04 - ALA - 680 – PM R10.6/R21.9
04 - CC - 680 – PM R0.0/R1.1
EA: 04-0Q3000
Project ID: 0418000069
PPNO: 2905F
November 2020

Project Report
For Project Approval

On Route I-680 in Alameda and Contra Costa Counties

Between from 0.4 mile south of Calaveras Rd Undercrossing

And 1.1 miles north of Alcosta Blvd Overcrossing

I have reviewed the right of way information contained in this Project Report and the R/W Data Sheet attached hereto, and find the data to be complete, current, and accurate:

Mark L. Weaver
Deputy District Director
Right of Way & Land Surveys

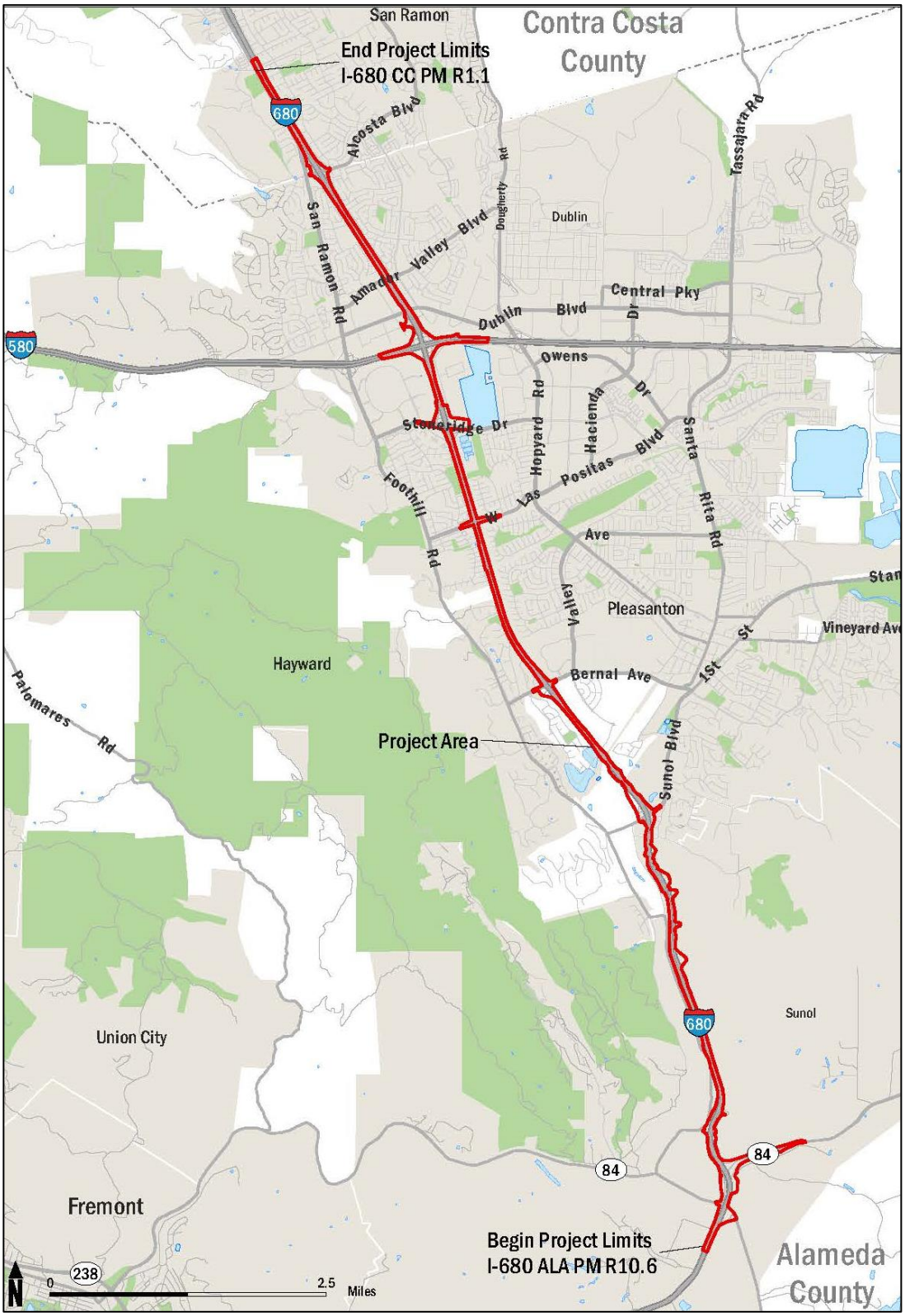
APPROVAL RECOMMENDED:

Jack Siauw
Project Manager

PROJECT APPROVED:

for Helena "Lenka" Culik-Caro 11/9/2020
Deputy District Director Design Date

Vicinity Map



This project report 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.

11-6-2020

ABHIJEET R. BHOI
REGISTERED CIVIL ENGINEER
AECOM CORPORATION

DATE

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ACRONYMS

AADT	Annual Average Daily Traffic
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC	Asphalt Concrete
ACCWP	Alameda Countywide Clean Water Program
Alameda CTC	Alameda County Transportation Commission
ADL	Aerially Deposited Lead
ADT	Average Daily Traffic
APE	Area of Potential Effect
APS	Advance Planning Study
BART	Bay Area Rapid Transit
BATA	Bay Area Toll Authority
BMP	Best Management Practice
BSA	Biological Study Area
Caltrans	California Department of Transportation
CAR	Cooperative Agreement Report
CCTA	Contra Costa Transportation Authority
CCTV	Closed-Circuit Television Cameras
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CHP	California Highway Patrol
CIDH	Cast-In-Drilled-Hole
CIP	Cast In Place
CMS	Changeable Message Sign
COZEEP	Construction Zone Enhanced Enforcement Program
CRCP	Continuously Reinforced Concrete Pavement
CRZ	Clear Recovery Zone
CSR	Customer Service Representative
CWTP	Alameda Countywide Transportation Plan
DED	Draft Environmental Document
FED	Final Environmental Document
DIS	Drainage Impact Study
DPR	Draft Project Report
DSMP	District System Management Plan
DSRSD	Dublin San Ramon Services District
ED	Environmental Document
EMS	Extinguishable Message Signs
EPVR	Encroachment Policy Variance Request
ESA	Environmentally Sensitive Area
ETS	Electronic Tolling System
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GeDs	Project geometry Drawings
HOV	High-Occupancy Vehicle
HMP	Hydromodification Management Plan
HQ	Headquarters
I-680	Interstate 680
IS/EA	CEQA Initial Study with Mitigated Negative Declaration and NEPA Environmental Assessment with Finding of No Significant Impact
JPA	Sunol Joint Powers Authority
JPCP	Jointed Plain Concrete Pavement
LCCA	Life Cycle Cost Analysis
LHSR	Location Hydraulic Study Report
LOS	Level of Service
MGS	Midwest Guardrail System
mph	mile(s) per hour
MPO	Metropolitan Planning Organization
MRP	Municipal Regional Permit
MSE	Mechanically Stabilized Embankment
MTBE	Methyl-Tert Butyl Ether
MTC	Metropolitan Transportation Commission
MVP	Maintenance Vehicle Pullout
NADR	Noise Abatement Decision Report
NEPA	National Environmental Policy Act
NOA	Naturally Occurring Asbestos
NPDES	National Pollutant Discharge Elimination System
OCPs	Organochlorine Pesticides
PA&ED	Project Approval and Environmental Document
PCC	Portland Cement Concrete
PDT	Project Development Team
PG&E	Pacific Gas and Electric Company
PM	Post Mile
PoDI	Project of Division Interest
PoCI	Project of Corporate Interest
Project	I-680 Express Lanes Project from SR 84 to Alcosta Blvd
PS&E	Plans, Specifications, and Estimates
PSI	Preliminary Site Investigation
PSR/PDS	Project Study Report/Project Development Support
RCSC	Regional Customer Service Center
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
RWQCB	Regional Water Quality Control Board
RW	Retaining Wall
R/W	Right of Way
SB 1	Senate Bill 1
SCS	Sustainable Communities Strategy
SIP	State Implementation Plan
SOV	Single-Occupant Vehicle
SR	State Route
STAA	Surface Transportation Assistance Act
STIP	State Transportation Improvement Program
SWDR	Storm Water Data Report
SWPPP	Storm Water Pollution Prevention Plan
TASAS	Traffic Accident Surveillance and Analysis System
TCE	Temporary Construction Easement
TCR	Transportation Concept Report
TDC	Toll Data Center
TIP	Transportation Improvement Program
TMP	Transportation Management Plan
TMS	Transportation Management System
TOAR	Traffic Operations Analysis Report
TOS	Traffic Operations System
TRB	Transportation Research Board
TSDP	Transportation System Development Plan
VA	Value Analysis
VDS	Vehicle Detection System
VMT	Vehicle Miles Traveled
Vph	Vehicles per hour
VTA	Santa Clara Valley Transportation Authority
VTMS	Variable Toll Message Sign
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

1. INTRODUCTION

Project Description:

The California Department of Transportation (Caltrans), in cooperation with the Alameda County Transportation Commission (Alameda CTC), proposes to construct High Occupancy Vehicle/express lanes (HOV/express lanes) on northbound and southbound Interstate 680 (I-680) from State Route (SR) 84 (Vallecitos Road) in Alameda County to north of Alcosta Boulevard in Contra Costa County. HOV/express lanes are specially designated freeway lanes that are free for eligible HOVs and also give other vehicles, including single-occupant vehicles (SOVs), the option to pay a toll to use the lane.

Attachment A shows the location of the proposed project, which extends for approximately 9 miles along I-680 from post mile (PM) R10.6 to R21.9 in Alameda County and from PM R0.0 to R1.1 in Contra Costa County. The new HOV/express lanes would pass in or near the cities of Pleasanton, Dublin, and San Ramon, and the community of Sunol. The project is anticipated to be constructed in two phases. Phase 1 would construct the southbound HOV/express lane and all project-related improvements in the median (both northbound and southbound). Phase 2 would construct the northbound HOV/express lane.

Caltrans, as assigned by the Federal Highway Administration (FHWA), is the lead agency under the National Environmental Policy Act (NEPA). Caltrans is the lead agency under the California Environmental Quality Act (CEQA).

Project Limits	04 - ALA - 680 - PM R10.6/R21.9 04 - CC - 680 - PM R 0.0/R1.1	
Number of Alternatives	2 (including No Build)	
	Current Cost Estimate:	**Escalated Cost Estimate:**
Capital Outlay Support (PA&ED)	$6.7M	$6.7M
Capital Outlay Support (PS&E and Construction)	$72.7M	$80.2M
Capital Outlay Construction	$261.4M	$331.4M
Capital Outlay Right of Way	$10.6M	$13.0M
Funding Source	Measure B, Measure BB, Regional Measure, Senate Bill 1 (SB 1), State Transportation Improvement Program (STIP), Federal and Local Transportation Development fees	
Type of Facility	Freeway (Express Lanes)	
Number of Structures	3 bridges, 11 retaining walls	
SHOPP Project Output	Not Applicable	
Environmental Determination or Document	CEQA Initial Study with Mitigated Negative Declaration and NEPA Environmental Assessment with Finding of No Significant Impact (IS/EA)	
Legal Description	Construction on State Highway in Alameda and Contra Costa Counties in and near Sunol, Pleasanton, Dublin and San Ramon on Route 680 from 0.7 Miles South of Scott's Corner Separation to 1.1 Miles North of Alcosta Blvd	
Project Development Category	4A	

2. RECOMMENDATION

The Project Development Team (PDT) identified the Build Alternative as the Preferred Alternative. This decision was made at the August 18, 2020 PDT meeting after considering the information in the IS/EA, technical studies, comments received from the public and outside agencies during the 32-day review period, and discussion and input from the PDT members. The No Build Alternative would not meet the project's purpose and need because of the lack of improvements to existing and projected future delay times, support for transit and HOV modes, measures to optimize freeway system management, and contribution to the regional HOV/express lane system.

It is recommended that this Project Report be approved and that authorization be granted for the project to proceed to final engineering and the preparation of plans, specifications, and estimates utilizing the Phase 1 of the Build Alternative and that authorization be granted for the execution of a cooperative agreement or agreements with the appropriate funding agencies for the proposed project. No federal or state funding can be used to purchase right of way for the Full Build Alternative, due to potential inverse condemnation claims, until the project funding is updated in the Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP). Only the fundable Phase 1 is authorized to proceed to the design and right of way acquisition phases.

The affected local agencies have been invited, participated, and consulted throughout the PDT process with respect to the proposed improvements. Their views have been considered, and they are in general accord with the proposed project.

3. BACKGROUND

3.1 Project History

Plan Bay Area, the 2013 Regional Transportation Plan (RTP) for the nine-county Bay Area, called for a 550-mile regional network of express lanes to be completed by 2035. Plan Bay Area 2040, the 2017 RTP, includes the continued development of the express lane network to take advantage of available capacity in under-used carpool lanes and to improve traffic management and reliability on well-used carpool lanes.

In 2014, Alameda County voters passed the Measure BB sales tax, which allocated funding for HOV/express lanes on I-680 from SR 237 to Alcosta Boulevard. On September 24, 2018, Caltrans approved a Project Study Report/Project Development Support (PSR/PDS) planning document to request approval for the proposed I-680 Express Lanes from SR 84 to Alcosta Boulevard Project to proceed to the Project Approval and Environmental Document (PA&ED) phase. The PSR/PDS evaluated the same alternatives—one Build Alternative and one No Build Alternative—that are discussed in this PR.

HOV/express lanes exist or are under construction in the following locations of I-680 in the project vicinity:

- South of the project area – An HOV/express lane exists on southbound I-680 from south of the SR 84 interchange to SR 237 in Milpitas, and an HOV/express lane is under construction on northbound I-680 from SR 262 (Mission Boulevard) to north of

the SR 84 interchange (EA 4G050).

- Within the project area – The SR 84 Expressway Widening and SR 84/I-680 Interchange Improvements project (EA 29763) proposes to extend the existing HOV/express lane on southbound I-680 northward by approximately 2 miles, from south of the SR 84 interchange to 0.8 mile north of Koopman Road.
- North of the project area – HOV/express lanes exist on I-680 from north of Alcosta Boulevard to Rudgear Road in the southbound direction and Livorna Road in the northbound direction (EA 3G950/3G910). Contra Costa Transportation Authority (CCTA) is developing a project that extends the southbound HOV/express lane from Rudgear Road and Livorna Road to the Benicia-Martinez Bridge.

The proposed project would close the gap between existing and in-progress HOV/express lane projects directly to the north and south. Upon completion of the proposed project, I-680 would have continuous HOV/express lanes from SR 262 in Fremont to Livorna Road in Alamo in the northbound direction, and from Rudgear Road in Walnut Creek to SR 237 in Milpitas in the southbound direction. Future projects will provide for a continuous 48-mile express lane system by extending the I-680 northbound express lane southward to SR 237, and the northbound and southbound HOV/express lanes to Marina Vista Avenue in Martinez, just south of the Benicia-Martinez Bridge. In doing so, the project would contribute to the completion of the Bay Area Express Lanes network.

Caltrans District 4 is implementing a programmed State Highway Operation and Protection Program (SHOPP) project to rehabilitate the I-680 pavement in southbound and northbound directions between Koopman Road and Alcosta Boulevard (04−ALA-680 PM M12.4/R21.9; EA 04-0J620). The I-680 Pavement Rehabilitation Project is currently in the design phase. The project team for the proposed HOV/express lanes project has been coordinating with the rehabilitation project team to minimize overlaps and throwaway costs. The project teams have held meetings from July 2019 to January 2020 and have agreed to potentially combine the southbound pavement rehabilitation work with the HOV/express lane project during construction. In October 2020, CTC approved a Project Change Request to down scope EA 0J620 to NB only and to program EA 0J624 as SB only to be combined with Phase 1 of the Project.

3.2 Community Interaction

3.2.1 Public Outreach

Caltrans held three public information meetings at the outset of the environmental studies for the proposed project. The purpose of the meetings was to inform the public about the project and solicit community input on the issues to be addressed in the environmental document.
The meetings were noticed through newspaper advertisements that ran on October 3 and 10, 2018, in the East Bay Times, covering Alamo, Oakland, Hayward, Fremont, Walnut Creek, Brentwood, Martinez, Danville, Blackhawk, San Ramon, Dublin, Pleasanton, Livermore, and Sunol. Advertisements also ran in the online version of the East Bay Times. In addition, meeting notices were mailed to approximately 2,500 addresses within 0.25 mile of the project area, along with approximately 200 other agency and local stakeholders. Caltrans also mailed invitations to elected officials that represent the project area. Locations, dates, and times of the

meetings were as follows:

- Dublin Civic Center, Regional Room, Dublin, CA, on Tuesday, October 9, 2018, 6 to 8 PM
- Sunol Glen Elementary, Auditorium, Sunol, CA, on Tuesday, October 16, 2018 6 to 8 PM
- Lydiksen Elementary School, Multi-Purpose Room, Pleasanton, CA, on Thursday, October 18, 2018, 6 to 8 PM

Approximately 10 members of the public in total attended the meetings.

The meetings were an open house format in which attendees could view informational exhibits and ask questions of the project team. Attendees were encouraged to submit comments in writing, either during the meeting, via postal mail or email, or via the Alameda CTC project web page, which has a link to an online comment form.

Meeting attendee questions and comments involved existing noise and traffic in the project area, potential traffic impacts during project construction, express lane enforcement and operation, and the existing express lanes to the north of the project area on I-680 in Contra Costa County.

Additional public outreach took place during the circulation period of the Draft IS/EA, as described further in Section 3.2.3.

3.2.2 Stakeholders

In addition to the public meetings in October 2018 and June 2020 and periodic Project Development Team (PDT) meetings, which include representatives from Caltrans, Alameda CTC, Alameda County and the Cities of Dublin, Pleasanton, and San Ramon, Alameda CTC staff coordinated with representatives from MTC and the Bay Area Tolling Authority (BATA) regarding toll system integration between the proposed project and the existing HOV/express lanes to the north of Alcosta Boulevard.

Communications with project stakeholders will continue throughout the project.

3.2.3 Draft Environmental Document Public Review

The Draft Project Report (DPR) for the project was approved on May 27, 2020. Caltrans filed a Notice of Completion for the Draft IS/EA with the State Clearinghouse on May 29, 2020. The filing of the Notice of Completion began a public review and comment period that extended from May 29, 2020, to June 30, 2020. The public had more than 30 days to review and comment on the document.

Notice of the Draft IS/EA circulation and public meeting was provided in following ways:

- Newspaper advertisements were placed in the *East Bay Times* print editions of May 29, June 5, June 12, and June 19, 2020, as well as in the online editions between June 2 and 17, 2020.
- Notices were mailed to approximately 2,500 addresses within 0.25 mile of the project area, along with approximately 200 other agency and local stakeholders.
- Meeting information was posted on Sunol.net and the Patch.com local community websites for Dublin, Pleasanton, San Ramon, and Fremont.
- Caltrans emailed announcements to the project email list, which included attendees of the October 2018 public meetings.
- Caltrans mailed announcements to elected officials and emailed announcements to staff that represent the officials.

In lieu of having one or more in-person meetings, a virtual open house was held for the protection of public health, in accordance with State of California Executive Order N-25-20 (March 12, 2020) and subsequent State and local orders limiting in-person gatherings due to the COVID-19 pandemic. The virtual open house took place on Thursday, June 18, 2020, from 6 PM to 8 PM. The open house began with a presentation providing an overview of the project and the environmental process, followed by a question and answer session. Attendees were invited to submit questions via an online chat function. Eighteen members of the public attended. A phone number was provided for technical help, translation, or assistive materials before, during, or after the meeting. No requests were received.

The purpose of the meeting was to encourage public involvement and comments, as well as to give the public an opportunity to view project information and ask questions of project team members. Attendees were encouraged to submit comments in writing via postal mail, email, or a comment form on Alameda CTC's project web page (www.alamedactc.org/680gapclosure). Comments were requested to be submitted by 5 PM on Tuesday, June 30, 2020.

A total of 19 comments were submitted during the public review and comment period. Comments included recommended revisions to avoidance, minimization, and mitigation measures; requests for consideration of an express bus as a project alternative; questions about the noise study, the analysis of induced demand, the project's consistency with state climate change goals, and the project's potential to affect traffic in the Niles Canyon section of SR 84; and requests for information about the project and schedule. All formal comments are addressed and responses are included in the Final IS/EA.

3.3 Existing Facility

I-680 extends from the Interstate 280/United States Highway 101 interchange in San Jose in the south to the Interstate 80/SR 12 interchange in Fairfield in the north. I-680 is a major north-south transportation corridor connecting Silicon Valley and the surrounding South Bay with the Tri-Valley area and eastern Contra Costa County. The Tri-Valley area includes Dublin, Livermore, and Pleasanton in Alameda County as well as Danville and San Ramon in Contra Costa County.

In the project area, I-680 contains three general purpose lanes (with no vehicle type or occupancy restrictions) in each direction, except north of Dublin Boulevard, which has four

general purpose lanes in the northbound direction. HOV/express lanes exist or are under construction on I-680 to the north and south of the proposed project area. The posted speed limit is 65 mph.

I-680 is a Classified Landscaped Freeway between Post Miles 18.40/19.85 and R20.42/R21.88 in Alameda County and PM R0.00/R2.76 in Contra Costa County. The Landscape Freeway Classification regulates the installation of outdoor advertising along a corridor.

4. PURPOSE AND NEED

4.1 Problem, Deficiencies, and Justification

4.1.1 Project Purpose

The purpose of the project is to:

- Increase the efficiency of the transportation system on I-680 between the I-680/SR 84 interchange and north of the I-680/Alcosta Boulevard interchange to accommodate current and future traffic demand;
- Improve travel time and reliability for all users, including HOV and transit users;
- Optimize freeway system management and traffic operations; and
- Contribute to the completion of 48 miles of contiguous HOV/express lanes between Santa Clara County and Contra Costa County.

4.1.2 Project Need

The following describes the existing traffic operations on I-680 in the project area and projected future traffic growth with respect to capacity and transportation demand, which create the need for the Project.

Existing Congestion

Highway capacity is a metric used to assess congestion. The capacity of a general purpose lane is typically considered to be 2,000 vehicles per hour (vph). The capacity of an HOV lane is typically considered to be 1,650 vph, which is the threshold of operation needed to provide HOVs with reliable travel time savings.[1] Comparing the counted or forecasted volume (known as traffic demand) of a highway to the approximate per-lane capacity indicates where and when congestion occurs.

In many segments of the project corridor, high traffic demand exceeds the available capacity, resulting in traffic congestion for approximately 10 hours each day. The primary travel directions on I-680 are southbound in the morning and northbound in the afternoon.

[1] Title 23, Section 166(d)(2) of the United States Code (USC) set a minimum average operating speed of 45 mph for HOV lanes with a speed limit of 50 mph or higher, which generally corresponds to Level of Service (LOS) C or D and a target threshold of approximately 1,650 vph per HOV lane. LOS D operating conditions in the HOV lane are only allowed with written approval of Caltrans (California Streets and Highways Code Section 149.6[b]). The minimum LOS C or D requirement is intended to provide HOV/express lane users with reliable travel times.

During the AM peak hour (from 7 AM to 8 AM), traffic demand on southbound I-680 generally approaches or exceeds capacity. A bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp slows vehicle speeds to between 15 and 35 mph northward to the westbound I-580 off-ramp. In addition, volumes along the corridor are near capacity from Sunol Boulevard to the SR 84 interchange. During the AM peak period (5 AM to 1 PM), drivers on southbound I-680 experience up to 17 minutes of delay traveling through the traffic study corridor. The study corridor includes southbound I-680 between the Bollinger Canyon Road interchange in San Ramon and the Sheridan Road interchange in unincorporated Alameda County, and northbound I-680 between the Washington Boulevard interchange in Fremont and the Bollinger Canyon Road interchange in San Ramon, as discussed further in Section 4.8.1. The average travel speed through the study corridor on southbound I-680 is 52 mph.

During the PM peak hour (from 5 PM to 6 PM), traffic demand on northbound I-680 exceeds capacity to the south of the SR 84 interchange. A bottleneck between the Andrade Road on-ramp and the Calaveras Road (SR 84) off-ramp slows traffic to between 8 and 35 mph southward to the Mission Boulevard (SR 262) interchange in Fremont, outside of the project area. North of the SR 84 interchange, volumes along segments of northbound I-680 are near capacity, and another PM peak period bottleneck exists between Stoneridge Drive and I-580. During the PM peak period (2 PM to 9 PM), drivers on northbound I-680 in the study corridor experience approximately 11 minutes of delay, and the average travel speed is just under 47 mph.

Future Congestion

Vehicle demand volumes in the project area are anticipated to grow by more than 30 percent between 2015 and 2045, with a minimum of 1 percent growth per year based on Plan Bay Area forecasts of jobs and households in the I-680 corridor. These projections of future conditions within the project limits indicate that the demand for travel will continue to exceed the available capacity during peak periods, adversely affecting travel speeds, and increasing the level and duration of congestion.

In future study year 2045, congestion from the existing bottleneck on southbound I-680 between Sunol Boulevard and Koopman Road would last from 5 AM to 12:30 PM, resulting in backups extending to the north of the Crow Canyon Road interchange. During the AM peak period (5 AM to 1 PM), drivers traveling through the study corridor on southbound I-680 would experience maximum delays of close to 47 minutes, and the average travel speed would be approximately 30 mph.

In 2045, bottlenecks are anticipated to form in multiple locations along northbound I-680 during both the AM (5 AM to 1 PM) and PM (2 PM to 9 PM) peak periods. Drivers traveling through the study corridor would experience maximum delays of close to 1 hour and 13 minutes in the AM peak period and 47 minutes in the PM peak period. The average travel speed would be approximately 42 mph in the AM peak period and 34 mph in the PM peak period.

Travel Time Reliability

The delays and travel speeds described above are averages for typical peak periods and result from fixed bottlenecks that cause persistent congestion. Because the congestion is predictable, travelers can plan for it by allowing extra time, traveling at off-peak times, or using different routes. Traffic incidents and even weather such as heavy rain can have variable and unpredictable effects on travel time. Travel time reliability relates to the predictability of traffic conditions. I-680 in the project area has no restrictions on lane use, and travel time delays can be unpredictable from day to day when demand and use exceed capacity.

HOV/express lanes provide greater travel time reliability for lane users through the use of dynamic toll pricing to maintain speeds of 45 mph or greater. Closing the 9-mile gap between the existing and in-construction HOV/express lanes to the north and south would also reduce the overall level of congestion in the system, which typically makes travel time more reliable in all lanes. In addition, the enforcement and incident management systems that are used to maintain acceptable traffic flow in the HOV/express lanes would support increased emergency response times, and the lanes would provide additional capacity to recover from unforeseen events, which would improve travel time reliability for all travelers.

4.1.3 Deficiencies

During the AM peak period, high volumes of vehicles entering southbound I-680 from western Pleasanton create a bottleneck between the Sunol Boulevard on-ramp and the Koopman Road off-ramp from approximately 6:00 AM to 10:00 AM that extends to the westbound I-580 off-ramp. Northbound I-680 is uncongested during the AM peak period.

During the PM peak period, a bottleneck forms on southbound I-680 between the Bollinger Canyon Road diagonal on-ramp and Alcosta Boulevard off-ramp between 4:30 PM and 6:30 PM, causing backups that extend outside of the study area. Another bottleneck forms on southbound I-680 between the Stoneridge Drive diagonal on-ramp and Bernal Avenue off-ramp between 5:30 PM and 6:00 PM, which extends to the Stoneridge Drive off-ramp. In the northbound direction, a bottleneck between the Washington Boulevard on-ramp and the Mission Boulevard (SR 238) off-ramp from 2:30 PM to 8:00 PM causes backups that extend outside of the study area. That bottleneck, together with another to the north between the Andrade Road on-ramp and the Calaveras Road (SR 84) off-ramp during generally the same period, controls northbound PM peak period traffic within the study area.

Levels of Service. For the AM peak, southbound I-680 operates at LOS F from the Dublin Boulevard on-ramp merge to the Sunol Boulevard on-ramp merge. Downstream of the Sunol Boulevard on-ramp merge section, the corridor operates at LOS E in the bottleneck section between the Sunol Boulevard on-ramp and the Koopman Road off-ramp. From Koopman Road to the Paloma Way on-ramp, southbound I-680 generally operates at LOS E, which indicates that this section is operating very near capacity. Downstream of Paloma Way (SR 84), southbound I-680 operates at LOS D or better.

In the AM peak, northbound I-680 generally operates at LOS D or better, indicating free-flow conditions. Segments of northbound I-680 near the Alcosta Boulevard on-ramp were estimated to operate at LOS E.

In the PM peak, northbound I-680 within the project limits operates at LOS F between the Stoneridge Drive off-ramp and the Stoneridge Drive loop on-ramp. The weave segment between the Stoneridge Drive on-ramp and the eastbound I-580 off-ramp operates at LOS E as it is a bottleneck.

Measures of Effectiveness. For the AM peak period, speeds along southbound I-680 average near 52 miles per hour (mph), but the maximum individual delay of 17.0 minutes (versus an average travel time of 19.7 minutes) indicates severe congestion due to the Sunol Boulevard bottleneck. During the PM peak period, southbound I-680 speeds are generally near free flow (64.6 mph), as the travel time calculation limits do not include the queue for the Bollinger Canyon Road to Alcosta Boulevard bottleneck. However, the effects of queuing for the Stoneridge Drive to Bernal Avenue bottleneck are evident in the maximum individual delay of 2.7 minutes.

Northbound I-680 operates near the speed limit with little delay for the AM peak period. Speeds are substantially lower throughout the PM peak period (averaging 46.9 mph), and the maximum individual delay (11.3 minutes) is high compared to the average travel time (23.4 minutes), which indicates heavy congestion.

4.2 Regional and System Planning

The proposed modifications by this project are consistent with regional and local planning, as discussed below.

4.2.1 Identify Systems

I-680 is a major north-south transportation corridor connecting Silicon Valley and the surrounding South Bay with the Tri-Valley area and eastern Contra Costa County. I-680 within the project limits is part of the National Highway Network, the Interstate System, the Surface Transportation Assistance Act (STAA) Network, and the MTC HOV Master Plan and Bay Area Express Lane Network. Sunol Joint Powers Authority (JPA) operates the existing express lane on southbound I-680 from south of the SR 84 interchange to SR 237 in Milpitas. Members of the authority are elected officials representing Alameda and Santa Clara Counties. Some administrative functions for the authority are performed on a contract basis by the Alameda CTC.

I-680 is listed as an Officially Designated State Scenic Highway between Mission Boulevard (SR 238) and the Contra Costa County line in Alameda County (PM R6.4 to R21.9) and from the Alameda County line to SR 24 in Contra Costa County (PM 0.0 to 14.4).

4.2.2 State Planning

Caltrans District 4 has completed the District System Management Plan (DSMP) project List, Transportation Concept Report (TCR), and Transportation System Development Plan (TSDP). Transportation Corridor Concept Report #10 (2002) identifies the 25-year concept for this

portion of I-680 as a six-lane freeway plus two express lanes, for a total of eight lanes. The TSDP recommends a comprehensive package of improvements, strategies and actions for the corridor. The project is consistent with all State Planning Documents.

4.2.3 Regional Planning

The Metropolitan Transportation Commission (MTC) functions as both the State-designated Regional Transportation Planning Agency (RTPA) and federally designated Metropolitan Planning Organization (MPO). As such, MTC is responsible for the update of the Regional Transportation Plan (RTP), a financially constrained, long-range programming report for the region. Under SB 375, along with an updated RTP, each region in California must develop a Sustainable Communities Strategy (SCS) that promotes walk- and bike-friendly mixed-use commercial and residential development that is located close to mass transit, jobs, schools, shopping, parks, recreation, and other amenities. As the federally designated Metropolitan Planning Organization (MPO) for the nine-county San Francisco Bay Area, MTC is required by Caltrans to prepare and adopt a regional Transportation Improvement Program (TIP) at least once every two years. The TIP is a list of surface transportation projects, programs and investment priorities in the nine-county San Francisco Bay Area over a four-year period. MTC's Plan Bay Area 2040, adopted in July 2017, serves as the San Francisco Bay Area's RTP and SCS.

Plan Bay Area 2040 includes the continued development of the regional express lane network. The project is included in Plan Bay Area 2040 (ABAG and MTC 2017, amended 2020; RTP ID No. 17-10-0065) for a cost of $480M. The project is in the 2019 TIP, which was adopted by the MTC on September 28, 2018 (MTC 2018; TIP ID No. ALA170009). The FHWA and Federal Transit Administration (FTA) approved the 2019 TIP on December 17, 2018.

4.2.4 Local Planning

Alameda CTC is the designated Congestion Management Agency for Alameda County. Alameda CTC coordinates countywide transportation planning efforts; programs local, regional, state and federal funding; and delivers projects and programs including those approved by voters in Alameda County transportation expenditure plans for Measure B, Measure BB, and the Vehicle Registration Fee.

The Alameda Countywide Transportation Plan (CWTP) is a long-range policy document that guides future transportation investments, programs, policies and advocacy for all of Alameda County through the year 2040. The CWTP identifies a number of future trends, issues and challenges for the County including safety, and more specifically, an increase in the number of collisions on roadways. The project has been assigned project number 030 in the CWTP. The project is also included in the 2014 Alameda County Transportation Expenditure Plan. Both plans include the continued development of express lanes in Alameda County.

The projects listed in Table 4-1 are the current and future projects on I-680 in the vicinity of the project that are part of the Caltrans SHOPP.

Table 4-1: SHOPP Projects in Vicinity of the Project limits

County	EA	Description	Approximate Construction Cost	Construction Date
Ala	4K670	At the ramp terminus of the on-ramp to southbound I-680 and Sunol Blvd. Install left-turn channelization with signalization(PM 15.25).	$4.0M	2021/22
Ala	0J620	Rehabilitate the I-680 pavement in southbound and northbound directions between Koopman Road and Alcosta Boulevard	$110.0M	2022/23
Ala	OP630	In Alameda County in Pleasanton at Stoneridge Drive – Construct Rock Slope protection at slip out.	$1.5M	2020/21
Ala	4G113	In and near Fremont Pleasanton, and Dublin, from 0.3 mile south of Scott Creek Road to 0.3 mile north of Alcosta Boulevard- Install ramp meters, ramp HOV bypass lanes and Traffic Operations Systems	$40.4M	2018

Transit Study on I-680

The Livermore-Amador Valley Transit Authority (Wheels) and the Central Contra Costa Transit Authority (County Connection) currently operate bus routes that use the I-680 corridor. Separate from this project, Alameda CTC is conducting a transit study of the I-680 corridor to identify one or more public express bus service options along the I-680 corridor that would leverage the existing and planned HOV/express lanes. A continuous HOV/express lane system on I-680 would improve travel time and travel reliability for public transit, increasing the incentive for transit use in the corridor.

In January 2019, Alameda CTC conducted a transit operator workshop to collect input from local transit providers. The workshop was attended by representatives from Bay Area Rapid Transit (BART), Caltrans, CCTA, MTC, Santa Clara Valley Transportation Authority (VTA), and Wheels. The purpose of the workshop was to consider target users of a potential express bus service; service type; route, termini, and stops; transit vehicle types; potential capital and operating funding opportunities; and implementation issues.

The input and observations from the workshop were considered in the development of a transit operations concept for the I-680 corridor that included a ridership analysis, revenue projections, and an operating plan. Findings were shared at a second transit operator workshop in October 2019. Work is ongoing to finalize findings, which will include capital and operating/maintenance cost estimates and potential funding sources. The transit operations concept would provide a basis for implementing potential future public express bus service on I-680 when funding is available.

A new public express bus service on I-680 is not considered an alternative to the proposed project because it would not fulfill the purpose of closing the gap in the I-680 HOV/express lane system between SR 84 and Alcosta Boulevard. Although an additional transit route would

increase person-throughput (the number of people moved per vehicle) and thereby incrementally reduce congestion on I-680, it would require HOV/express lanes to provide riders with improved travel time and travel reliability. By helping to provide a continuous HOV/express lane system, the proposed project, combined with other in-progress and proposed HOV/express lane projects, would provide reliable travel times for public transit and help encourage transit use in the corridor.

4.3 Traffic

Fehr & Peers conducted the traffic studies for this project. The traffic studies were detailed in the Traffic Operations Analysis Report (TOAR), which was approved by Caltrans on July 29, 2019.

The traffic study area includes northbound I-680 between the Washington Boulevard interchange in Fremont and the Bollinger Canyon Road interchange in San Ramon, and southbound I-680 between the Bollinger Canyon Road interchange in San Ramon and the Sheridan Road interchange in unincorporated Alameda County. The geographic area considered in the traffic analysis extends beyond the project limits to capture the effects of the proposed project on the surrounding transportation system as well as the effects of traffic in the surrounding area on the proposed project.

The operational analysis evaluated existing and future conditions. Existing conditions represent the year 2018. Future conditions are projected for the years 2025 (Opening Year) and 2045 (Design Year).[2] For purposes of this project, the AM peak period is 5:00 AM to 1:00 PM, and the PM peak period is 2:00 PM to 9:00 PM. Traffic volumes and levels of service (LOS) were identified for 30-minute intervals (7:30 AM to 8:00 AM and 5:30 PM to 6:00 PM) because using a 1-hour peak would not as accurately reflect the growth and change in congestion over time in the study area.

Freeway operations were analyzed using VISSIM microsimulation analysis software, based on the procedures and methodologies outlined in the 2010 Highway Capacity Manual (Transportation Research Board [TRB] 2011). The AM and PM peak operational models were calibrated and validated to observed traffic counts, travel times, bottleneck locations, and queues. The TOAR also analyzed system-wide performance measures, called Measures of Effectiveness, to provide an understanding of overall traffic operations.

Findings of the TOAR are summarized below.

4.3.1 Current and Forecasted Traffic

Peak hour volumes for both AM and PM and average daily traffic (ADT) volumes for existing conditions and opening year and design year Build Alternative and No Build Alternative within the project limits are summarized in Table 4-2.

[2] The TOAR qualitatively analyzed traffic conditions in the event that, due to funding and other constraints, the project opening year is 2026 instead of 2025, and subsequently the project design year is 2046 instead of 2045. See Sections 4.3.3.1 and 4.3.3.2, below.

Table 4-2: Existing and Forecasted Peak Hour and ADT Volumes

Facility	Existing			2025						2045					
				No Build			Build			No Build			Build		
	AM Peak	PM Peak	ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak	ADT
SB I-680: Between Alcosta and I-580	7,702	7,048	107,000	8,365	9,005	119,000	8,425	9,005	119,000	10,085	11,640	151,000	10,260	11,640	151,000
SB I-680: Between I-580 and Stoneridge	5,080	5,618	81,000	5,900	6,315	89,000	5,950	6,335	89,000	6,795	8,240	112,000	6,995	8,330	112,000
SB I-680: Between Stoneridge and Bernal	5,099	5,965	76,000	5,535	6,645	84,000	5,585	6,665	84,000	6,310	8,520	105,000	6,510	8,610	105,000
SB I-680: Between Sunol and Koopman	5,530	5,396	77,000	7,045	5,885	83,000	7,070	5,905	83,000	8,025	7,205	100,000	8,140	7,295	100,000
SB I-680: Between Andrade and Calaveras	7,031	5,573	92,000	8,795	6,735	102,000	8,795	6,735	102,000	10,095	8,760	125,000	10,095	8,760	125,000
NB I-680: Between Alcosta and I-580	6,777	6,965	96,000	7,250	7,755	108,000	7,250	7,755	108,000	9,845	9,590	139,000	9,845	9,590	139,000
NB I-680: Between I-580 and Stoneridge	5,310	6,500	89,000	5,850	7,115	98,000	5,850	7,140	98,000	7,390	8,300	119,000	7,390	8,435	119,000
NB I-680: Between Stoneridge and Bernal	4,637	4,549	80,000	5,640	5,935	88,000	5,640	5,965	88,000	7,115	6,850	107,000	7,115	7,005	107,000
NB I-680: Between Sunol and Koopman	4,608	4,687	72,000	5,145	5,215	80,000	5,145	5,305	80,000	6,665	6,260	100,000	6,665	6,305	100,000
NB I-680: Between Andrade and Calaveras	4,971	5,650	85,000	5,685	6,750	94,000	5,685	6,750	94,000	7,730	7,955	119,000	7,730	7,955	119,000

Source: Fehr & Peers 2019

4.3.1.1 Truck Volumes

Trucks represent between 3.1 percent and 7.9 percent of all traffic in the AM peak period and between 2.0 percent and 6.3 percent of all traffic in the PM peak period. A separate truck percentage was set for the northbound and southbound directions of the I-680 corridor based on the count data.

4.3.1.2 Truck Routes and Operations

I-680 is part of the National Network under the Surface Transportation Assistance Act (STAA). I−680 also provides connections to STAA Terminal Access Routes and California Legal Truck Routes such as SR 84.

4.3.1.3 Forecasted Traffic Conditions

Future year traffic conditions were analyzed for year 2025 and year 2045 conditions, for both the before-project and after-project scenarios (also known as No Project and Plus Project conditions, respectively). As there is only one project alternative under consideration at this time, only one Plus Project scenario is analyzed.

4.3.1.3.1 Year 2025 Conditions

Bottlenecks

Year 2025 No Project

Southbound AM. The southbound AM peak period bottleneck between the Sunol Boulevard on-ramp and the Koopman Road off-ramp would be active from 5:30 AM to past 10:00 AM and extend to the eastbound I-580/Dublin Boulevard off-ramp.

Southbound PM. During the PM peak period, the southbound I-680 bottleneck between the Bollinger Canyon Road diagonal on-ramp and the Alcosta Boulevard off-ramp would be active between 3:30 PM and 7:00 PM, and queues from this bottleneck would reach past the Crow Canyon Road interchange. In addition, the southbound I-680 bottleneck between the Stoneridge Drive diagonal on-ramp and the Bernal Avenue off-ramp will be active between 4:30 PM and 7:00 PM, and backups would extend to the Alcosta Boulevard diagonal on-ramp.

Northbound AM. On northbound I-680 in the AM peak period, traffic would continue to operate under free-flow conditions.

Northbound PM. On northbound I-680 in the PM peak period, completion of the SR 84 Expressway Widening and SR 84/I-680 Interchange Improvements project (EA 29763) would remove the existing bottleneck approaching Calaveras Road (SR 84). Completion of the I-680 Northbound Express Lane Project from SR 262 (Mission Boulevard) to north of the SR 84 interchange (EA 4G050) would improve the bottleneck between the Washington Boulevard on-ramp and the Mission Boulevard (SR 238) off-ramp. During the PM peak period, a bottleneck would form in the weave section on northbound I-680 between the Stoneridge Drive diagonal on-ramp and the eastbound I-580 off-ramp from 4:30 PM to 7:00 PM. Heavy demand in the right lane approaching the off-ramp

to eastbound I-580 could result in queueing to the Bernal Avenue on-ramp.

Year 2025 Plus Project

Southbound AM. With the project, the southbound AM peak period bottleneck between the Sunol Boulevard on-ramp and the Koopman Road off-ramp would no longer be active; however, improved flow along southbound I-680 would result in a bottleneck between the Paloma Way (SR 84) on-ramp and the Andrade Road off-ramp from 6:30 AM to 7:30 AM. The queue from this bottleneck would reach as far as the southbound SR 84 connector on-ramp, a distance of 0.3 mile.

Southbound PM. In the PM peak period, the southbound I-680 bottleneck between the Bollinger Canyon Road diagonal on-ramp and the Alcosta Boulevard off-ramp would be active between 3:30 PM and 7:00 PM, as it would under No Project conditions. No improvement at this bottleneck is expected because it is located upstream of the proposed project improvements. The southbound I−680 bottleneck between the Stoneridge Drive diagonal on-ramp and the Bernal Avenue off-ramp that occurs under No Project conditions would be inactive during the PM peak period under Plus Project conditions. This represents an improvement over No Project conditions, where the bottleneck would be active for 2.5 hours.

Northbound AM. Northbound I-680 during the AM peak period would operate at free-flow conditions, as it would under No Project conditions.

Northbound PM. Under Plus Project conditions, the PM peak period bottleneck along northbound I−680 in the Stoneridge Drive diagonal on-ramp to the eastbound I-580 off-ramp weave section would be active only between 5:30 PM and 6:00 PM. Under No Project conditions, this bottleneck would be active between 4:30 PM and 7:00 PM.

Levels of Service

Year 2025 No Project

During the AM peak, southbound I-680 would operate at LOS F between the I-580 westbound off-ramp and the Sunol Boulevard on-ramp merge. This section of LOS F conditions is a result of the bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp. Under Existing conditions, the LOS F operations only extended to the Dublin Boulevard on-ramp merge section. All other segments along southbound I-680 would operate at LOS E or better.

Northbound I-680 would operate at LOS E or better throughout the AM peak, as the facility would be generally uncongested.

During the PM peak, spillback from the southbound I-680 bottleneck between the Bollinger Canyon diagonal on-ramp and the Alcosta Boulevard off-ramp would result in LOS F conditions in the merge section for the Bollinger Canyon Road diagonal on-ramp. Additionally, queue spillback from the southbound I-680 bottleneck between the Stoneridge Drive diagonal on-ramp and Bernal Avenue off-ramp would result in LOS F conditions between the I-580 westbound off-ramp and the Sunol Boulevard on-ramp merge section.

Under PM peak conditions, northbound I-680 would operate at LOS F between the Bernal Avenue off-ramp and the Stoneridge Drive loop on-ramp, due to the bottleneck at the weave section between the Stoneridge Drive loop on-ramp and the eastbound I-580 off-ramp.

Year 2025 Plus Project

During the AM peak, northbound and southbound I-680 would operate at or near free flow conditions (LOS E or better). The improvement in southbound I-680 LOS is attributed to the project's addition of the HOV/express lane through the No Project bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp.

During the PM peak, northbound I-680 would operate at LOS F from the Stoneridge Drive off-ramp to the Stoneridge Drive loop on-ramp. This represents a reduction in the number of segments operating at LOS F from five under No Project conditions to one under Plus Project conditions.

The merge area for the Stoneridge Drive diagonal on-ramp to southbound I-680 would operate at LOS F during the PM peak. The No Project bottleneck between the Stoneridge Drive diagonal on-ramp and the Bernal Avenue off-ramp would not be active under Plus Project conditions. The leftmost general purpose lane would operate at a lower density such that the overall speed in the general purpose lanes is above 35 mph, an improvement over the No Project condition.

Measures of Effectiveness

The project would not change the number of vehicles served in the study area throughout the course of each study period; this is to be expected as the total demand volumes between the No Project and Plus Project scenarios are nearly identical. Peak period vehicle miles traveled (VMT) is largely identical between the No Project and Plus Project scenarios (less than a 1 percent increase between No Project and Plus Project). The modeled increase in VMT is attributed to more vehicles remaining on the mainline rather than diverting to other routes under Plus Project conditions. With the project, vehicle hours of delay in the study area would decrease by between 20 and 45 percent during the study periods (5:00 AM to 1:00 PM and 2:00 PM to 9:00 PM).

Along southbound I-680, AM peak period travel times and travel speeds would improve with the project compared to the No Project condition, as the HOV/express lane would better accommodate demand volumes in the bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp. Travel time along the corridor would also be more reliable than with the No Project condition due to the projected reductions in congestion. Similar benefits will occur in the PM peak period.

Along northbound I-680, travel times, speeds, and delays would remain nearly constant for the AM peak period, as the facility would be uncongested in the No Project and Plus Project scenarios throughout the AM peak period. In the PM peak period, travel time with the project would decrease by nearly 5 percent, and travel speed would increase by about 6 percent. Travel time reliability would improve, as the maximum individual delay with the project would decrease from 4.1 minutes to 0.5 minutes.

As discussed further in Section 5.2, the project is anticipated to be constructed in two phases. In Year 2025, if only Phase 1 is operational, it would decrease vehicle hours of delay in the study area

by between 23 and 32 percent compared with the No Project condition. On southbound I-680, Phase 1 would result in lower average travel times, higher average travel speeds, and lower maximum individual delays than the No Project condition. The travel times, speeds, and individual delays for southbound I-680 with Phase 1 would be the same as with the Plus Project condition (both phases constructed). Travel times, travel speeds, and maximum individual delays on northbound I-680 would be the same as with the No Project condition.

HOV/Express Lane Operations

HOV/express lanes, like high-occupancy vehicle lanes, are administered under a federal mandate requiring that HOV/express lanes operate at 45 mph (or higher) during the peak hour and peak period. Generally, this requires the vehicle throughput in the HOV/express lane to remain at or below 1,650 vehicles per hour per lane. The traffic analysis accounted for the flow in the HOV/express lane to ensure that volumes do not exceed the 1,650 vehicle per hour threshold.

The Year 2025 peak hour HOV/express lane volumes would be at or below 1,650 vehicles, indicative of acceptable operations in the segments of the HOV/express lane with heaviest use. All HOV/express lane segment speeds would be above 50 mph, which indicates that the HOV/express lane operations would meet the federal operational guidelines. The temporal and physical locations of the peak hour of HOV/express lane volume vary between models as the HOV/express lanes are continuous access, and the flow is subject to the severity and duration of congestion associated with the bottlenecks in the model.

Opening Year Sensitivity Analysis

The project, as initially envisioned, is anticipated to open to traffic in late 2025. However, due to funding and other constraints, the project may open in 2026. As noted in the summary of Year 2025 conditions above, the project would result in reductions in travel time, increases in travel speed, and reductions in vehicle hours of delay. The improvements in these measures of effectiveness for congested corridors – southbound I-680 in the morning, and both directions of I-680 in the afternoon – typically range from between 5 and 45 percent. The annual growth rate in demand volumes along the I-680 corridor is between 1 and 2 percent. Therefore, it is anticipated that Year 2026 traffic operations would be very similar to Year 2025 traffic operations, and the project would still yield substantial benefits to the traveling public if it were to open in Year 2026 instead.

4.3.1.3.2 Year 2045 Conditions

Bottlenecks

Year 2045 No Project
Southbound AM. Under No Project conditions, the bottleneck on southbound I-680 between the Sunol Boulevard on-ramp and Koopman Road off-ramp would be active from 5:00 AM to 12:30 PM. The queue from this bottleneck would extend beyond the Crow Canyon Road interchange, outside of the study area. Under Year 2025 No Project conditions, this bottleneck was active between 5:30 AM and 10:30 AM.

Southbound PM. During the PM peak period, a southbound I-680 bottleneck between the Bollinger Canyon Road diagonal on-ramp and the Alcosta Boulevard off-ramp would be active from 2:00 PM to 5:30 PM and from 7:00 PM to past 9:00 PM. This bottleneck was previously identified as active between 3:30 PM and 7:30 PM under Year 2025 No Project conditions. The queues from this bottleneck would extend past the I-680/Crow Canyon Road interchange, outside of the study area.
The southbound I-680 bottleneck between the Stoneridge Drive diagonal on-ramp and the Bernal Avenue off-ramp would be active between 4:30 PM and 7:00 PM, as it would be for Year 2025 No Project conditions. In Year 2025, the queues from this bottleneck would extend to the Alcosta Boulevard diagonal on-ramp; in Year 2045, the queues would extend past the Crow Canyon Road interchange, outside of the study area.

Northbound AM. During the AM peak period, three new bottlenecks that were not active in Year 2025 would form along northbound I-680:

- Between the Alcosta Boulevard on-ramp and the Bollinger Canyon Road off-ramp from 7:30 AM to 10:00 AM, with queue spillback beyond the Washington Boulevard interchange, outside of the study area.
- Between the Bernal Avenue on-ramp and Stoneridge Drive off-ramp from 9:30 AM to 11:30 AM, with queue spillback beyond the Washington Boulevard interchange. This bottleneck would form when the system is recovering from congestion associated with the Alcosta Boulevard to Bollinger Canyon Road bottleneck described above, and would be hidden by queue spillback from that bottleneck between 8:00 AM and 9:30 AM.
- Between the Andrade Road on-ramp and Calaveras Road (SR 84) off-ramp from 8:00 AM to 8:30 AM and from 10:30 AM to past 1:00 PM, with queue spillback beyond the Washington Boulevard interchange.

Northbound PM. Under Year 2045 No Project conditions in the PM peak period, a bottleneck would also form along northbound I-680 between the Andrade Road on-ramp and Calaveras Road (SR 84) off-ramp from 2:30 PM to 5:30 PM as well as from 8:00 PM to past 9:00 PM. Queue spillback would extend beyond the Washington Boulevard interchange. This existing bottleneck would be inactive under Year 2025 No Project conditions due to completion of the I-680 Northbound Express Lane Project.

Another PM peak period bottleneck would form along northbound I-680 between the Bernal Avenue on-ramp and Stoneridge Avenue off-ramp from 3:30 PM to 4:00 PM and 7:30 PM to 8:00 PM, with

queue spillback beyond the Washington Boulevard interchange.

The PM peak period bottleneck in the weave section along northbound I-680 between the Stoneridge Drive diagonal on-ramp and the eastbound I-580 off-ramp would be active from 4:00 PM to 7:30 PM, compared with 4:30 PM to 7:00 PM under Year 2025 No Project conditions. The queue from this bottleneck would extend beyond the Washington Boulevard interchange, compared with the Bernal Avenue on-ramp under Year 2025 No Project conditions.

Additionally, a bottleneck would form along northbound I-680 between the Sunol Boulevard on-ramp and the Bernal Avenue off-ramp between 8:00 PM and 8:30 PM. The queue for this bottleneck would extend to the Sunol Boulevard off-ramp gore.

Year 2045 Plus Project

Southbound AM. During the AM peak period, a southbound I-680 bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp would be active between 6:30 AM and 7:30 AM, and the maximum queue spillback would extend to the Bernal Avenue on-ramp. This represents an improvement over Year 2045 No Project conditions, where the bottleneck would be active for 7.5 hours and the queues would reach beyond the Crow Canyon Road interchange.

As with Year 2025 Plus Project conditions for the AM peak period, improved flow along southbound I-680 would result in a bottleneck between the Paloma Way (SR 84) on-ramp and the Andrade Road off-ramp. Under Year 2045 conditions, the bottleneck would be active between 5:30 AM and 8:30 AM, compared with 6:30 AM to 7:30 AM for Year 2025. The queue from this bottleneck would reach as far as the Paloma Way (SR 84) off-ramp, a distance of about 0.8 mile, compared with a Year 2025 queue spillback to the southbound SR 84 connector on-ramp, a distance of 0.3 mile.

Additionally, a bottleneck would form on southbound I-680 between the Alcosta Boulevard diagonal on-ramp and the eastbound I-580/Dublin Boulevard off-ramp between 8:00 AM and 11:00 AM due to high off-ramp demand. The queue spillback would extend beyond the Crow Canyon Road interchange.

Southbound PM. During the PM peak period, the southbound I-680 bottleneck between the Bollinger Canyon Road diagonal on-ramp and the Alcosta Boulevard off-ramp would be active from 2:00 PM to past 9:00 PM, compared with 3:30 PM to 7:00 PM under Year 2025 conditions. The project would improve conditions in this area.

A southbound I-680 bottleneck between the Stoneridge Drive diagonal on-ramp and the Bernal Avenue off-ramp, which was inactive under Year 2025 conditions, would be active between 5:00 PM and 6:30 PM under Year 2045 conditions. The maximum queue for this bottleneck will reach as far back as the I-580 on-ramp. This represents an improvement over No Project conditions, where the bottleneck would be active for 2.5 hours and result in queue spillback to the Crow Canyon Road interchange, outside of the study area.

Northbound AM. In the northbound direction, an AM peak period bottleneck on northbound I-680 between the Alcosta Boulevard on-ramp and Bollinger Canyon Road off-ramp would be active between 7:30 AM and 10:30 AM. The bottleneck would last a half hour longer than with the No

Project scenario because of increased throughput along the corridor with the proposed project.

Another AM peak period bottleneck between the Bernal Avenue on-ramp and Stoneridge Drive off-ramp would be active and controlling between 10:00 AM and 11:00 AM; under Year 2045 No Project conditions, this bottleneck would persist until 12:00 PM.

A bottleneck along northbound I-680 between the Andrade Road on-ramp and Calaveras Road (SR 84) off-ramp would be active from 8:00 AM to 10:00 AM and from 10:30 AM to 11:00 AM. The bottleneck would be longer in duration (past 1:00 PM) with No Project conditions.

Northbound PM. In the PM peak period, a bottleneck would form along northbound I-680 between the Andrade Road on-ramp and Calaveras Road (SR 84) off-ramp between 2:30 PM and 8:30 PM, with queue spillback past the Washington Boulevard interchange (outside of the study area). Under Year 2045 No Project conditions, the bottleneck would be active past 9:00 PM.

The PM peak period bottleneck in the weave section along northbound I-680 between the Stoneridge Drive diagonal on-ramp and the eastbound I-580 off-ramp would last from 4:00 PM to 7:30 PM, same as under Year 2045 No Project conditions. Under Plus Project conditions, the queue spillback would extend to the Bernal Avenue off-ramp gore; under No Project conditions, the queue spillback would extend past the Washington Boulevard interchange (outside of the study area).

Levels of Service

Year 2045 No Project

During the AM peak, southbound I-680 would operate at LOS F between the Bollinger Canyon Road diagonal on-ramp merge and the Sunol Boulevard on-ramp merge. These segments of LOS F operations are a result of the active, controlling bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp. All other segments along southbound I-680 would operate at LOS E or better.

Northbound I-680 would operate at LOS F between the Stoneridge Drive diagonal on-ramp and the Alcosta Boulevard on-ramp merge. All other segments along northbound and southbound I-680 would operate at LOS E or better.

During the PM peak, spillback from the southbound I-680 bottleneck between the Stoneridge Drive diagonal on-ramp and the Bernal Avenue off-ramp would result in LOS F conditions between the Bollinger Canyon Road diagonal on-ramp merge and the Stoneridge Drive diagonal on-ramp merge.

Northbound I-680 would operate at LOS F between the Mission Boulevard (SR 238) off-ramp and the Stoneridge Drive loop on-ramp. All other segments along northbound and southbound I-680 would operate at LOS E or better.

Year 2045 Plus Project

During the AM peak, southbound I-680 would operate at LOS F between the Paloma Way (SR 84) off-ramp gore and the Paloma Way (SR 84) on-ramp gore. With the exception of the Sunol Boulevard on-ramp merge (which operates near the cusp of LOS E/F operations), all other segments along southbound I-680 would operate at LOS E or better.

Northbound I-680 would operate at LOS F between the Dublin Boulevard to Alcosta Boulevard basic section and the Alcosta Boulevard on-ramp merge. All other segments along northbound I-680 would operate at LOS E or better.

During the PM peak, northbound I-680 from the Mission Boulevard (SR 238) off-ramp to the Andrade Road on-ramp would operate at LOS F. LOS F conditions would also be present between the Bernal Avenue on-ramp and the Stoneridge drive loop on-ramp. This represents a substantial reduction in the number of segments operating at LOS F compared to Year 2045 No Project conditions.

Southbound I-680 is projected to operate at LOS F at the Bollinger Canyon Road diagonal on-ramp merge as well as between the I-580 on-ramp and the Stoneridge Drive diagonal on-ramp. This represents an improvement in operations as these two areas of LOS F operations were connected under Year 2045 No Project Conditions. All other segments along northbound and southbound I-680 would operate at LOS E or better.

Measures of Effectiveness

The project would increase the number of vehicles served in the study area by about 2 percent. Peak period VMT is estimated to increase by 3 to 5 percent between the No Project and Plus Project scenarios. With the project, total vehicle hours of delay in the study area would decrease by between 25 and 55 percent over the course of the study periods (5:00 AM to 1:00 PM and 2:00 PM to 9:00 PM).

Along southbound I-680, AM peak period travel times and travel speeds would improve with the project compared to the No Project condition, as the HOV/express lane would better accommodate demand volumes in the bottleneck between the Sunol Boulevard on-ramp and Koopman Road off-ramp. Travel speeds with the project would increase as much as 90 percent in the AM peak period, with a corresponding travel time reduction of nearly 55 percent. Travel time along the corridor would also be more reliable due to the projected reductions in congestion; the AM peak period maximum individual delay is projected to decrease by over 85 percent. In the PM peak period, travel time and speed would improve in the range of 10 to 15 percent, and maximum individual delay would decrease by over 75 percent.

Along northbound I-680, travel times, speeds, and delays with the project would improve in both the AM and PM peak periods. In the AM peak period, the average travel time would decrease by about 25 percent, average travel speeds would increase by about 20 percent, and the maximum individual delay would decrease by about 50 percent. In the PM peak period, travel time would decrease by nearly 25 percent, and travel speeds would increase by about 20 percent. Travel time reliability would improve, as the maximum individual delay would decrease with the project from

46.6 minutes to 20.4 minutes (a reduction of over 55 percent).

In the unlikely scenario that in year 2045, if only Phase 1 is operational, it would decrease vehicle hours of delay in the study area by between 19 and 33 percent compared with the No Project condition. On southbound I-680, Phase 1 would result in lower average travel times, higher average travel speeds, and lower maximum individual delays than the No Project condition. The travel times, speeds, and individual delays for southbound I-680 with Phase 1 would be the same as with the Plus Project condition (both phases constructed). Travel times, travel speeds, and maximum individual delays on northbound I-680 would be the same as with the No Project condition.

HOV/Express Lane Operations

In Year 2045, the peak hour HOV/express lane volumes would be at or below 1,650 vehicles, indicative of acceptable operations on the segments of the HOV/express lane with heaviest use. All HOV/express lane segment speeds would be above 50 mph, which indicates that the HOV/express lanes would meet the federal operational guidelines. The temporal and physical locations of the peak hour of HOV/express lane volume vary between models as the HOV/express lanes are continuous access, and the flow is subject to the severity and duration of congestion associated with the bottlenecks in the model.

Design Year Sensitivity Analysis

The project, as initially envisioned, is anticipated to open to traffic in late 2025. However, due to funding and other constraints, the project may open in 2026. This would typically result in the design year being Year 2046 rather than 2045. The improvements in measures of effectiveness typically range from between 10 and 10 percent. The annual growth rate in demand volumes along the I-680 corridor is between 1 and 2 percent. Therefore, Year 2046 traffic operations are anticipated to be very similar to Year 2045 traffic operations, and the project would still yield substantial benefits to the traveling public if the design year for the project was Year 2046 instead.

4.3.2 Collision Analysis

Collision data from the Caltrans District 4 Traffic Accident Surveillance and Analysis System (TASAS) was compiled for the I-680 corridor from PM R8.120 in Alameda County to PM R2.870 in Contra Costa County. Collision information is provided for the most recent three years of complete data: January 2017 through December 2019.

Table 4-3 summarizes the TASAS collision data as it relates to the statewide averages for similar facilities. Collision rates are expressed as accidents per million vehicle miles traveled.

Table 4-3: Collision History for I-680

Facility	Number of Collisions			Collision Rate (collisions/million vehicle miles)					
	Total	Fatal	Fatal + Injury	Actual			State Average		
				Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury	Total
Interstate 680 (Directional)									
Northbound I-680 PM ALA-R8.120 to PM CC-R2.870	893	6	255	0.005	0.19	0.67	0.005	0.27	0.83
Southbound I-680 PM CC-R2.870 to ALA-R8.120	837	3	246	0.002	0.18	0.63	0.005	0.27	0.83

Source: Caltrans District 4 TASAS data between 1/1/17 and 12/31/19.

A total of 1,730 collisions were reported in the I-680 corridor, including 9 fatal collisions. Collision rates were below the statewide average for similar facilities.

In the northbound direction, rear-end and side-swipe type collisions accounted for 77.6 percent of all reported collisions. Collisions that were a result of hitting an object accounted for 18.0 percent of northbound collisions, and 2.8 percent of collisions were due to overturned vehicles.

In the southbound direction, rear-end and side-swipe type collisions accounted for 79.6 percent of all reported collisions. Collisions that were a result of hitting an object accounted for 16.4 percent of northbound collisions, and 2.3 percent of collisions were due to overturned vehicles.

5. ALTERNATIVES

5.1 Identification of the Preferred Alternative

A description of the No Build Alternative and the Build Alternative for the project is provided as follows. The PDT selected the Build Alternative as the Preferred Alternative on August 18, 2020, as described in Section 2.

5.2 No Build Alternative

The No Build Alternative would not construct HOV/express lanes in each direction of I-680 or increase the capacity of I-680 within the project limits. I-680 would continue to have three general purpose lanes in each direction, except north of Dublin Boulevard, which has four general purpose lanes in the northbound direction. Existing or in-construction HOV/express lanes would border the project area to the north and south, as described in Section 3.1. This alternative assumes maintenance of the existing facility and the construction of other planned and programmed projects on I-680 within the project limits through the year 2045, including the following:

- I-680 Sunol Express Lanes Project – Northbound (EA 4G050), which is constructing an HOV/express lane on northbound I-680 from SR 262 (Mission Boulevard) to north of the SR 84 interchange.
- I-680 Pavement Rehabilitation Project between Koopman Road and Alcosta Boulevard (EA 04-0J620), which would resurface and restore the I-680 roadway and ramps and improve drainage facilities, guardrails, concrete barriers, and other roadway features.
- SR 84 Expressway Widening and SR 84/I-680 Interchange Improvements Project (EA 297631), which would widen and conform SR 84 to expressway standards between south of Ruby Hill Drive and I-680, improve SR 84/I-680 interchange ramps, and extend the existing southbound I-680 HOV/express lane northward by approximately 2 miles, to approximately 0.8 mile north of Koopman Road.

The No Build Alternative represents the baseline condition against which the Build Alternative will be compared.

5.3 Build Alternative

The Build Alternative would construct HOV/express lanes on northbound and southbound I-680 from SR 84 to north of Alcosta Boulevard, a distance of approximately 9 miles.

The Build Alternative is anticipated to be constructed in two phases and represents the long-term vision for buildout of the HOV/express lane facility on I-680 from SR 84 to Alcosta Boulevard. The phases are envisioned as follows:

Phase 1 would construct the southbound HOV/express lane and all project-related improvements in the median (both northbound and southbound). In the south, the Phase 1 HOV/express lane would connect with a future HOV/express lane to the south that will be constructed as part of another project (EA 04-29763). The future lane (EA 04-29763) will extend from south of SR 84 to 0.8 mile north of Koopman Road in Sunol and will open to traffic before Phase 1. In the north, the Phase 1 HOV/express lane would connect with the existing HOV/express lane that begins north of Alcosta Boulevard in San Ramon. On completion of Phase 1, the southbound I-680 express lane would extend from Rudgear Road in Walnut Creek to SR 237 in Milpitas.

Phase 2 would construct the northbound HOV/express lane. In the south, the Phase 2 HOV/express lane would connect with an HOV/express lane to the south that is being constructed as part of another project (EA 04-4G050) and will open to traffic before Phase 2. In the north, the Phase 2 HOV/express lane would connect with the existing HOV/express lane that begins north of Alcosta Boulevard in San Ramon. On completion of Phase 2, the northbound I-680 express lane would extend from SR 262 in Fremont to Livorna Road in Alamo.

At the current time, funding for the Full Build Alternative has yet to be identified. An Environmental Revalidation and Supplemental Project Report for the NEPA documentation will be required prior to proceeding with the Full Build Alternative. Funding for Phase 1 of the project is reasonably available. Phase 1 of the project does have independent utility and logical termini as identified in the Environmental Document and as stated therein may proceed to construction independent of the Full Build Alternative.

5.3.1 Proposed Engineering Features

The Build Alternative would include the following features, as shown in Attachment B.

- Addition of a new continuous access HOV/express lane in both the southbound and northbound directions of I-680 from SR 84 to Alcosta Boulevard;
- Installation of electronic tolling equipment and signage;
- Widening/reconstruction of pavement in the median and outside to accommodate the HOV/express lanes;
- Widening or modification of bridge structures to accommodate freeway widening; and
- New and replacement median concrete barriers, retaining walls and sound walls.

For regional consistency, the HOV/express lanes will include a continuous access type, allowing vehicles to access HOV/express lanes from adjacent mixed-flow (general purpose) lane throughout the limits of the facility. During the hours of operation, drivers of SOVs can choose to use the HOV/express lanes for a fee. All eligible HOVs as authorized by the Federal and State statutes (including motorcycles, buses, and eligible clean air vehicles as authorized by the California Air Resources Board) would be able to access the HOV/express lane during the hours of operation. Depending on the operational business rules, these vehicles may travel fee-free or may incur a reduced fee. The Bay Area Managed Lanes Committee, composed of Caltrans, MTC, and California Highway Patrol (CHP) staff, will decide hours of operations of the HOV/express lanes. Outside of the hours of operation, the HOV/express lanes would be operated as general purpose lanes, open to all users for no toll.

Complete Streets Program would not be applicable as this project includes addition of express lanes exclusive to I-680 and improvements to local streets are not proposed.

5.3.1.1 HOV/Express Lanes and Signage

The HOV/express lanes would be adjacent to the median and would connect with existing HOV/express lanes south of SR 84 and in the vicinity of Alcosta Boulevard. Consistent with other HOV/express lanes that are currently being planned and implemented in the Bay Area, the Build Alternative would allow continuous access between the HOV/express lanes and the adjacent general purpose lanes. An 8-inch white dashed line would allow traffic to enter and exit the HOV/express lane anywhere along the project corridor.

The Build Alternative would install overhead Variable Toll Message Sign (VTMS) and static "FasTrak only" signs. Signs would provide graphic or text messages that inform motorists of pricing, and operating rules. A total of 39 overhead sign structures have been proposed for this project; 12 existing guide signs will be replaced/relocated and 27 new signs are being proposed. Signs would be mounted on cantilevered overhead Truss type sign structures spanning above the express lanes. The finish and color of proposed signs will match existing overhead signs. The total height of the overhead sign structure (including the sign) would depend on the type of sign being mounted. See Attachment B for locations of the sign structures. A summary of the sign types is provided below.

Static/Non-Electrical Signs

• Toll Reader Signs – Sign panels indicating HOV and Fastrak use only would be placed approximately ¾ mile apart within each toll zone and no more than ½ mile after each VTMS. The overhead sign structures would also include toll reader and toll enforcement equipment.

Variable Toll Message Sign (VTMS)

Electronic message signs would display two prices; one for the zone the driver is in, and the other for travelling to the end of the express lane facility. These prices would be guaranteed, regardless of whether or not they change during the driver's trip as a result of increased (or decreased) levels of traffic congestion in the express and general-purpose lanes. VTMS signs will also notify HOV users they are allowed to use the express lane facility free of charge. These signs would be mounted on overhead sign structures and be located at approximately 2 mile spacing with additional signs placed in advance of the express lane facility and near on-ramps with heavy traffic volumes. All overhead sign structures would have a maximum height of approximately 35 feet and be either supported on a cast-in-drilled-hole pile foundation, or supported on a retaining wall structure. Smaller signs would be mounted on the concrete median barrier. Toll gantries, toll readers and antennas, vehicle sensors, rear-plate facing cameras, enforcement beacons, closed-circuit television cameras, zone controllers, utility cabinets, CHP enforcement area, and maintenance vehicle pullouts would be provided.

To provide electrical power and communications to the electronic tolling equipment and signage for the express lane facility, electrical and communications conduits and fiber would be extended from existing sources along the outside edge of pavement. Conduit and fiber will also be installed for Caltrans' use. Extending electrical and communication conduit and fiber would require trenching and/or horizontal directional drilling to bring these services to the electronic tolling equipment and signage. Installation of pull boxes, controller cabinets, and service enclosures for electrical and/or fiber optic conduits would also be required.

5.3.1.2 Typical Cross Section and Profile

In the project area, I-680 contains three general purpose lanes in each direction, except north of Dublin Boulevard, which has four general purpose lanes in the northbound direction. The Build Alternative would add one HOV/express lane adjacent to the median in each direction of I-680 throughout the project limits, by reconstructing the paved median for a stronger structural section and widening the pavement as necessary on the inside or outside to minimize Right of Way, environmental, and roadway geometry impacts. The pavement widening and reconstruction needed for the project is divided in fifteen segments as summarized in Table 5-1 below.

Table 5-1: Project Pavement Widening and Reconstruction Summary

Pavement Widening Segment	Roadway Portion	Widening Type	Begin PM	End PM	Location
1	NB Outside	Fill	R 12.32	R 12.45	0.1 mile south of Koopman Road to Koopman Road UC
2	NB Outside	Cut	R 12.55	R 13.3	Koopman Road UC to 0.8 mile north of Koopman Road
3	NB Outside	Fill	R 15.15	R 15.41	NB I-680 Sunol Blvd off-ramp to NB I-680 Sunol Blvd on-ramp
4	NB Outside	Fill	R 17.30	R 18.57	0.5 mile north of Bernal Ave to 0.7 mile south of Stoneridge Dr
5	NB Outside	Fill	R 19.05	R 21.36	NB I-680 off-ramp to Stoneridge Dr to 0.5 mile south of Alcosta Blvd
6	NB Inside	Fill	R 12.48	R 12.72	Koopman Road UC to 0.2 mile north of Koopman Road
7	NB Inside	Fill	R 13.20	R 15.02	0.7 mile north of Koopman Road to Happy Valley Road UC
8	NB Inside	Flat	R 15.06	R 20.31	Happy Valley Road UC to NB I-680 on-ramp from Dublin Blvd
9	SB Inside	Cut	R 13.29	R 15.26	0.8 mile north of Koopman Road to Sunol Blvd UC
10	SB Inside	Flat	R 15.29	R 21.7 (ALA) R 0.35 (CC)	Sunol Blvd UC to 0.3 mile north of Alcosta Blvd
11	SB Outside	Fill	R 14.76	R 14.90	0.3 mile south of Happy Valley Road UC
12	SB Outside	Cut	R 14.90	R 15.01	0.2 mile south of Happy Valley Road UC
13	SB Outside	Flat	R 19.17	R 20.33	SB I-680 on-ramp from Stoneridge Blvd to WB I-580 connector ramp from SB I-680
14	SB Outside	Fill	R 20.77	R 21.33	Amador Valley Blvd UC to 0.6 mile north of Amador Valley Blvd UC
15	SB Outside	Cut	R 21.33	R 21.59	0.6 mile north of Amador Valley Blvd UC to SB I-680 on-ramp from Alcosta Blvd

I-680 would be widened to match the existing pavement profile grade in each travel direction. The proposed HOV/express lanes would be a standard 12 feet in width with generally a 10-foot inside shoulder. The project would overlay existing pavement and correct any less than standard roadway cross slopes.

See Attachment B for layouts, typical cross sections, utility plans, and a project layout exhibit.

5.3.1.3 Proposed Structures

A total of three structures are part of the planned improvements. These existing undercrossing structures will be widened in northbound direction. An Advanced Planning Study (APS) was prepared for the proposed bridge structures and retaining walls and was approved by Caltrans HQ Structures on October 4, 2019.

The proposed project would widen the bridges listed in Table 5-2. Construction is anticipated to require cast-in-place concrete structures. Temporary falsework structures would be required over Pleasanton-Sunol Road Undercrossing. See Attachment C, approved APS plan sheets, for preliminary structure widening plans.

Table 5-2: Bridge Widening Locations

Bridge No.	Bridge Name	Work Description	Location Description	Approx. Length (feet)	Approx. Area (square feet)
BR-1	Pleasanton-Sunol Road Undercrossing (33-0387)	Northbound outside widening	I-680/Pleasanton-Sunol Road	174	2,644
BR-2	Amador Valley Blvd Undercrossing (33-0356)	Northbound outside widening	I-680/Amador Valley Blvd	166	1,778
BR-3	Dublin Blvd Undercrossing (33-0373)	Northbound outside widening	I-680/Dublin Blvd	159	2,255

5.3.1.4 Retaining Walls and Concrete Barriers

Eleven new retaining walls would be installed at the locations listed in Table 5-3 and shown in Attachment B. The Build Alternative may require the relocation of two existing sound walls along northbound and southbound I-680, just north of Amador Valley Boulevard. The sound walls would be reconstructed along the tops of Retaining Walls 599 and 600.

Areas between retaining walls and Right of Way fences would be accessible from MVP's and walk gates. Table 5-3 lists the details of the proposed retaining walls. See Attachment C, APS plan sheets, for locations of retaining walls within the project area.

Caltrans standard Type 60 MG barrier would be constructed as a median barrier between the express lanes in the project limits.

Aesthetic treatments for retaining and sound walls, as well as concrete median barriers, will be implemented to reduce visual impacts and glare.

Table 5-3: Proposed Retaining Walls

Wall No.	Fill or Cut	Location	Max Design Height (ft.)	Length (ft.)	Type of Wall
RW-153	Fill	Northbound I-680 right shoulder south of Koopman Road	10	455	Caltrans Type 1(Mod) on Pile
RW-162	Cut	Northbound I-680 median near Koopman Road	10	880	Caltrans Type 7 (Mod) on Spread Footing
RW-180	Cut	Northbound I-680 right shoulder	14	490	Soil Nail
RW-213	Cut/Fill	Northbound I-680 median	20	8,649	Soil Nail
RW-310	Fill	Northbound I-680 right shoulder at Sunol Blvd.	12	450	Caltrans Type 1(Mod) on Spread Footing
RW-424	Fill	Northbound I-680 right shoulder between Bernal Ave. and Las Positas Blvd.	9	6,645	MSE
RW-579	Fill	Northbound I-680 right shoulder before Dublin	19	26	Soldier Pile
RW-581	Fill	Northbound I-680 right shoulder between Dublin Blvd. and Amador Valley Blvd.	12	1,593	Caltrans Type 1 (Mod) on Pile
RW-599	Fill	Northbound I-680 outside widening north of Amador Valley Blvd.	12	3,194	Retaining Wall Type 1(Mod)
RW-600	Fill	Southbound I-680 outside widening north of Amador Valley Blvd.	18	2,900	Retaining Wall Type 1 (Mod)
RW-633	Cut	Southbound I-680 outside widening	10	941	Soil Nail

5.3.1.5 Drainage

A Location Hydraulic Study Report (LHSR) and a Drainage Impact Study (DIS) that identify existing hydrologic and hydraulic conditions, highway drainage design elements, and hydrologic and hydraulic design standards was prepared for the project.

There are numerous named and unnamed creeks and flood control channels that cross the I-680 corridor within the project limits: Vallecitos Creek; Sheep Camp Creek; Unnamed Tributaries to Arroyo de la Laguna 1, 2, and 3; Happy Valley Creek; Line B-2-1; Arroyo de la Laguna; Unnamed Tributaries to Arroyo de la Laguna 4, 5, and 6; Tehan Canyon Creek; Gold Creek; Laurel Creek; Dublin Creek; and Line J-1. Runoff from the project ultimately discharges to Arroyo de la Laguna, which flows generally parallel to the project in a southerly direction until it discharges to Alameda Creek, approximately 1 mile east of the I-680/SR 84 interchange. Alameda Creek traverses westerly, ultimately draining into the San Francisco Bay. The existing drainage systems within the project limits consist of cross culverts, longitudinal pipe systems, and longitudinal ditches/gutters along I−680. The principal feature that would impact existing drainage facilities is the widening of the roadway. .

The proposed drainage design for the project within Caltrans Right of Way will comply with Chapter 800 of the Caltrans Highway Design Manual, Sixth Edition (updated 2018) and standards from the FHWA. The drainage systems will need to be designed to route flows to and from permanent stormwater treatment best management practices (BMPs). Drainage work is further described in Section 6.5.3.

Runoff from the project area ultimately discharges to Arroyo de la Laguna, which discharges to Alameda Creek. Because the project would obtain a Section 401 Water Quality Certification, the project would follow the Alameda County hydromodification criteria as recommended in the San Francisco Bay Regional Water Quality Control Board's (RWQCB's) Memorandum of California Department of Transportation Post-Construction Stormwater and Hydromodification Standards (2008). This memo establishes an agreement between the San Francisco Bay RWQCB and Caltrans District 4 for projects that require a Section 401 Water Quality Certification. Alameda County is subject to hydromodification requirements as stated in the San Francisco Bay Region Municipal Regional Permit (MRP), National Pollutant Discharge Elimination System (NPDES) Permit, and Hydrograph Modification Management Plan (HMP). The Alameda Countywide Clean Water Program (ACCWP) designates the entire project area as susceptible to hydromodification. Within the ACCWP area, this study identifies Vallecitos Creek, Sheep Camp Creek, and Arroyo de la Laguna as having the highest risk of impacts from hydromodification due to existing erosion problems in these natural channels; the remainder of the named creeks are contained within flood control channels and are considered to have low to moderate risk. Unnamed waterway crossings are considered susceptible to hydromodification based on the ACCWP designation. Because all the channels ultimately discharge to Arroyo de la Laguna within 0.25 mile of the project, hydromodification management measures would be included in the design of all stormwater discharges to Waters of the State.

5.3.2 Nonstandard Boldface and Underlined Design Features

The phrase "Boldface design standards" refers to the Boldface standards outlined in Caltrans Highway Design Manual, Table 82.1A, while the phrase "Underlined design standards" refers to the Underlined standards outlined in Caltrans Highway Design Manual, Table 82.1B. Caltrans Project Development Procedures Manual Chapter 21 defines Boldface design standards as those considered most essential to achievement of overall design objectives. Underlined design standards are important also but allow greater flexibility in application to accommodate design constraints or be compatible with local conditions on resurfacing or rehabilitation projects.

Caltrans Design Information Bulletin (DIB) no. 78 was completed during the development of geometric plans. There are existing nonstandard design elements that do not meet the current design standards. Exceptions from Boldface and Underlined design standards will be required under the Build Alternative. These nonstandard features are documented in the design standard decision document that has been prepared for the project and approved on October 1, 2019.

Boldface Design Exceptions

Seven Boldface design exceptions have been identified withn the project limits. The proposed Boldface design exceptions for the Build Alternative are summarized in Table 5-4.

Underlined Design Exceptions

Six Underlined design exceptions have been identified within the project limits. The proposed Underlined design exceptions for the Build Alternative are summarized in Table 5-5.

Table 5-4: Exceptions to Boldface Design Standards

Exception No.	Design Exception and HDM Index	Location	Standard	Existing	Proposed	Condition	Plan Sheet
B1	Lane Width Index 301.1	"I-680" 567+14 to 612+70	12'	11.5' to 12' Metric Lanes from I-580 to Alcosta Blvd	11'	Proposed	L-34 to L-37
		“I-680” 631+00 to 663+44					L-38 to L-41
B2	Shoulder Width Index 302.1 And Minimum Horizontal Clearances Index 309.1	“I-680” 275+40 to 514+00	10'	9'	Inside shoulder 4' min in general, 2' min at Alcosta OC, 3’ min from Amador Valley UC to I-580/I-680 IC, and 3’ min at West Las Positas Blvd OC.	Proposed	L-13 to L-30
		"I-680" 568+40 to 608+00					L-34 to L-37
		"I-680" 633+80 to 679+34					L-39 to L-42
B3	Stopping Sight Distance Standards Index 201.1	“I-680” Line Curve 5	V-65, SSD-660'	500'	V-55, SSD-500'	Match Existing	L-4
		“I-680” Line Curve 6	V-65, SSD-660'	470'	V-57, SSD-530'	Improved Existing	L-5 and L-6
		“I-680” Line Curve 11	V-65, SSD-660'	630'	V-63, SSD-630'	Match Existing	L-14
		“I-680” Line Curve 12	V-65, SSD-660'	600'	V-55, SSD-500'	Proposed	L-15
B4	Median Width - Freeways and Expressways Index 305.1	"I-680" 294+00 to 307+00	22'	34.5’ min	10’ min	Proposed	L-14 to L-15
		"I-680" 312+50 to 429+85		34.8’ min	9.3’ min		L-16 to L-24
		"I-680" 470+00 to 515+35		35’ min	10’ min		L-27 to L-30
		"I-680” 566+85 to 608+00		21’ min	15’ min		L-34 to L-37
		"I-680” 621+00 to 679+40		21.2’ min	13.4’ min		L-38 to L-42
B5	Standards for Superelevation Index 202.2	“I-680” Line Curve No. 6	V-65, 9.0%	7%	7% (68 mph comfort speed)	Match Existing	L-5 and L-6
		“I-680” Line Curve no. 9	V-65, 9.2%	7%	7% (68 mph comfort speed)	Match Existing	L-10 and L-11
		“I-680” Line Curve no. 10	V-65, 5.6%	4%	4% (75 mph comfort speed)	Match Existing	L-12 to L-13
		“I-680” Line Curve no. 11	V-65, 7.0%	5%	5% (70 mph comfort speed)	Match Existing	L-13 and L-14
		“I-680” Line Curve no. 12	V-65, 8.4%	6%	6% (69 mph comfort speed)	Match Existing	L-15 and L-16
B6	Minimum Interchange Spacing Index 501.3	580/680 IC and Stoneridge Drive IC	The minimum interchange spacing shall be one mile in urban areas, two miles outside of urban areas, and two miles between freeway-to-freeway inter- changes and other interchanges. The minimum interchange spacing on Interstates outside of urban area shall be three miles.	0.76 mile	0.76 mile	Match Existing	L-31 and L-33
B7	Isolated Off-Ramps and Partial Interchanges Index 502.2	Dublin Blvd IC	Isolated off-ramps or partial interchanges shall not be used because of the potential for wrong- way movements.	Partial IC - Missing NB Off ramp connection	Partial IC - Missing NB Off ramp connection	Match Existing	L-35

Table 5-5: Exceptions to Underlined Design Standards

Exception No.	Design Exception and HDM Index	Location	Standard	Existing	Proposed	Condition	Plan Sheet
U1	Superelevation Transition Index 202.5 (1)	“I-680” Line Curve 9	Design in accordance to figure 202.5A - 510' superelevation runoff length needed.	238’	238’	Match Existing	L-10 and L-11
		“I-680” Line Curve 10	Design in accordance to figure 202.5A - 450' superelevation runoff length needed.	148’	148’	Match Existing	L-12 and L-13
		“I-680” Line Curve 11	Design in accordance to figure 202.5A - 510' superelevation runoff length needed.	171’	171’	Match Existing	L-13 and L-14
		“I-680” Line Curve 12	Design in accordance to figure 202.5A - 510' superelevation runoff length needed.	211’	211’	Match Existing	L-15 and L-16
U2	Superelevation Runoff Index 202.5 (2)	“I-680” Line Curve 9	2/3 of super elevation runoff should be on the tangent and 1/3 within the curve.	58% on tangent and 42% on curve	Match Existing	Match Existing	L-10 and L-11
		“I-680” Line Curve 10		48% on tangent and 52% on curve	Match Existing	Match Existing	L-12 and L-13
		“I-680” Line Curve 11		48% on tangent and 52% on curve	Match Existing	Match Existing	L-13 and L-14
		“I-680” Line Curve 12		50% on tangent and 50% on curve	Match Existing	Match Existing	L-15 and L-16
		“I-680” Line Curve 14		24% on tangent and 76% on curve	Match Existing	Match Existing	L-34 and L-35
U3	Side Slopes 4:1 or Flatter Index 304.1	"I-680" 200+10 TO 203+30 Right	Embankment (fill) slopes should be 4:1 or flatter.	2:1	2:1 with MGS	Proposed	L-8
		"I-680" 281+35 TO 289+00 Right		2:1	2:1 with MGS	Proposed	L-13 and L-14
		"I-680" 416+27 TO 417+25 Right		2:1	2:1 with MGS	Proposed	L-23
U4	18 ft. Minimum Catch Distance Index 304.1 (b)	"I-680" 168+07.37 TO 173+46.41 Right	Light grading where normal slope catch in a distance less than 18’. from the edge of the shoulder, a uniform catch point, at least 18’ from the edge of the shoulder should be used.	N/A	Does not conform	Proposed	L-5 and L-6
U5	Median Width Freeways and Expressways - Urban Index 305.1 (1)	"I-680" 160+20 TO 203+00	The minimum median width for freeways and expressways in urban areas should be 36’.	19’ to 57’	22' to 36'	Proposed	L-5 to L-8
		"I-680" 290+30 TO 682+47		35’ to 52’	10' to 36'	Proposed	L-14 to L-42
U6	Ramp Entrance and Exit Standards Index 504.2 (2)	NB 680/EB580 connector ramp	Design of freeway entrances and exits should conform to the standard designs illustrated in Figure 504.2A-B (single lane), and Figure 504.3L (two-lane entrances and exits) and/or Figure 504.4 (diverging branch connections), as appropriate. - Departure angle is 4°52’08”	2°53’02”	2°53’02”	Match Existing	L-32

5.3.3 Project Construction

Project construction would take approximately three construction seasons (765 working days), and would not include highway planting. A separate landscaping project would install highway planting(See 5.3.10). Lane and partial freeway closures will be required. Construction would occur during daytime and partly with nighttime closures. Property access would be maintained throughout project construction, although single-night closures may be needed for paving and switching traffic. Traffic would be detoured to the I-680/Sunol Boulevard interchange and Stanley Boulevard for destinations in Pleasanton and Livermore. Temporary daytime and/or nighttime closures of local streets at all undercrossing structures would be needed to set up and remove falsework for bridge widening. The closures would be timed so that detour routes are open. Full closure of I-680 is not anticipated; however, temporary nighttime lane closures would be needed for pavement overlay, striping, and installation of temporary barriers (Type K, also known as K-rail) along construction areas.

5.3.4 Interim Features

Interim features are not proposed at this time.

5.3.5 Maintenance Vehicle Pullouts

Maintenance vehicle pullouts would be installed in the I-680 shoulder areas to allow access to the TOS and tolling equipment. Preliminary locations of the pullouts are shown in Attachment B. The specific locations of these features would be developed during final project design; however, all features would be accommodated within the project footprint.

5.3.6 Ramp Metering

Ramp metering exists within the project limits and would stay operational during construction of the Project. Additional ramp metering improvements are not proposed.

5.3.7 Traffic Operations System

Traffic Operations Systems (TOS) for existing facilities are present in the project limits. New TOS equipment such as traffic monitoring stations, closed circuit televisions, electrical cabinets, and controllers would be installed along the outside edge of pavement within the existing Right of Way. Existing TOS would stay operational during construction of the new TOS facilities. An allowance for new TOS elements has been included in the project cost estimate (see Attachment D).

Trenching would be conducted along the outside edge of pavement for installation of conduits. The depth of trenching would be 3 to 5 feet below the roadway surface. Horizontal directional drilling maybe performed in paved shoulders, at min depth of 4 to 6 feet. Conduits would be jacked across the freeway to the median where needed to provide power and communication feeds to the new overhead signs and toll structures along I-680.

5.3.8 CHP Enforcement Area

To allow CHP enforcement of the express lanes, a protected observation area would be provided within the freeway median between Bernal Avenue and Las Positas Boulevard (PM R18.0) for the officers to safely park their vehicles to conduct occupancy verification and traffic observation. The CHP observation area would provide bidirectional access to I-680. The CHP observation area would be approximately 115 feet in length and vary between 10 to 14 feet in width. The CHP vehicle would park behind concrete barriers on a raised platform to improve the line of sight. See Attachment B for the location of the CHP enforcement area.

5.3.9 Park and Ride Facilities

This project does not include any new park-and-ride facilities. Currently, park-and-ride facilities are not within the project area.

5.3.10 Highway Planting

Replacement Planting

Impacted planting outside of the State Right of Way will be addressed as part of Right of Way negotiations and included in the Right of Way agreements (during the design phase of the project).

Revegetation Planting

Temporarily disturbed areas will be restored to pre-construction conditions within one year of disturbance. Areas that are disturbed by project construction activities will be revegetated through a combination of hydroseeding and erosion control. After construction, those areas will be revegetated using hydroseed mixtures with a combination of native grasses, shrubs, and legumes as appropriate for upland areas, bioswales, and creek beds. Naturally occurring plants that are invasive will not be replanted.

The hydroseeding of disturbed areas will be completed as part of the roadway contract. Erosion Control Type 3 (for bioswales and basins) will have a one-year plant establishment period. The remaining erosion control types will not have a plant establishment period.

Mitigation Planting

Due to space constraints in the State right-of-way, all on-site replacement planting will serve as mitigation planting. On-site tree mitigation will be conducted in accordance with the project's permit requirements, which will be determined during the PS&E for each project phase. The final number of trees to be planted will be determined based on the actual number of tree removals, using replacement ratios set by regulatory agency permits, which are equal to or greater than Caltrans standards.

The on-site mitigation planting plan will be approved in advance per regulatory agency permit requirements.

If sufficient space is not available to accommodate all required mitigation planting, tree mitigation will also be satisfied through off-site tree planting under a separate contract funded by Alameda CTC. The final number of trees to be planted will be determined based on the actual number of tree removals.

The off-site mitigation planting plan will be approved in advance per regulatory agency permit requirements. The mitigation provider will be responsible for the establishment and monitoring of the off-site mitigation planting.

Water Sources

Water sources will be determined during PS&E for the landscape contract and will vary according to available existing water sources where planting is proposed. Irrigation could be provided by an underground pipe system where an existing system can be extended or by truck watering where both potable and non-potable water can be used. Roadway side slopes steeper than 2:1 will not be landscaped.

Construction

Irrigation supply line conduits will be placed with the main highway construction contract. The on-site mitigation planting will be conducted under a separate contract from the roadway contract. The separate contract will include a 5-year plant establishment period, 5 additional years of maintenance, and a total 10 years of monitoring and reporting, and must meet the replacement planting and mitigation planting success criteria required within the environmental permits. The separate contract would be completed within 200 days of the end of the roadway contract construction. The estimated escalated capital cost to mid-year construction 2025 is $6.36M, which consists of $4.18M for construction, $1.06M for the plant establishment period, and $245K for 10 years of monitoring and reporting. The support cost is estimated to be $875K, which includes design, construction administration, monitoring and reporting, and coordination with resource agencies. Alameda CTC is responsible for funding the capital and support required for this separate contract.

Cooperative Agreement

A final design (PS&E) and construction Cooperative Agreement will be prepared between Caltrans and Alameda CTC at a later date for a separate highway planting (i.e., on-site mitigation planting) contract that includes a 5-year plant establishment period, 5 additional years of maintenance, and a total of 10 years of monitoring and reporting. Caltrans will advertise the contract.

5.3.11 Erosion Control

Standard Caltrans erosion control measures will be implemented to protect the transportation facility and to meet water quality discharge requirements. These measures include hydroseeding, planting, rock slope protection, slope paving, and applicable new technologies such as bonded fiber matrix and turf reinforcement mat. In addition to temporary erosion control, the following other erosion control measures are proposed during the construction phase:

- Temporary silt fence
- Temporary drainage inlet protection
- Check dams
- Temporary fiber rolls
- Temporary covers
- Temporary hydraulic mulch
- Temporary fence (Type Environmentally Sensitive Area [ESA])
- Slope rounding

A detailed evaluation of erosion control measures will be made at the PS&E stage in conjunction with design of storm water control measures using Caltrans guidelines for best management practices (BMPs). Erosion control measures are further explained in detail in the Storm Water Data Report (for approval signature page, see Attachment F). Erosion control measures will be defined for the project and included in a Storm Water Pollution Prevention Plan (SWPPP) during final design phase as required by the National Pollutant Discharge Elimination System (NPDES) permit.

The estimated costs for the erosion control measures have been included in the Preliminary Project Cost Estimate Summary.

5.3.12 Noise Barriers

This project is a Type I project as defined in Title 23, Part 772 of the Code of Federal Regulations because it includes the addition of through-lanes. A Noise Study Report (Wilson Ihrig, December 2019) and Noise Study Report Addendum (Wilson Ihrig, September 2020) have been prepared to assess potential highway noise impacts from the project. Noise barriers in the form of reconstructed sound walls are anticipated for this project, as discussed further in Section 6.8. Noise berms are not required for the project.

5.3.13 Cost Estimate

A preliminary cost estimate was prepared for the proposed project. A detailed breakdown of the quantities and unit prices is provided in Attachment D. Below is a summary of the preliminary cost estimate.

Table 5-6: Total Project Cost (2020 Dollars)

Roadway	Structures	Right of Way & Utility Relocation	Total Current Capital Cost	Total Escalated Capital Cost (2025)
206,592,300	$54,787,200	$ 10,600,000	$ 271,980,000	$ 344,359,000

The current preliminary total cost estimate including the support cost for the project is $352M.

5.3.14 Context Sensitive Solutions and Aesthetic Treatments

Caltrans uses "Context Sensitive Solutions (DP-22)" as an approach to plan, design, construct, maintain, and operate its transportation system. These solutions use innovative and inclusive approaches that integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals. Context sensitive solutions are reached through a collaborative, interdisciplinary approach involving all stakeholders.

Four types of construction are proposed on the I-680 walls: Mechanically Stabilized Embankment (MSE), Cast in Place (CIP), Soil Nail, and Soldier Pile. Each wall will have a smooth horizontal band at the top and a smooth concrete barrier at the bottom. When the walls are CIP, Soil Nail, and Soldier Pile, additional horizontal smooth bands will be added between the top band and the bottom band, if the overall height of the wall is sufficient to receive multiple horizontal bands. On MSE walls, additional mid-height horizontal bands will be omitted and replaced with a tooled texture. The vertical face on MSE walls would be textured throughout the area between the top band and bottom concrete barrier.

Architectural treatment is proposed to match existing treatment on I-680 retaining walls for walls south of the I-680/SR 84 interchange. Alternate aesthetic treatments will be used on retaining walls facing local streets. Designs will provide context sensitive architectural treatments for local motorists, bicyclists and pedestrians. The Oak Leaf design which was installed on the I-680 retaining walls in San Ramon and Danville can be proposed north of I−580 Interchange area. The aesthetic treatments will employ relief sculpting to add depth and shadows to the architectural elements.

Fractured fin architectural treatment will be used on the project where walls with fractured fin texture are being replaced and are immediately adjacent to fractured fin textured walls that will remain. Fractured fin architectural treatment will also be used in areas where visibility is limited. In those locations fractured fin is recommended to discourage graffiti. In natural environments, the fractured fin walls will receive a pigmented finish to blend the walls into the adjacent earth areas.

Median barriers are proposed to have custom patterns that complement adjacent architectural treatments. Examples include a wave line with texture without the oak leaves. All textures would be subject to Caltrans approval.

5.3.15 Visual Impact Assessment

I-680 in the project limits is an Officially Designed State Scenic Highway. The overall visual resource change and visual impact with the project features would be moderate. Overhead express lane signs would be visible to adjacent residential properties, and tree removal to accommodate pavement widening for the express lanes would remove visual shielding in some areas. Standard measures such as revegetation and aesthetic treatments would be implemented to reduce and minimize visual impacts.

5.3.16 Highway Lighting for General Safety and Improved Visibility

To provide improved roadway visibility, the project would provide additional highway lighting, enhanced signage, median barriers, and pavement delineation. Highway lighting would be included at on-ramps, lane merges, and exit ramps, and would also be added on the I-680 express lane entrances and toll zone boundaries, locations on the highway where visibility is restricted by barriers, locations where drivers may experience headlight glare, and locations where concentrations of nighttime accidents are known to have occurred. Type 60G concrete barriers will be included to prevent headlight glare at necessary locations.

Highway lighting would be installed on mast-arm standards in the median of I-680 as well as on overhead signs and toll structures. The maximum height of the lighting would be 35 to 40 feet. The actual spacing and number of lights in the project corridor will be determined during detailed project design in coordination with the Caltrans Traffic Safety unit. The additional lighting would be downward cast, per Caltrans requirements, which prevents the illumination of areas outside of the highway Right of Way. During the project permitting process, the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) may request additional measures to restrict illumination to the paved highway and avoid potential species habitat.

5.4 Rejected Alternatives

The following alternatives were considered and analyzed during the project initiation phase and early stages of the PA&ED phase. Other than specific components of alternatives that were incorporated into previous projects or the proposed Build Alternative, these alternatives were ultimately rejected and withdrawn from further study for the reasons described below.

5.4.1 Separate HOV/Express Lane Segments

During the PA&ED phase, the PDT considered shorter HOV/express lane segments to provide incremental improvements in congestion if funding was not available to build the complete project. The following segments were considered:

- Southbound Only: I-580 to SR 84. This alternative would construct an HOV/express lane on southbound I-680 from the I-580/I-680 interchange to the southern project limit. There, it would connect with a future HOV/express lane to the south that will be constructed as part of another project (EA 04-29763) and continue to the existing southbound express lane from south of the SR 84

interchange to SR 237 in Milpitas. Constructing a southbound HOV/express lane in this area would allow vehicles to enter the lane to the north of the AM peak Sunol Boulevard to Koopman Road bottleneck, bypassing the bottleneck and also alleviating congestion in the general-purpose lanes. Extending the southbound HOV/express lane to the I-580/I-680 interchange area would also help to alleviate a PM peak period bottleneck at the Stoneridge Drive interchange.

- Northbound Only: SR 84 to Las Positas Boulevard. This alternative would construct an HOV/express lane on northbound I-680 from the southern project limit to approximately the Las Positas Boulevard overcrossing between the Bernal Avenue and Stoneridge Drive interchanges. This northbound HOV/express lane would connect in the south with the express lane that is under construction on northbound I-680 from SR 262 (Mission Boulevard) to north of the SR 84 interchange (EA 4G050). The HOV/express lane would allow vehicles to enter the lane to the south of the PM peak period bottleneck between Stoneridge Drive and I-580, bypassing the bottleneck and also alleviating congestion in the general-purpose lanes.
- Southbound from I-580/Northbound from Las Positas Boulevard to Alcosta Boulevard. This alternative would construct HOV/express lanes on southbound and northbound I-680 from the northern termini of the Southbound Only and Northbound Only segments described above to the project limits north of Alcosta Boulevard. Construction of this segment would connect the previously completed HOV/express lanes with the existing HOV/express lanes north of Alcosta Boulevard, which extend to Rudgear Road in the southbound direction and Livorna Road in the northbound direction (EA 3G950/3G910).

Although each segment would provide incremental congestion relief, no single segment would address congestion throughout the project limits. All three segments would have to be constructed to address the project's purpose and need. The segments would not have logical termini or independent utility based on the criteria discussed in Section 1.3.3. Therefore, the segment alternatives were eliminated from further consideration.

5.4.2 Reversible Traffic Lanes

California Assembly Bill (AB) 2542 (2016; effective January 1, 2017) requires that, prior to the approval of a capacity-increasing project or major street or highway lane realignment project by the California Transportation Commission, Caltrans or a regional transportation planning agency must demonstrate that reversible lanes were considered for the project. Reversible lanes add peak-direction capacity to a two-direction roadway and decrease congestion by using the available capacity from the direction of traffic that is not experiencing peak period congestion. In addition, these lanes provide a cost benefit in cases where increasing the capacity is especially expensive, particularly on bridges and in dense urban areas. With the implementation of reversible lanes, roads may be adjusted ranging from a one-way road to having a middle lane that operates in the peak direction. Changeable signs and/or arrows are used to indicate the adjustment at specified times of day, or when volume exceeds the capacity of the roadway.

Reversible traffic lanes on I-680 were considered for the proposed project. The traffic analysis shows that for the 2025 No Build scenario, the bottleneck along southbound I-680 between Sunol Boulevard and Koopman Road is expected to be active in the AM peak period, and the bottleneck along southbound I-680 between Stoneridge Drive and Bernal Avenue is expected to be active in the PM peak period. These bottlenecks require the capacity of all southbound lanes during both peak periods and are too close together to allow for reversible lanes. Also, the grade differences of up to 17 feet between northbound and southbound I-680 between SR 84 and Sunol Boulevard (from PM 11.9 to 12.7, approximately 0.9 mile; and from PM 13.1 to 15.0, approximately 2 miles) would make a reversible lane geometrically infeasible.

6. CONSIDERATIONS REQUIRING DISCUSSION

6.1 Hazardous Waste

The review of environmental records identified 83 potential hazardous materials sites within 1 mile of the project site. Thirteen active and 15 closed release sites were identified within, adjacent to, or hydraulically upgradient of the project area. Potential groundwater contamination from petroleum hydrocarbon and methyl-tert butyl ether (MTBE) associated with 3 of the 13 active release sites could be encountered during project construction. Residual groundwater contamination (if any) from the adjacent release sites that have been closed could also be encountered during project construction. The other 55 release sites are not expected to affect environmental conditions in the project area because no pathway for contaminant migration exists.

Other sources of potential hazardous materials have also been identified in the project area. I-680 within the project area was constructed in the late 1960s, before the phase-out of lead in gasoline. Therefore, project construction activities that disturb exposed shallow soils could encounter aerially deposited lead (ADL). Shallow soils within the project area may also contain arsenic and/or organochlorine pesticides (OCPs) due to previous agricultural uses. Though no work is currently planned in or near the Union Pacific Railroad corridor, any project improvements along the foundation of the I-680 railroad overcrossing could encounter undocumented soil contamination from historical railroad operations. Project improvements in the vicinity of the Kinder Morgan underground petroleum pipeline could encounter soil or groundwater with potential contamination from undocumented petroleum releases.

Lead-based paint and asbestos-containing materials may be present in bridge and wall structures built before 1981. Demolition or modification of bridge and wall structures could result in the release of lead particles and asbestos fibers into the environment. Disturbance of lead-based yellow traffic striping and pavement markings on roadways could also result in a release of lead particles. Generation of asphalt concrete (AC) and Portland-cement concrete (PCC) grindings could result in a release of metals and petroleum hydrocarbons into the environment. Project construction could potentially encounter soils contaminated with asbestos and/or metals in fill embankments.

Deposits of naturally occurring asbestos (NOA) have not been identified in or near the project area.

A Preliminary Site Investigation (PSI) to evaluate potential contaminants of concern in soil, groundwater, and building materials is recommended during the final project design phase. Soil and/or groundwater found to have environmental contaminants should be properly characterized and disposed of at an appropriate facility per applicable regulations.

6.2 Value Analysis

A Value Analysis (VA) study was conducted from April 29 to May 2, 2019. The VA study analyzed the conceptual plans and ensured the compatibility with the surrounding conditions. The objectives of the VA study were to review the "base case" project for cost-effectiveness, function, and ability to meet objectives; and to provide VA proposals and design comments to increase project value through improved functionality, constructability, phaseability, coordination with other projects, and/or capital cost avoidance. The VA team generated 22 ideas, 9 VA proposals, and 2 design comments for which definitive VA proposals could not be made or quantified at the time of the study. Alameda CTC accepted three VA proposals to further evaluate and implement during the design phase:

- VA-1: Allow for simultaneous construction staging of median and outside shoulder work to avoid deferring the structure work until late in the process, which would reduce the project construction time and subsequent cost.
- VA-6: Construct the northbound roadway section in the median during Phase 1 instead of Phase 2, to reduce cost through more efficient staging and to reduce rework and subsequently minimize traffic impacts.
- VA-7: Combine the proposed project with the I-680 Pavement Rehabilitation Project between Koopman Road and Alcosta Boulevard (04-ALA-680 PM M12.4/R21.9; EA 04-0J620), to reduce mobilization costs; project administration/construction management costs; COZEEP; time related overhead; multiple Resident Engineer offices; traffic staging; K-rail placement; cutting of new pavement for conduits/utilities; rework on the shoulders and the traffic lanes to place communication fiber, conduits, cabinets etc.; biological mitigation costs; and long-term lane closure time associated with project overlap.

Alameda CTC designated the following proposal and comments as needing further study:

- VA-2: Use cast-in-drilled-hole (CIDH) soldier pile walls instead of Type 1 Modified walls with piles for Retaining Walls (RW) 581 and RW-600, to simplify construction and eliminate footing conflicts with existing walls.
- VA-3: Consolidate closely spaced overhead signs to use only one structure (pole and foundation), where feasible, to reduce the number of structures and associated visual clutter.
- VA-4: Microgrid Portland Cement Concrete (PCC) at the end of the project to remove remnants of previous lane line striping and improve lane line visibility.
- VA-5: Coordinate with Caltrans to avoid placing open grade pavement at the end of the I-680 Pavement Rehabilitation Project between Koopman Road and Alcosta Boulevard (04-ALA-680 PM M12.4/R21.9; EA 04-0J620), since the proposed

express lane striping will scar the pavement and require rework due to project overlap.

- VA-8: Include proposed project components such as median work, cross-slope correction, utilities work, and electronic conduit placement in the Caltrans Pavement Rehabilitation Project, to avoid or minimize rework and traffic disruption due to project overlap.
- VA-9: Incorporate proposed median work (pavement widening, concrete barrier, and tolling system infrastructure) into the SR 84 Expressway Widening and SR 84/I-680 Interchange Improvements Project (EA 297631) to reduce rework due to project overlap.
- DC-1: Investigate bearing loads during design of soil nail wall (RW-213) to determine if there are constructability issues and a different wall type is required.
- DC-2: Consider soldier pile walls if temporary construction easements (TCEs) cannot be acquired for construction of soil nail walls (e.g., RW-633).

Table 6-1: Summary of Value Analysis Proposals

VA Proposal No.	Description	Cost Savings (Additional Costs)
VA-1	Allow for simultaneous staging	$190,000
VA-2	Use CIDH wall (i.e., soldier pile) for RW 581 and RW 600	($3,120,000)
VA-3	Consolidate the signage to use only one structure in lieu of two structures closely spaced together, where feasible	$380,000
VA-4	Micro Grind Portland Cement Concrete (PCC) at the end of the project	($1,520,000)
VA-5	Coordinate with Caltrans Rehabilitation Project to avoid placing open grade because express lane staging striping will scar the pavement	$1,180,000
VA-6	Construct the roadway section in the median for the northbound (NB) side in Phase 1 instead of Phase 2	$310,000
VA-7	Combine this project with Caltrans Rehabilitation Project	$23,050,000
VA-8	Include items of this project (i.e., median, cross-slope correction, utilities, and electronic conduit) in the Caltrans Rehabilitation Project, where applicable	$1,050,000
VA-9	Extend NB pavement improvements from SR 84 Project northward to same limit as the SB	$175,000

6.3 Resource Conservation

The proposed project will improve traffic operations and facilitate traffic movements through the project area. The lessening of congestion and related traffic delay is associated with faster average travel speeds and more efficient vehicle operation compared to no-build conditions. Improved operations are likely to reduce vehicle energy use, whether in the form of petroleum fuels or alternative sources of energy. Measures to conserve energy and nonrenewable resources have been considered. Any existing asphalt concrete pavement that is removed will

be recycled if economically and logistically advantageous. Additional features, such as barricades, signs, crash cushions, signals, MGSs, and lighting, will be salvaged and reused if they are in working condition and if doing so proves economically and logistically advantageous. These features will be further analyzed during the final design phase.

6.4 Right of Way

6.4.1 General

Retaining wall and concrete barriers have been incorporated into the project design to minimize impacts to surrounding properties. Retaining walls are designed so that all footings would stay within Caltrans right of way and no permanent footing easements would be necessary. Permanent acquisitions are not anticipated. There will be several temporary construction easements (TCE) needed for construction access and staging and it is anticipated these will not involve any structures. During the final design phase, a boundary survey will be performed to determine exact right of way line and TCE requirements.

A Right of Way Data Sheet has been prepared based on the Right of Way and Utility needs of the conceptual design. The Right of Way Data Sheet and preliminary right of way requirement maps are included in Attachment G.

6.4.2 Utility and Other Owner Involvement

Utility investigations have identified the location and extent of existing public lines within the project area. The project would require relocating some aboveground utilities to facilitate construction within the project footprint. Table 6-1 shows existing utilities to be relocated by the Build Alternative. The relocation of utilities would result in localized construction impacts and could result in temporary service by-pass by the utility companies during the tie-in phase. Final verification and approvals would be performed during the project's design phase. The prior rights or any existing utility easements will be investigated during the PS&E design phase and will be shown on the right-of-way appraisal maps as Consent to Common Use Agreement (CCUA) or Joint Use Agreement (JUA). These CCUA and JUA would be documented during the Right of Way closeout process.

Table 6-1: Existing Utilities To Be Relocated by the Build Alternative

Owner	Utility Relocation	Location	Relocation Quantity	Unit	Utility Owner Cost	Estimated Project Cost
PG&E	12kV Overhead Distribution	"S" 28+61 to "S" 31+24	400	LF	$ 500,000	$ 500,000
Sprint	Fiber Optic conduit	"DB" 30+30 to "DB" 31+97	250	LF	$ 125,000	$ 0
PG&E	4" Gas Distribution	"DB" 30+30 to "DB" 31+97	250	LF	$ 312,500	$ 312,500

Owner	Utility Relocation	Location	Relocation Quantity	Unit	Utility Owner Cost	Estimated Project Cost
PG&E	12kV 2-6" & 4" conduits – Electric Distribution	"DB" 30+30 to "DB" 31+97	250	LF	$ 187,500	$ 187,500
Comcast	Cable TV	"DB" 30+30 to "DB" 31+97	250	LF	$ 125,000	$ 0

An Encroachment Policy Variance Request (EPVR) for the various existing utility facilities to remain in place within the State right of way was submitted to Caltrans for the Build Alternative, and conceptual approval for PA&ED phase was provided by Caltrans HQ on 6/17/2019. Table 6-2 summarizes the list of the longitudinal encroachment exceptions for exceeding a permissible skew angle of 30° from the normal for transverse crossing for the Build Alternative.

Table 6-2: Summary Table of Exception A (Longitudinal Encroachment)

Utility Exception No.	Owner	Facility Description	Utility Category	Existing Skew Angle	Location of Crossing
A-1	PG&E	21kV OH Electric Distribution	High	50°	Sta "I-680" 368+70
A-2	City of Pleasanton	36” Water	Low	50°	Sta "I-680" 368+40

Table 6-3 summarizes the list of encroachment exceptions for encasement requirements of underground utilities within the State Right of Way for the Build Alternative. Where potholing, protection, relocation, or removal of facilities is required, the work will be performed and liability determined in accordance with State law, policy, procedure, contracts, and agreements, as per the Caltrans Right of Way Manual. Each utility facility will be relocated to comply with the State encroachment policy if the policy exception request is denied by Caltrans during the design phase.

Table 6-3: Summary Table of Exception B (Longitudinal Encroachment)

Utility Exception No.	Owner	Facility Description	Utility Category	Encased	Location of Crossing
B-1	PG&E	3” Gas Distribution (Unknown psi)	To be determined by pressure rate (during PS&E phase)	No	Sta "I-680" 113+80 at Calaveras Rd UC
B-2	PG&E	4” Gas Distribution (Unknown psi)	To be determined by pressure rate (during PS&E phase)	No	Sta "I-680" 309+15 at Sunol Blvd UC
B-3	City of Pleasanton	12” Water	Pressurized	No	Sta "I-680" 309+40 at Sunol Blvd UC

Utility Exception No.	Owner	Facility Description	Utility Category	Encased	Location of Crossing
B-4	City of Pleasanton	12” Water	Pressurized	No	Sta "I-680" 347+60 at Laguna Creek Ln UC
B-5	City of Pleasanton	36” Water	Pressurized	No	Sta "I-680" 368+40
B-6	City of Pleasanton	12” Water	Pressurized	No	Sta "I-680" 388+55 at Bernal Ave UC
B-7	PG&E	4” Gas Distribution (Unknown psi)	To be determined by pressure rate (during PS&E phase)	No	Sta "I-680" 309+15 at Sunol Blvd UC
B-8	City of Pleasanton	16” Water	Pressurized	No	Sta "I-680" 450+75
B-9	City of Pleasanton	16” Water	Pressurized	No	Sta "I-680" 474+50 at W. Las Positas Blvd UC
B-10	City of Pleasanton	16” Water	Pressurized	No	Sta "I-680" 516+20 S. of Stoneridge Dr
B-11	City of Pleasanton	16” Water	Pressurized	No	Sta "I-680" 540+90
B-12	PG&E	8” Gas Transmission	High Priority	No	Sta "I-680" 580+40 at Dublin Blvd UC
B-13	DSRSD	12” Water	Pressurized	No	Sta "I-680" 580+50 at Dublin Blvd UC
B-14	PG&E	4” Gas Distribution (Unknown psi)	To be determined by pressure rate (during PS&E phase)	No	Sta "I-680" 580+75 at Dublin Blvd UC
B-15	PG&E	4” Gas Distribution (Unknown psi)	To be determined by pressure rate (during PS&E phase)	No	Sta "I-680" 597+75 at Amador Valley Blvd UC
B-16	DSRSD	6” Recycled Water	Pressurized	No	Sta "I-680" 597+95 at Amador Valley Blvd UC
B-17	DSRSD	12” Water	Pressurized	No	Sta "I-680" 598+40 at Amador Valley Blvd UC
B-18	DSRSD	14” Water	Pressurized	No	Sta "I-680" 630+30
B-19	DSRSD	10” Water	Pressurized	No	Sta "I-680" 658+90 at Alcosta Blvd UC

A preliminary list of utility relocation information for the Build Alternative is included in Attachment G, Right of Way Data Sheet and Preliminary Right of Way Requirements.

6.4.3 Railroad Involvement

Railroad right of way exists adjacent to southbound I-680 between PM 13.07 to PM 14.25. Temporary construction easements within operating railroad right of way are not anticipated as part of this project. A short clause will be added to the special provisions during the design phase notifying the contractor to keep clear of the railroad Right of Way. If construction activities take place within 25 feet of the centerline of the nearest rail, the railroad may require that a flagger be present.

The project goes over operating Union Pacific Railroad at PM 15.9 and operating Bay Area Rapid Transit at PM 20.05. Existing median width on the structures is adequate and no widening would be required to accommodate the Project. Preliminary Engineering Review will be required for each railroad and the railroads may require that a flagger be present.

6.5 Environmental Compliance

Caltrans, as assigned by the FHWA, is the lead agency under the National Environmental Policy Act (NEPA). Caltrans is the lead agency under the California Environmental Quality Act (CEQA).

An Initial Study with Mitigated Negative Declaration/Environmental Assessment (IS/EA) with Finding of No Significant Impact (FONSI) has been prepared in accordance with Caltrans' environmental procedures, as well as State and Federal environmental regulations. The attached Final IS/EA is the appropriate document for the proposal, and was approved on November 2, 2020.

A Biological Opinion is required for the project. A Biological Assessment for the project was submitted to the U.S. Fish and Wildlife Service (USFWS) on November 15, 2019, to initiate consultation under Section 7 of the Federal Endangered Species Act. The USFWS will issue the Biological Opinion before the Final IS/EA.

The following subsections summarize the required environmental findings and issues related to project design and construction.

6.5.1 Wetlands and Floodplain

The jurisdictional delineation conducted in June, July, and October 2018 identified a total of 0.24 acre of potentially jurisdictional wetlands, 2.96 acres of potentially jurisdictional non-wetland other waters of the U.S., and 1.01 acre of culverted waters of the U.S. within the biological study area (BSA). In addition, 53,724 linear feet of potentially non-jurisdictional waters of the U.S. (such as stormwater features, upland manmade drainage ditches, roadside ditches, concrete lined v-ditches, and some culverts that do not connect wetlands or waters of the U.S.) were identified in the BSA.

The project would impact less than 0.01 acre of potentially jurisdictional other waters of the United States. The project has the potential to permanently impact 0.04 acre and temporarily impact 0.09 acre of potentially jurisdictional culverted waters of the United States. No impacts

to wetlands and no permanent impacts to potentially jurisdictional other waters of the U.S. are anticipated. Although project activities would temporarily impact four concrete- or riprap-lined ephemeral channels and one concrete-lined riverine intermittent channel, the functions and values associated with these features would not be diminished.

Standard measures such as preparation of a storm water pollution prevention plan (SWPPP) and implementation of best management practices (BMPs) would avoid or minimize construction-related impacts to potentially jurisdictional features. Upon completion of the project, all temporarily impacted areas will be restored to approximately original site conditions, at a minimum 1:1 ratio. Impacted stormwater features will be replaced in kind on-site.

Project activities have the potential to result in a total of 215 linear feet of permanent impacts and 6,272 linear feet of temporary impacts to non-jurisdictional stormwater features. Stormwater features that would be affected by the proposed project would be replaced in kind within the project area, with priority for providing unlined ditches wherever possible. These features would be separate from any treatment areas for roadway runoff and from features preliminarily identified as wetlands or other waters of the United States. All replacement features would be in the Caltrans Right of Way.

Numerous named and unnamed creeks and flood control channels cross the I-680 corridor within the project limits: Vallecitos Creek; Sheep Camp Creek; Unnamed Tributaries to Arroyo de la Laguna 1, 2, and 3; Happy Valley Creek; Line B-2-1; Arroyo de la Laguna; Unnamed Tributaries to Arroyo de la Laguna 4, 5, and 6; Tehan Canyon Creek; Gold Creek; Laurel Creek; Dublin Creek; and Line J-1. Runoff from the project ultimately discharges to Arroyo de la Laguna, which flows generally parallel to the project in a southerly direction until it discharges to Alameda Creek, approximately 1 mile east of the I-680/SR 84 interchange. Alameda Creek traverses westerly, ultimately draining into the San Francisco Bay.

The project would not widen bridges over waterways. Potential impacts to floodplains and/or floodways are expected to result from fill within Line J-1's Zone AO floodplain (1 percent annual chance of shallow flooding, with an average depth of 1 to 3 feet). Net new impervious areas would result from the proposed roadway widening at bridge overcrossings, pavement widening to accommodate the new express lanes, adding maintenance vehicle pullouts, and replacing or adding new retaining walls. The new impervious areas are relatively small compared to the total watershed sizes of the 1 percent-annual-chance flooding sources to which the project drains. As a result, floodplain impacts are considered to be negligible. Minimization measures would include balancing cut and fill in the floodway/floodplain. The project would not change water surface elevations or result in a longitudinal encroachment of the base floodplain.

6.5.2 Cultural Resources

Cultural resources were identified within the area of potential effect (APE). One archaeological resource in the APE is listed in the National Register of Historic Places. However, no construction activities would take place in this site, and no surface deposits related to the site were identified during the field surveys. Caltrans has made a Finding of No Adverse Effect

with Standard Conditions—Environmentally Sensitive Areas (ESAs).

It is Caltrans' policy to avoid cultural resources whenever possible. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find.

6.5.3 Water Quality and Storm Water Runoff

The project's receiving water body is ultimately the San Francisco Bay, via Alamo Canal and Arroyo de la Laguna discharging into Alameda Creek. Runoff from the project is either collected or conveyed through a system of tributaries to Alamo Canal and Arroyo de la Laguna. Arroyo de la Laguna is the only project receiving water body listed as impaired on the Clean Water Act 303(d) List; the impairment is for diazinon.

This project would result in 46.34 acres of new and reconstructed impervious area, which has the potential to impact water quality. The increase of impervious area from the project has the potential to result in an increase to velocity, volume, and potential sediment load of downstream flow. These increases would be minimized through the implementation of stormwater treatment BMPs to promote infiltration and dispersion of runoff. Downstream effects would be further minimized through the use of permanent erosion control measures along slopes and disturbed soils to achieve permanent stabilization and vegetation establishment. The use of culvert end devices such as flared end sections, tees, and rock slope protection would be used to dissipate and disperse the energy of runoff as it flows out of the culverts onto open land, existing ditches, or treatment BMPs.

Temporary and permanent erosion control BMPs will be included in the project to prevent an adverse change in downstream water quality. Measures will include feasible temporary (short-term) and permanent (long-term) BMPs. Feasible treatment BMPs that will be considered during the final design phase include biofiltration swales/strips, detention devices, and gross solid removal devices. The required Storm Water Pollution Prevention Plan will include storm water BMPs for erosion and sediment control, non-storm water management, post-construction storm water management, and waste management and disposal. As the project has been classified as Risk Level 3, storm water runoff pH and turbidity monitoring would be conducted, and pre- and post-construction aquatic biological assessments may be required.

An estimated 37.90 acres of impervious surface can be treated by the identified treatment areas. The goal of the project is to treat the 46.34 acres of post-construction treatment area. Therefore, the project would have an 8.44 acre deficit in providing full stormwater treatment. The Project Team is continuing to review the project corridor and planned geometry to locate additional treatment opportunities. The project has identified locations for offsite treatment and has coordinated with the local municipalities (Pleasanton, Dublin, and San Ramon) for potential off-site alternative compliance opportunities that will be further coordinated during the PS&E phase. The project cost estimate includes funds for off-site stormwater mitigation which is anticipated to be adequate to meet any needs for alternative compliance for stormwater treatment located outside the project Right of Way.

Caltrans District 4 Office of Water Quality has planned and programmed projects that will

construct trash capture devices along the I-680 corridor within the project limits. The Design Team will coordinate with the Office of Water Quality to identify these devices as as-built conditions on the plans prepared during the design phase. The Design Team will also coordinate with the Office of Water Quality for trash capture devices proposed for this project during the design phase, which will include identifying feasible locations and appropriate types for each location. The plans, specifications, and estimate, plus coordination efforts, will be performed during the design phase.

6.5.4 Paleontology

The project has the potential to encounter geologic units that are known to contain paleontological resources. The project area is located within geologic units that could contain nonrenewable paleontological resources, including Pleistocene Alluvial Fan deposits, Pliocene/Pleistocene Livermore Gravels, and Miocene Briones Formation. Although other areas are underlain by Holocene basin and floodplain deposits, they are likely shallow in depth and underlain by older Pleistocene deposits.

Due to the presence of sensitive geologic formations within the project limits, a Paleontological Mitigation Plan was prepared to address potential discoveries during project construction. Implementation of resource stewardship measures, such as Caltrans Standard Specification 14-7.03 and a specification in the construction contract requiring paleontological monitoring during construction in high-sensitivity areas, would avoid or minimize potential impacts to sensitive paleontological resources, if present.

6.5.5 Biological Resources

The Biological Study Area (BSA) for the project totals approximately 553.93 acres, which comprise 236.22 acres of vegetated areas, 2.92 acres of riverine features, and 314.79 acres of developed areas (paved surfaces of I-680, SR 84, paved or gravel driveways, structures, and residential and commercial properties).

The project could result in up to 15.36 acres of permanent impacts, up to 8.30 acres of long-term temporary impacts, and up to 37.42 acres of temporary impacts to naturally occurring and disturbed vegetation communities, including communities of special concern such as valley oak woodland. A total of 821 trees may be permanently impacted, and 231 trees may be temporarily impacted by project activities. (For visual assessment purposes, all of these trees were conservatively assumed to be permanently impacted.)

The project has the potential to affect three federal and/or state-listed wildlife species: California tiger salamander, California red-legged frog, and Alameda whipsnake. In addition, the project has the potential to affect other wildlife species of special concern, nesting raptors and migratory birds, and special-status bats.

Avoidance and minimization measures such as preconstruction surveys, establishment of environmentally sensitive areas to be avoided, and construction personnel education would reduce effects. In addition, mitigation measures including on-site restoration, off-site preservation, and purchase of mitigation bank credits would reduce the permanent effects of the project.

6.6 Air Quality Conformity

The project is included in the Metropolitan Transportation Commission's (MTC's) Bay Area Regional Transportation Plan (RTP), Plan Bay Area 2040, amended 2020 (RTP ID No. 17-10-0065). The project is in the 2019 Transportation Improvement Program (TIP), which was adopted by the MTC on September 28, 2018 (TIP ID No. ALA170009). The FHWA and Federal Transit Administration (FTA) approved the 2019 TIP on December 17, 2018.

The design concept and scope of the proposed project is consistent with the project description in the 2017 RTP as amended in 2020, the 2019 TIP, and the open to traffic assumptions of the MTC's regional emissions analysis. Therefore, the project is in conformity with the State Implementation Plan (SIP) and will not otherwise interfere with timely implementation of any Transportation Control Measures in the applicable SIP.

The project team conducted consultation with MTC Air Quality Conformity Task Force for $PM_{2.5}$ conformity analysis on March 1, 2019, and the project was determined to be not of air quality concern. FHWA provided concurrence on project-level conformity on September 23, 2020.

6.7 Title VI Considerations

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of the IS/EA.

The project would not disproportionately impact any of the populations in the project area. HOVs will use the express lane for no cost. Use of the express lane will require drivers of single-occupant vehicles to pay a toll; however, the associated costs do not represent a disproportionate burden as the use of express lanes is voluntary.

6.8 Noise Abatement Decision Report

The Noise Abatement Decision Report (NADR; approved December 2019, revised September 2020) presents the noise abatement recommendation based on acoustical and non-acoustical feasibility factors and the relationship between noise abatement allowances and the engineering cost estimate. The NADR is based on the project-specific Noise Study Report (NSR; Wilson Ihrig, December 2019) and Noise Study Report Addendum (Wilson Ihrig, September 2020). The NSR documents the assessment of existing and future (2045) traffic noise levels at noise-sensitive receptors in the vicinity of the proposed project and identifies whether preliminary noise abatement measures are necessary for the project to comply with State and Federal noise abatement/mitigation requirements. A summary of key information used in making the preliminary noise abatement decision is found in Table 6-4, below.

Table 6-4. Summary of Abatement Key Information

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Design Goal Achieved?	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
3 (new)	6	No	0	No	$0	$791,680	No
	8	Yes	N/A	No	$0	$922,240	No
	10	Yes	N/A	No	$0	$1,052,800	No
	12	Yes	4	Yes	$428,000	$1,183,360	No
	14	Yes	4	Yes	$428,000	$1,313,920	No
	16	Yes	4	Yes	$428,000	$1,444,480	No
4 Trail-Township (new)	6	Yes	N/A	No	$0	$1,104,366	No
	8	Yes	N/A	No	$0	$1,415,304	No
	10	Yes	1	Yes	$107,000	$1,733,390	No
	12	Yes	1	Yes	$107,000	$2,015,736	No
	14	Yes	1	Yes	$107,000	$2,326,674	No
	16	Yes	1	Yes	$107,000	$2,601,872	No
5 Laguna Creek (new)	6	Yes	N/A	No	$0	$1,588,744	No
	8	Yes	N/A	No	$0	$1,784,992	No
	10	Yes	N/A	No	$0	$1,981,240	No
	12	Yes	6	Yes	$642,000	$2,177,488	No
	14	Yes	6	Yes	$642,000	$2,373,736	No
	16	Yes	6	Yes	$642,000	$2,569,984	No
6 Southbound before Bernal Avenue (replacement)	6	No	0	No	$0	$993,888	No
	8	No	0	No	$0	$1,273,216	No
	10[1]	Yes	N/A	No	$0	$1,526,560	No
	12	Yes	N/A	No	$0	$1,792,896	No
	14	Yes	15	Yes	$1,605,000	$2,068,976	No
	16	Yes	15	Yes	$1,605,000	$2,338,560	No
10 Muirwood/ Stonedale (replacement)	6	Yes	N/A	No	$0	$3,351,000	No
	8	Yes	N/A	No	$0	$4,468,000	No
	10[1]	Yes	N/A	No	$0	$5,585,000	No
	12	Yes	N/A	No	$0	$6,702,000	No
	14	Yes	34	Yes	$3,638,000	$7,819,000	No
	16	Yes	55	Yes	$5,885,000	$8,936,000	No
7A Trail (new)	6	No	0	No	$0	$3,685,800	No
	8	No	0	No	$0	$4,914,400	No
	10	No	0	No	$0	$6,143,000	No
	12	Yes	N/A	No	$0	$7,371,600	No
	14	Yes	N/A	No	$0	$8,600,200	No
	16	Yes	9	Yes	$963,000	$9,828,800	No
13-Relocated Canterbury	6	No	0	No	$0	$1,686,432	No
	8	Yes	N/A	No	$0	$2,197,472	No
	10[1]	Yes	N/A	No	$0	$2,682,960	No
	12	Yes	N/A	No	$0	$3,142,896	No
	14	Yes	42	Yes	$4,494,000	$3,577,280	Yes
	16	Yes	42	Yes	$4,494,000	$3,986,112	Yes
14A-Relocated Ironwood	6	No	0	No	$0	$1,496,400	No
	8	Yes	N/A	No	$0	$1,948,800	No
	10	Yes	N/A	No	$0	$2,378,000	No
	12	Yes	N/A	No	$0	$2,784,000	No
	14[1]	Yes	39	Yes	$4,173,000	$3,166,800	Yes
	16	Yes	39	Yes	$4,173,000	$3,526,400	Yes

1. Current barrier height.

The NADR recommends the following replacement sound walls if existing Barriers 13 and 14 must be relocated to accommodate roadway widening:

- Barrier 13–Relocated, approximately 3,194 feet long and 14 feet high. Calculations based on preliminary design data show that the barrier will reduce noise levels by 5 to 8 dBA for 42 residences at a cost of $3,577,280.
- Barrier 14A–Relocated, approximately 2,900 feet long and 14 feet high. Calculations based on preliminary design data show that the barrier will reduce noise levels by 6 to 8 dBA for 38 residences and a church at a cost of $3,166,800.

If necessary, the removal and reconstruction of Barriers 13–Relocated and 14A–Relocated would result in visual changes for residents near the sound walls, including higher walls that would be closer to adjacent homes and removal of existing vegetation in the State Right of Way. Measures to avoid or minimize adverse effects include protecting existing vegetation to the extent possible and providing aesthetic treatments for new project structures including retaining walls and sound walls. These secondary effects of noise abatement are described in the Visual Impact Assessment. Permanent and temporary tree impacts associated with the removal and reconstruction of Barriers 13–Relocated and 14A–Relocated are also addressed in the Natural Environment Study.

The preliminary noise abatement decision is based on preliminary project alignments and profiles, which may be subject to change. As such, the physical characteristics of noise abatement also may be subject to change. If pertinent parameters change substantially during the final project design, the preliminary noise abatement decision may be changed or eliminated from the final project design. A final decision to construct noise abatement will be made upon completion of the project design.

The preliminary noise abatement decision presented here was included in the DED, and circulated for public review.

6.9 Life-Cycle Cost Analysis and Materials Recommendations

A Life Cycle Cost Analysis (LCCA) and Preliminary Materials Report were prepared using the guidelines presented in the Caltrans Highway Design Manual, Caltrans LCCA Procedures Manual, and RealCost v2.5.2CA software.

Caltrans I-680 Pavement Rehabilitation Project (EA 04-0J620) would rehabilitate existing I-680 lanes prior to the construction of this Project from PM 12.4 to PM 21.9. The LCCA assumes all existing lanes will be in acceptable ride conditions with no distress during the time of construction and only widening is needed to be analyzed as part of LCCA for this project.

Asset Management output from SHOPP tool is included in Attachment L which includes 63 lane miles of which 6.64 miles are in good condition, 50.3 miles in fair condition and 6.06 miles in poor condition. 27 curb ramps are listed to be in poor condition. Complete Streets improvements are not included as the express lanes project does not propose any improvements to local streets.

Based on the LCCA Procedures Manual, Figure 2-2 LCCA Lane Widening Flowchart; a 40 year design life CRCP, a 40 year design life JPCP, a 40 year design life Flexible Pavement and a 20 year design life Flexible Pavement were compared for fifteen segments as shown in Table 5-1.

A cost comparison of these alternatives was made using the RealCost v2.5.2CA software. A summary of the Pavement Strategy Checklist, Preliminary Materials recommendations and LCCA results is provided in Attachment L.

For widening adjacent to existing pavement surfaces as proposed by the Caltrans rehabilitation project, alternatives were selected to match the same pavement type. Project typical cross sections (Attachment B) show proposed pavement structural sections. The LCCA and Preliminary Materials Report were approved on July 8, 2019.

6.10 Express Lane Facility Agency Responsibilities

The express lanes facility will require a successful collaboration between several entities that will support the opening and complete operation of the facility. This section outlines suggested agency roles in operating the northbound I-680 express lane facility and will be described in detail when the Concept of Operations Report is prepared during the final design phase of the project. These agencies include the Alameda CTC, BATA, Caltrans, and CHP. Each of the above-identified agencies will be responsible for the operation of the functional subsystem with which they are associated. These roles and responsibilities will be finalized in the agency agreements that will be executed for this project.

The Alameda CTC, as the owner of the express lanes facility infrastructure, would be responsible for the following:

- Operation, monitoring, maintenance and technical support of the ETS, including the following subsystems: ETS readers, antennas, DMSs, tolling zone controllers, Vehicle Detection System (VDSs), lighting, CCTV equipment, the enforcement equipment that the CHP will utilize, and all equipment and components related to the express lanes facility communications system, which includes the links to BATA, Caltrans and CHP
- The express lane facility toll transaction and trip generation processing, which would be located at the TDC, tolling zone device control and monitoring, TDC operations and maintenance
- The dynamic pricing and toll rate management process
- Express lane facility Customer Service Representative (CSR) functions and monitoring
- Express lane facility financial reconciliation process with BATA
- Providing express lane facility reporting
- Oversight of the express lane facility System Operator (if the Alameda CTC chooses to contract out the express lanes facility operations)
- Performing lane closures in cooperation with Caltrans in order to properly maintain and support the express lane facility equipment
- Maintenance of express lanes static signs
- Conduct express lane facility specific marketing

BATA would be responsible for the following:

- Full RCSC processing, including FasTrak® account management, customer service interface to the public, express lane facility trip record processing, and revenue management functions
- Management of FasTrak® accounts, transponder inventory/tracking, transponder fulfillment and revenue management
- Operating, supporting and maintaining FasTrak® back office operations
- Providing FasTrak® revenue and account information to the Alameda CTC

Caltrans would be responsible for the following:

- Safe operation of I-680
- Incident response management within I-680 corridor including the express lane facility
- Operation of the express lane facility DMS messages, in coordination with Alameda CTC staff, when incident response warrants an override of the ETS operation
- Existing TOS elements (TMS, CCTV, CMS, EMS) and other TOS elements planned by the State in other efforts
- On and off ramp lighting
- Roadway maintenance

The CHP would be responsible for the following:

- Express lanes facility enhanced highway patrol enforcement. To assist the CHP with enforcement, enforcement zones will be provided (see Section 5). The CHP will receive FasTrak® account-related data via vehicle mounted or hand-held devices provided by the Alameda CTC. The data will be transmitted from the TDC and will provide the CHP with current FasTrak® account information that can be used for enforcement purposes.

7. OTHER CONSIDERATIONS AS APPROPRIATE

7.1 Public Hearing Process

Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The IS/EA was circulated for public review and comment period from May 29, 2020, to June 30, 2020. A virtual open house was held on Thursday, June 18, 2020, from 6 PM to 8 PM. The public review and comment process is described further in Section 3.2.3.

A total of 19 comments were submitted during the public review and comment period via email, postal mail, and the project web page. The IS/EA presents the public comments and the project team’s responses.

After comments are received from the public and reviewing agencies, Caltrans, as the

designated lead agency under NEPA and CEQA may: (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project.

7.2 Route Matters

7.2.1 Freeway Agreements & New Connections

Changes to the current freeway agreements are not anticipated, since there is no change in freeway access. Current freeway agreements dated July 6, 1962 and March 8, 1965 are still valid.

7.2.2 Route Adoptions

Route adoption requirements are not within the project limits.

7.2.3 Relinquishments

Relinquishments are not within the project limits.

7.3 Permits

The following environmental permits, reviews, and approvals would be required for project construction:

Table 7-1: Permits and Approvals Required

Agency	Permit or Approval	Status or Planned Action
U.S. Army Corps of Engineers (USACE)	Concurrence on delineation of waters of the U.S., and Section 404 permit for placement of fill within waters of the U.S.	The Jurisdictional Delineation was submitted to USACE for concurrence on 11/18/2019, and USACE issued a preliminary jurisdictional delineation on 4/7/20. A permit application will be submitted during the project design phase.
U.S. Fish and Wildlife Service (USFWS)	Section 7 consultation for threatened and endangered species.	A Biological Assessment was submitted to the USFWS on 11/15/2019. USFWS issued a Biological Opinion on 10/30/20
Federal Highway Administration (FHWA)	Concurrence with project's conformity to Clean Air Act and other requirements.	Air quality studies were submitted for FHWA concurrence after public review of the IS/EA. FHWA issued a project-level conformity determination on 9/23/20.
California Department of Fish and Wildlife (CDFW)	Section 1602 Lake and Streambed Alteration Permit and Consistency Determination.	Permit application and request for Consistency Determination or Incidental Take Permit will be submitted during the project design phase.
San Francisco Bay Regional Water Quality Control Board (RWQCB)	Waste discharge requirements under the Porter-Cologne Water Quality Control Act; National Pollutant Discharge Elimination System (NPDES) approval for work greater than one acre.	A Joint "Application for 401 Water Quality Certification" and/or "Report of Waste Discharge" will be submitted during the project design phase. An NPDES permit application will be submitted during the project design phase. A Notice of Intent and SWPPP will be prepared/submitted prior to construction.

7.4 Cooperative Agreements

A Cooperative Agreement addressing the PA&ED has been executed between Caltrans and Alameda CTC using the Cooperative Agreement Report (CAR) as the authorizing document. A draft executable Cooperative Agreement (see Attachment M) has been prepared for the design and Right of Way procurement activities in the PS&E design phase. Alameda CTC will remain as the project sponsor and will be responsible for all design and Right of Way work with Caltrans providing oversight.

The Project Report will be the authorizing document for the PS&E Cooperative Agreement.

Caltrans will advertise and award the project and administer the construction phase of the project. A Construction Cooperative Agreement will be executed between Caltrans and Alameda CTC during the design phase.

A final design (PS&E) and construction Cooperative Agreement will be prepared between Caltrans and Alameda CTC at a later date for a separate highway planting (or replacement highway planting) contract including a three year Plant Establishment Period.

7.4.1 Other Agreements

A Joint Powers Agreement was executed between FHWA, Caltrans and Alameda CTC on September 10, 2010 to establish, maintain and monitor a value pricing program on I-680 in Alameda and Santa Clara Counties as part of Caltrans' membership in the value pricing pilot program referred to as "I-680 SMART Carpool Lanes." The program is conducted, administered and operated by the Sunol SMART Carpool Lane Joint Powers Authority (SSCLJPA) as a toll facility. SSCLJPA members consist of Alameda CTC and VTA elected officials. The SSCLJPA has designated Alameda CTC as the managing agency for the SSCLJPA.

Based on discussions between Caltrans and Alameda CTC, the existing Maintenance and Operations Agreement for I-680 Southbound Express Lane will be modified during the design phase to include the proposed extension of the I-680 express lane tolling facility.

7.5 Involvement with a Navigable Waterway

This project does not involve crossing over any body of water that requires a permit from the U.S. Coast Guard.

7.6 Transportation Management Plan for Use during Construction

A Transportation Management Plan (TMP) will be prepared during the final design phase to minimize delay and inconvenience to the traveling public, in accordance with Caltrans requirements and guidelines. The TMP will address traffic impacts from staged construction, detours, and specific traffic handling concerns during construction of the Project. A TMP Data Sheet is provided in Attachment H and includes a preliminary estimate of cost for these activities.

The TMP for the project will be further developed during the final design phase and may require additional traffic studies to evaluate traffic operations. The need for lane closures during off-peak hours or short-term detour routes for ramp closures will be identified in the TMP. The TMP will also include briefings to local officials and a public information program to inform the public of project progress and upcoming closures and detours.

Table 7-2 is a list of the TMP strategies and contains a brief description of each item that should be further detailed in the TMP. Additional aspects of a TMP should include ride-sharing agencies, transit operators, and neighborhood and special-interest groups; consideration of construction strategies and contract incentives; and CHP and local law enforcement involvement.

Table 7-2: Transportation Management Plan Strategies

Strategy	Description
Public Information	Community outreach strategies are to inform motorists and businesses affected by construction and detours. Publish daily construction activities in the local newspaper or on a website to advise of changes to the traffic patterns. Provide toll-free number to motorists to provide information or assist in complaints. Hotels may also be provided to public for stay due to increased noise during construction.
Integrated Incident/Emergency Management Program	The use of electronics, computers, and wireless communication systems to coordinate real-time responses to incidents and emergencies by various emergency providers and enforcement agencies, particularly around construction sites.
Freeway Service Patrol	Dedicated patrol trucks along construction site, particularly during peak commute hours.
California Highway Patrol	Additional CHP presence will be required during temporary partial and full freeway and ramp closures.
Construction Zone Enhanced Enforcement Program	Cooperative program between Caltrans and the CHP for proactive police enforcement at construction sites on the State highway system.
Portable Changeable Message Signs	These signs used to inform motorists about traffic conditions and future roadwork.
Traffic Control Improvements	Examples include changes in signal timing, use of temporary signals, adding detectors for actuation, and coordinating traffic signals.
Street Improvements, Signing, and Striping	Examples include temporary removal of median islands or on-street parking, changes in turn restrictions and prohibitions, and provision of detour and guidance signage, etc.
Comprehensive GIS/Database/Mapping System	Computer mapping and database system centralizing various information on construction detours, transportation, modes, travel services, major destinations, planned development, etc.
Coordination of Construction Schedules	Continuous ongoing coordination of the schedules of construction projects with all of the stakeholder agencies.
Contingency Plans	Specific actions that will be taken to minimize impacts on traffic when the congestion or delay exceeds original estimates due to unforeseen events such as work-zone accidents, higher-than-predicted traffic demand, or delayed lane closures. Information to be coordinated and disseminated among construction and emergency service providers and public-safety providers.
Workshops	Workshops to be conducted with the general public and specific stakeholders prior to the construction phases that would affect the stakeholders.

7.7 Stage Construction

To ensure that traffic operations are not affected, detour and construction staging plans will be developed that will preserve or minimize the impact to the existing number of traffic lanes on I-680 in each direction throughout the construction period, except during critical short-term construction activities. Twenty-four-hour traffic counts will be performed to assess the impact of any needed lane closures. Preliminary information concerning lane closures will be used to develop feasible staging plans. Impacts to access for local business and private properties, will all be carefully considered in the staging plans. If nighttime closures are required, acceptable detours will need to be put in place.

The details of how traffic will be handled during construction will be presented in the TMP. The lane closures will be done at night to keep traffic effects at a minimum. Public outreach will be performed ahead of time to ensure that closures will be announced in a timely manner. Temporary detours of existing interchange ramps may be necessary during construction. Most of the construction activity will be done behind temporary railing (type K) to keep lane closures and traffic disruption to a minimum.

Project construction is based on the two major stages identified below. Several construction phases are associated with each construction stage. A conceptual stage construction plan has been developed (see Attachment I) to confirm Project constructability. The stage construction concept was presented to Caltrans Design Contra Costa on November 13, 2018, comments received have been incorporated. A construction sequence of the major construction activities of each stage is presented below. Refer to Attachment I for details.

Stage 1 Phase 1:

- Construct concrete barrier along I-680 median.
- Construct overhead sign structure along I-680 median.
- Construct CHP area along I-680 median.
- Construct inside pavement widening for NB I-680 Express Lane.
- Construct inside pavement widening for SB I-680 Express Lane.
- Construct retaining wall No. 162 along I-680 median.
- Construct retaining wall No. 213 along I-680 median.
- Construct Midwest guardrail system along I-680 median.

Stage 2 Phase 1:

- Construct Maintenance Vehicle Pullout along SB I-680 right shoulder.
- Construct concrete barrier along NB I-680 right shoulder.
- Construct outside pavement widening along NB I-680 and retaining wall No. 180 and 424.
- Construct outside pavement widening along SB I-680.
- Construct retaining wall No. 153 along NB I-680 right shoulder.
- Construct retaining wall No. 310 along NB I-680 right shoulder.
- Construct retaining wall No. 579 along NB I-680 Dublin Blvd on-ramp right shoulder.
- Construct retaining wall No. 581 along NB I-680 right shoulder.
- Construct retaining wall/sound wall No. 599 along NB I-680 right shoulder.
- Construct retaining wall/sound wall No. 600 along SB I-680 right shoulder.
- Construct retaining wall No. 633 along SB I-680 right shoulder.
- Construct outside widening of Pleasanton-Sunol Road Undercrossing (Br No. 33-0387) along NB I-680.
- Construct outside widening of Amador Valley Blvd Undercrossing (Br No. 33-0356) along northbound I-680.
- Construct outside widening of Dublin Blvd Undercrossing (Br No. 33-0373) along northbound I-680
- Construct Midwest guardrail system along NB I-680 right shoulder.
- Construct Midwest guardrail system along SB I-680 right shoulder.

Stage 2 Phase 2:

- Construct outside pavement widening along NB I-680.
- Construct outside pavement widening along SB I-680.
- Construct concrete barrier along NB I-680 right shoulder.

7.8 Accommodation of Oversize Loads

The project will not restrict the movement of oversized loads through the area.

7.9 Graffiti Control

This project is in a generally suburban and rural area and therefore it is considered to be less graffiti-prone. The project proposes new retaining walls, bridge widenings, and a number of overhead signs. To reduce the occurrence of graffiti, measures such as applying texture, color and anti-graffiti coatings on appropriate surfaces will be implemented.

8. FUNDING, PROGRAMMING AND ESTIMATE

8.1 Funding

The estimated total project funding is $480 million.[3] The current funding plan is as follows:

1. $30 million is programmed from Alameda County local tax measures and an additional $283 million anticipated to be programmed from local tax measure.
2. $37 million anticipated from Local Partership Program under SB-1 Program.
3. $40 million anticipated from Regional Transportation Improvement Program (RTIP) funds
4. $80 million anticipated from Regional Measure (RM) funds
5. $10 million anticipated from local regional funds

It has been determined that this Project is eligible for federal-aid funding.

8.2 Programming

The Project is programmed in the Alameda CTC's and Tri-Valley Transportation Council's Transportation Expenditure Plans.

The project is included in Plan Bay Area 2040 (ABAG and MTC 2017, amended 2020; RTP ID No. 17-10-0065). The project is in the 2019 TIP, which was approved by FHWA on December 17, 2018 (TIP ID No. ALA170009) for a cost of $394M.

The support cost ratio is 29.20%.

8.3 Estimate

An eleven-page format cost estimate has been prepared for the project (See Attachment D). Major items of construction cost include tolling infrastructure, roadway excavation, hot mix asphalt, concrete pavement, concrete barriers, retaining walls and bridge structures.
The cost estimate includes 20% contingency for the PR phase with 5% escalation till midyear construction. A cost estimate certification has been prepared and was approved by District Cost Estimate Certification Coordinator on February 5, 2020.

[3] The project is being implemented in two phases for Design, Right of Way and Construction. Southbound improvements are proposed as the first phase at Capital cost of approximately $252M.

9. SCHEDULE

The following is the current major milestone schedule for Phase 1 of the project. Phase 2 schedule is yet to be determined:

Table 9-1: Project Schedule (Phase 1) - Major Milestones

Project Milestones		Milestone Date (Month/Date/Year)	Milestone Designation (Target/Actual)
PROGRAM PROJECT	M015	09/10/2018	Actual
BEGIN ENVIRONMENTAL	M020	09/10/2018	Actual
NOTICE OF PREPARATION (NOP)	M030	NA	Actual
NOTICE OF INTENT (NOI)	M035	NA	NA
CIRCULATE DED EXTERNALLY	M120	05/29/2020	Actual
PA & ED	M200	11/13/2020	Target
PS&E TO DOE	M377	08/13/2021	Target
DRAFT STRUCTURES PS&E	M378	08/13/2021	Target
RIGHT OF WAY CERTIFICATION	M410	10/04/2021	Target
READY TO LIST	M460	10/15/2021	Target
FUND ALLOCATION	M470	12/09/2021	Target
HEADQUARTERS ADVERTISE	M480	01/12/2022	Target
AWARD	M495	03/15/2022	Target
APPROVE CONTRACT	M500	04/15/2022	Target
CONTRACT ACCEPTANCE	M600	12/27/2024	Target
END PROJECT	M800	10/22/2025	Target

M030 and M035 are only required if the environmental document is an EIR/EIS, M120 is only required if there is a draft environmental document that will be released to the public, and M378 is not required, but optional if there are structures involved, delete rows as needed. The Milestone Designation column may be deleted when all the milestone dates are in the future.

10. RISKS

A Level 3 risk register for the PA&ED phase has been prepared for the project and is included in Attachment J.

The project is proposed to be phased due to limited availability of funding. The project risk register documents a risk which could result in higher costs and schedule delays. Recommended mitigation is to identify additional funding and minimize throwaway costs while phasing the project. Probable cost for this risk is approximately $22.5M.

Based on the current economic conditions, the risk register includes a risk for unanticipated escalation in construction and environmental mitigation costs. The recommended mitigation is to follow the current bidding environment during all project phases, seek additional funding opportunities if needed, and update the project estimate frequently with reasonable escalation. Probable cost for this risk is approximately $8.9M.

As the project will require a large number of overhead signs and related infrastructure, a risk exists that late changes in sign locations and tolling equipment standards may affect the project

scope and delay the project schedule. Close coordination is recommended on the development of sign locations and tolling standards during the PS&E phase. The probable cost for this risk is approximately $2.0M.

Unforeseen right of way and temporary access requirements not determined during PA&ED phase could require additional environmental clearance, schedule, and cost implications for the project. The probable cost for this risk is approximately $90k.

The Project presents a phasing strategy as funding may not be available to construct the full Build Alternative. Depending on how much time elapses between construction phases, new or revised technical studies and/or supplemental environmental documentation could be needed. The project estimate may need to be updated continually during the project development phase to consider project phasing breakdown and construction implementation and timeframe. The risk may also pose a substantial impact to the project schedule.

The project risks will be updated through the PS&E phase of the project.

11. EXTERNAL AGENCY COORDINATION

11.1 Federal Highway Administration (FHWA)

Per the Joint Stewardship and Oversight Agreement dated May 28, 2015, between Caltrans and FHWA, the Project review has been delegated to Caltrans.

This Project has neither been identified as a Project of Division Interest (PoDI), nor as a Project of Corporate Interest (PoCI).

11.2 U.S. Fish and Wildlife Service

Formal consultation with the USFWS for threatened and endangered species under Section 7 of the Federal Endangered Species Act is required for the California red-legged frog, California tiger salamander, and Alameda whipsnake. The USFWS is anticipated to issue a Biological Opinion before PA&ED.

11.4 U.S. Army Corps of Engineers

The project requires a Preliminary Jurisdictional Determination from the U.S. Army Corps of Engineers (USACE) identifying wetlands and other Waters of the United States within the project footprint. USACE issued a Preliminary Jurisdictional Delineation on April 7, 2020. Any work within jurisdictional areas will require a Section 404 Permit.

11.5 Regional Water Quality Control Board

The USACE permit will require RWQCB approval of a Section 401 Water Quality Certification or Waiver. The RWQCB certification or waiver is approved following, or contingent upon, receipt of all federal permits, including the USACE authorization and agreement on wetland mitigation. The project will also require a Notice of Construction and

Storm Water Pollution Prevention Plan agreement with RWQCB, which is typically obtained during the construction phase.

11.6 California Department of Fish and Wildlife

The CDFW may require a 1602 Agreement for a Streambed Alteration Agreement. Their jurisdiction would apply to the banks of creek or waterway habitat affected by the project. A Consistency Determination or Incidental Take Permit may be required for impacts to California tiger salamander.

12. PROJECT REVIEWS

12.1 Geometric Reviews

Geometry review meetings were conducted with Robert Effinger, Caltrans HQ Project Delivery Coordinator, Bach Yen and Hassan Nikzad, Geometric design reviewers Caltrans District 4, Caltrans Design Contra Costa, Caltrans Highway Operations and other functional units between January and August 2018. Comments were received and have been incorporated into the current Project geometry drawings (GeDs). The design standard decision document for Boldface and Underlined Design Standards were submitted to Caltrans between December 2018 and May 2019. Comments on the Fact Sheets were received in December 2018 and June 2019. The comments were incorporated and an approval for the Design Standard Decision Document (DSDD) for the PA&ED phase was obtained on October 1, 2019.

12.2 Other Reviews

Encroachment Policy Variance Request Review: The Encroachment Policy Variance Request was submitted in May 2019 and comments were received on May 30, 2019. HQ encroachment exceptions division of design concurred with the variance request on June 17, 2019, for the PA&ED phase. A final EPVR will be submitted during the design phase when additional utility investigations are conducted.

Pavement Strategy and LCCA Review: The proposed pavement structural sections have been developed. A Life Cycle Cost Analysis for 20 and 40-year design pavement was prepared with the design assumptions memo (see Attachment L). The pavement section limits and materials have been coordinated to match with the Caltrans Rehabilitation Project (EA 04-0J620). Caltrans District 4 Materials unit reviewed the analysis and provided comments on January 14, 2019, March 27, 2019 and May 20, 2019. Comments were incorporated and the LCCA was approved on July 8, 2019.

13. PROJECT PERSONNEL

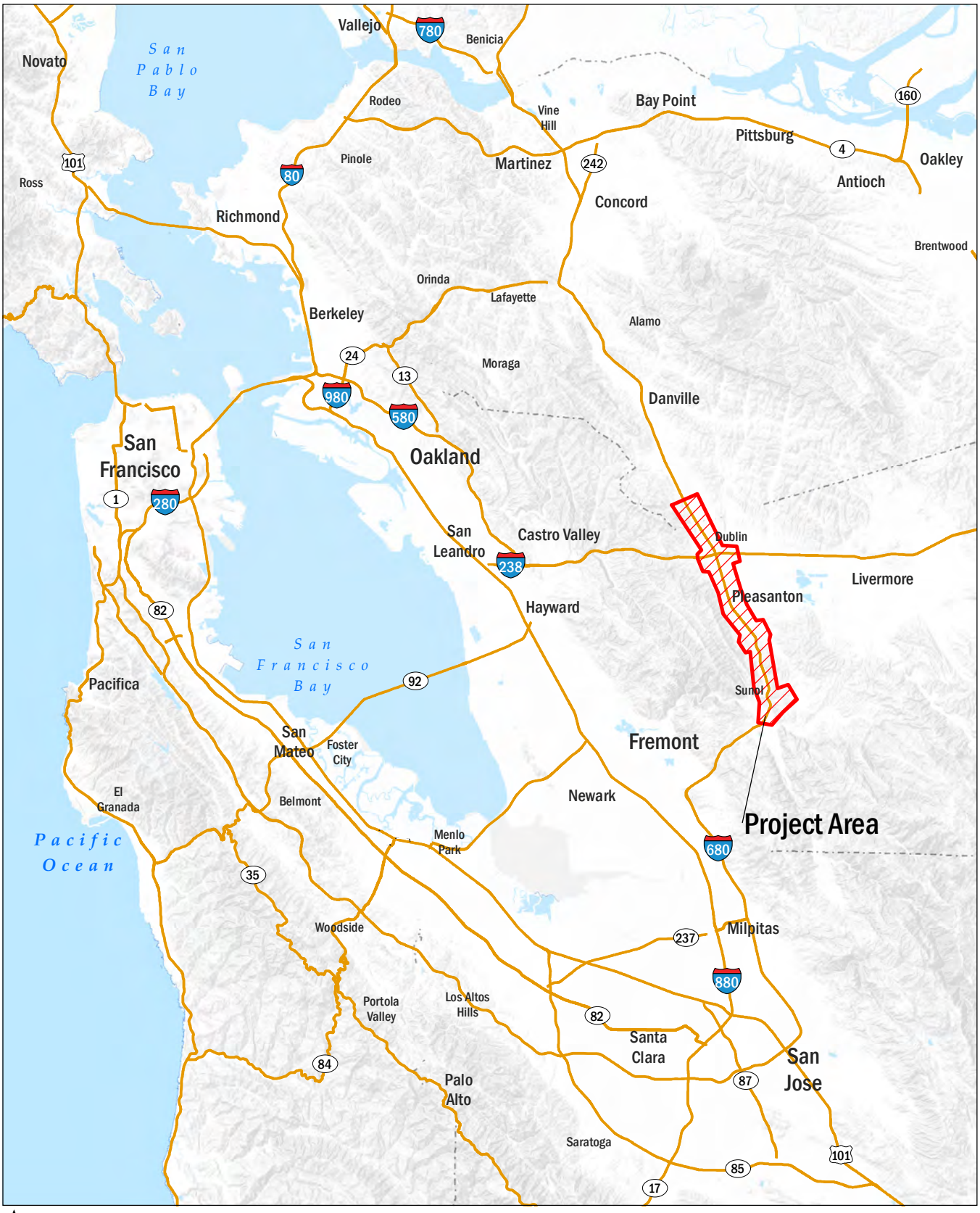
Alameda CTC PM	Gary Sidhu	(510) 208-7414
AECOM PM and Design Manager	Abhijeet Bhoi	(408) 961-8414
AECOM Environmental Manager	Lynn McIntyre	(510) 874-3149
Caltrans Project Manager	Jack Siauw	(510) 286-4193
Caltrans Design Office Chief	Kendall Kitamura	(510) 286-7190
Caltrans Senior Transportation Engineer	Vince Bonner	(510) 622-5633
Caltrans District Design Liaison	Bach-Yen Nguyen	(510) 286-4928
Caltrans HQ Project Delivery Coordinator	Robert Effinger	(916) 704-4384
Caltrans Environmental Analysis	Brian Gassner	(510) 286-6025
Caltrans Highway Operations	Peter Lau	(510) 286-6157
Caltrans Traffic	Philip Cox	(510) 286-5584
Caltrans Traffic Safety	Bahman Zarechian	(510) 286-4422

14. ATTACHMENTS

Attachment A	**Project Vicinity & Location Map**
Attachment B	**Build Alternative Preliminary Plans & Project Layout Exhibit** Title Sheet Typical Sections Key Map Layouts Utility Plans Project Layout Exhibit (from Final Environmental Document)
Attachment C	**APS Plans**
Attachment D	**Preliminary Project Cost Estimate**
Attachment E	**Final Environmental Document Signature Page**
Attachment F	**Storm Water Data Report Signature Page**
Attachment G	**Right of Way Data Sheet and Preliminary Right of Way Requirements**
Attachment H	**Transportation Management Plan Data Sheet**
Attachment I	**Preliminary Construction Schedule and Proposed Construction Staging Plan**
Attachment J	**Risk Management Plan**
Attachment K	**Noise Abatement Decision Report (NADR) Signature Page**
Attachment L	**Pavement Strategy Checklist, Preliminary Materials Recommendations and LCCA results**
Attachment M	**Draft Cooperative Agreement for PS&E Phase**

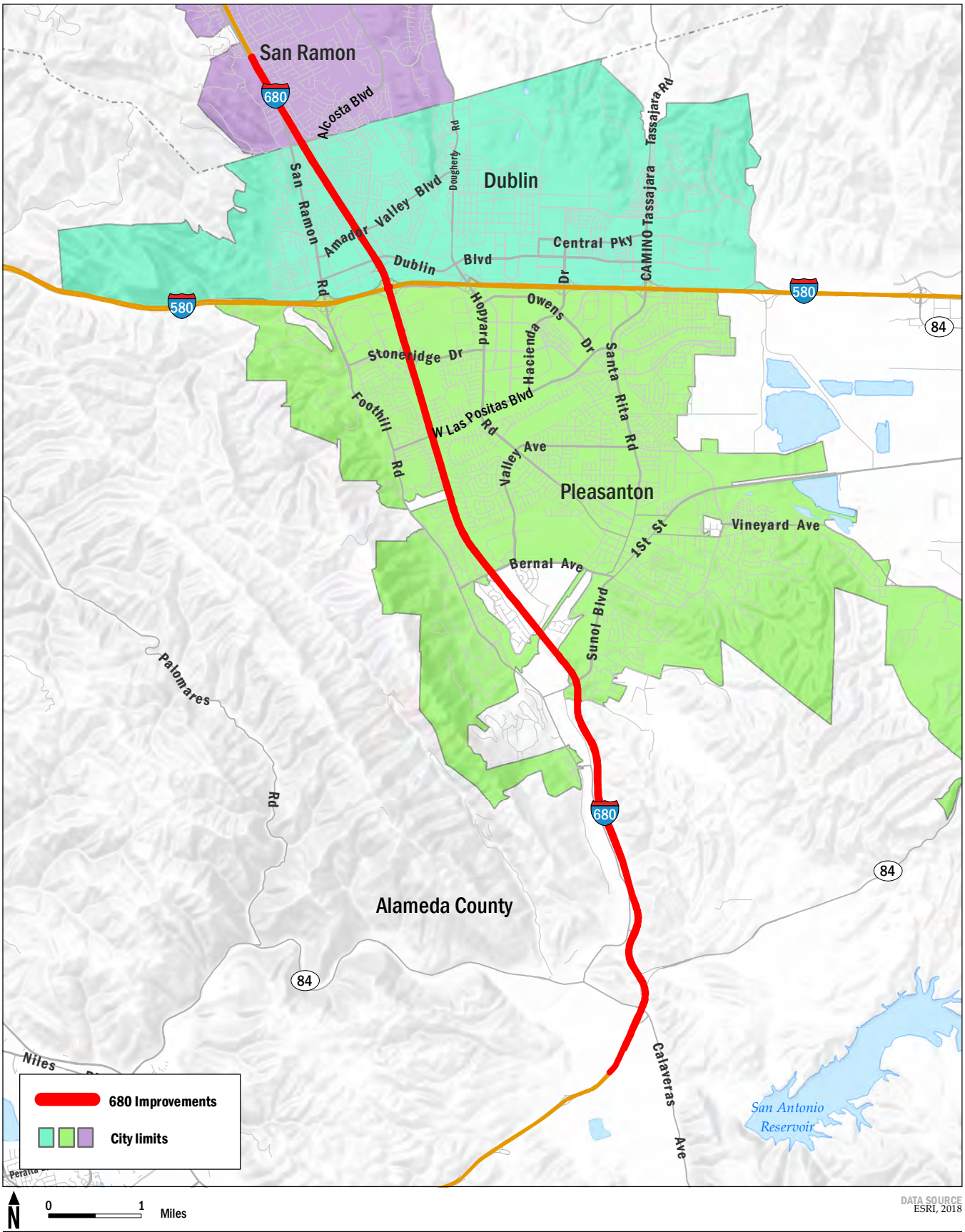
Attachment - A

Project Vicinity and Location Map



I-680 Express Lanes From SR 84 to Alcosta Blvd Project
Alameda County

FIGURE 1
Project Vicinity



I-680 Express Lanes From SR 84 to Alcosta Blvd Project
Alameda County

FIGURE 2
Project Location

Attachment - B

Build Alternative Preliminary Plans & Project Layout Exhibit

INDEX OF PLANS

SHEET NO.	DESCRIPTION
1	TITLE AND LOCATION MAP
2-18	TYPICAL CROSS SECTIONS
19	KEY MAP
20-61	LAYOUT
62-103	UTILITY PLAN

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

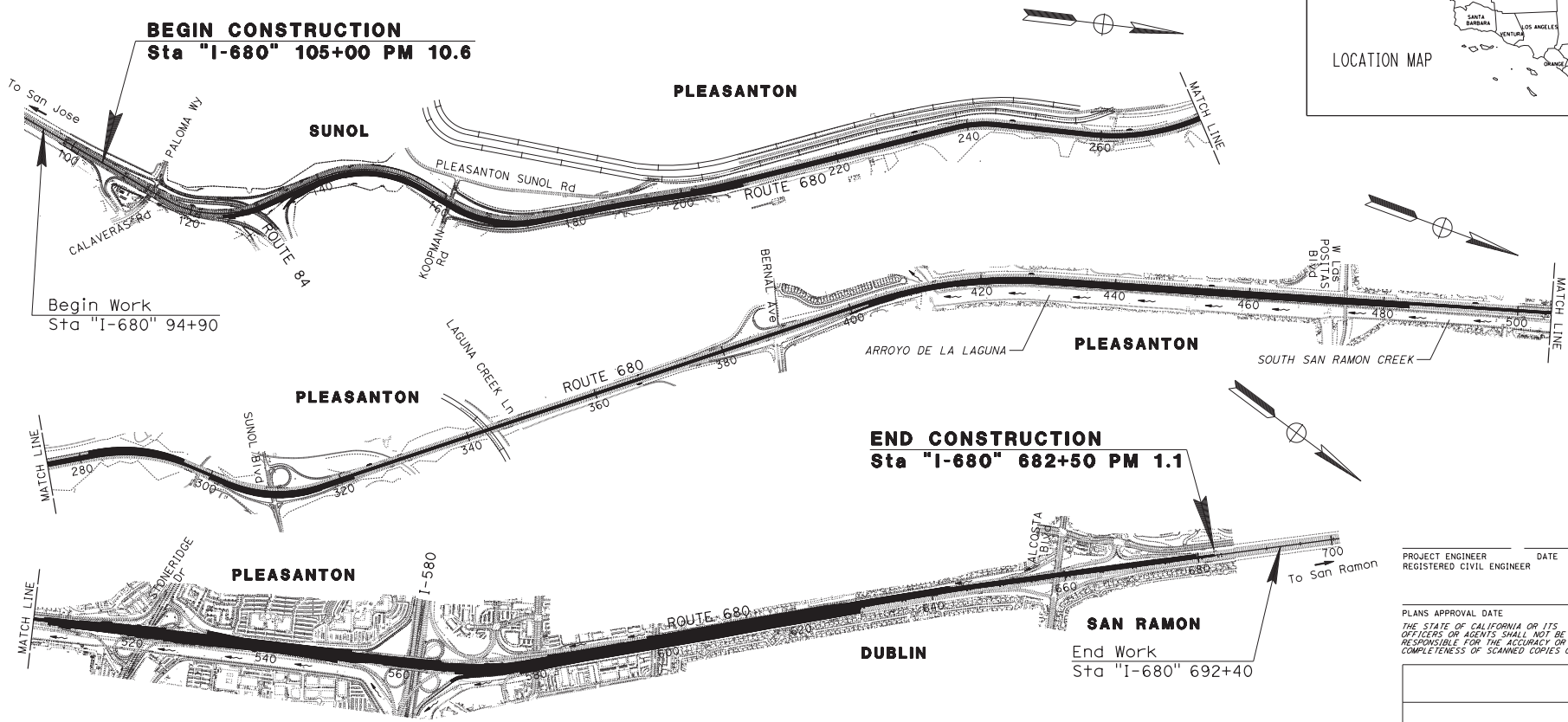
STATE HIGHWAY

IN ALAMEDA COUNTY AND CONTRA COSTA COUNTY
IN AND NEAR SUNOL, PLEASANTON, DUBLIN AND SAN RAMON
ON ROUTE 680 FROM 0.7 MILES SOUTH OF SCOTTS CORNER SEPARATION
TO 1.1 MILES NORTH OF ALCOSTA BOULEVARD OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2018

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	ALA	680	R10.6/R21.9		
	CC	680	R0.0/R1.1		

LOCATION MAP



NO SCALE

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

CONTRACT No.	04-0Q3000
PROJECT ID	0418000069

LAST REVISION 11-18-19
DATE PLOTTED => 18-NOV-2019
TIME PLOTTED => 15:06

APPROVED AS TO IMPACT ON STATE FACILITIES AND CONFORMANCE WITH APPLICABLE STATE STANDARDS AND PRACTICES AND THAT TECHNICAL OVERSIGHT WAS PERFORMED.

CONSULTANT DESIGN MANAGER RAMSEY HISSEN | CALTRANS DESIGN OVERSIGHT APPROVAL | REGISTRATION No. | LICENSE Exp DATE | DATE SIGNED

BORDER LAST REVISED 10/4/2013 | CALTRANS WEB SITE IS: HTTP//WWW.DOT.CA.GOV/ | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => josh.sun DGN FILE => Title Sheet from PSR-PDS.dgn | UNIT 0000 | PROJECT NUMBER & PHASE 04180000690

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

AECOM
300 Lake Drive
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

NOTES:

1. SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS
2. FOR LOCATIONS, LIMITS AND DETAILS OF RETAINING WALLS, SEE STRUCTURES PLANS.
3. MAINLINE WORK BY PAVEMENT REHABILITATION PROJECT (EA 04-0J620), UNLESS OTHERWISE NOTED.
4. USE LCB INSTEAD OF CI 2 AB FOR PAVEMENT SECTION WIDTHS LESS THAN 8'.

ABBREVIATIONS:

RS	RUMBLE STRIP
LL	LANE LINE
RHMA-G	RUBBERIZED HOT MIX ASPHALT (GAP GRADED)
RHMA-O	RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)
RAC-G	RUBBERIZED ASPHALT CONCRETE (GAP GRADED)
RAC-O	RUBBERIZED ASPHALT CONCRETE (OPEN GRADED)
PJCP	PRECAST JOINTED CONCRETE PAVEMENT
LCBRS	LEAN CONCRETE BASE RAPID SETTING
GPI	GEOSYNTHETIC PAVEMENT INTERLAYER

ROUTE 680 DESIGN DESIGNATION:

ALCOSTA TO I-580

NORTHBOUND:

ADT (2025)	108,000	D = 53%
ADT (2045)	139,000	T = 4%
DHV	21,266	V = 65 MPH
ESAL	133,913,266	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

SOUTHBOUND:

ADT (2025)	119,000	D = 53%
ADT (2045)	151,000	T = 4%
DHV	21,266	V = 65 MPH
ESAL	133,913,266	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

I-580 TO STONERIDGE

NORTHBOUND:

ADT (2025)	98,000	D = 54%
ADT (2045)	119,000	T = 4%
DHV	16,223	V = 65 MPH
ESAL	106,668,843	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

SOUTHBOUND:

ADT (2025)	89,000	D = 54%
ADT (2045)	112,000	T = 4%
DHV	16,223	V = 65 MPH
ESAL	106,668,843	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

STONERIDGE TO BERNAL

NORTHBOUND:

ADT (2025)	88,000	D = 52%
ADT (2045)	107,000	T = 4%
DHV	15,178	V = 65 MPH
ESAL	97,895,215	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

SOUTHBOUND:

ADT (2025)	84,000	D = 52%
ADT (2045)	105,000	T = 4%
DHV	15,178	V = 65 MPH
ESAL	97,895,215	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

SUNOL TO KOOPMAN

NORTHBOUND:

ADT (2025)	80,000	D = 53%
ADT (2045)	100,000	T = 4%
DHV	13,256	V = 65 MPH
ESAL	92,353,977	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

SOUTHBOUND:

ADT (2025)	83,000	D = 53%
ADT (2045)	100,000	T = 4%
DHV	13,256	V = 65 MPH
ESAL	92,353,977	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

ANDRADE TO CALAVERAS

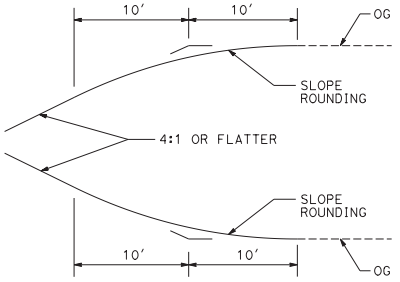
NORTHBOUND:

ADT (2025)	94,000	D = 51%
ADT (2045)	119,000	T = 4%
DHV	15,739	V = 65 MPH
ESAL	112,671,852	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

SOUTHBOUND:

ADT (2025)	102,000	D = 51%
ADT (2045)	125,000	T = 4%
DHV	15,739	V = 65 MPH
ESAL	112,671,852	TI - INNER LANE(S) = 12 TI - OUTER 2 LANES = 16

PAVEMENT CLIMATE REGION: INLAND VALLEY



TYPICAL SLOPE ROUNDING DETAIL

PROPOSED TYPICAL PAVEMENT STRUCTURE SECTIONS (PRELIMINARY):

[1] 0.10' RHMA-O
0.20' RHMA-G
1.60' TO 1.75' HMA
0.50' CI 2 AB

[2] 0.10' RHMA-O
0.20' RHMA-G
1.20' TO 1.35' HMA
0.50' CI 2 AB

[3] 0.10' RHMA-O
0.20' RHMA-G
1.60' TO 1.80' HMA
0.50' CI 2 AB

[4] 1.15' JPCP
0.25' HMA-A
0.70' CI 4 AS

[5] 0.95' JPCP
0.25' HMA-A
0.60' CI 4 AS

[6] 1.15' TO 1.20' JPCP
0.25' HMA-A
0.70' CI 4 AS

[7] 0.10' RHMA-O
0.20' RHMA-G
1.60' TO 1.75' HMA
0.25' ATPB
0.50' CI 2 AB

[8] 0.10' RHMA-O
0.20' RHMA-G
1.60' TO 1.80' HMA
0.25' ATPB
0.50' CI 2 AB

EXISTING STRUCTURAL SECTIONS:

(A) 0.75' PJCP
0.35' LCBRS
0.05' LCB
1.00' CI 1 AS

(A1) 0.75' PJCP
0.35' LCBRS
0.90' CI 1 AS

(B) 0.20' AC (TYPE A)
Var CI 2 AB
0.50'-1.55' CI 1 AS

(C) 0.15' RAC-G
GPI (PAVING GRID)
0.10' AC (TYPE A)
0.40'-0.75' CI 2 AB
1.00' CI 1 AS

(D) 0.10' RAC-O
0.15' RAC-G
GPI (PAVING GRID)
1.25' AC (TYPE A)
0.50' CI 4 AS

(D1) 0.10' RAC-O
0.15' RAC-G
GPI (PAVING GRID)
0.25' AC (TYPE A)
PRF
0.50' AC (TYPE A)
0.67' CTB (TYPE A)
1.00' CI 4 AS

(E) 0.10' RAC (TYPE O)
0.15' RAC (TYPE G)
0.20' AC (TYPE A)
1.55' CI 4 AS

(F) 0.15' RAC-G
GPI (PAVING GRID)
0.60' AC (TYPE A)
0.40'-0.75' CI 2 AB
1.00' CI 4 AS

(G) 0.75' PJCP
0.35' LCBRS
0.05' LCB
0.60' CI 4 AS

(G1) 0.75' PJCP
0.35' LCBRS
0.90' CI 1 AS

(H) 0.20' AC (TYPE A)
1.55' CI 4 AS

(I) 0.15' RAC-G
GPI (PAVING GRID)
0.10' AC (TYPE A)
0.40'-0.75' CI 2 AB
1.00' CI 4 AS

(J) 0.10' RAC-O
0.15' RAC-G
GPI (PAVING GRID)
0.30' AC (TYPE A)
0.75' CTB (TYPE A)
0.67' LT

(K) 0.10' RAC-O
0.15' RAC-G
GPI (PAVING GRID)
0.50' AC (TYPE A)
0.25' ATPB
0.25' ACB (TYPE A)
1.80' CI 4 AS

(L) 0.10' RAC-O
0.15' RAC-G
GPI (PAVING GRID)
0.40' AC (TYPE A)
0.25' ATPB
0.35' ACB (TYPE A)
1.75' CI 4 AS

(M) 0.55' AC (TYPE A)
0.75' CTB (TYPE A)
0.67' LT

(N) 0.15' RAC-G
GPI (PAVING GRID)
0.60' AC (TYPE A)
0.25' ATPB
0.25' ACB (TYPE A)
1.80' CI 4 AS

(O) 0.10' RAC-O
0.20 RAC-G
1.75 AC (TYPE A)
0.50 CI 2 AB

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-1

REVISED BY	DATE REVISED	CALCULATED-DESIGNED BY	CHECKED BY	CONSULTANT FUNCTIONAL SUPERVISOR
.	.	M. FALLAHA	M. GOGOSANU	RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:43
11-18-19

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

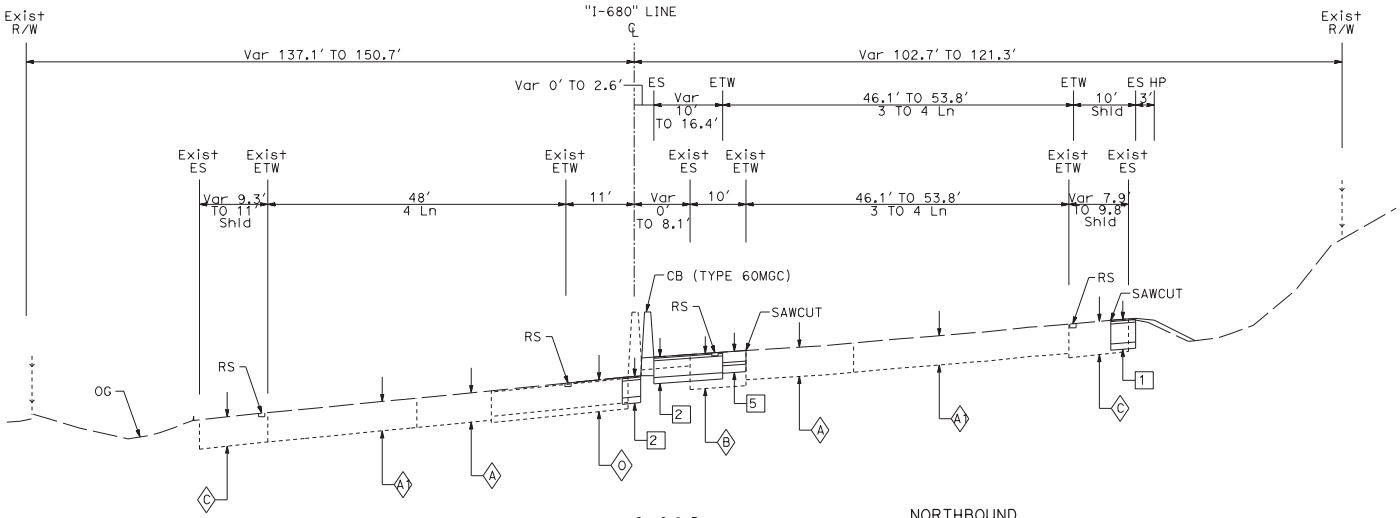
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

AECOM
300 Lake Drive
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

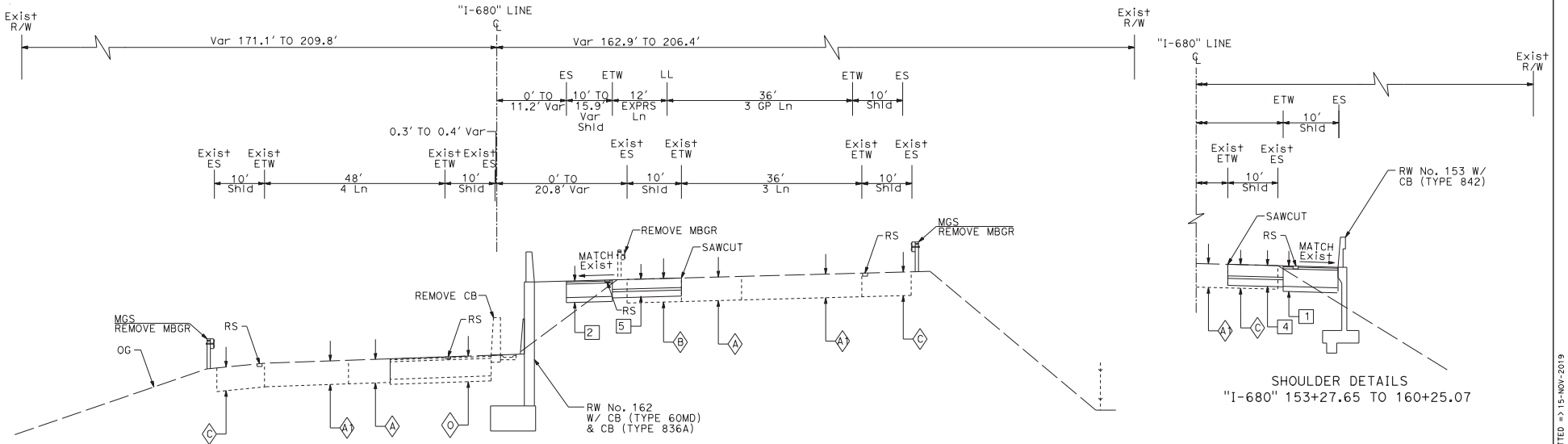


SOUTHBOUND

I-680

"I-680" 170+90.00 TO 175+93.83

NORTHBOUND



SOUTHBOUND

I-680

"I-680" 163+14.87 TO 170+90.00

NORTHBOUND

SHOULDER DETAILS

"I-680" 153+27.65 TO 160+25.07

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-2

REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:43

BORDER LAST REVISED 7/2/2010

USERNAME => josh.sun
DGN FILE => 00000ca002.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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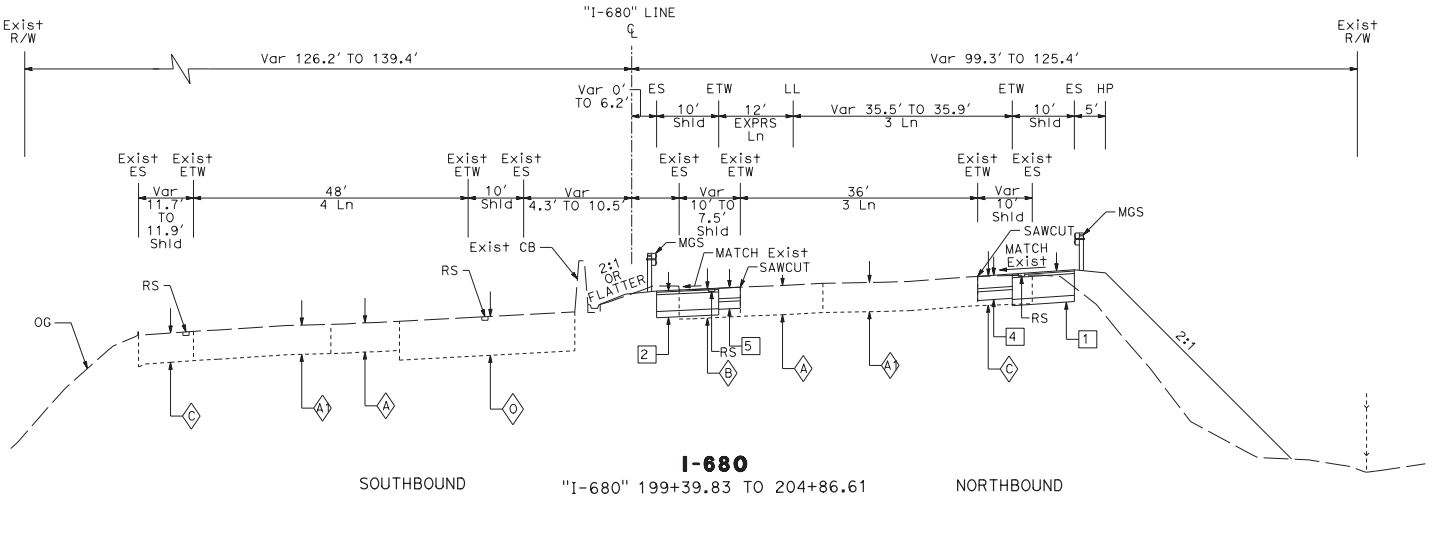
REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

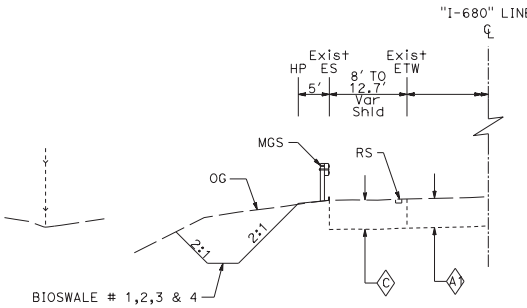
AECOM
300 Lake Drive
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607



I-680

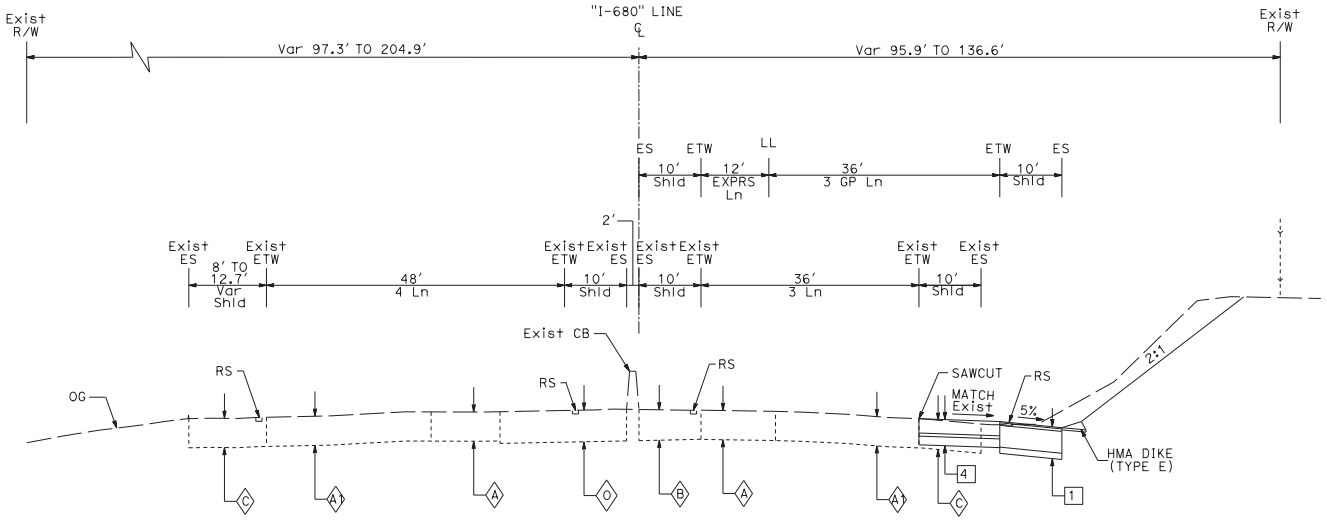
SOUTHBOUND "I-680" 199+39.83 TO 204+86.61 NORTHBOUND



SOUTHBOUND SHOULDER DETAIL

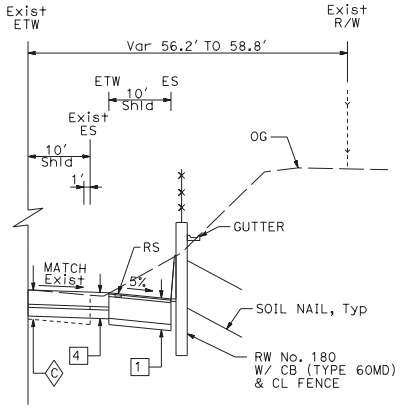
I-680

"I-680" 173+84.09 TO 184+53.44
"I-680" 199+59.35 TO 215+29.95



I-680

SOUTHBOUND "I-680" 175+93.83 TO 199+39.83 NORTHBOUND



NORTHBOUND SHOULDER DETAIL

I-680

"I-680" 179+49.87 TO 184+19.90

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-3

CALCULATED-DESIGNED BY	M. FALLAHA			
CHECKED BY	M. GOGOSANU			
CONSULTANT FUNCTIONAL SUPERVISOR	RAMSEY HISSEN			
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans	REVISED BY	.	.
		DATE REVISED	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:43

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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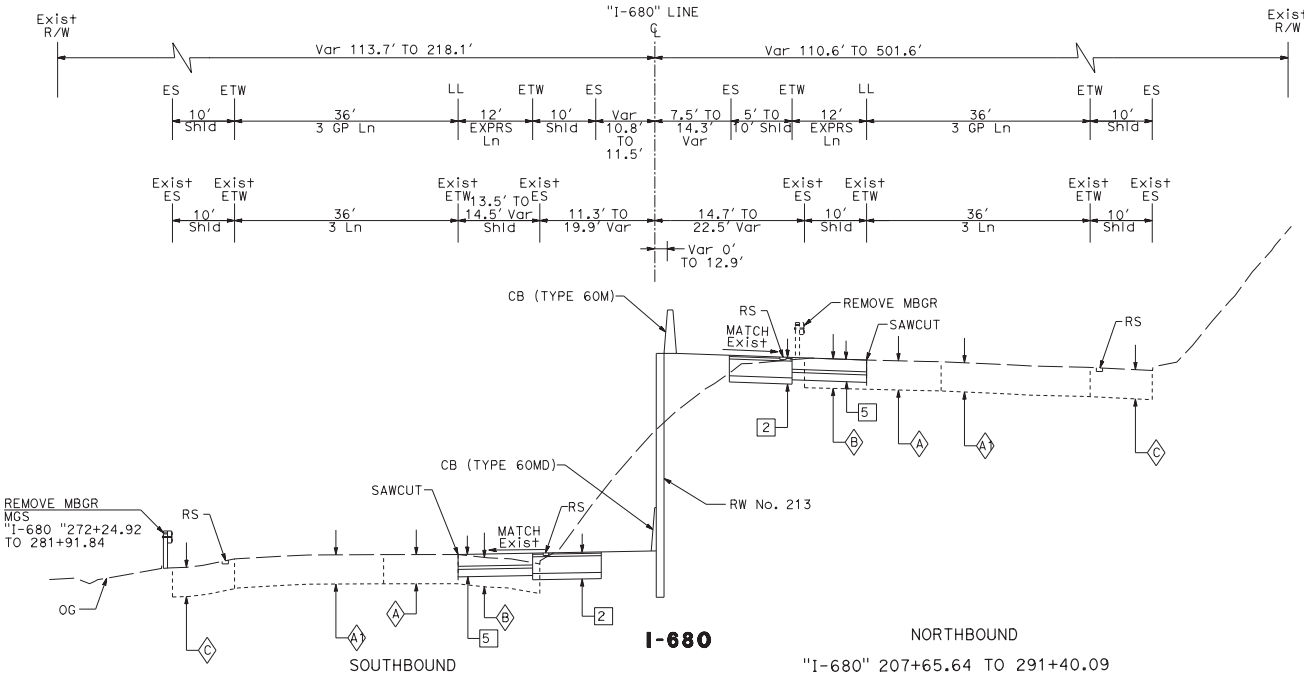
REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

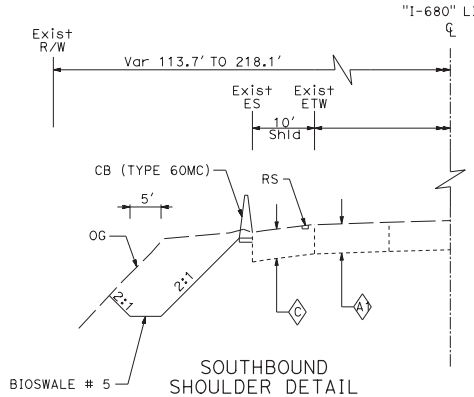
AECOM 300 Lake Drive Suite 400 Oakland, CA 94612	ALAMEDA COUNTY TRANSPORTATION COMMISSION 1111 Broadway, Suite 800 Oakland, CA 94607



I-680

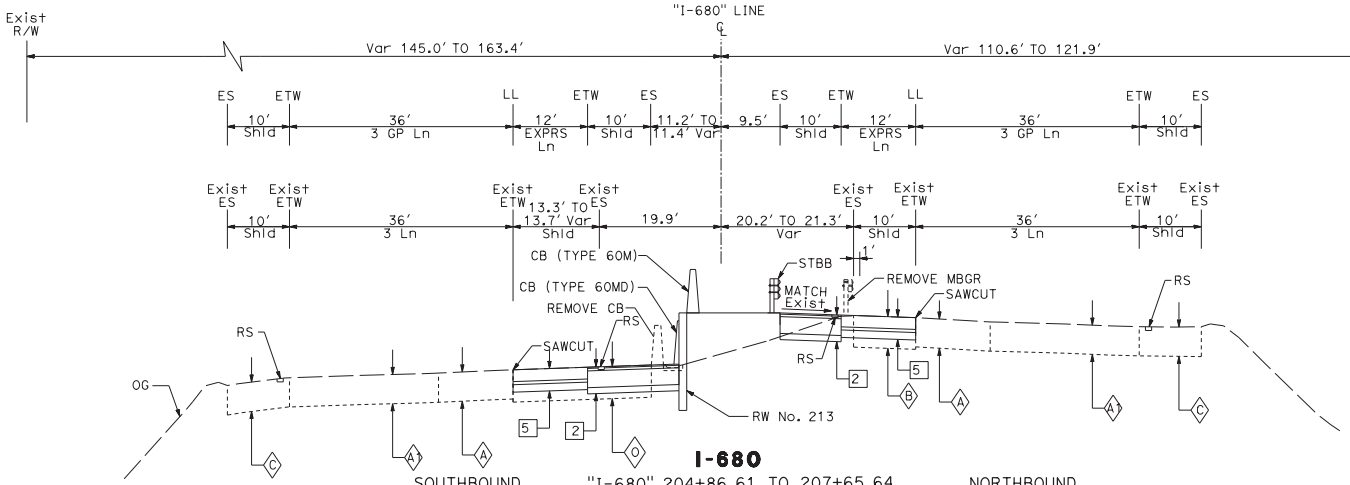
"I-680" 207+65.64 TO 281+91.84

"I-680" 207+65.64 TO 291+40.09



I-680

"I-680" 254+64.29 TO 257+17.14



I-680

"I-680" 204+86.61 TO 207+65.64

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-4

REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY	CHECKED BY
M. FALLAHA	M. GOGOSANU

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION => 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:43

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca004.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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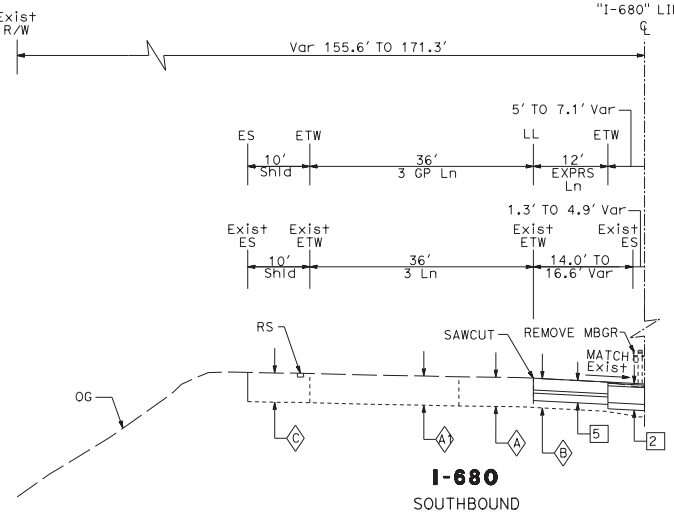
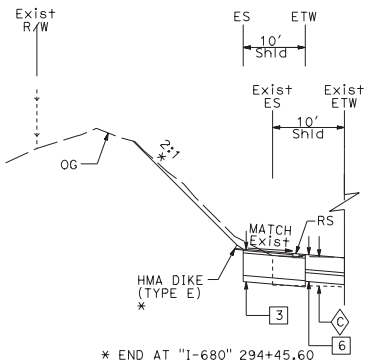
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

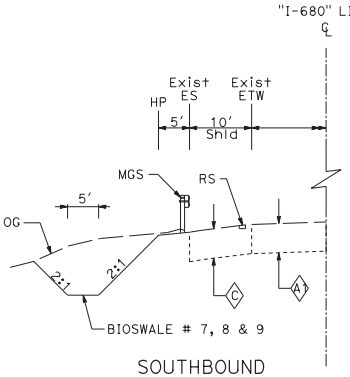


I-680
SOUTHBOUND
"I-680" 295+16.91 TO 297+33.17



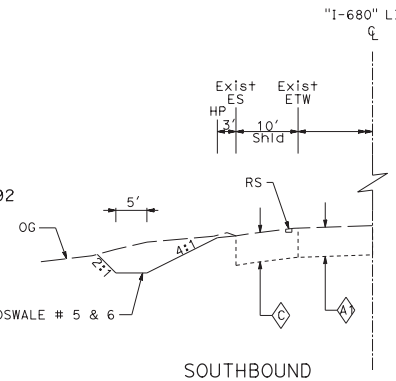
* END AT "I-680" 294+45.60

I-680 SOUTHBOUND
SHOULDER DETAIL
"I-680" 289+04.00 TO 295+16.91



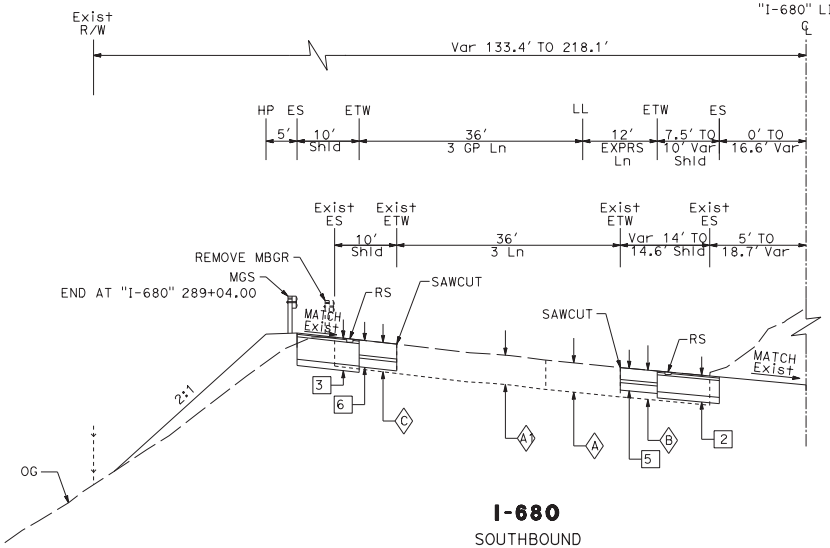
SOUTHBOUND
SHOULDER DETAIL

I-680
"I-680" 260+57.52 TO 272+24.92

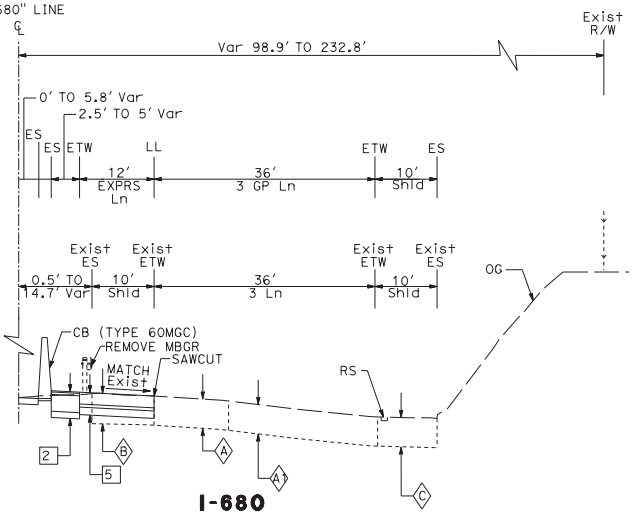


SOUTHBOUND
SHOULDER DETAIL

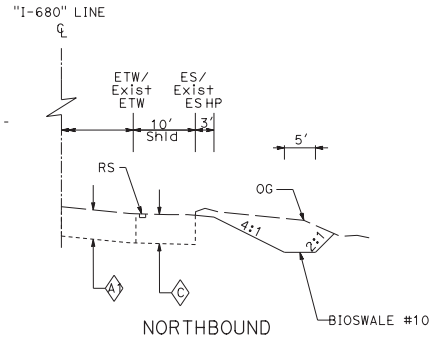
I-680
"I-680" 250+83.17 TO 254+64.29
"I-680" 258+07.76 TO 260+57.52



I-680
SOUTHBOUND
"I-680" 281+91.84 TO 295+16.91



I-680
NORTHBOUND
"I-680" 291+40.14 TO 297+33.17



NORTHBOUND
SHOULDER DETAIL

I-680
"I-680" 283+48.82 TO 288+69.51

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-5

REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:43

BORDER LAST REVISED 7/2/2010
USERNAME => josh.sun
DGN FILE => 00000ca005.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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ALAMEDA COUNTY TRANSPORTATION COMMISSION
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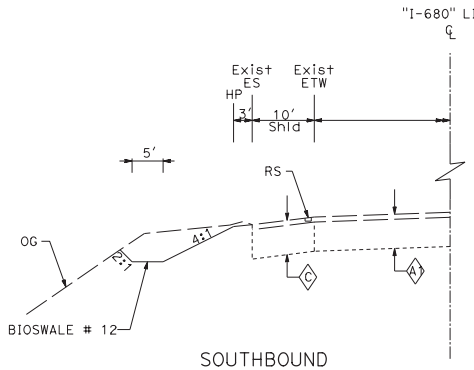
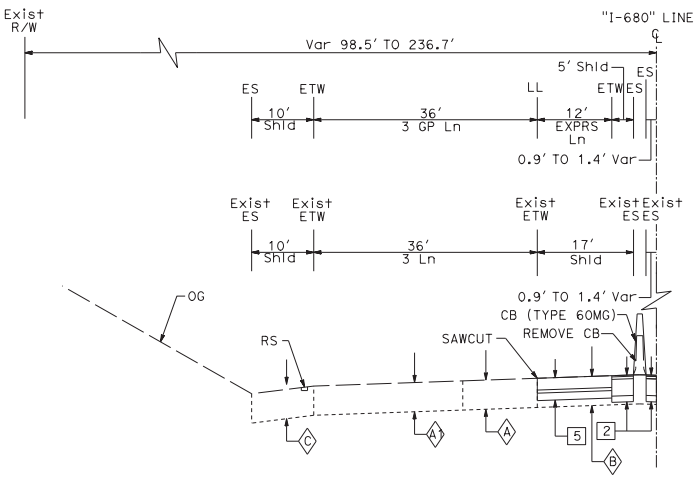
Oakland, CA 94607



SOUTHBOUND
SHOULDER DETAIL

I-680

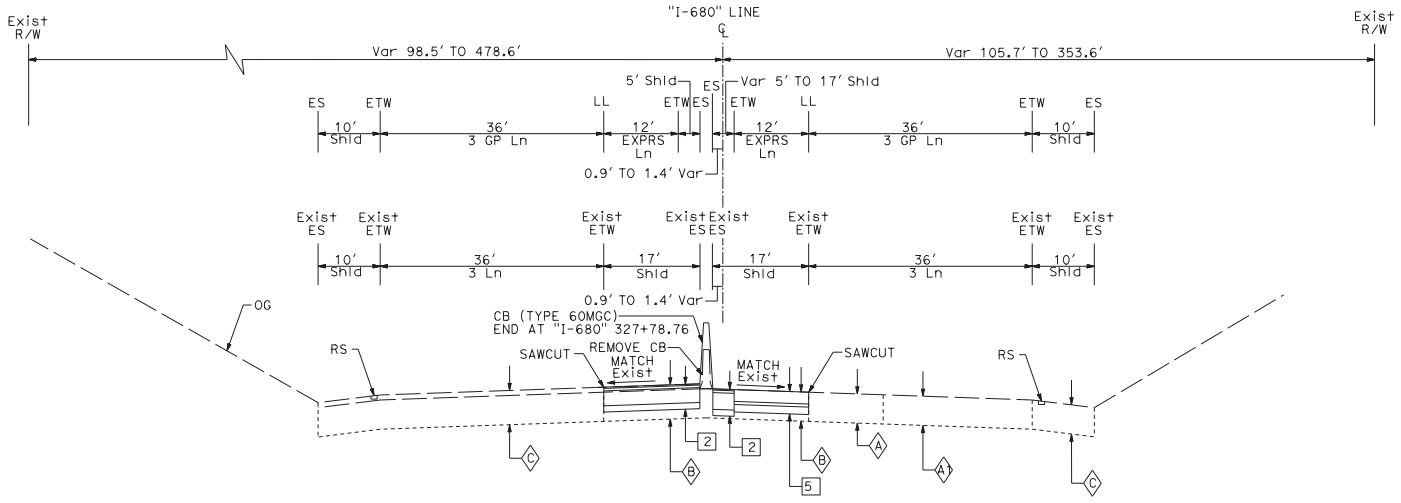
"I-680" 312+16.61 TO 316+10.62



I-680

SOUTHBOUND

"I-680" 329+61.34 TO 341+96.69



I-680

SOUTHBOUND

"I-680" 299+02.34 TO 308+77.43
"I-680" 310+48.37 TO 327+78.76

NORTHBOUND

"I-680" 299+02.34 TO 306+27.06
"I-680" 312+82.39 TO 327+94.03
"I-680" 329+61.34 TO 341+99.69

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-6

REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

BORDER LAST REVISED 7/2/2010

USERNAME => josh.sun
DGN FILE => 00000ca006.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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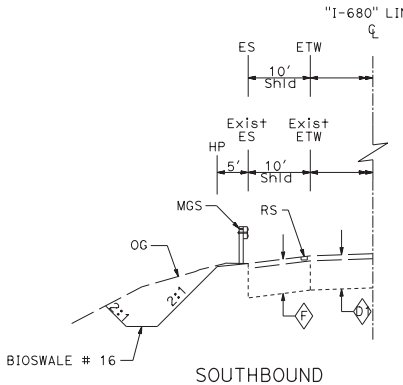
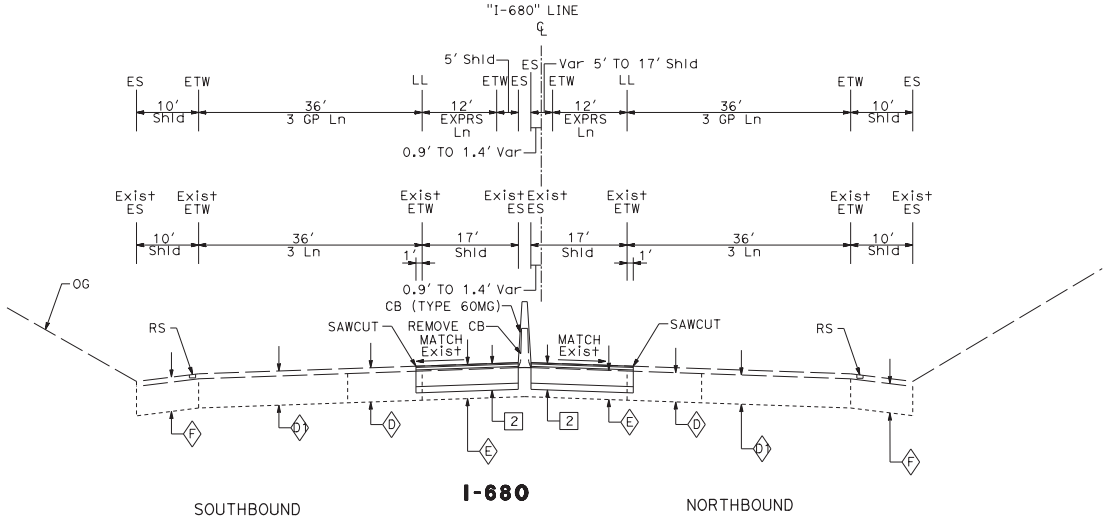
ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607



SOUTHBOUND
SHOULDER DETAIL

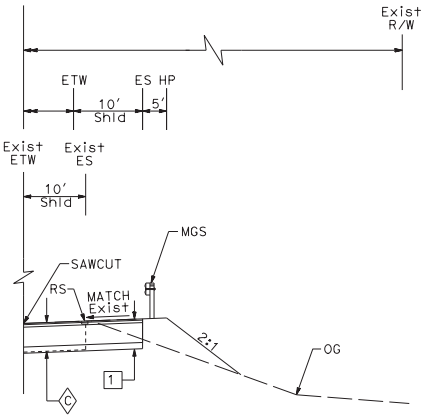
I-680

"I-680" 389+47.59 TO 397+57.70

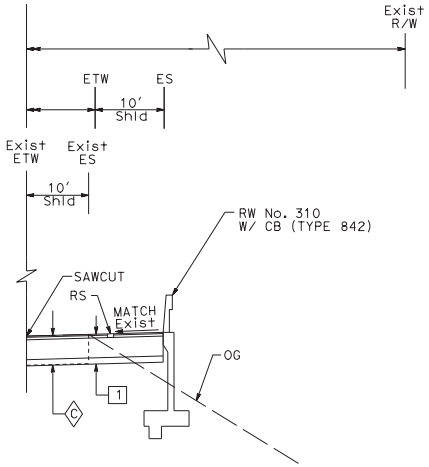


I-680

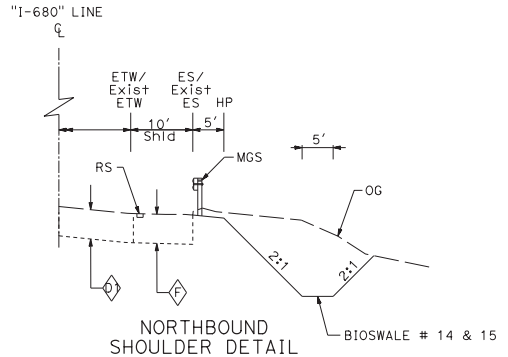
"I-680" 345+00.00 TO 416+27.04



SHOULDER DETAILS
"I-680" 302+95.10 TO 308+95.30
"I-680" 315+31.65 TO 317+40.00



SHOULDER DETAILS
"I-680" 310+98.04 TO 315+31.65



NORTHBOUND
SHOULDER DETAIL

I-680

"I-680" 368+82.36 TO 374+56.67
"I-680" 383+35.52 TO 386+20.25

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-7

REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY	CHECKED BY
M. FALLAHA	M. GOGOSANU

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

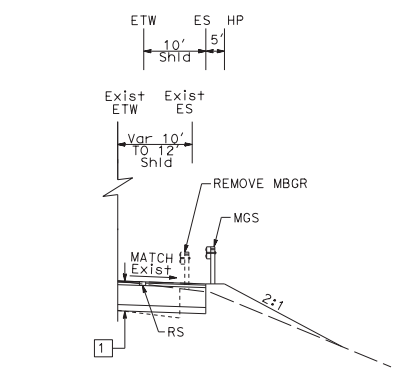
BORDER LAST REVISED 7/2/2010

USERNAME => josh.sun
DGN FILE => 00000ca007.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

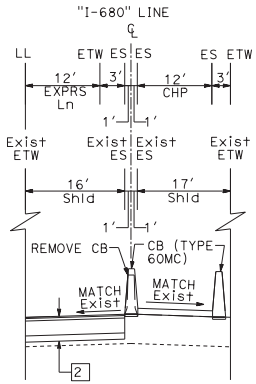
PROJECT NUMBER & PHASE 0000000000



NORTHBOUND
SHOULDER DETAIL

I-680

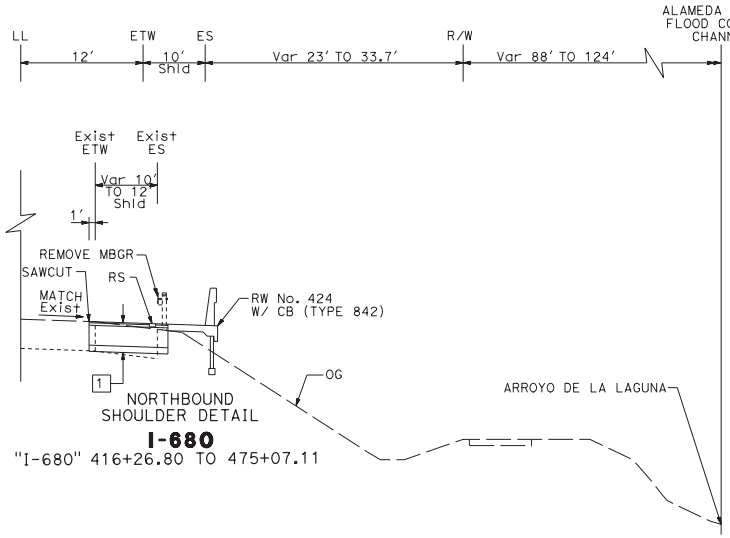
"I-680" 416+27.04 TO 417+25.00



CHP ENFORCEMENT AREA
DETAIL

I-680

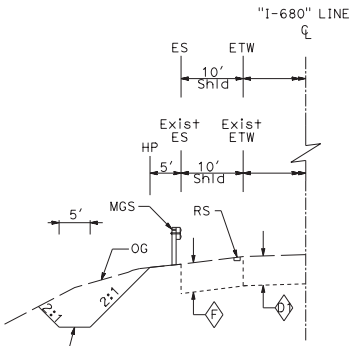
"I-680" 454+42.50 TO 455+57.50



NORTHBOUND
SHOULDER DETAIL

I-680

"I-680" 416+26.80 TO 475+07.11

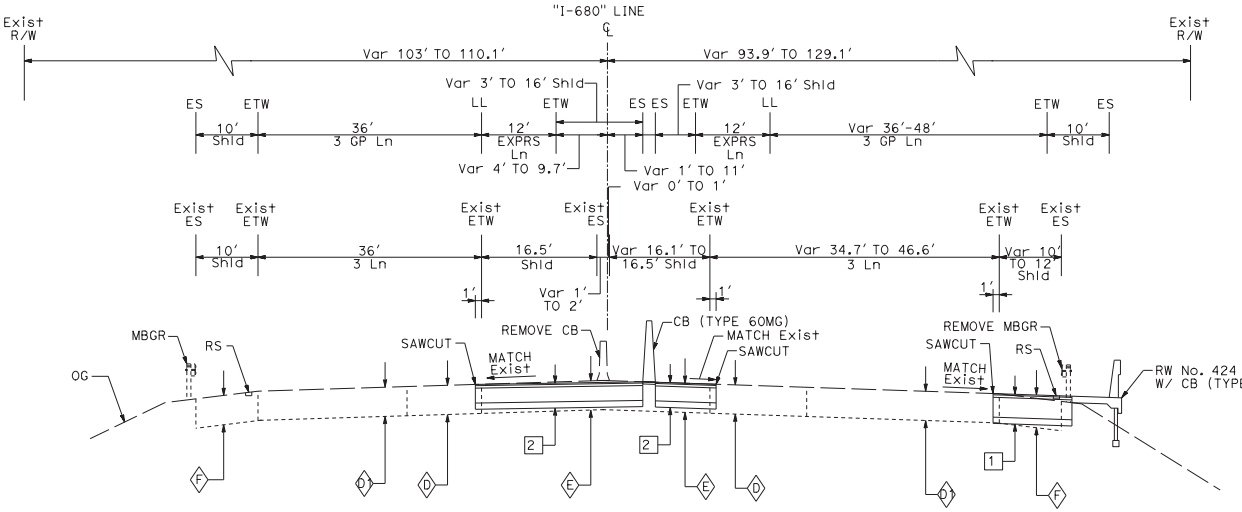


BIOSWALE # 17, 18, 19,
20, 21, 22, 23,
24, 25, 26 & 27

SOUTHBOUND
SHOULDER DETAIL

I-680

"I-680" 430+00.00 TO 508+69.35



SOUTHBOUND NORTHBOUND

I-680

"I-680" 416+27.04 TO 475+07.11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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REVISED BY	DATE REVISED
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CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-8

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

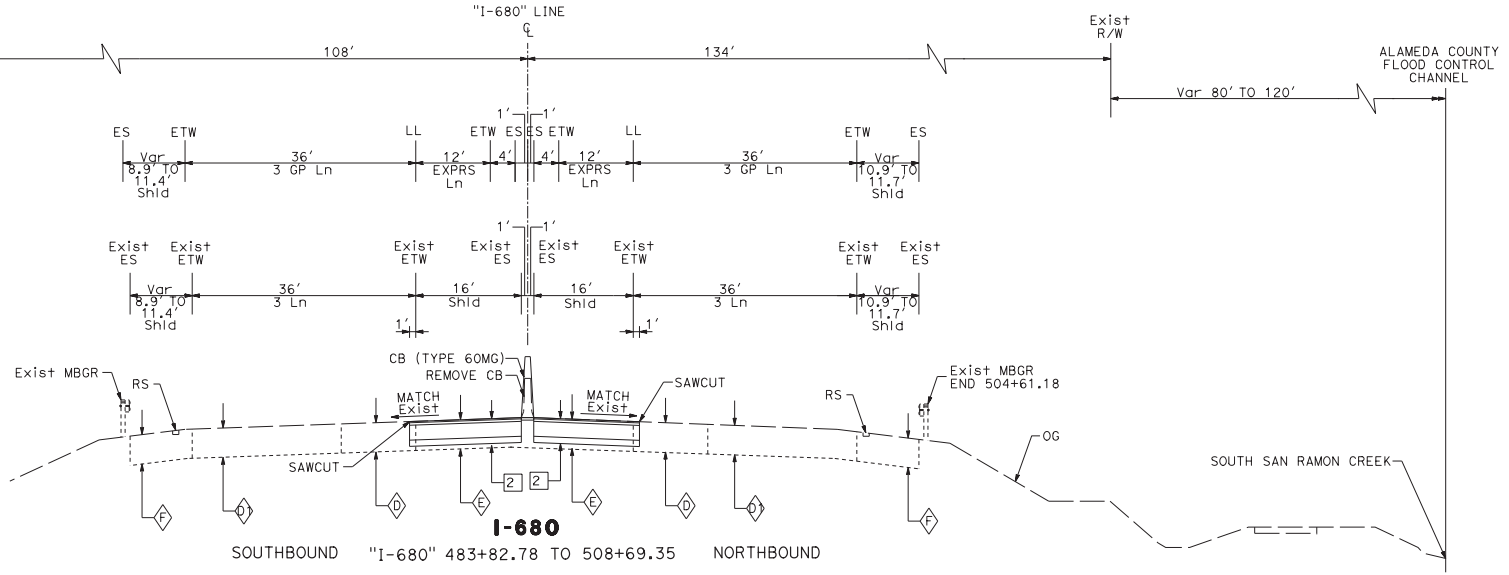
BORDER LAST REVISED 7/2/2010

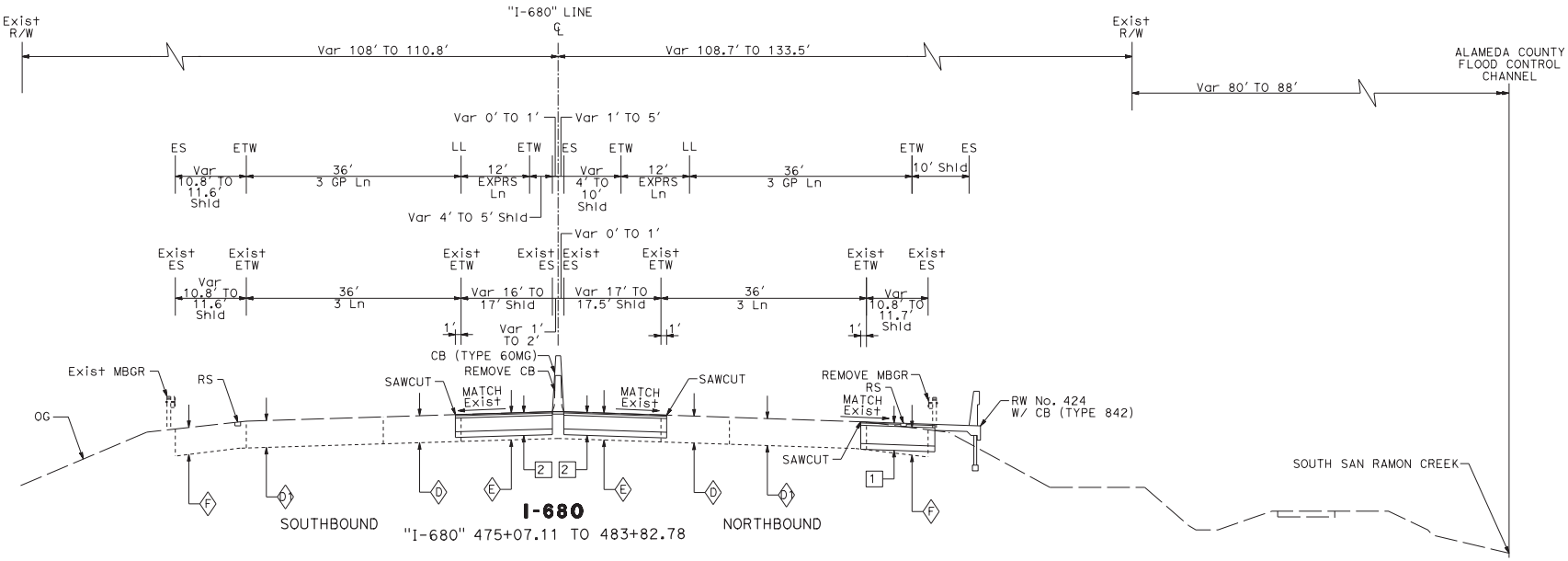
USERNAME => josh.sun
DGN FILE => 00000ca008.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 0000000000





Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-9

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

CALCULATED-DESIGNED BY: M. FALLAHA

CHECKED BY: M. GOGOSANU

REVISED BY: .

DATE REVISED: .

LAST REVISION: DATE PLOTTED => 15-NOV-2019
11-18-19 TIME PLOTTED => 16:44

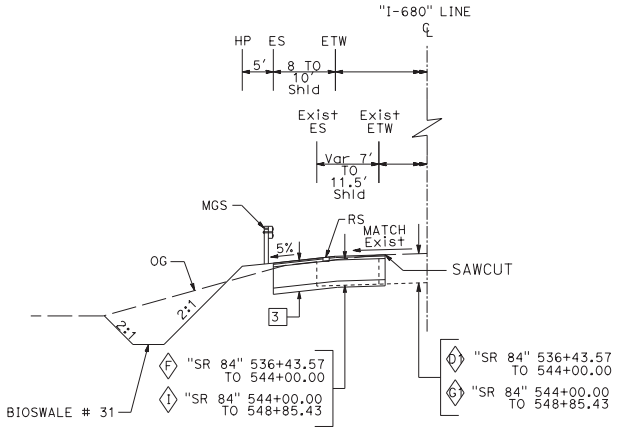
BORDER LAST REVISED 7/2/2010

USERNAME => josh.sun
DGN FILE => 00000ca009.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

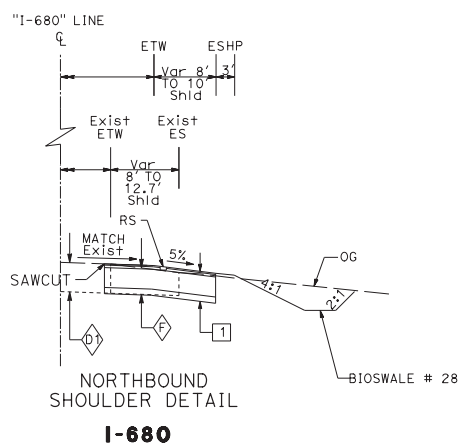
PROJECT NUMBER & PHASE 0000000000



SOUTHBOUND SHOULDER DETAIL

I-680

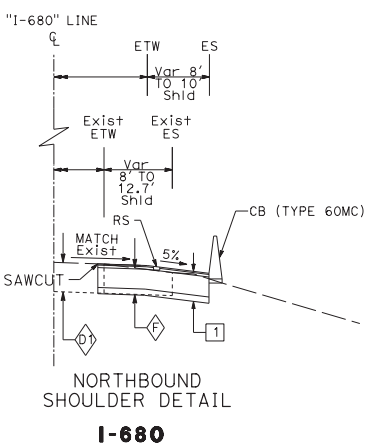
"I-680" 536+43.57 TO 548+85.43



NORTHBOUND SHOULDER DETAIL

I-680

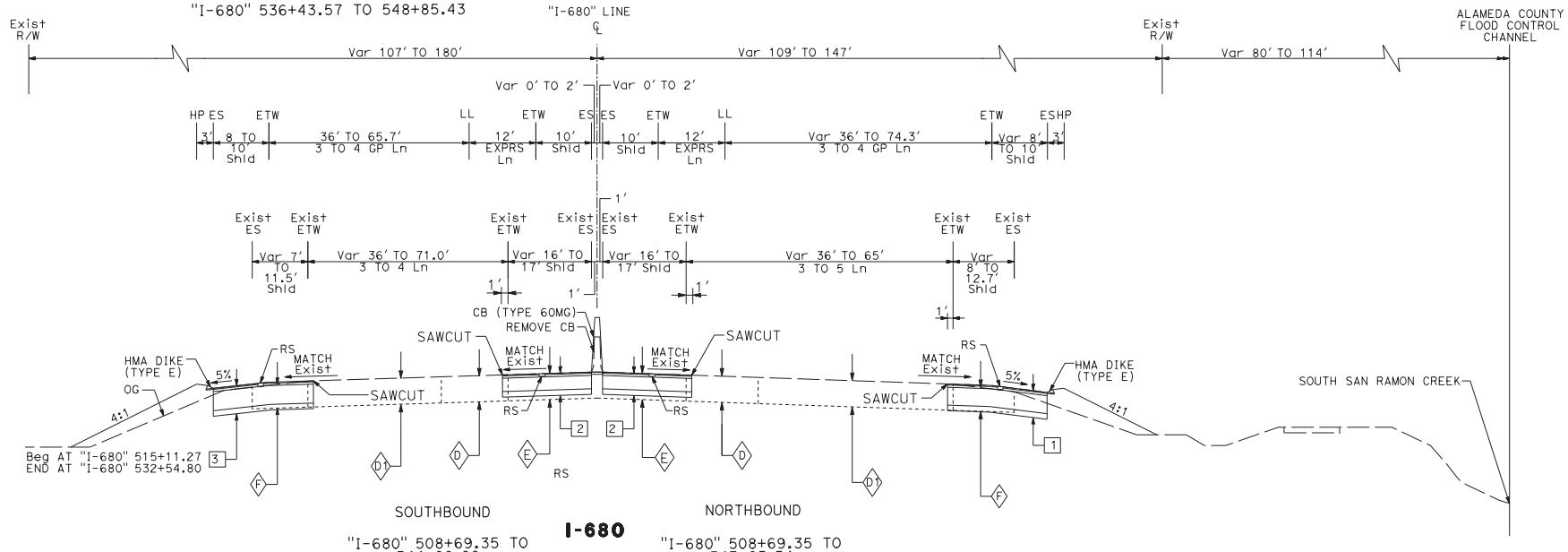
"I-680" 510+58.98 TO 518+15.11



NORTHBOUND SHOULDER DETAIL

I-680

"I-680" 535+99.69 TO 543+68.13



SOUTHBOUND

"I-680" 508+69.35 TO 544+00.00

I-680

NORTHBOUND

"I-680" 508+69.35 TO 543+85.54

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-10

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

AECOM
300 Lake Drive
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION: DATE PLOTTED => 15-NOV-2019
11-18-19 TIME PLOTTED => 16:44

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca010.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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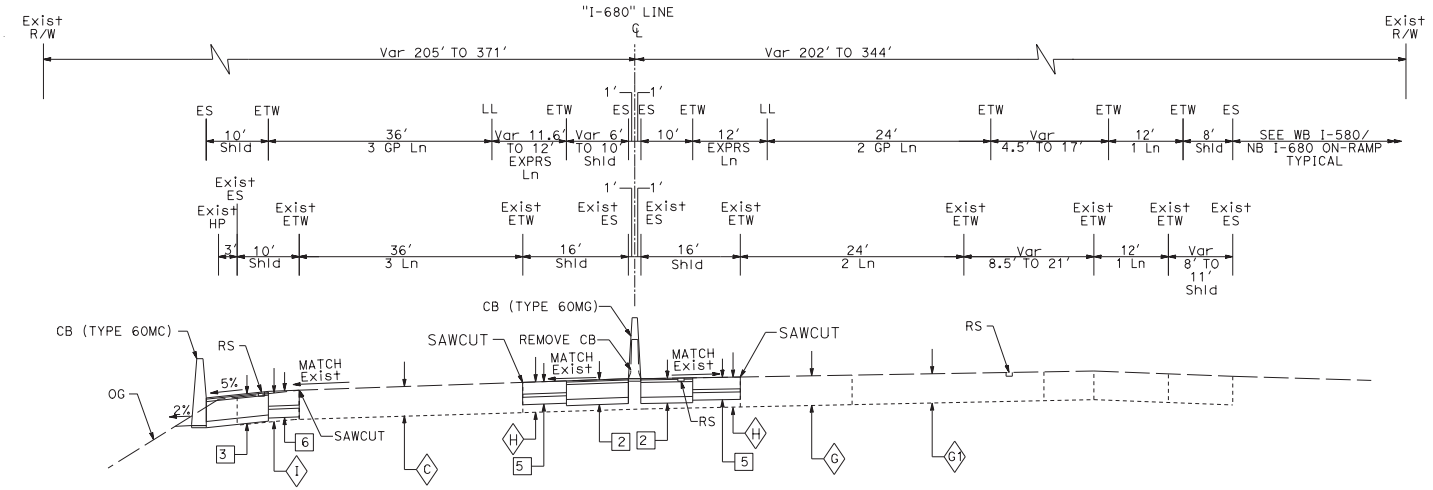
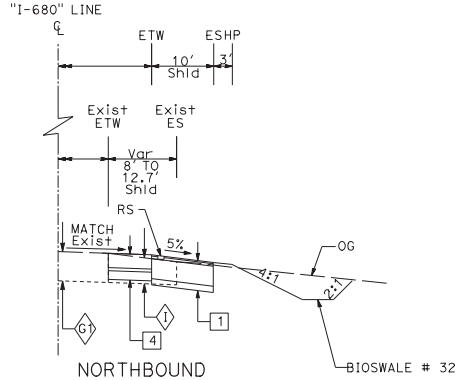
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607



SOUTHBOUND **I-680** NORTHBOUND

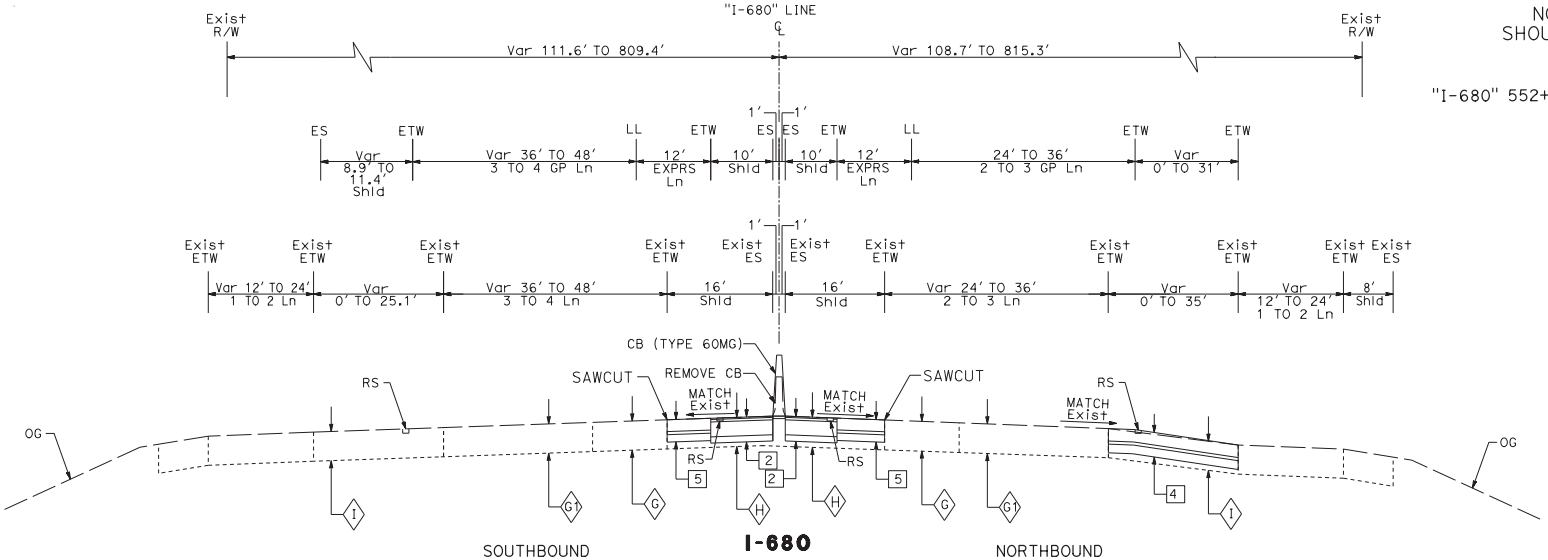
"I-680" 566+20.60 TO 570+35.00



NORTHBOUND SHOULDER DETAIL

I-680

"I-680" 552+40.14 TO 558+37.33



SOUTHBOUND **I-680** NORTHBOUND

"I-680" 544+00.00 TO 560+39.80
"I-680" 563+64.16 TO 568+41.48

"I-680" 543+85.54 TO 560+39.80
"I-680" 563+64.16 TO 566+41.48

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-11

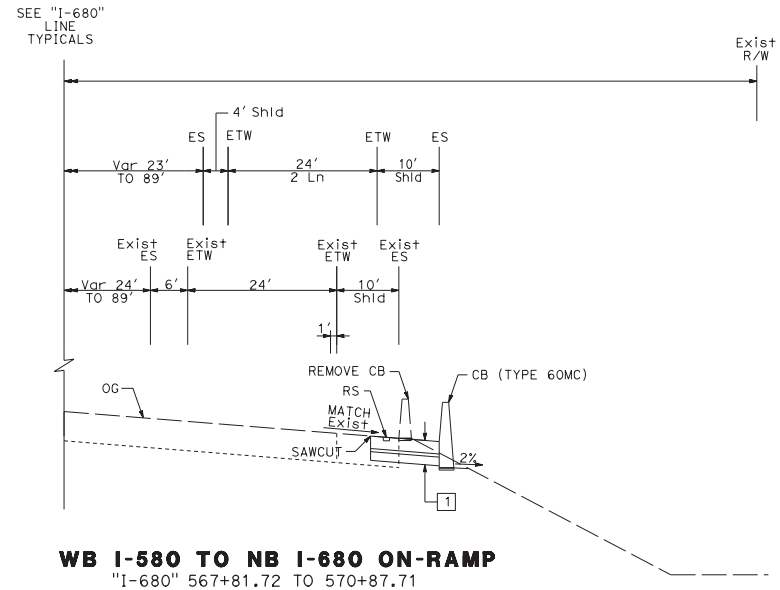
REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

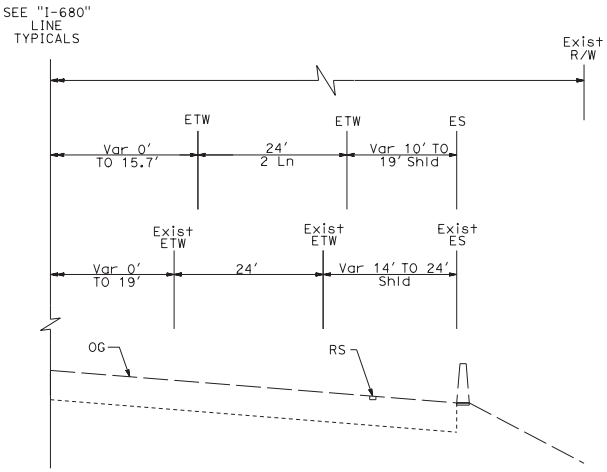
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

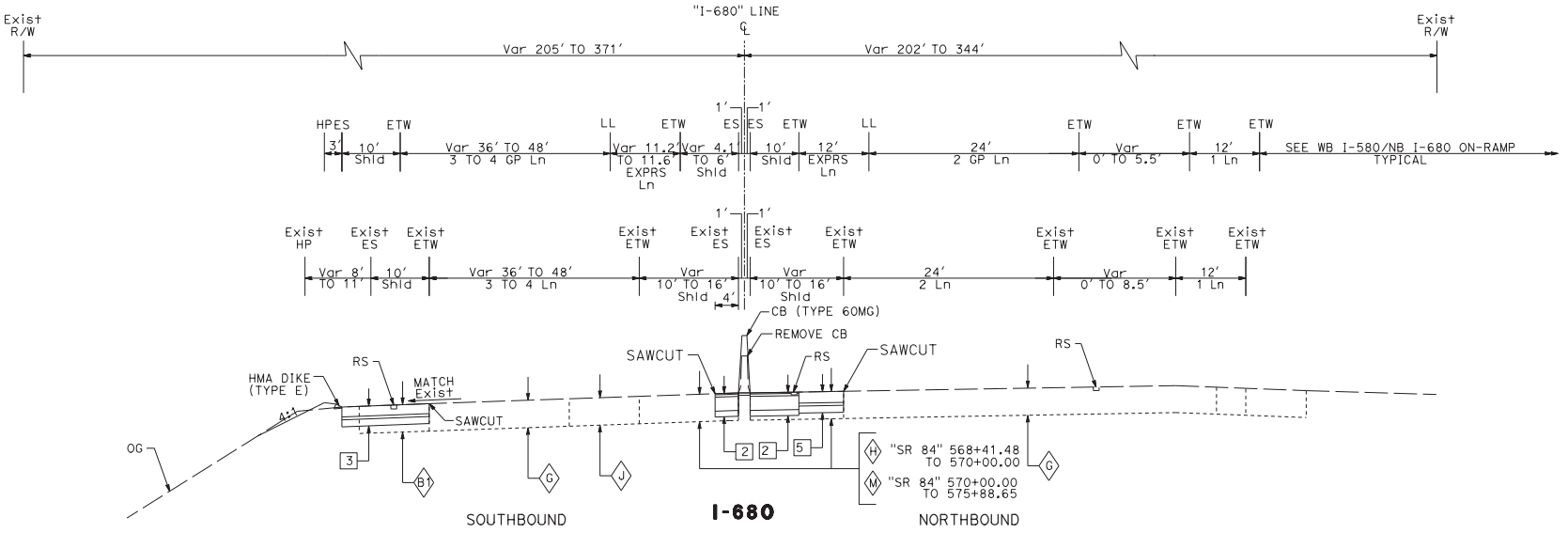
BORDER LAST REVISED 7/2/2010
USERNAME => josh.sun
DGN FILE => 00000ca011.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 0000000000



WB I-580 TO NB I-680 ON-RAMP
"I-680" 567+81.72 TO 570+87.71



WB I-580 TO NB I-680 ON-RAMP
"I-680" 570+87.71 TO 575+83.35



"I-680" 568+41.48 TO 575+88.65

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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300 Lake Drive
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU	.	.

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION => 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca012.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

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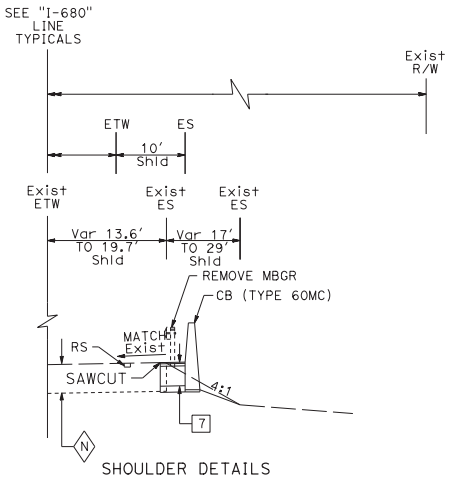
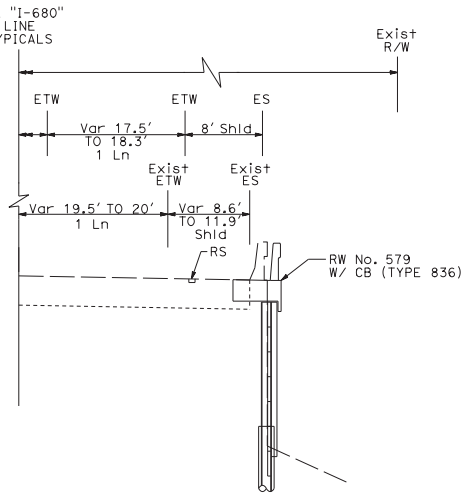
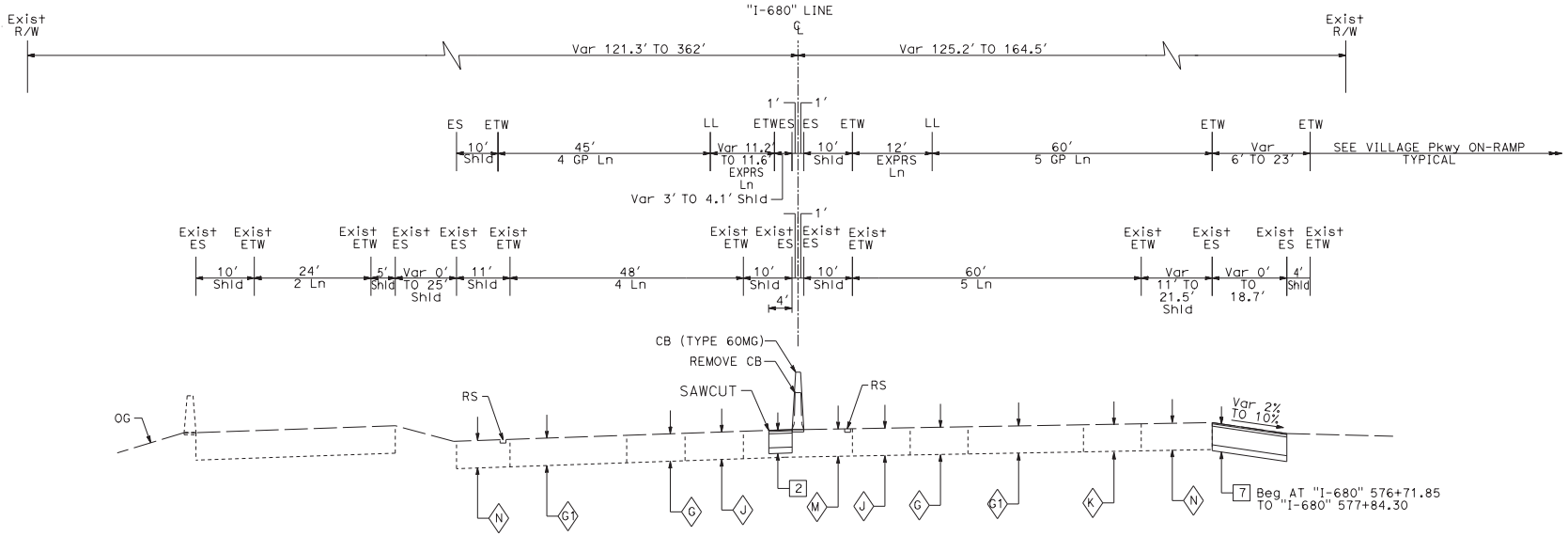
1111 Broadway, Suite 800
Oakland, CA 94607



SHOULDER DETAILS
"I-680" 575+85.32 TO 576+71.85



VILLAGE Pkwy ON-RAMP
"I-680" 578+64.63 TO 578+89.36



SOUTHBOUND

I-680
"I-680" 575+88.65 TO 579+46.08

NORTHBOUND

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS
NO SCALE

X-13

CALCULATED-DESIGNED BY	CHECKED BY
M. FALLAHA	M. GOGOSANU

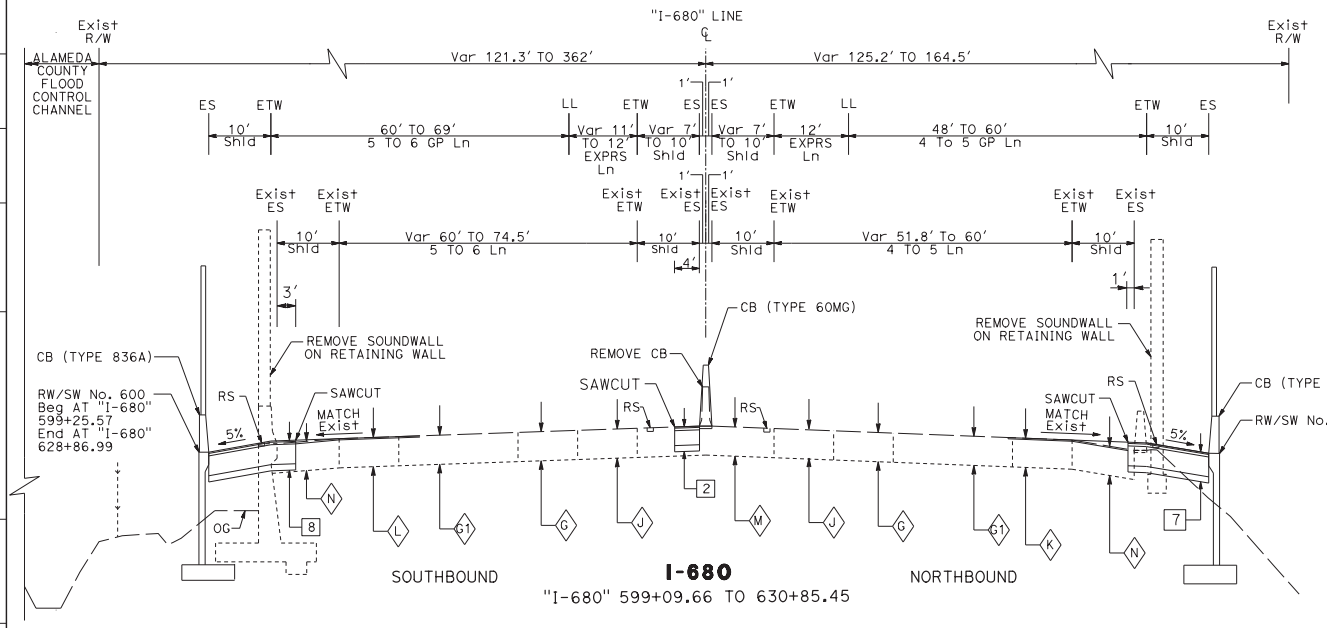
REVISED BY	DATE REVISED
.	.

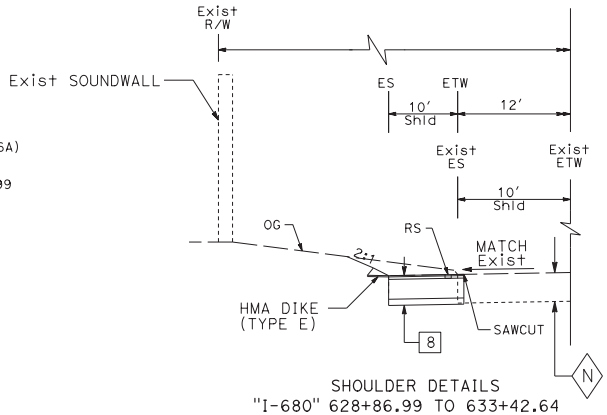
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

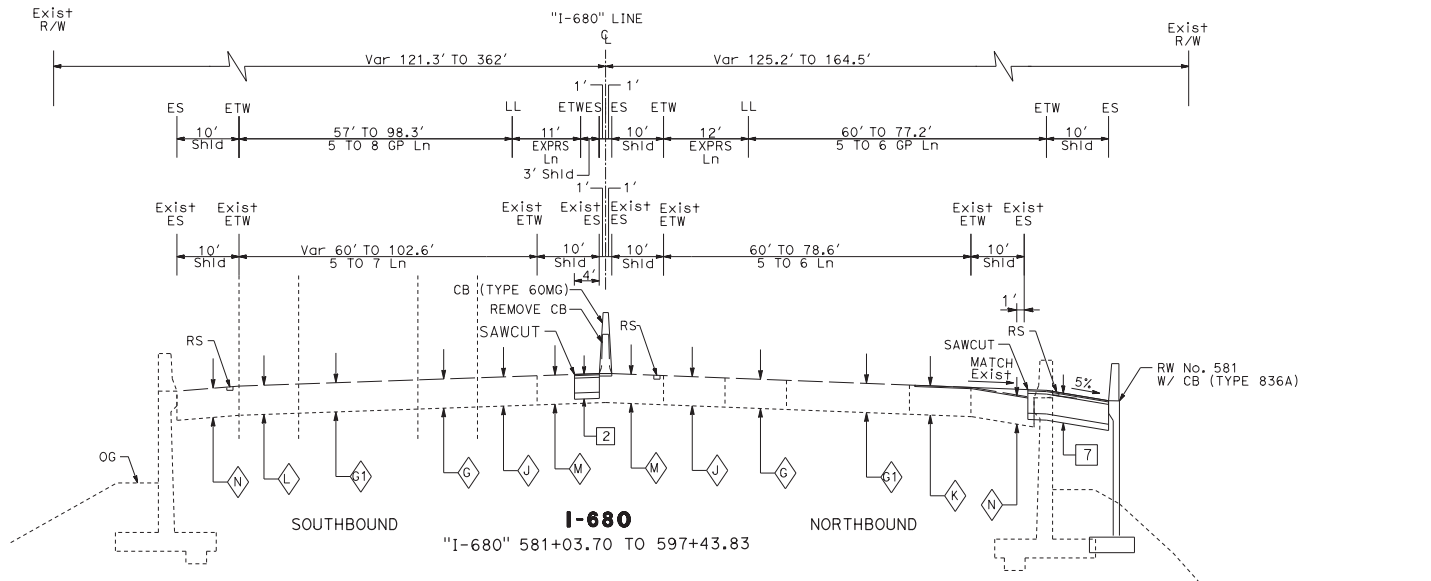
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION => 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca013.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000







PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-14

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

AECOM
300 Lake Drive
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

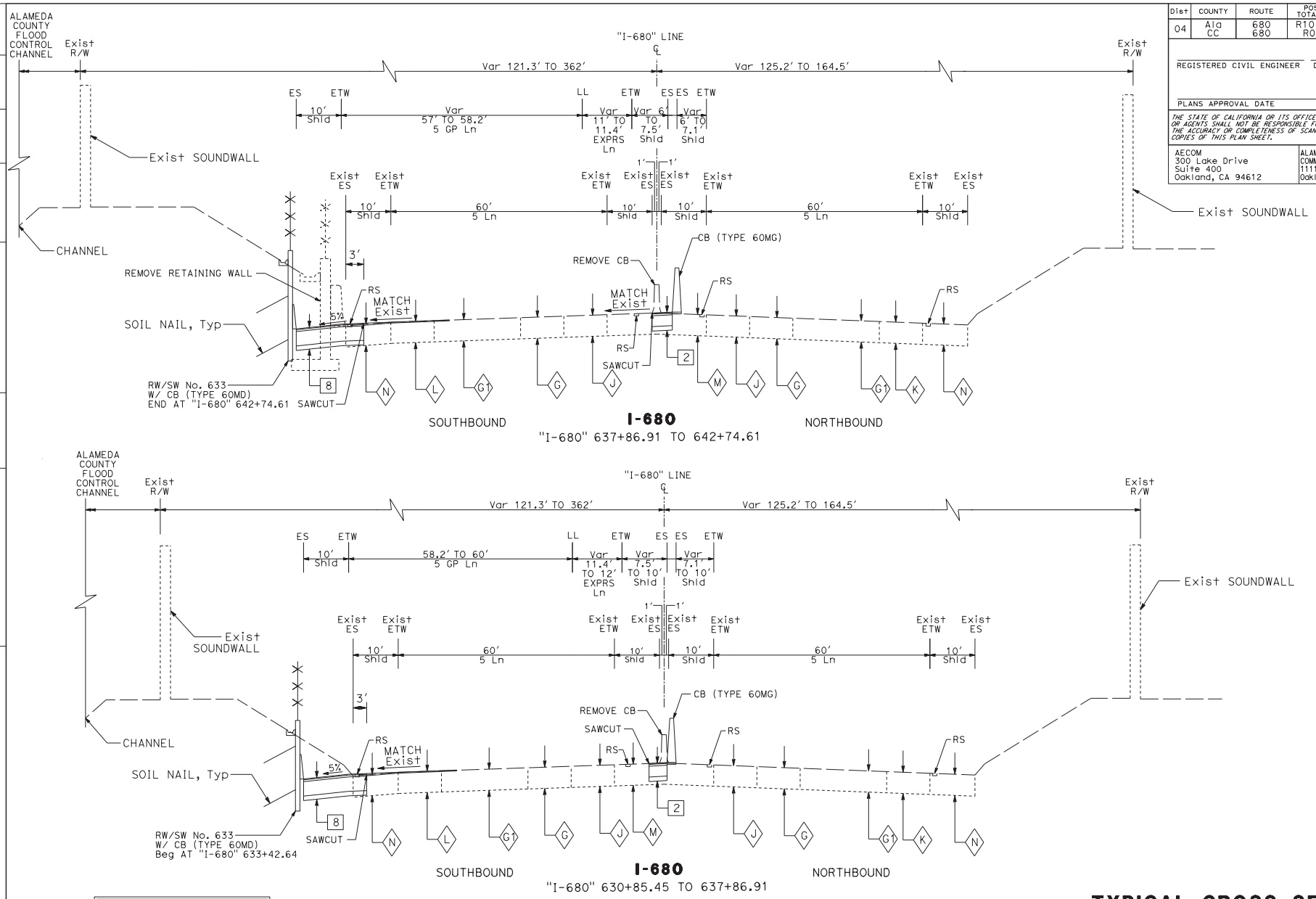
CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

REVISED BY	DATE REVISED
.	.

CALCULATED-DESIGNED BY	CHECKED BY
M. FALLAHA	M. GOGOSANU

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-15

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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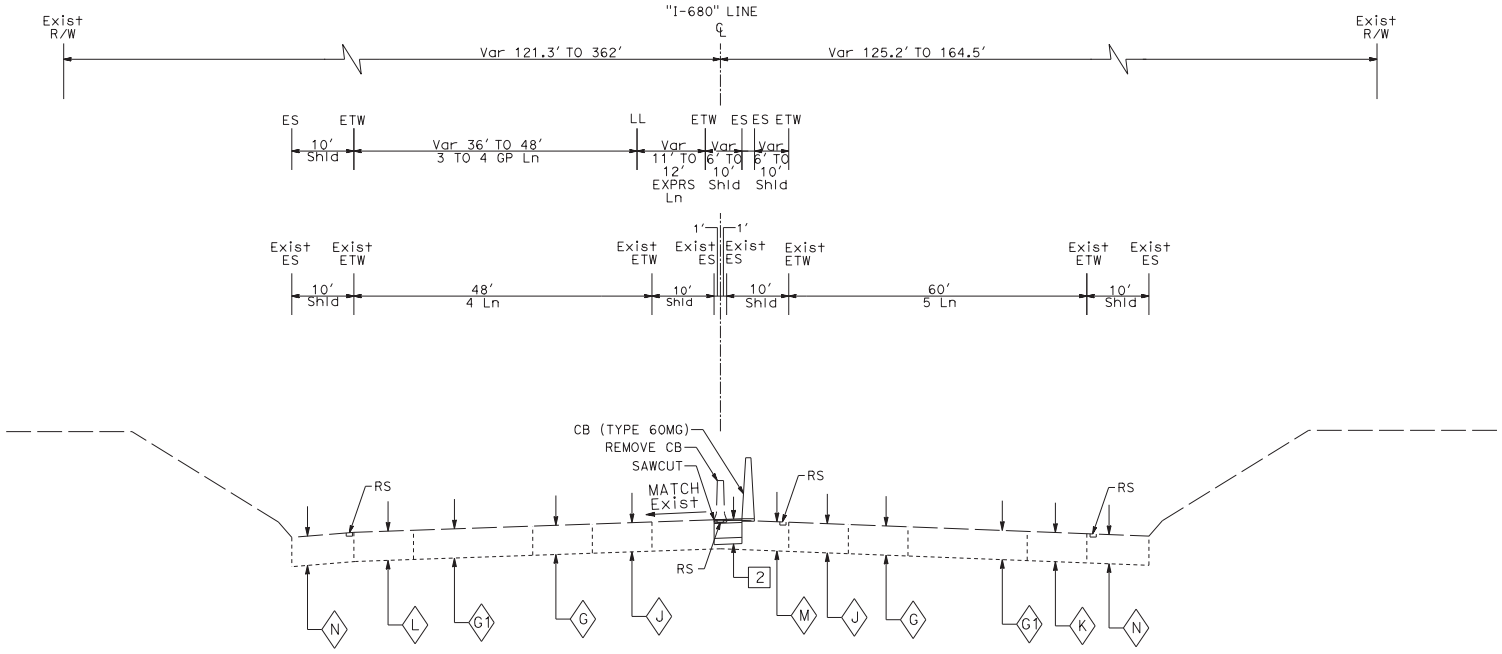

I-680

"I-680" 642+74.61 TO 682+46.60

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-16

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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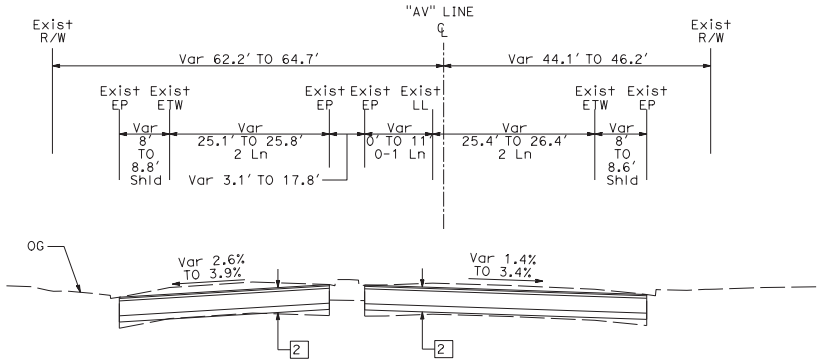
Oakland, CA 94607



WESTBOUND EASTBOUND

AV

"AV" 50+00.00 TO 55+30.00

PRELIMINARY PLANS SUBJECT TO REVISION

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

X-17

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISED BY	.
Caltrans	RAMSEY HISSEN	M. FALLAHA	DATE REVISED	.
		CHECKED BY	M. GOGOSANU	

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 16:44

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => 00000ca017.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 0000000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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Oakland, CA 94612

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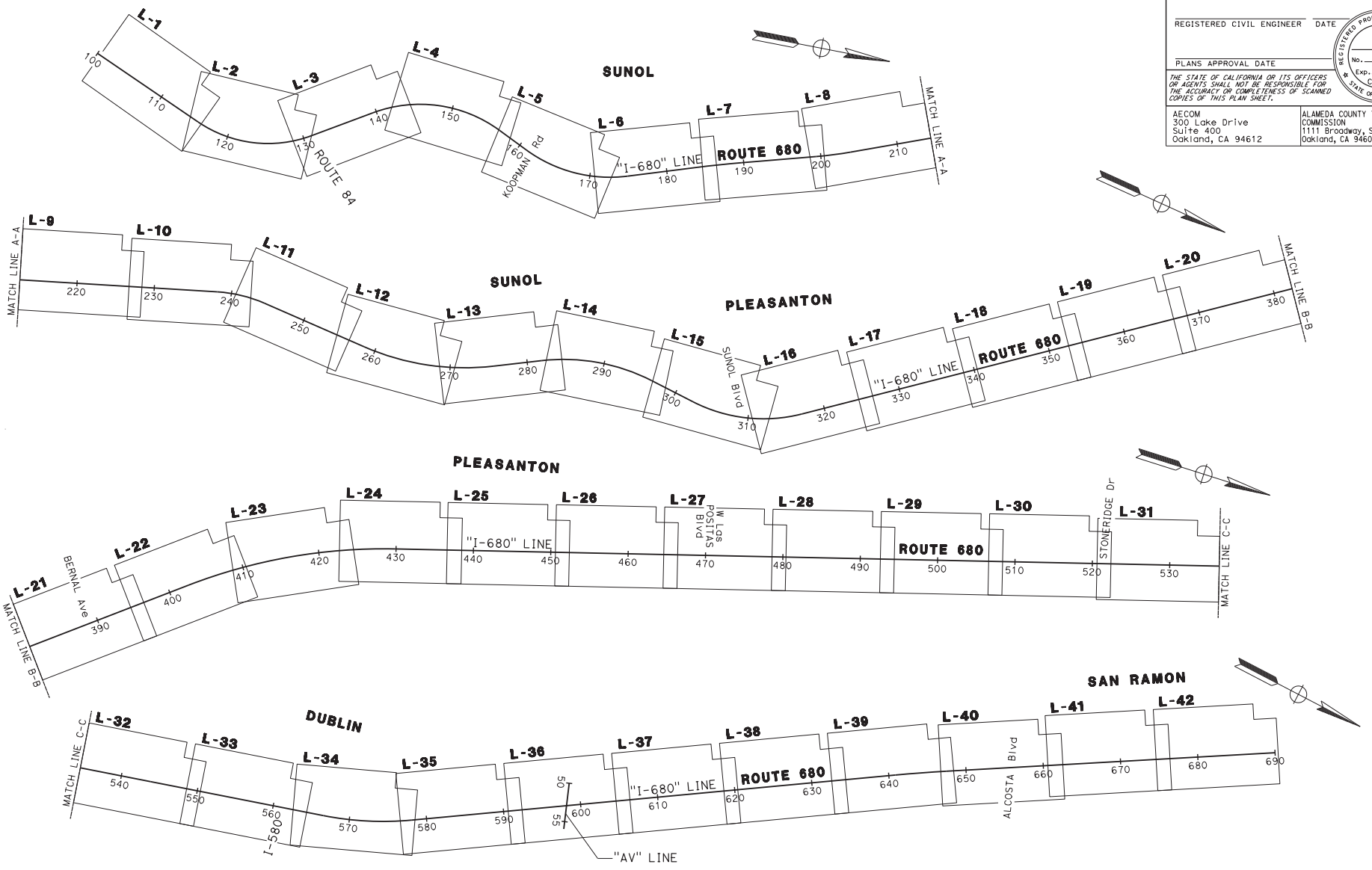
1111 Broadway, Suite 800
Oakland, CA 94607



PRELIMINARY PLANS SUBJECT TO REVISION

KEY MAP

NO SCALE

K-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 15-NOV-2019
TIME PLOTTED => 15:58

BORDER LAST REVISED 7/2/2010 | USERNAME => josh.sun | DGN FILE => Key Map.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTES:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
1. RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

COORDINATES, DISTANCES AND BEARINGS SHOWN ARE BASED ON
2. CALIFORNIA COORDINATE SYSTEM ZONE 3. THE HORIZONTAL DATUM IS NAD 83 (1991.35). THE VERTICAL DATUM IS NAVD 1988.

3. 31" IN-LINE TERMINAL SYSTEM END TREATMENT TO BE USED AT ALL PROPOSED MGS LOCATIONS.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
1	1999.96′	20°40′06"	364.69′	721.45′	2037653.365	6161386.799
2	23498.80′	0°50′08"	171.36′	342.72′	2027693.560	6184860.309
3	23499.80′	0°50′09"	171.39′	342.76′	2046897.030	6141963.978

Exist CABINET/PAD

LEGEND:

LANE WIDTH BOLDFACE DESIGN EXCEPTION

PROPOSED CABINET/PAD

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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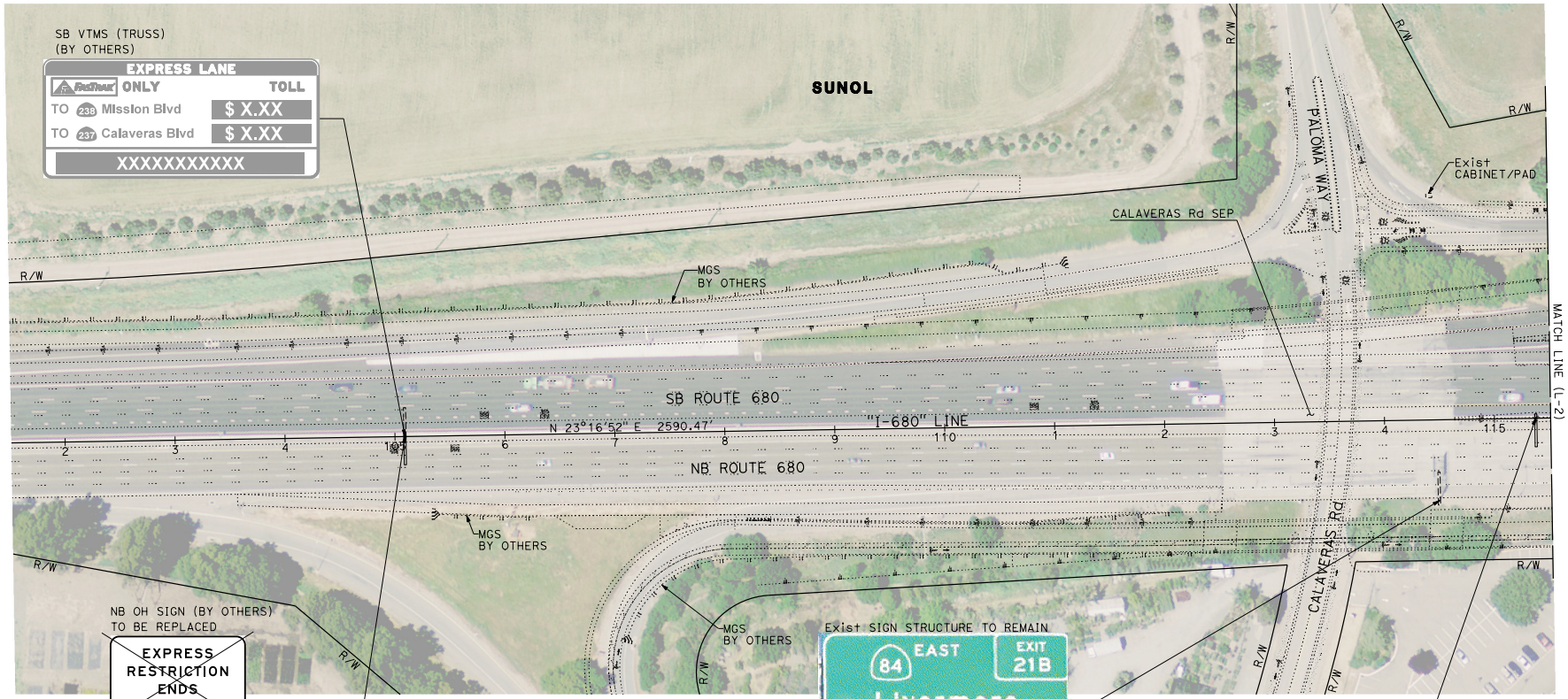

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-1

REVISED BY	DATE REVISED	M. FALLAHA	M. GOGOSANU	CALCULATED-DESIGNED BY	CHECKED BY
.	.				

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 16-JUL-2020
TIME PLOTTED => 14:46

BORDER LAST REVISED 7/2/2010

USERNAME => ben.demonbreun
DGN FILE => L-001 old.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

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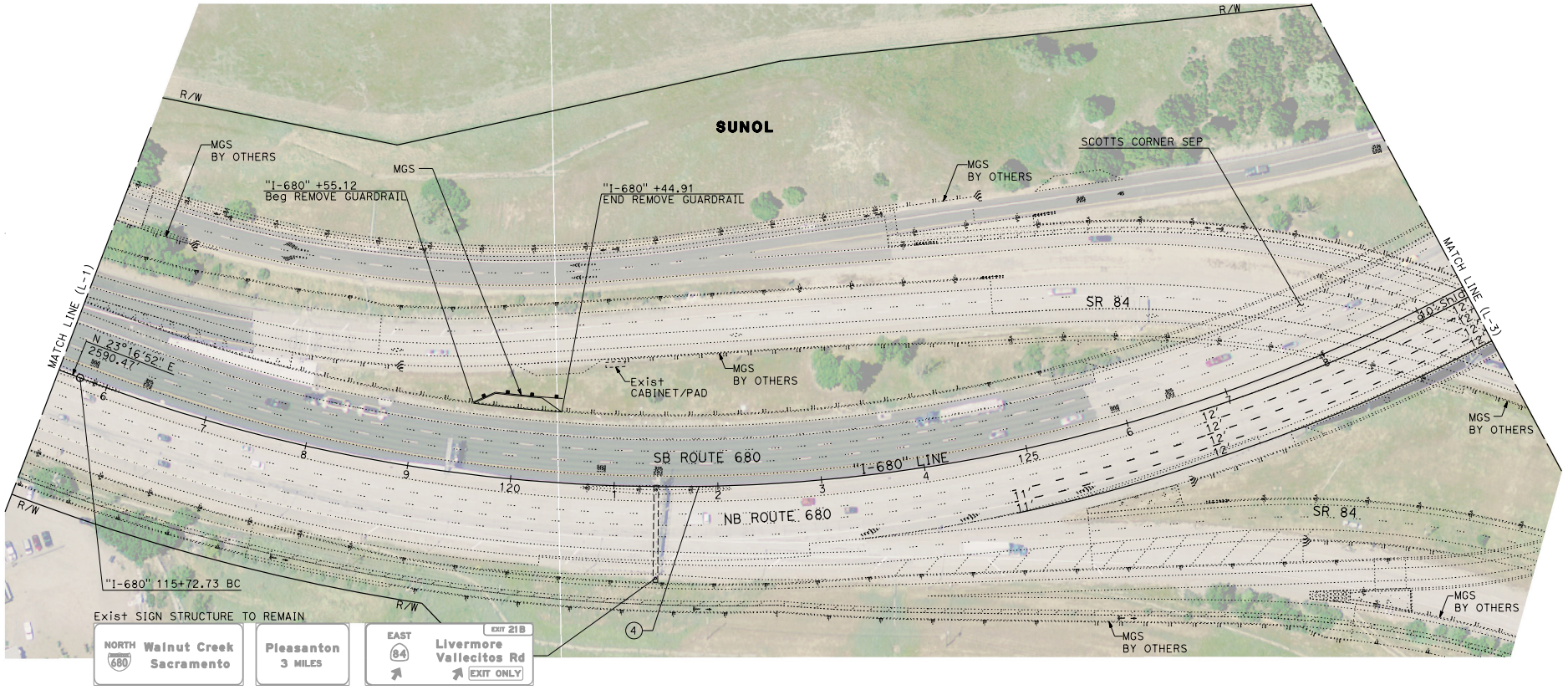
Suite 400
Oakland, CA 94612

ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
4	1605.00′	54°44′45"	830.99′	1533.57′	2040622.856	6163099.908



PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:07

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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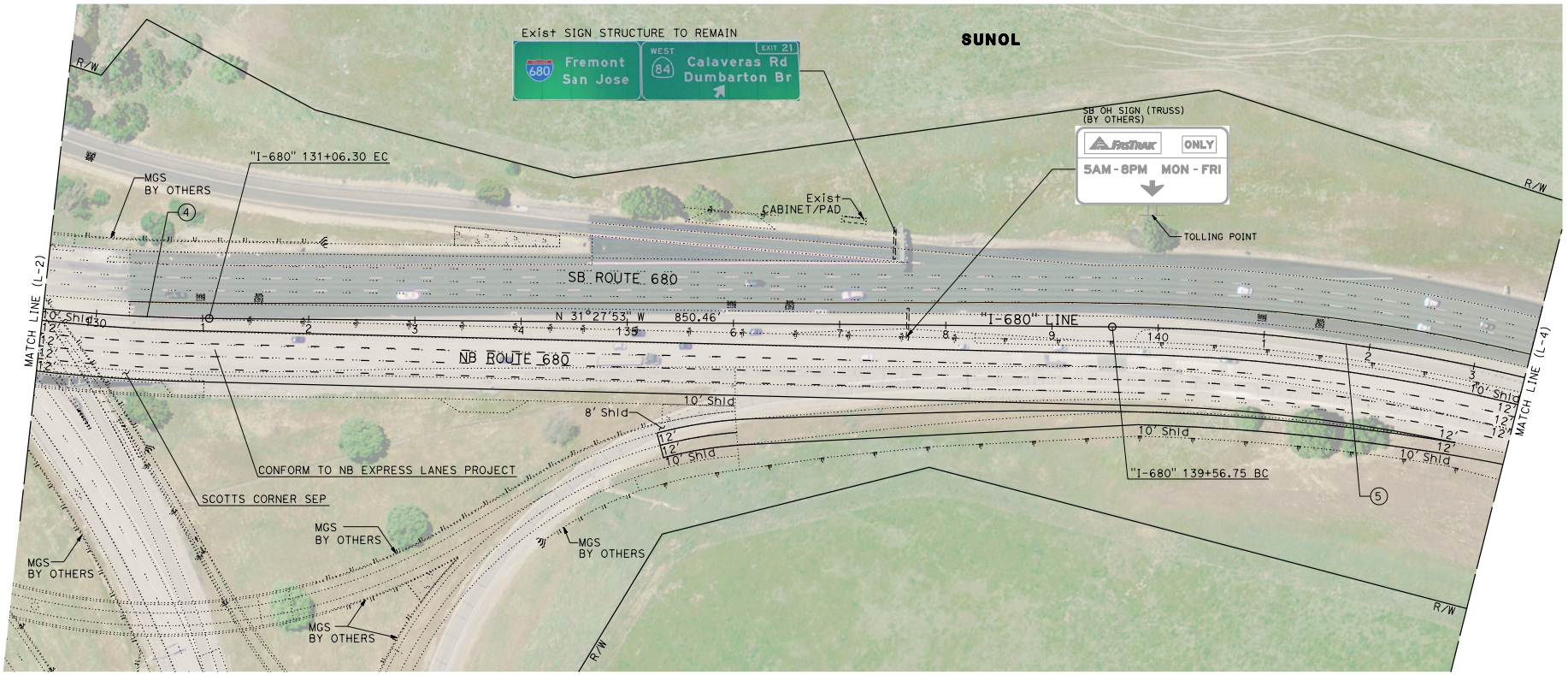
ALAMEDA COUNTY TRANSPORTATION COMMISSION
1111 Broadway, Suite 800
Oakland, CA 94607

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
4	1605.00′	54°44′45"	830.99′	1533.57′	2040622.856	6163099.908
5	1734.55′	56°38′30"	934.78′	1714.75′	2043091.425	6165504.499



PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:09

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-003.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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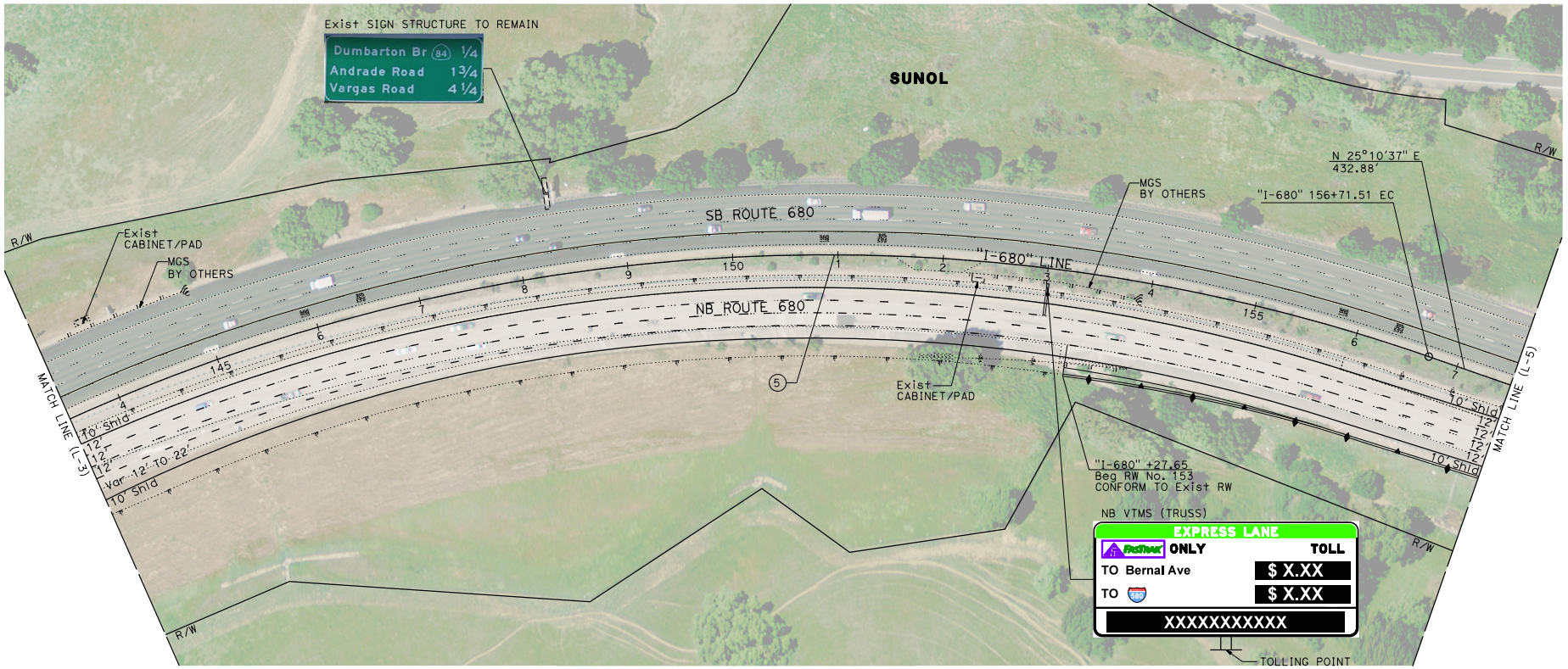
1111 Broadway, Suite 800
Oakland, CA 94607

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
5	1734.55′	56°38′30"	934.78′	1714.75′	2043091.425	6165504.499



PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-4

REVISED BY	DATE REVISED
.	.

M. FALLAHA / M. GOGOSANU — CALCULATED-DESIGNED BY / CHECKED BY

RAMSEY HISSEN — CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 11-18-19

DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:12

BORDER LAST REVISED 7/2/2010

USERNAME => ben.demonbreun
DGN FILE => L-004.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
6	1829.72'	43°24'06"	728.17'	1386.02'	2044999.477	6162462.988

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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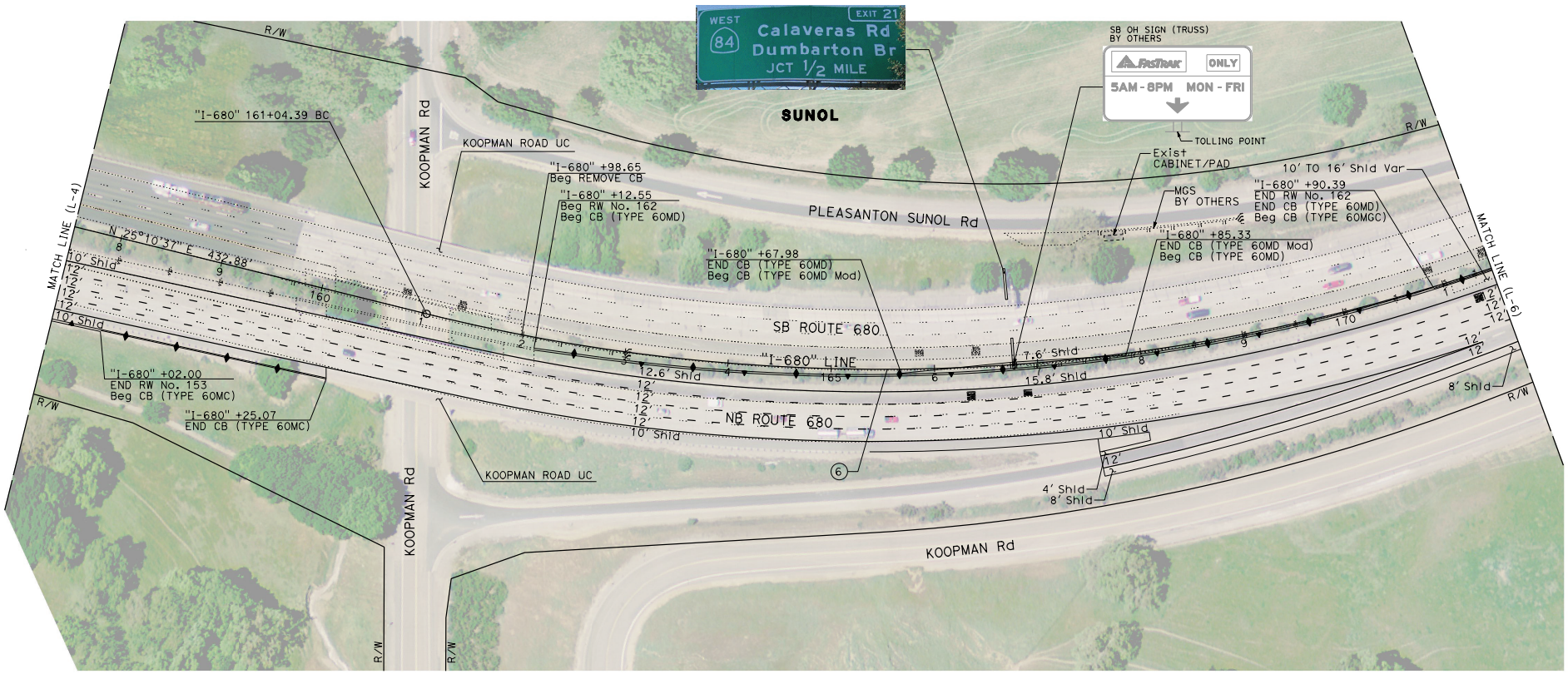
Oakland, CA 94607

Exist SIGN STRUCTURE TO REMAIN



PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-5

LAST REVISION 11-18-19
DATE PLOTTED => 15-JUL-2020
TIME PLOTTED => 19:11

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU
REVISED BY: .
DATE REVISED: .

BORDER LAST REVISED 7/2/2010

USERNAME => ben.demonbreun
DGN FILE => L-005.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
6	1829.72′	43°24′06"	728.17′	1386.02′	2044999.477	6162462.988
7	13475.26′	2°28′18"	290.69′	581.28′	2050642.018	6176718.387

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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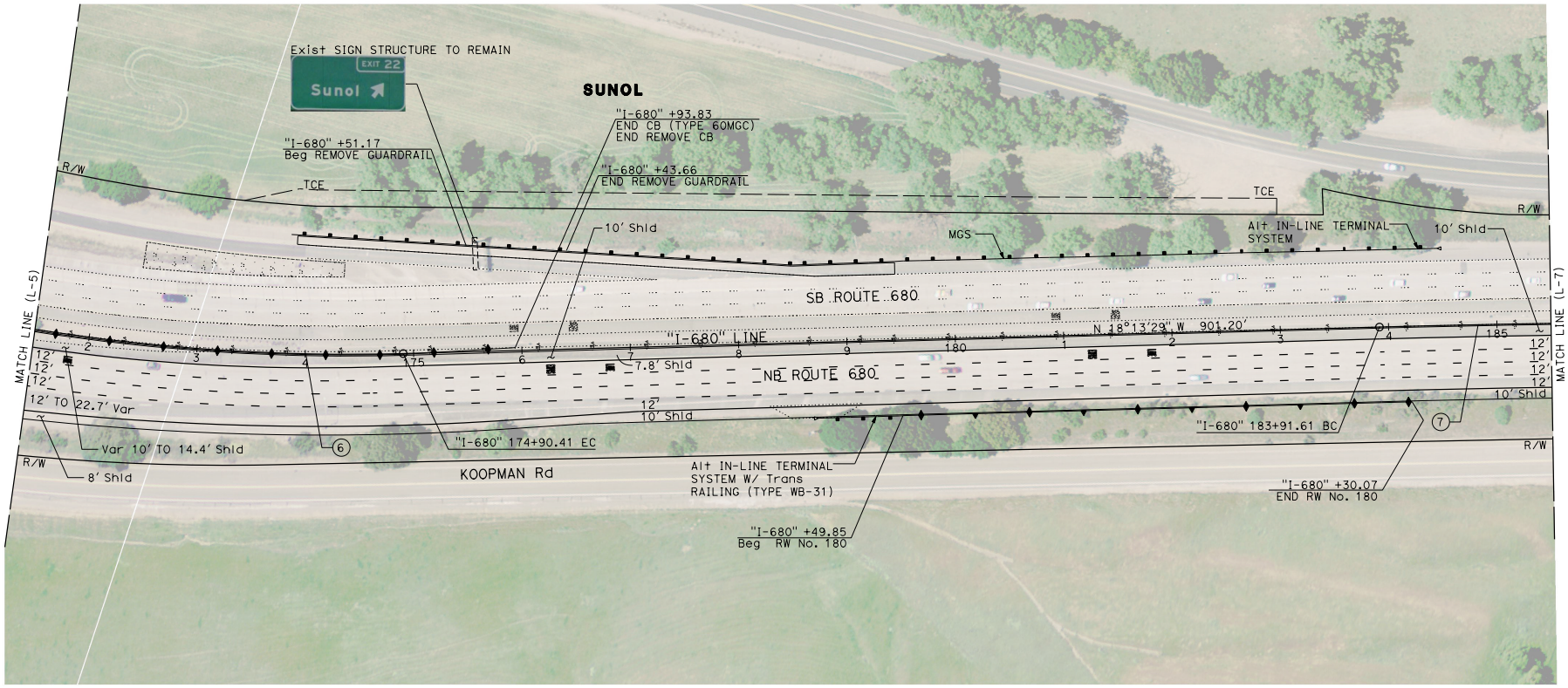

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION | CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN | CALCULATED-DESIGNED BY: M. FALLAHA | CHECKED BY: M. GOGOSANU | REVISED BY: . | DATE REVISED: .

LAST REVISION | DATE PLOTTED => 14-JUL-2020
11-18-19 | TIME PLOTTED => 22:16

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-006.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
7	13475.26′	2°28′18"	290.69′	581.28′	2050642.018	6176718.387
8	5000.00′	5°09′49"	225.45′	450.60′	2046556.306	6158674.655

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04 04	Ala CC	680 680	R10.6/R21.9 R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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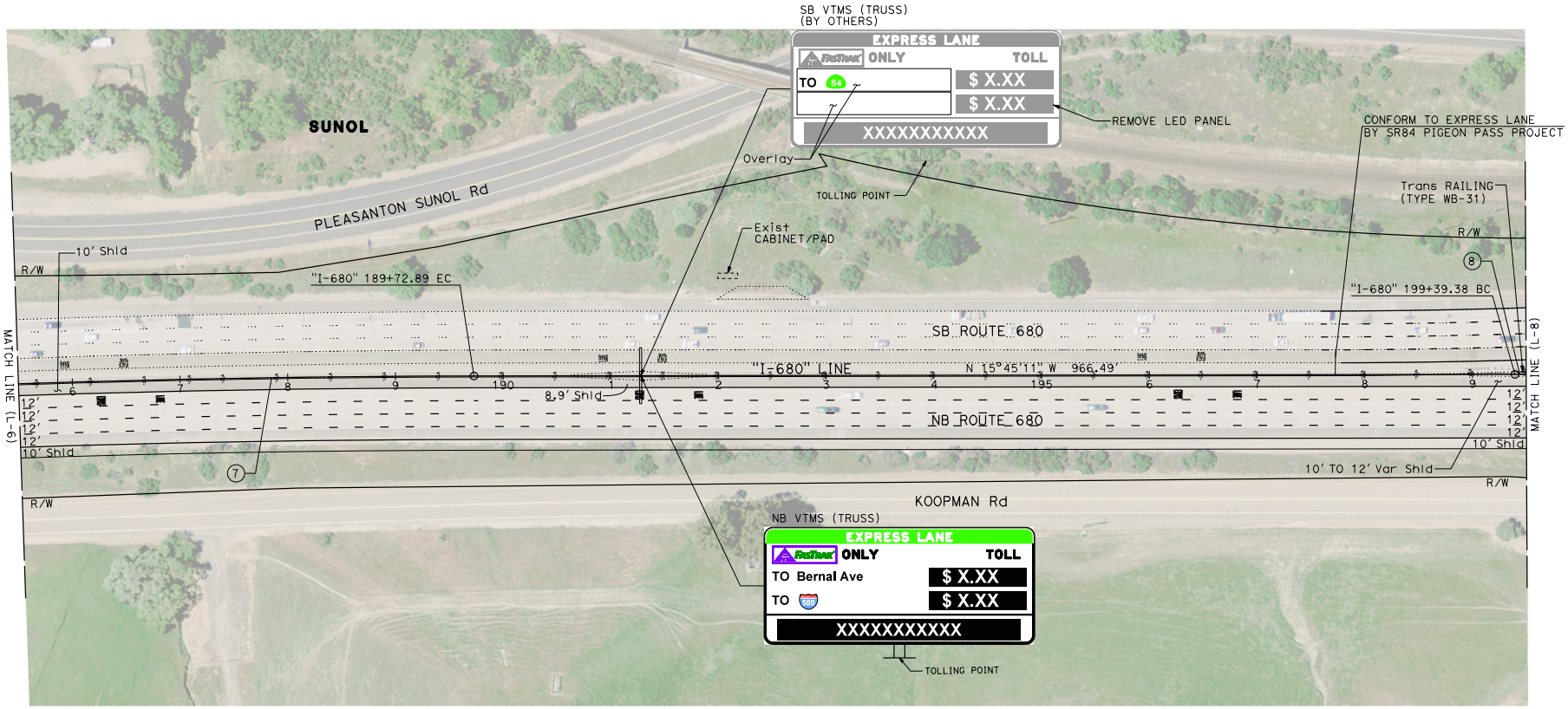

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-7

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:18

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-007.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
8	5944.99′	5°09′44"	267.99′	535.62′	2046139.290	6157810.417

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

PLANS APPROVAL DATE

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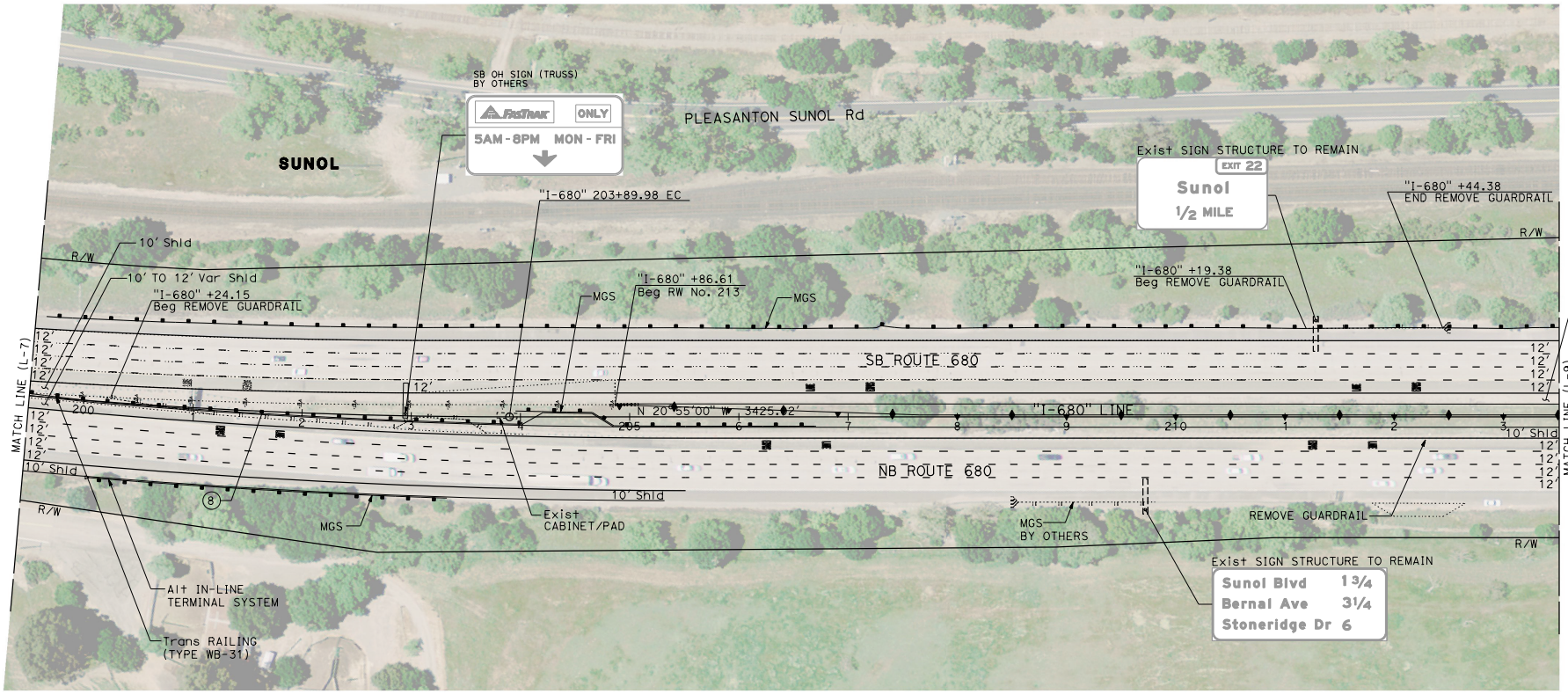

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-8

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19

DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:21

BORDER LAST REVISED 7/2/2010

USERNAME => ben.demonbreun
DGN FILE => L-008.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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1111 Broadway, Suite 800
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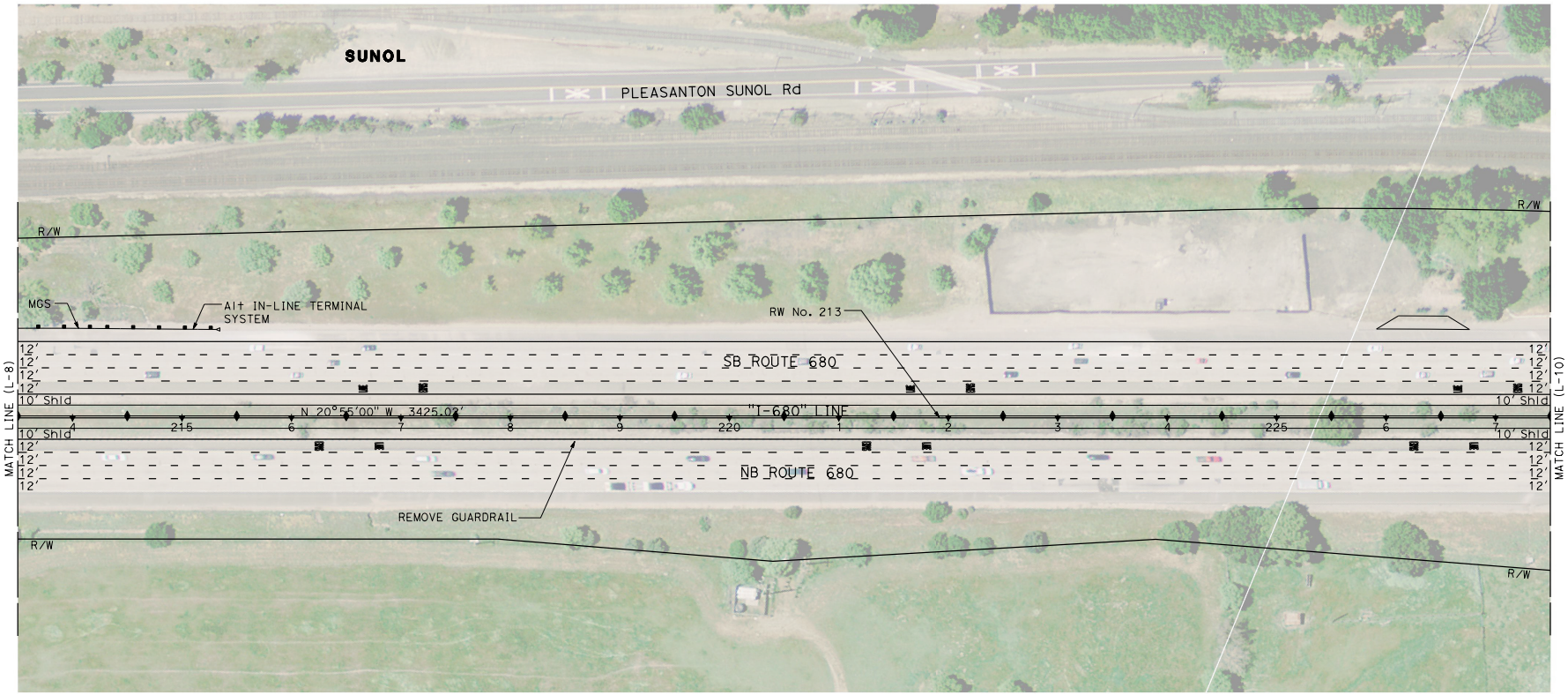
NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-9

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:24

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-009.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
9	1800.00′	20°07′00"	319.28′	631.98′	2052183.280	6163803.775

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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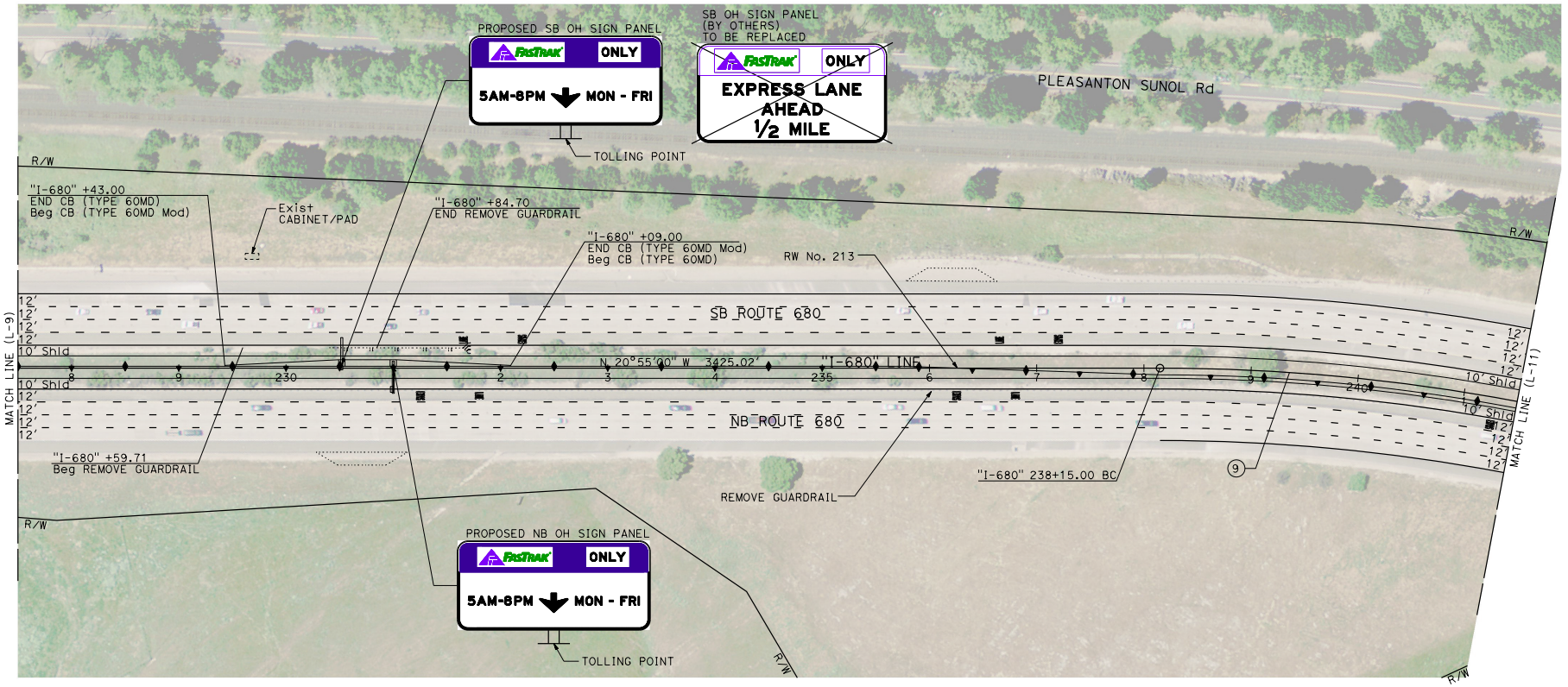
Oakland, CA 94607



PRELIMINARY PLANS
SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU
REVISED BY: .
DATE REVISED: .

LAST REVISION 11-18-19
DATE PLOTTED => 03-AUG-2020
TIME PLOTTED => 11:57

BORDER LAST REVISED 7/2/2010
USERNAME => ben.demonbreun
DGN FILE => L-010.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
9	1800.00′	20°07′00"	319.28′	631.98′	2052183.280	6163803.775

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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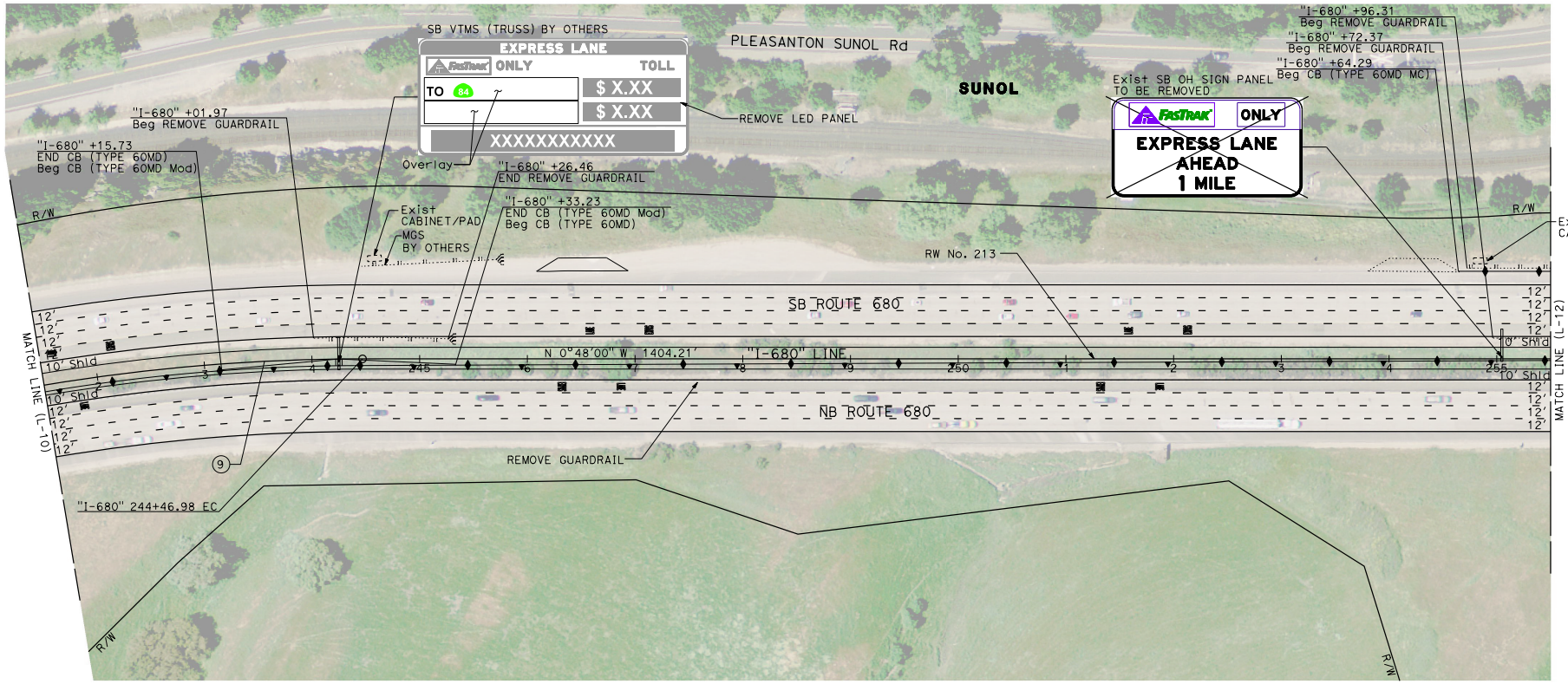

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-11

LAST REVISION	DATE PLOTTED => 14-JUL-2020
11-18-19	TIME PLOTTED => 22:29

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION | CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN | CALCULATED-DESIGNED BY: M. FALLAHA | CHECKED BY: M. GOGOSANU | REVISED BY: . | DATE REVISED: .

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-011.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
10	3249.99′	30°09′59"	875.90′	1711.14′	2053516.844	6158734.672

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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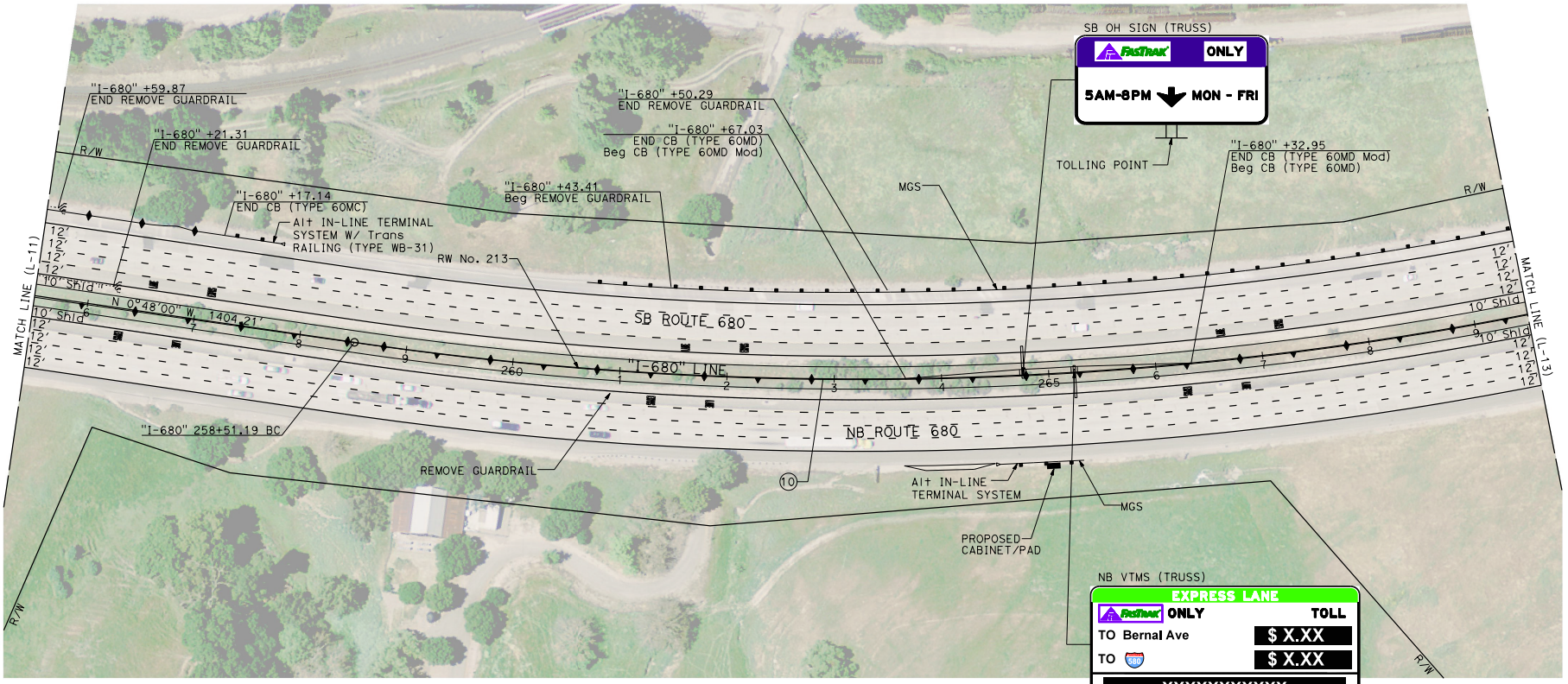

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-12

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU
REVISED BY: .
DATE REVISED: .

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:32

BORDER LAST REVISED 7/2/2010
USERNAME => ben.demonbreun
DGN FILE => L-012.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
10	3249.99′	30°09′59"	875.90′	1711.14′	2053516.844	6158734.672
11	2500.01′	33°40′59"	756.78′	1469.71′	2057009.560	6163344.601

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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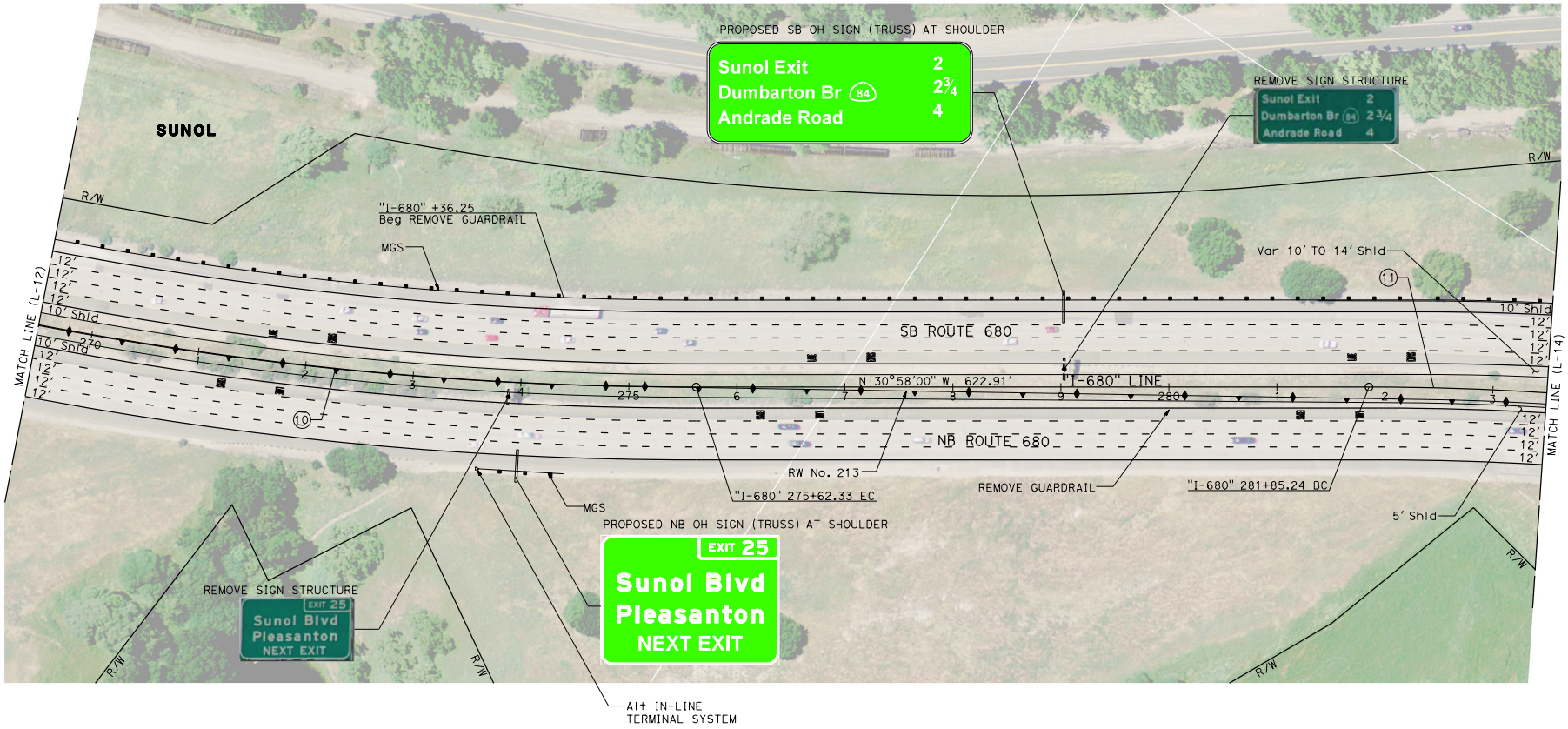

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-13

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION | CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN | CALCULATED-DESIGNED BY: M. FALLAHA | CHECKED BY: M. GOGOSANU | REVISED BY | DATE REVISED

LAST REVISION 11-18-19 | DATE PLOTTED => 14-JUL-2020 | TIME PLOTTED => 22:36

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-013.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
11	2500.01′	33°40′59"	756.78′	1469.71′	2057009.560	6163344.601

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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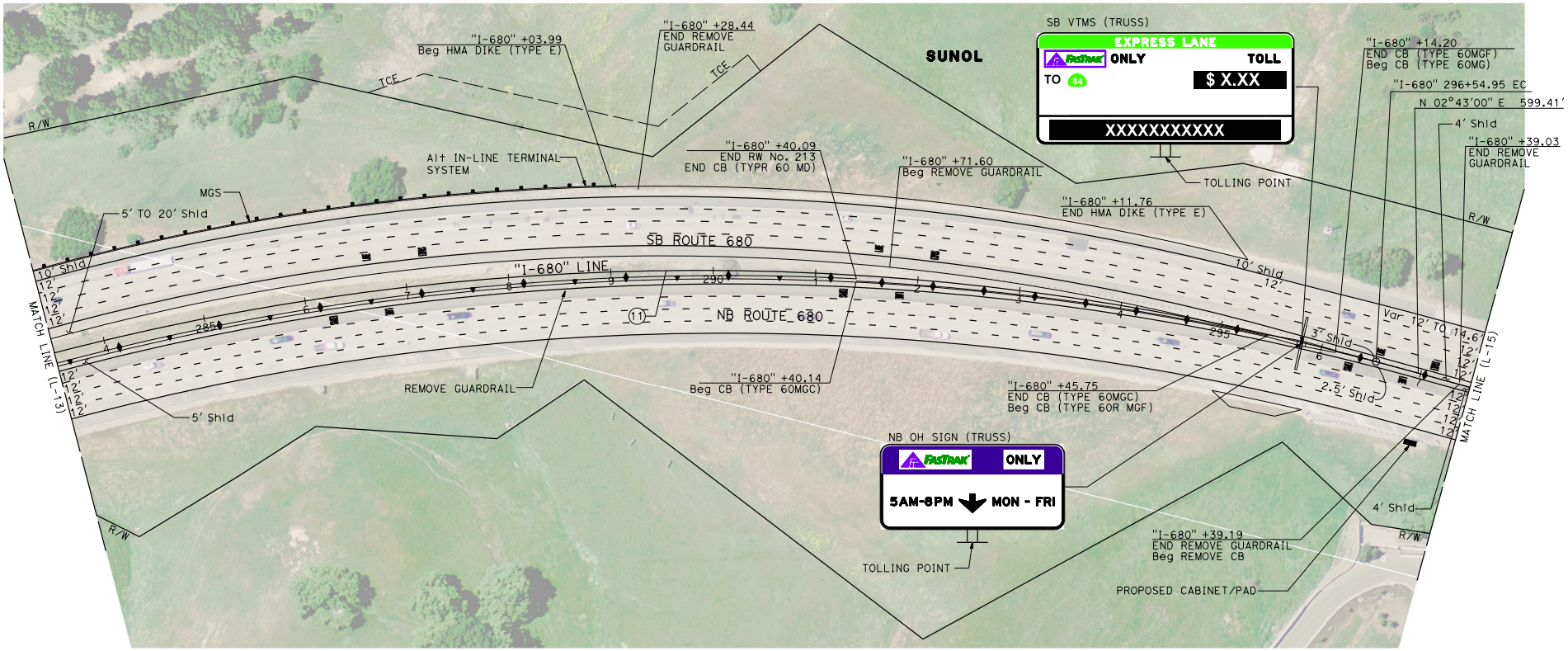

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-14

CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU	.	.

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 15-JUL-2020
TIME PLOTTED => 19:14

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
12	1999.99′	41°28′00"	757.06′	1447.45′	2057821.579	6158878.074

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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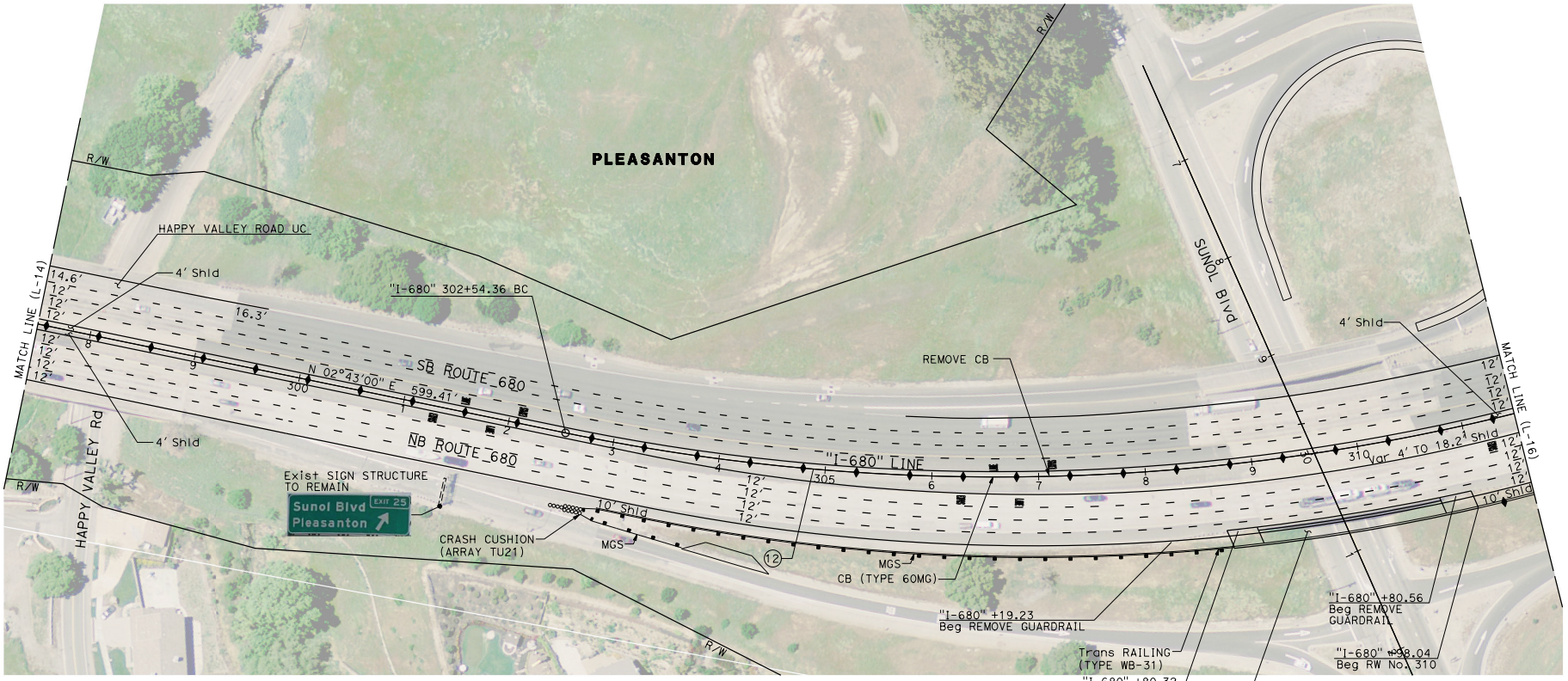

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-15

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:41
11-18-19

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-015.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
12	1999.99′	41°28′00"	757.06′	1447.45′	2057821.579	6158878.074

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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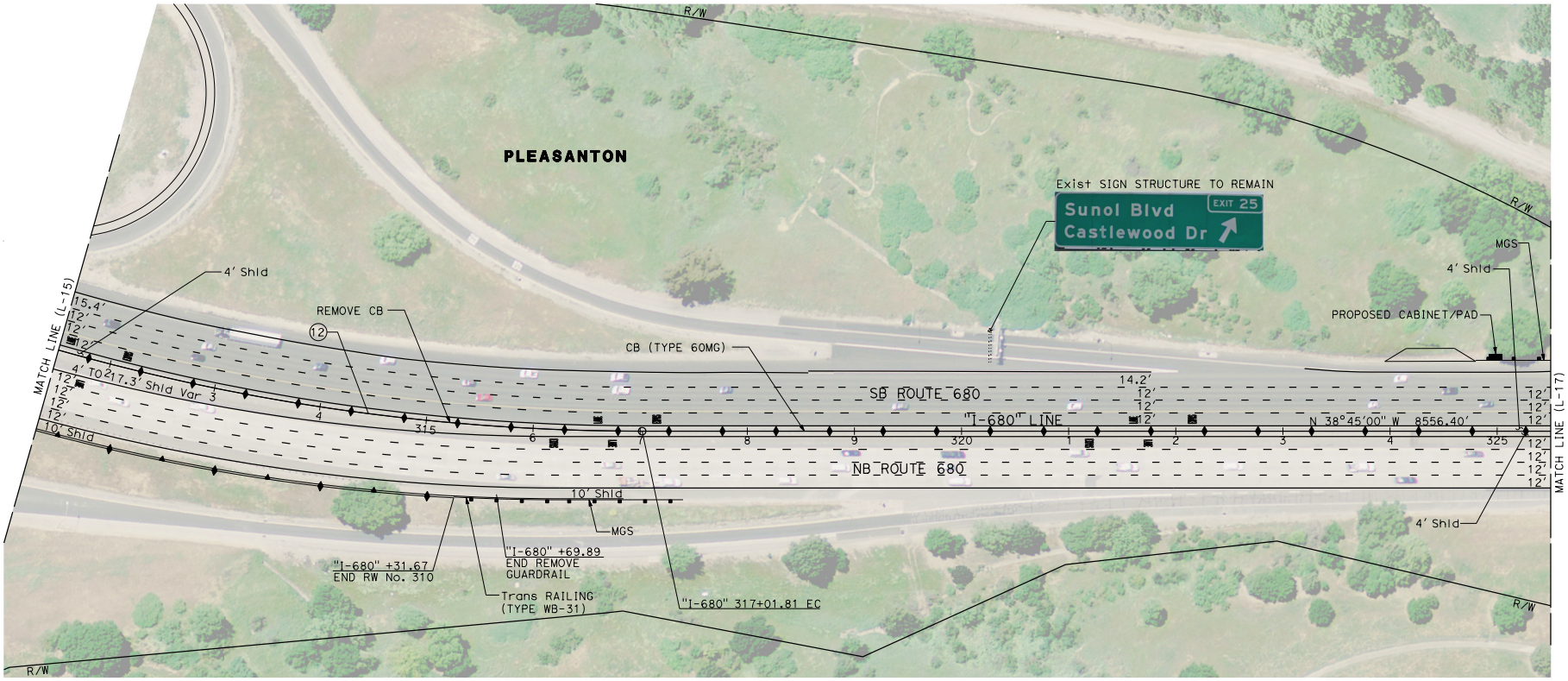

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-16

LAST REVISION	DATE PLOTTED => 14-JUL-2020
11-18-19	TIME PLOTTED => 22:45

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

BORDER LAST REVISED 7/2/2010	USERNAME => ben.demonbreun DGN FILE => L-016.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0000	PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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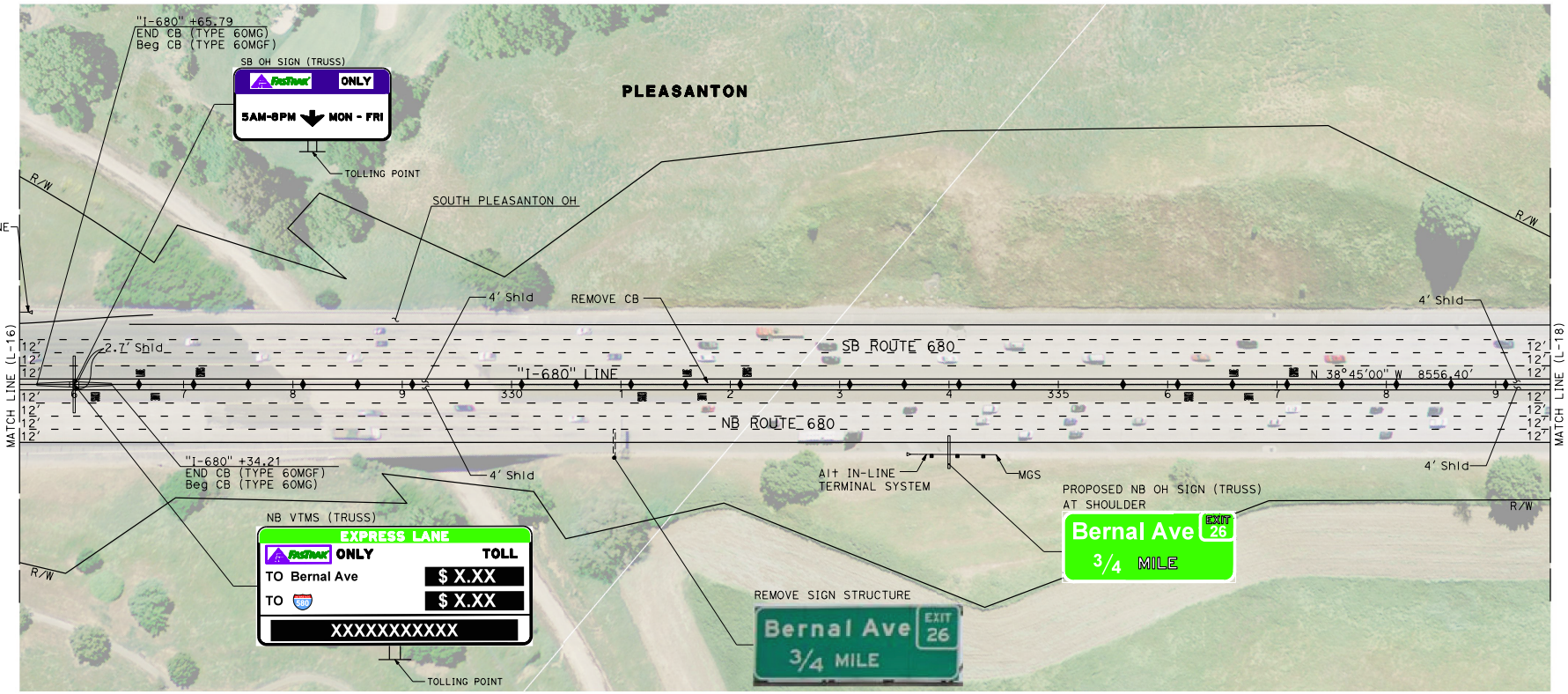

PRELIMINARY PLANS
SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-17

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:49

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-017.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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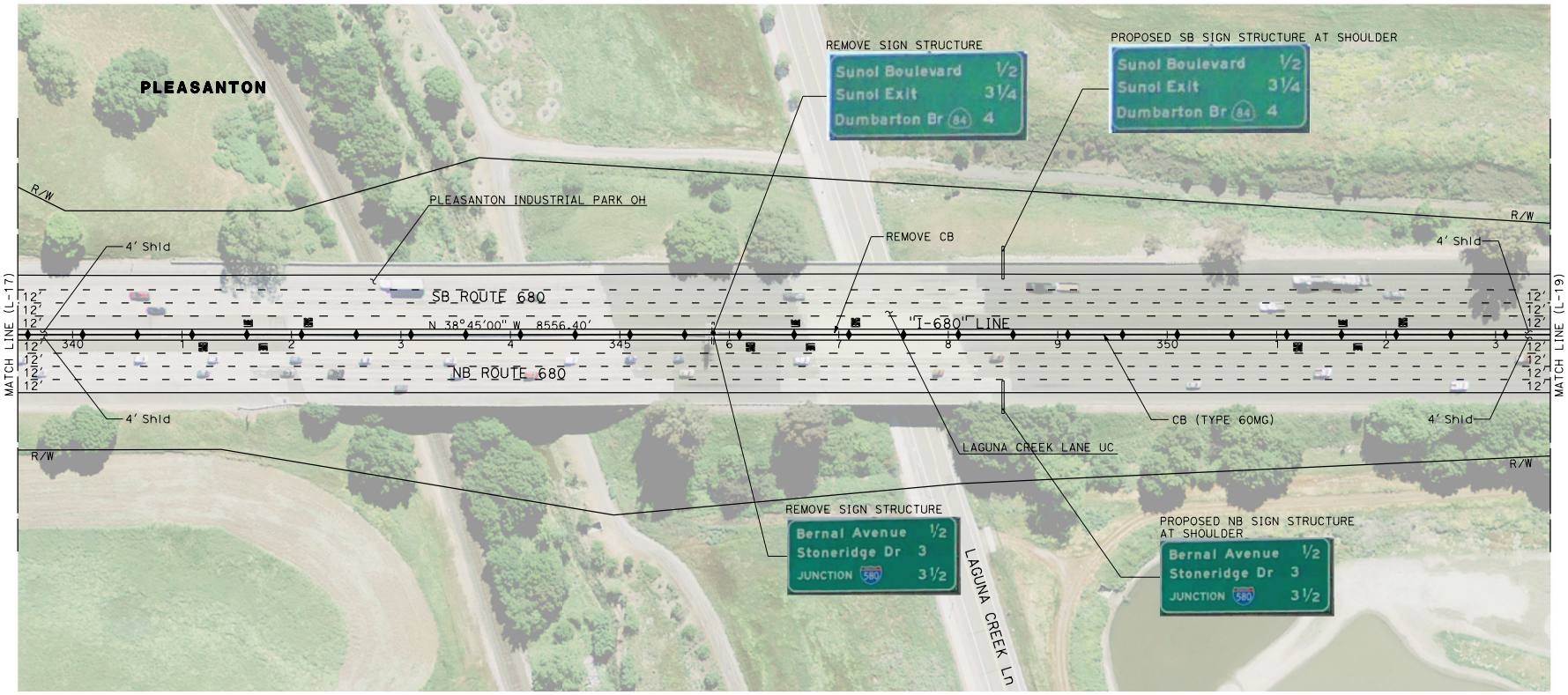

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-18

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:53

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-018.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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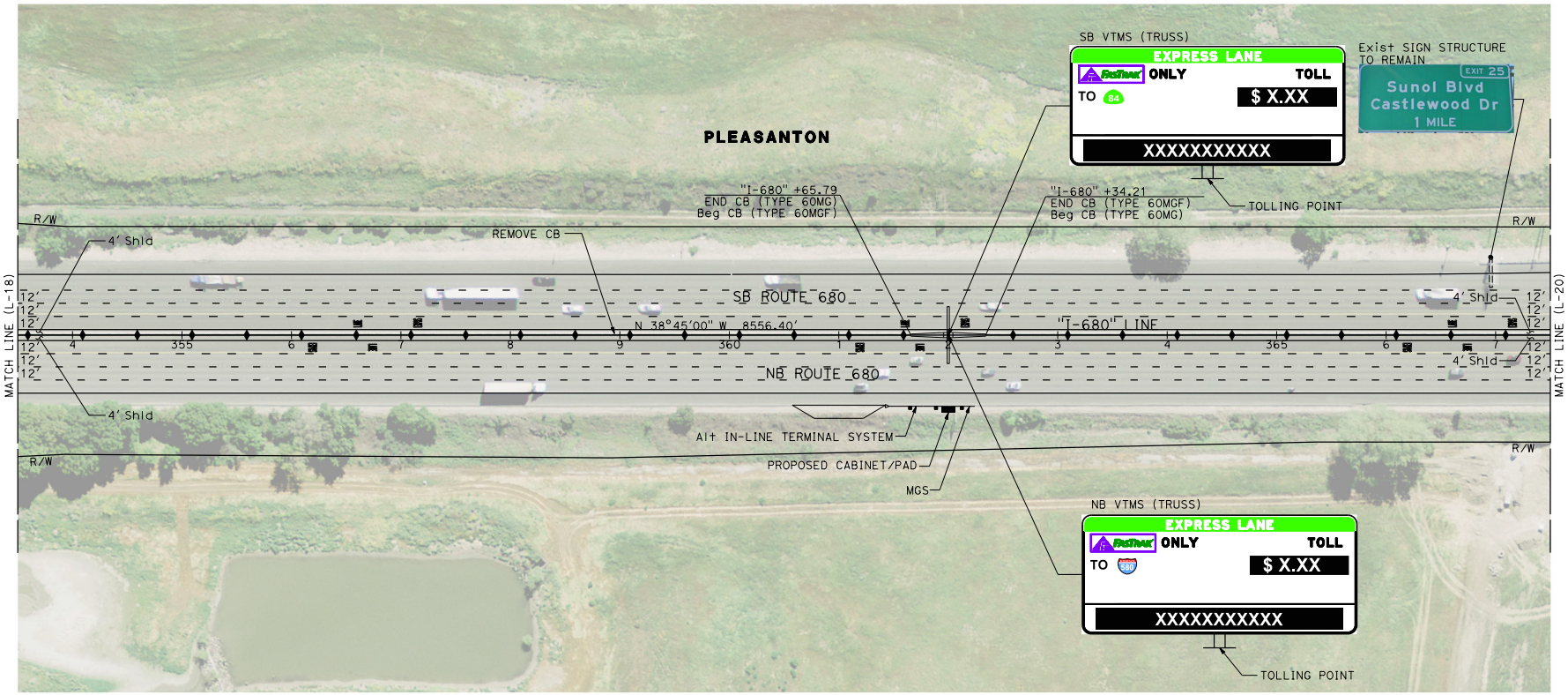

PRELIMINARY PLANS
SUBJECT TO REVISION

LAYOUT
SCALE: 1" = 50'

L-19

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 22:57

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-019.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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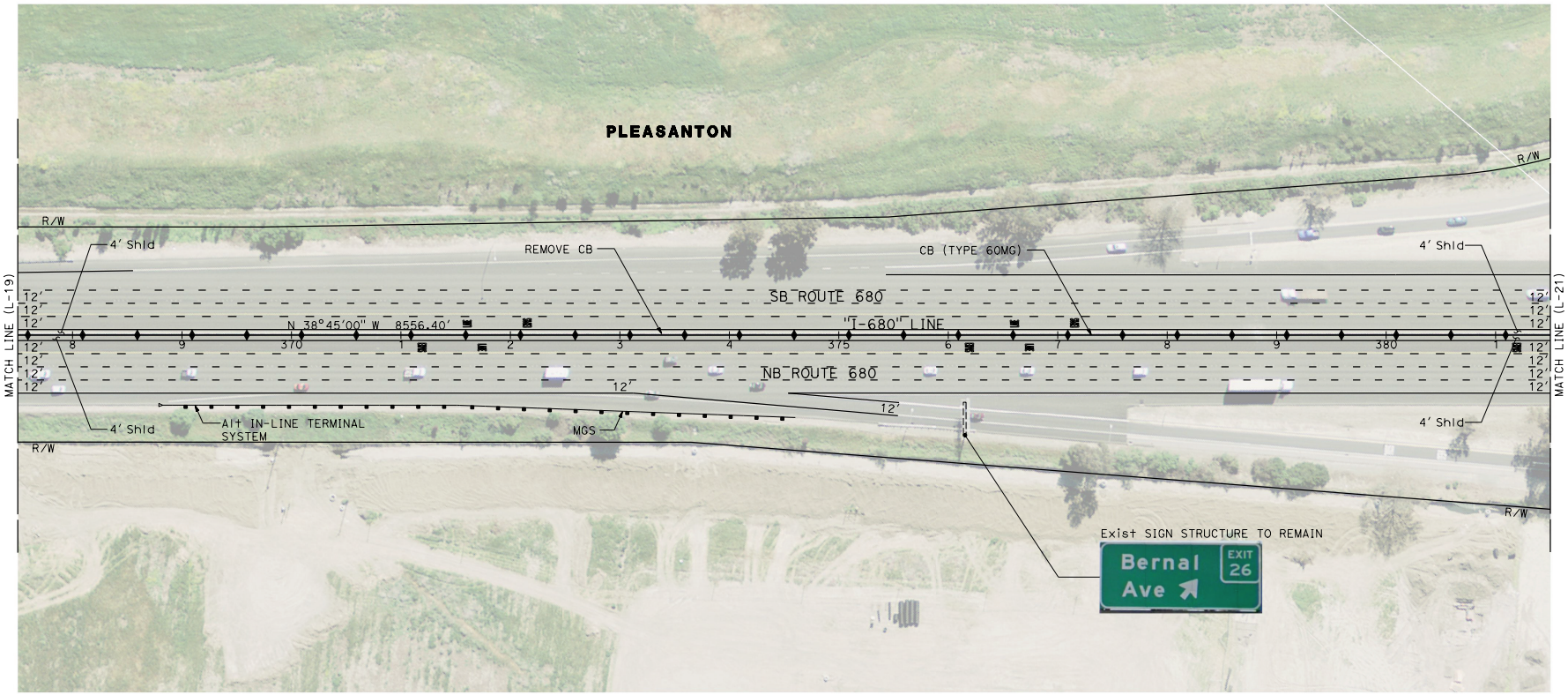

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-20

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 23:01

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-020.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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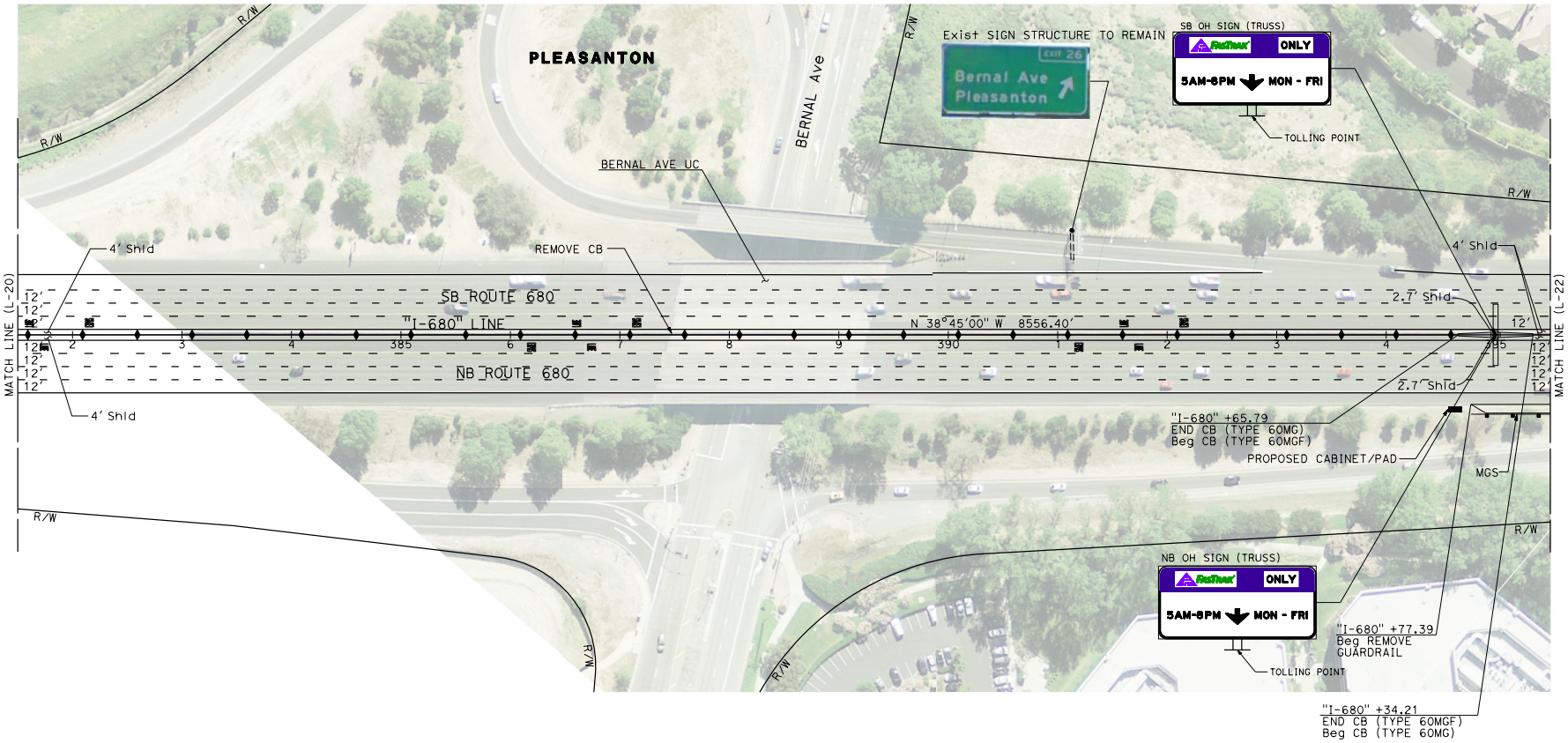

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-21

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	REVISED BY	DATE REVISED
Caltrans	RAMSEY HISSEN	M. FALLAHA	M. GOGOSANU	.	.

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 23:04

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-021.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
13	7000.06′	22°19′34"	1381.36′	2727.67′	2070127.922	6160541.417

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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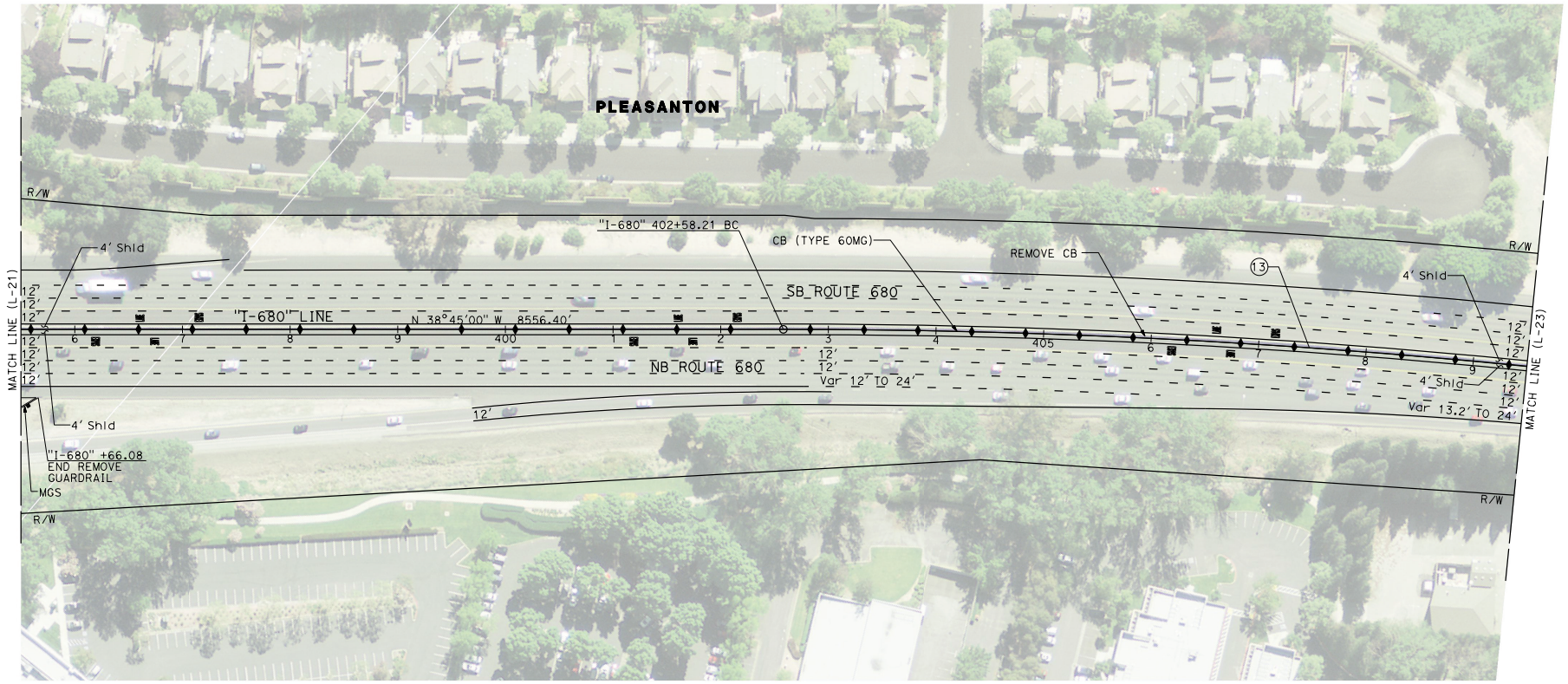

PRELIMINARY PLANS
SUBJECT TO REVISION

LAYOUT
SCALE: 1" = 50′

L-22

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

CALCULATED-DESIGNED BY / CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 23:06

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-022.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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NOTE:

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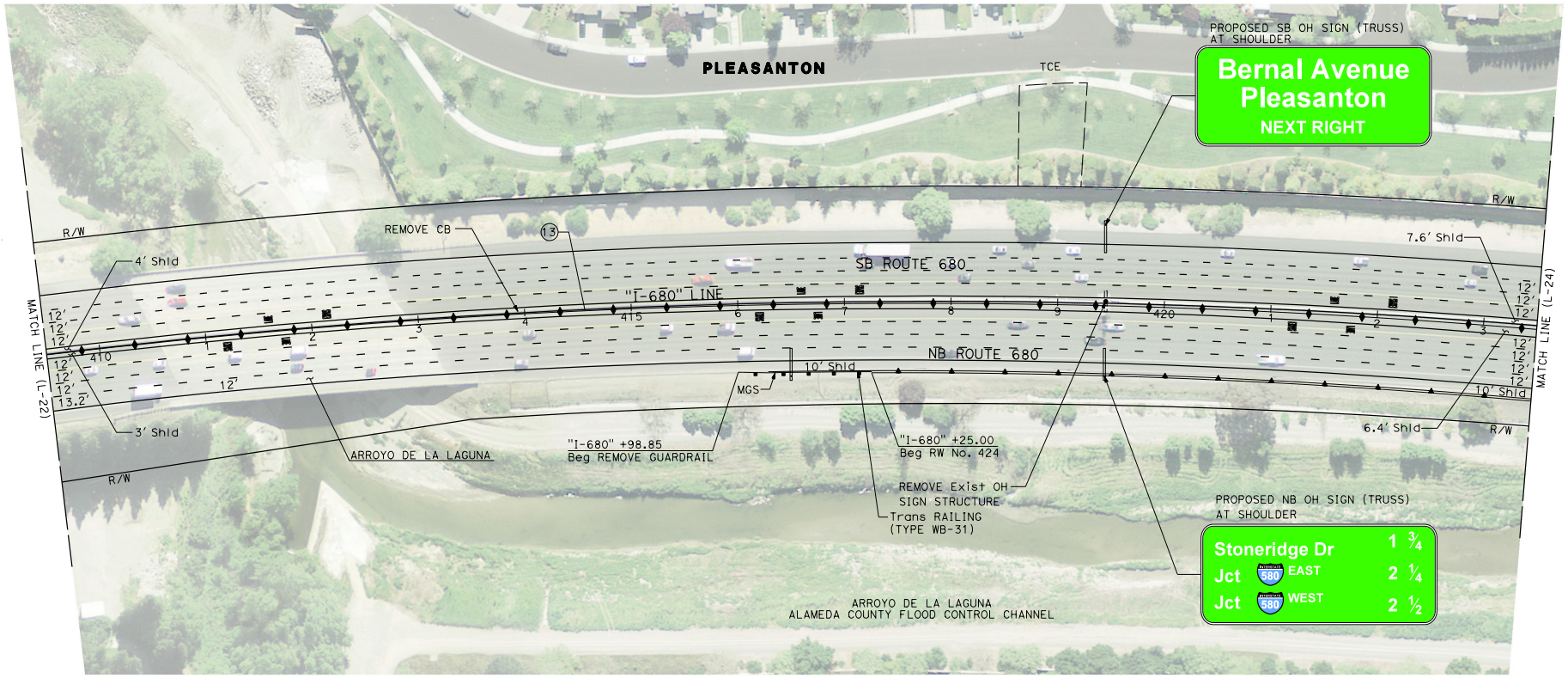
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No. (X)	R	△	T	L	N-COORDINATE	E-COORDINATE
13	7000.06′	22°19′34"	1381.36′	2727.67′	2070127.922	6160541.417



PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT
SCALE: 1" = 50′

L-23

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 23:08

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-023.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

CURVE DATA

No. (X)	R	Δ	T	L	N-COORDINATE	E-COORDINATE
13	7000.06′	22°19′34"	1381.36′	2727.67′	2070127.922	6160541.417

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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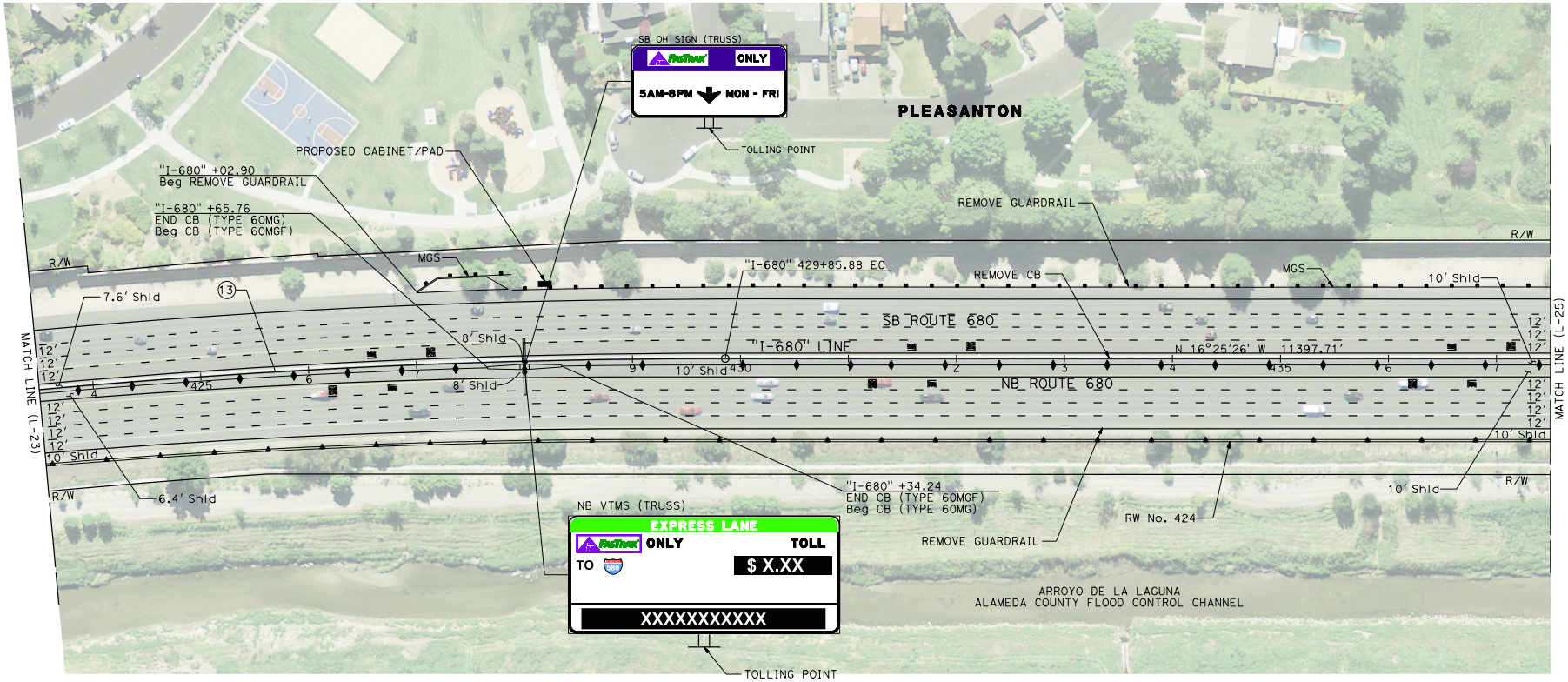

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50′

L-24

REVISED BY	DATE REVISED
M. FALLAHA	M. GOGOSANU

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 23:10

BORDER LAST REVISED 7/2/2010 | USERNAME => ben.demonbreun | DGN FILE => L-024.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE

NOTE:

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RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	Ala	680	R10.6/R21.9		
04	CC	680	R0.0/R1.1		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. Exp. CIVIL — STATE OF CALIFORNIA

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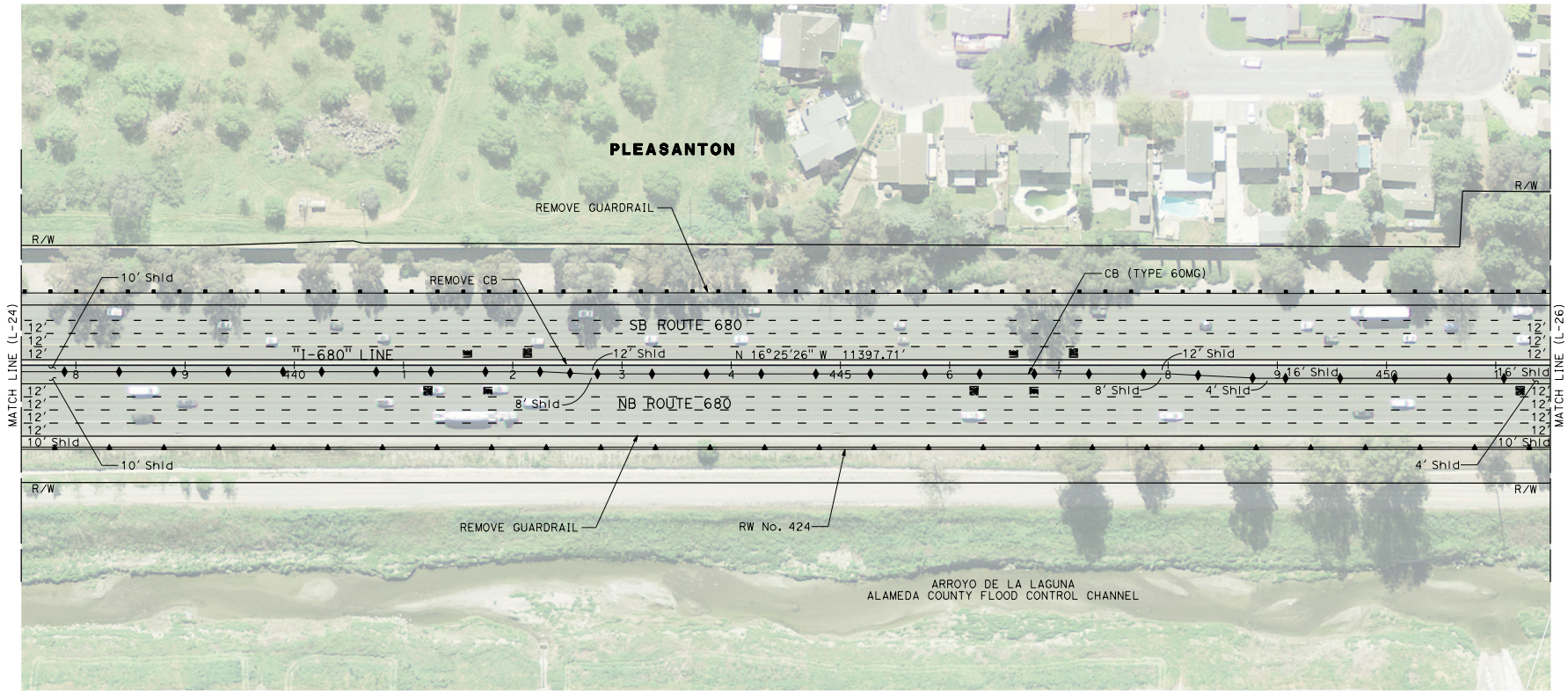

PRELIMINARY PLANS SUBJECT TO REVISION

LAYOUT

SCALE: 1" = 50'

L-25

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CONSULTANT FUNCTIONAL SUPERVISOR: RAMSEY HISSEN
CALCULATED-DESIGNED BY: M. FALLAHA
CHECKED BY: M. GOGOSANU
REVISED BY: .
DATE REVISED: .

LAST REVISION 11-18-19
DATE PLOTTED => 14-JUL-2020
TIME PLOTTED => 23:11

BORDER LAST REVISED 7/2/2010
USERNAME => ben.demonbreun
DGN FILE => L-025.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE