FIX 5 CASCADE GATEWAY PROJECT/CASCADE SHOPP PROJECT

FIX 5 CASCADE GATEWAY PROJECT

SHASTA COUNTY, CALIFORNIA
2–SHA–5–PM R13.9 / R23.2
TEHAMA COUNTY, CALIFORNIA
2–TEH–5–PM 40.7
EA 02-0H920 / EFIS 0215000083

CASCADE SHOPP PROJECT

SHASTA COUNTY, CALIFORNIA
2–SHA–5–PM R14.8 / R20.0
EA 02-1J380 / EFIS 0220000064

INITIAL STUDY WITH PROPOSED MITIGATED NEGATIVE DECLARATION



PREPARED BY THE
STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION
CALTRANS DISTRICT 2
1657 RIVERSIDE DRIVE, MS-30
REDDING, CA 96001

NOVEMBER 9, 2023

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General Information About This Document

What's in this document:

The California Department of Transportation (Department), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study, which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Shasta and Tehama counties, California. The Department is the lead agency under the National Environmental Policy Act (NEPA). The Department is the lead agency under the California Environmental Quality Act (CEQA). The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this document.
- Additional copies of this document and the related technical studies are available for review at the District Office, the Shasta County Library at 1100 Parkview Avenue in Redding. This document may be downloaded at the State Clearinghouse website https://ceqanet.opr.ca.gov/ and at the Caltrans website: https://dot.ca.gov/caltrans-near-me/district-3/d3-programs/d3-environmental/d3-environmental-docs
- Attend the public meeting on November 15, 2023, from 4 p.m. to 6:30 p.m. in the Lassen Room on the first floor in the West Venture Building at 1031 Butte Street in Redding.
- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public meeting and/or send your written comments via postal mail or email to the Department by the deadline.
- Send comments via postal mail to:
  North Region Environmental Management, Attention: Carolyn Sullivan
  Department of Transportation, Environmental Planning
  1657 Riverside Drive (MS-30), Redding, CA 96001
- Send comments via email to: Carolyn.Sullivan@dot.ca.gov
- Be sure to send comments by the deadline: December 16, 2023.

What happens next:

After comments are received from the public and reviewing agencies, the Department, as assigned by the FHWA, may: (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, the Department could design and construct all or part of the project.

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Alternative Formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, or in digital format. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Carolyn Sullivan, Environmental Planning, 1657 Riverside Drive (MS-30), Redding, CA 96001; (530) 218-8940 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY to Voice), 1 (800) 735-2922 (Voice to TTY), 1 (800) 855-3000 (Spanish TTY to Voice and Voice to TTY), 1-800-854-7784 (Spanish and English Speech-to-Speech) or 711.

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FIX 5 CASCADE GATEWAY PROJECT/ CASCADE SHOPP PROJECT

INITIAL STUDY with Proposed Mitigated Negative Declaration

Submitted Pursuant to: Division 13, California Public Resources Code

STATE OF CALIFORNIA
Department of Transportation

Approved By: Wesley Stroud Date: 11/14/23

Wesley Stroud, Office Chief
North Region Office of Environmental Management
California Department of Transportation
(530) 356-3004

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MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

State Clearinghouse Number:

DIST-CO-RTE-PM: 2-SHA-5-PM R13.9/R23.2 and 2-TEH-5-PM 40.7, 2-SHA-5-PM R14.8/R20.0

EA: 02-0H920, 02-1J380

Project Description

The Fix 5 Cascade Gateway Project (EA 02-0H920)/Cascade State Highway Operation and Protection Program (SHOPP) Project (EA 02-1J380) would make improvements to Interstate 5 (I-5) in Shasta County from the Hartnell Avenue OC (PM R13.9) to 0.8-mile north of Union School Road (PM R23.2) and in Tehama County at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility (PM 40.7). This is the PM range for the Fix 5 Cascade Gateway Project and includes the PM range for the Cascade SHOPP Project, which is from PM R14.8 to PM R20.0. The Fix 5 Cascade Gateway Project would install a truck only lane in the northbound and southbound directions of travel, constructing/extending auxiliary lanes between interchanges, widen bridges with rail upgrades and install in-fill walls, install median barrier, install signage, upgrade drainage facilities, install and/or upgrade ITS/TMS elements, paving, and install a medium/heavy-duty vehicle charging facility. The Cascade SHOPP Project would improve the pavement quality to enhance smoothness, reduce maintenance efforts, and minimize field maintenance exposure to traffic; upgrade bridge rails and install in-fill walls; upgrade drainage facilities; install and/or upgrade ITS/TMS elements; increase the vertical clearance at two structure locations; upgrade signs, lighting, and striping; and install median barrier.

Determination

An Initial Study has been prepared by the California Department of Transportation (Caltrans), District 2.

On the basis of this study it is determined that the proposed action with the incorporation of the identified mitigation measures will not have a significant effect on the environment for the following reasons:

- The proposed project would have no effect on agriculture and forest resources, cultural resources, land use and planning, mineral resources, population and housing, recreation, and tribal cultural resources.
- In addition, the proposed project would have less than significant effects to aesthetics, air quality, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, public services, transportation, utilities and service systems, and wildfire.
- The proposed project would have a potentially significant impact to biological resources. However, with incorporated mitigation measures to mitigate for impacts to the movement of native resident wildlife species within migratory wildlife corridors, the project would have a less than significant impact to biological resources.

Signature

Wesley Stroud
Office Chief
Caltrans District 2

Date

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List of Abbreviated Terms

AADT	Average annual daily traffic
AB	Assembly Bill
ACM	Asbestos containing material
ADA	Americans with Disabilities Act
ADL	Aerially deposited lead
ALMS	Advanced Lane Management System
APS	Advance Planning Studies
ARB	(California) Air Resources Board
AVM	Advanced variable message
BAU	Business-as-usual
BMPs	Best management practices
BTU	British thermal unit
CAFE	Corporate Average Fuel Economy
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCTV	Closed-circuit television
CDFW	California Department of Fish and Wildlife
CERFA	Community Environmental Response Facilitation Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CH_4	Methane
CIPP	Cured-in-place pipeliner
CMS	Changeable message signs
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO_2	Carbon dioxide
CO	Carbon monoxide
CO-CAT	Coastal and Ocean Working Group of the California Climate Action Team
CRZ	Clear recovery zone
CSP	Corrugated steel pipe
CTP	California Transportation Plan
CTC	California Transportation Commission
CWA	Clean Water Act
dBA	Weighted decibel
dB	Unweighted decibel
DI	Drainage inlet
DOT	Department of Transportation
DSA	Disturbed soil area
EB	Eastbound
EEP	Emergency Evacuation Plan
EFH	Essential Fish Habitat

EMFAC	Emission Factors
EO	Executive Order
EPACT92	Energy Policy Act of 1992
ESA	Environmentally sensitive area
ESU	Evolutionary significant unit
ETNO	End-treatment number
ETW	Edge of travel way
FCAA	Federal Clean Air Act
FES	Flared end section
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FNBT	Facing northbound traffic
FRAP	Fire and Resource Assessment Program
FSBT	Facing southbound traffic
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
gal	Gallon
GHG	Greenhouse gas
H_2S	Hydrogen sulfide
HAR	Highway advisory radio
HFC-134a	1,1,1,2-tetrafluoroethane
HFC-152a	Difluoroethane
HFC-23	Fluoroform
HDPE	High-density polyethylene
HMA	Hot mix asphalt
IIJA	Infrastructure Investment and Jobs Act
IPCC	Intergovernmental Panel on Climate Change
ITS	Intelligent transportation systems
LCP	Lead containing paint
LCFS	Low Carbon Fuel Standard
LED	Light emitting diode
LEDPA	Least environmentally damaging practicable alternative
LMS	Lane management system
LOS	Level of service
$MMTCO_2e$	Metric tons of carbon dioxide
MPH	Miles per hour
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAGPRA	Native American Graves Repatriation Act
NB	Northbound
ND	Negative Declaration
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
No.	Number
NOAA	National Oceanic and Atmospheric Administration
NO_x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSR	Noise study report
N_2O	Nitrous oxide

OH	Overhead
OHWM	Ordinary high water mark
OPR	Office of Planning Research
OSHA	Occupational Safety and Health Act
OSTP	Office of Science and Technology Policy
O_3	Ozone
Pb	Lead
PM	Post mile or particulate matter (air quality)
PPM	Parts per million
PS&E	Plans, specifications, and estimates
RCP	Reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act
RHMA	Rubberized hot mix asphalt
RHMA-OG	Rubberized hot mix asphalt open graded
ROG	Reactive organic gas
RSP	Rock slope protection
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill or southbound
SCAQMD	Shasta County Air Quality Management District
SCS	Sustainable Communities Strategy
SF_6	Sulfur hexafluoride
SHOPP	State Highway Operation and Protection Program
SIP	State Implementation Plan
SLR	Sea-level rise
SO_2	Sulfur dioxide
SO_x	Sulfur oxides
SR	state route
SWMP	Statewide Storm Water Management Plan
SWPPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCAPCD	Tehama County Air Pollution Control District
TMC	Traffic management center
TMDL	Total Maximum Daily Loads
TMS	Transportation management systems
TSCA	Toxic Substances Control Act
UC	Undercrossing
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
U.S. EPA	United States Environmental protection Agency
USFWS	United States Fish and Wildlife Service
VOCs	Volatile organic compounds
VMT	Vehicle miles traveled
WB	Westbound
WDR	Waste Discharge Requirements
WPCP	Water Pollution Control Program
ZEV	Zero emission vehicle

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Appendix A Site Plan

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Chapter 1. Proposed Project

Project Title
Fix 5 Cascade Gateway Project/Cascade SHOPP Project

Lead Agency Name and Address
California Department of Transportation, District 2
Office of Environmental Management, MS-30
1657 Riverside Drive
Redding, CA 96001

Contact Person and Phone Number
Carolyn Sullivan
Caltrans Senior Environmental Planner
Phone: (530) 218-8940
Email: Carolyn.Sullivan@dot.ca.gov

Project Location
The project is located on I-5 in Shasta County from the Hartnell Avenue OC (PM R13.9) to 0.8-mile north of Union School Road (PM R23.2) and in Tehama County at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility (PM 40.7). This is the PM range for the Fix 5 Cascade Gateway Project and includes the PM range for the Cascade SHOPP Project, which is from PM R14.8 to PM R20.0. Portions of the project are located in the City of Redding and the City of Shasta Lake. The majority of the project is located on the United States Geological Survey's Enterprise and Project City 7.5-minute quadrangles. The portion of the project located on I-5 in Tehama County at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility (PM 40.7) is located on the United States Geological Survey's Hooker 7.5-minute quadrangle. A project vicinity map is shown in Figure 1. A project location map showing the project area is provided in Figure 2.

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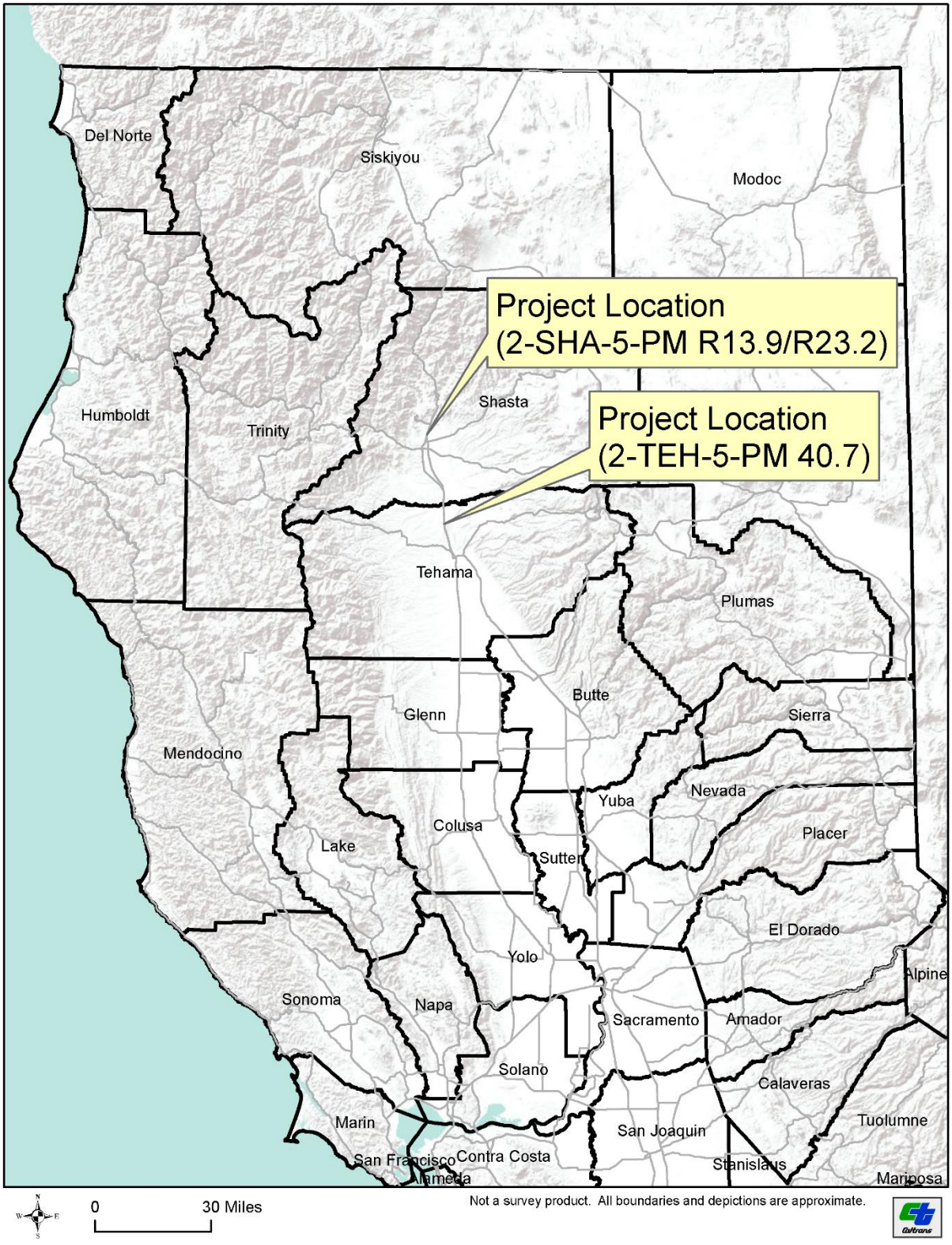


Figure 1 Project Vicinity Map

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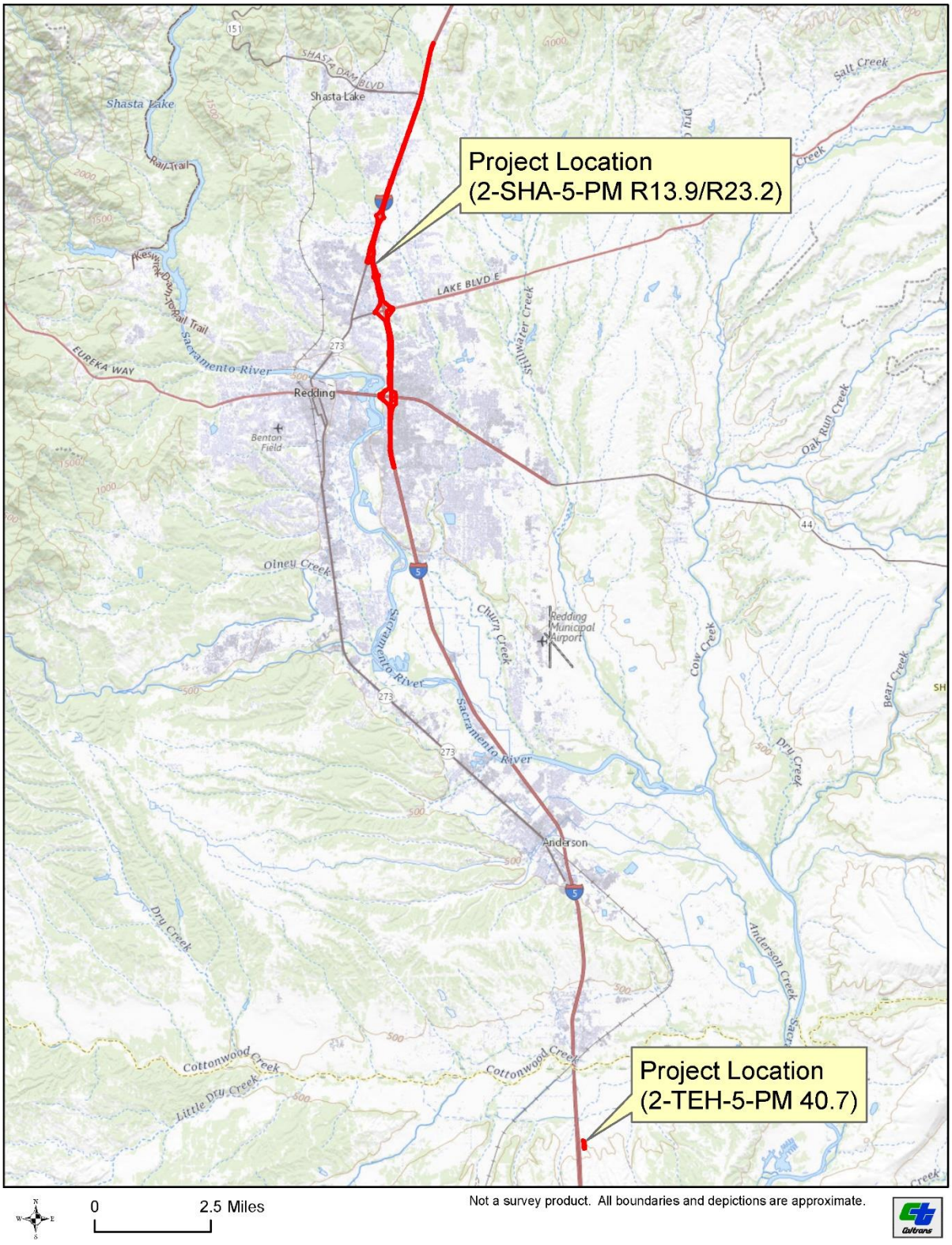


Figure 2 Project Location Map

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Project Sponsor's Name and Address

California Department of Transportation, District 2
Office of Environmental Management, MS-30
1657 Riverside Drive
Redding, CA 96001

Purpose and Need

PURPOSE

Fix 5 Cascade Gateway Project (02-0H920)

The purpose of the Fix 5 Cascade Gateway project (02-0H920) is to improve interstate and interregional goods movement by

- installing a truck only lane in both the NB and SB directions,
- extending auxiliary lanes between interchanges to improve safety and reduce merging conflicts,
- widening bridges with rail upgrades and installing in-fill walls,
- installing and/or upgrading ITS/TMS elements,
- installing a medium/heavy-duty vehicle charging facility, and
- improving emergency (wildfire and winter storm) operations.

Cascade SHOPP Project (EA 02-1J380)

The purpose of the Cascade SHOPP project (EA 02-1J380) is to improve safety, operations, and facility condition on Interstate-5 (I-5) for users and workers by

- improving the pavement quality to enhance smoothness, reduce maintenance efforts, and minimize field maintenance exposure to traffic,
- upgrading bridge rails and installing in-fill walls,
- upgrading drainage,
- installing and/or upgrading ITS/TMS elements,
- increasing the vertical clearance at two structure locations,
- upgrading signs, lighting, and striping, and
- installing median barrier (concrete and cable).

NEED

Fix 5 Cascade Gateway Project (02-0H920)

The Fix 5 Cascade Gateway project (02-0H920) is needed to improve traffic operations, including goods movement, through the Redding area. The mainline flow of traffic is currently degraded by merging and weaving traffic at consecutive interchanges. These interchanges connect I-5 to the North Coast via Routes 44/299W and I-5 to Northern Nevada via Routes 299E/89/44/36/395 (an STAA route). The presence of trucks in the right lane and the lack of continuous auxiliary lanes between interchanges are two major factors to

merging conflicts. System resiliency is reduced during emergency operations, such as wildfires and snowstorms, due to closure and/or chain control on I-5 north of the project. These operations create extended backups of mostly freight trucks, which then impedes access to ramps for local traffic and emergency vehicles. These factors reduce the safety of the facility as well.

Cascade SHOPP Project (EA 02-1J380)

The Cascade SHOPP Project (EA 02-1J380) is needed to improve the safety, traffic operations, and pavement condition within the project limits. The existing signing, lighting, median barrier, and bridge railing do not meet current standards. The resiliency of existing structures is reduced during a seismic resilient due to a lack of in-fill walls. Existing ITS/TMS elements are in poor condition and are needed for daily freeway operations and during emergency events. Two structure locations within the project limits do not meet minimum vertical clearance standards. There are drainage systems within the project limits that have been assessed as having fair or poor health. All these factors reduce the safety and operational effectiveness of the facility.

Project Description

The California Department of Transportation (Caltrans) in partnership with the Shasta Regional Transportation Agency (SRTA) and using state and federal funding, is proposing the Fix 5 Cascade Gateway Project (EA 02-0H920)/Cascade State Highway Operation and Protection Program (SHOPP) Project (EA 02-1J380) which would make improvements to Interstate 5 (I-5) in Shasta County from the Hartnell Avenue OC (PM R13.9) to 0.8-mile north of Union School Road (PM R23.2) and in Tehama County at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility (PM 40.7). This is the PM range for the Fix 5 Cascade Gateway Project and includes the PM range for the Cascade SHOPP Project, which is from R14.8 to R20.0. Both projects would be combined at construction and are addressed as a single project in this Initial Study.

Project Alternatives

Two project alternatives, a build alternative and a no-build alternative, were considered as viable options during preparation of this Initial Study. Details of each alternative are provided below.

Alternative 1—Build Alternative
The build alternative would include:

FIX 5 CASCADE GATEWAY PROJECT (EA 02-0H920)

The Fix 5 Cascade Gateway Project would make the following improvements to I-5:

- The project would reconstruct and widen the existing four-lane freeway into a six-lane freeway with two multi-use lanes and a truck only lane in the NB direction of travel from the Hilltop Drive OC to the Route 151 Junction and in the SB direction of travel from the Route 151 Junction to the Hartnell Avenue OC. The project would add a truck only lane in each direction of travel on I-5 (6.00 miles in the NB direction of travel and 8.19 miles in the SB direction of travel). The addition of a truck only lane in each direction of travel would be accomplished through a combination of constructing new lanes (2.64 miles in the NB direction of travel and 3.29 miles in the SB direction of travel) and converting existing multi-use lanes (3.36 miles in the NB direction of travel and 4.90 miles in the SB direction of travel). Each truck only lane would be 12 feet wide with 10-foot-wide inside and outside shoulders. The truck only lane would be used exclusively by trucks 24 hours per day, seven days per week. In the event of emergencies, the truck only lanes may be temporarily opened to use by all vehicles. The location of the truck only lane in the NB and SB directions of travel is provided below.

    - NB

        - NB Truck Only Lane:
          Begin PM R16.14 (Hilltop OC)
          End PM R22.14 (Route 151 Junction)

        - NB New 3rd Lane 2.64 miles
          Begin PM R16.14 (Hilltop OC)
          End PM R18.78 (Route 273 On-ramp)

        - NB: 6.00 (total) – 2.64 (new) = 3.36 miles (converted)

    - SB

        - SB Truck Only Lane:
          Begin PM R13.95 (Hartnell Avenue OC)
          End PM R22.14 (Route 151 Junction)

        - SB New 3rd Lane 3.29 miles
          Begin PM R18.73 (Route 273 Off-ramp)
          End PM R15.44 (Route 44 Junction)

        - SB: 8.19 (total) – 3.29 (new) = 4.90 miles (converted)

    To accommodate a new truck only lane in the NB and SB directions of travel, widening would occur at the following locations:

        - SB widening in the median from PM R15.4 to R18.6.
        - NB widening in the median from PM R16.5 to R18.6.

- NB widening to the outside from PM R18.6 to R19.2.

- Four-strand high tension cable barrier will be placed in the unpaved median sections when the median width is greater than 36 feet.

- Concrete barrier will be placed in the paved median sections when the median width is 36 feet or less.

- Four auxiliary lanes will be constructed/extended in the following locations:

    - SB PM R16.0/R16.7 – From I-5/SR 44 WB off-ramp terminating at the I-5/SR 299 on-ramp. Widening will be within the median.

    - NB PM R16.1/R17.0 – From I-5/SR 44 WB on-ramp terminating at the I-5/SR 299 off-ramp. Widening will be in the median, while utilizing existing pavement and reconfiguring existing pavement delineation. In addition, it will include a two-lane off ramp at SR 299.

    - SB PM R18.7/R19.4 – From I-5/SR 273 SB off-ramp terminating at the Oasis Road on-ramp. The paved median will be reconstructed, the existing concrete barrier will be upgraded and relocated approximately 5 feet to the east, existing pavement delineation will be reconfigured, and the remaining median pavement will be utilized where feasible.

    - NB PM R18.7/R19.3 – From I-5/SR 273 NB on-ramp terminating at the Oasis Road off-ramp. Widening will be to the outside. The paved median will be reconstructed, existing pavement delineation will be reconfigured, and the remaining median pavement will be utilized where feasible.

- Seven bridges will be widened, six of which will include a ¾-inch minimum polyester concrete overlay (Table 1):

    - Six bridges will be widened in the median and each will include the polyester overlay.

    - One bridge will be widened to the outside and will include a +/- 3" polyester overlay.

    - Bridge widening at the Churn Creek Bridge would extend three piers, remove/replace wing-walls, add bridge rail, and involve deck construction. The extensions of the piers would be constructed to match existing piers (pier dimensions would be approximately 12 feet long, 1-foot wide, and 4 feet deep

on a 2-foot spread footing). Wingwalls on the eastside of the Churn Creek Bridge adjacent to northbound I-5 would be removed/replaced. The new wingwalls would be approximately 25 feet long, 1-foot wide, and 4 feet deep with a 6-foot-3-inch wide spread footing.

Table 1. Structures Within the Project Limits

PM	Bridge (Official Bridge Name)	Bridge Number	Upper Facility	Lower Facility	Replace Median Bridge Rail	Widening Towards (Median/Outside)	Vertical Clearance Work
R15.43	East Redding (5/44) Separation	06-0126L	I-5	Route 44 (freeway)	Yes	Median	No
R15.43	East Redding (5/44) Separation	06-0126R			N/A	N/A	No
R15.56	NB I-5 to WB SR 44 Connector Undercrossing (UC)	06-0127L	I-5	Route 44 (freeway)	Yes	Median	No
R16.15	Hilltop Drive Overcrossing (OC)	06-0101	Hilltop Drive	I-5	N/A	N/A	No
R17.13	Boulder Creek	06-0167	I-5	Boulder Creek	N/A	N/A	N/A
R17.3	Route (5/299) Separation	06-0129L	I-5	Route 299	Yes	Median	No
R17.3	Route (5/299) Separation	06-0129R			Yes	Median	No
R18.07	Twin View Boulevard UC	06-0143L	I-5	Twin View Boulevard	Yes	Median	Yes (SHOPP)
R18.07	Twin View Boulevard UC	06-0143R			Yes	Median	Yes (SHOPP)
R18.48	NB SR 273-NB I-5 Connector Overcrossing (OC)	06-0137G	Route 273	I-5	N/A	N/A	Yes (SHOPP)
R19.0	Churn Creek	06-0107	I-5	Churn Creek	Yes (Outside Bridge Rail)	Outside	NA
R19.4	Oasis Road OC	06-0155	Oasis Road	I-5	N/A	N/A	No

- Widened bridges will include upgraded bridge rail on both sides. (The outside rail will be funded with Infrastructure Investment and Jobs Act (IIJA) funds as part of the Cascade SHOPP Project. Excluding the Churn Creek Bridge rail which will be replaced as part of the 02-0H920 project.

- Vertical clearance under I-5 will be improved by lowering the roadway under Twin View Boulevard by approximately one-foot as part of the Cascade SHOPP Project.

- Vertical clearance on I-5 will be improved to standard under the NB SR 273/NB I-5 Connector OC by reconstructing a portion of the SB profile of I-5 as part of the Cascade SHOPP Project. The roadway would be lowered by approximately one-foot at this location.

- The existing pavement will be cold planed 0.10-foot and a 0.10-foot rubberized hot-mix asphalt (open graded) (RHMA-OG) friction course will be placed from edge of pavement (EP) to EP as a final wearing course for mainline, shoulders, and ramps. The RHMA-OG will reduce the possibility of hydroplaning and provide attenuation of traffic noise. The location of the 0.1' cold plane and repave limits would be from Hartnell OC (PM R13.95) to the 151 OC (PM R22.14) from edge of pavement to edge of pavement.

- Existing ramp configurations will be maintained or improved when feasible.

Truck Only Lane/Emergency Operations Sign Package

NB

A truck only lane/emergency operations sign package would be installed at various locations in the NB lane from PM R15.1to R23.2 (0.8-mile north of Union School Road OC). The sign package would consist of three advance variable message (AVM) signs, two lane management system (LMS) signs, and one panel sign. The AVM signs would be installed at PM R16.15, R16.84, and R22.11. The LMS signs would be installed at PM R18.96 and R21.36. The panel sign would be installed at PM R14.23.

SB

A truck only lane/emergency operations sign package would be installed at various locations in the SB lane from PM R23.2 (0.8-mile north of Union School Road OC) to R13.9 (Hartnell Avenue). The sign package would consist of five panel signs and one LMS sign that would be installed at PM R16.54.

Drainage

The proposed 10-foot inside shoulder will be sloped towards the median for most of the project limits. The number 1 lane (inside lane closest to the median) will typically be sloped towards the median as well except when conforming to the existing six-lane facilities adjacent to the project where the number 1 lanes are sloped to the outside. Several factors were considered in determining the number 1 lane cross slope, including: conforming to existing structures, conforming to existing six-lane sections, paved medians, profile grades paired with geometric configurations, and width of pavement. All the controlling factors will directly or indirectly affect the drainage characteristics.

The existing median drainage will be adjusted, replaced, or extended as needed. Median inlets attached to cross-culverts will be maintained or adjusted to perpetuate the existing connectivity. Additional drainage facilities will be added to meet drainage needs. From the information provided in the culvert inventory assessment, there are 26 culverts in poor to critical condition or in fair condition requiring some type of repair or replacement or need maintenance or repair (Table 2).

Table 2. Proposed Drainage Work for the Fix 5 Cascade Gateway Project

Location PM (Upstream ETNO[1] – Downstream ETNO)	Existing Culvert Length (feet)	Existing Diameter	Proposed Culvert	Proposed Work
R15.60 (3-4)	90	18"	18" RCP	Extend to new flowline/DI. Potentially CIPP.
R15.60 (4-8)	159	12" CSP	18" RCP/HDPE	Remove/reconfigure culvert and DI according to new median. Note: Potential to abandon this section if cross slope drains water to outside shoulder as shown on ca002.
R15.60 (4-5)	18	18" HDPE	18" RCP/HDPE	Remove/reconfigure. May eliminate DI box 4.
R15.60 (5-6)	100	18" HDPE	18" RCP/HDPE	Remove/reconfigure DIs and pipe to barrier design.
R15.60 (6-7)	99	18" HDPE	18" RCP/HDPE	Remove/reconfigure DIs and pipe to barrier design.
R15.69 (1-2)	126	18" RCP	18" RCP	Extend to new flowline.
R15.69 (2-3)	55	18" HDPE	18" RCP/HDPE	Remove/reconfigure culvert and DI according to new median. Note: Potential to abandon this section if cross slope drains water to outside shoulder as shown on ca002.
R15.69 (2-4)	22	18" HDPE	18" RCP/HDPE	Remove/reconfigure. May eliminate DI box 2.
R15.69 (4-5)	97	18" HDPE	18" RCP/HDPE	Remove/reconfigure DIs and pipe to barrier design.
R15.82 (1-2)	106	18" RCP	18" RCP	Shorten/lengthen pipe/ Remove/replace DI to new flowline. New DI(s) in NB median per barrier design.

Table 2. Proposed Drainage Work for the Fix 5 Cascade Gateway Project

Location PM (Upstream ETNO[1] – Downstream ETNO)	Existing Culvert Length (feet)	Existing Diameter	Proposed Culvert	Proposed Work
R16.21 (1-2)	103	18" RCP	18" RCP	Replace or adjust median DI. New DIs per barrier design.
R16.21 (2-3)	74	36" HDPE ?	18" (36") RCP/HDPE	Remove/reconfigure. Note: Existing culvert size seems too big.
R16.53 (3-2)	7	24" RCP	24" RCP	Remove/reconfigure. Add DI between 3-4 per barrier design.
R16.53 (2-5)	202	36" HDPE?	24" (36") RCP/HDPE	Remove/reconfigure. Note: Existing culvert size seems too big.
R16.76 (2)	Var	24" RCP	24" RCP	Remove/reconfigure DI. New DI in NB median per barrier design.
R16.94 (2-1)	135	36"	No Change	New DI NB median per barrier design.
R17.06 (2-1)	115	24" RCP	No change	Remove/reconfigure DI. New DI in NB median per barrier design.
R17.17 (2)	NA			Remove/replace DI for ramp widening/rock blanket. Add new DI/culvert to gore area.
R17.17 (2-3)	72	18" RCP	No Change	Remove/reconfigure DI. New DI in NB median per barrier design.
R17.40 (2)	NA	24" RCP	No Change	Reconfigure DI to new FL.
R17.55 (2)	NA	24" RCP	No Change	Reconfigure DI to new FL.
R17.75 (2)	NA	24" RCP	No Change	Reconfigure DI to new FL.
R17.88 (4)	NA	18" RCP		Reconfigure DI to new FL.
R18.29 (2)	NA	24" RCP		Reconfigure DI to new FL.
R18.40 (2)	NA	24" RCP		Reconfigure DI to new FL.
R18.72 (3-4)	309	18" CSP	24" RCP	Remove/reconfigure DI and culvert. New DI(s) in NB median per barrier design.
R18.72 (4-5)	345	18" CSP	24" RCP	Remove/reconfigure DI and culvert. New DI in NB median per barrier design.
R18.72 (5-6)	24	18" CSP	24" RCP	Remove culvert and DI. (unless inside shoulder is tipped inboard)

[1]End Treatment Number

Detention basins, infiltration trenches, and underground detention vaults will be utilized as necessary to attenuate or retain peak flows during storm events. A portion of the project is located adjacent to a flood plain, which is associated with Boulder Creek and Churn Creek. When required, increased stormwater runoff from the additional impervious area will be metered to maintain pre-construction out-flows.

Railroad Involvement

There is no railroad within the project limits, therefore this project requires no railroad involvement.

Transportation Management Systems

There are 34 existing traffic census station locations with 64 loops and six piezoelectric axle sensors (piezos) within the project limits; the six piezos and 45 loops will be replaced, 19 loops will be protected in place, and three new loops will be added.

There are seven existing ITS field elements within the project limits that must be protected in place or replaced if damaged during construction. The existing fiber optic vaults will be adjusted to grade to account for the change in elevation due to the roadway widening in the median.

Two new ITS elements are anticipated as part of this project: A closed-circuit television (CCTV) camera near Hilltop OC at PM R16.15 and placement of fiber optic system from PM R18.6 to R20.0. Additional ITS elements may be considered and included; the ITS element commitments made during the application process will be incorporated into the project scope. As funding sources become available, grant requirements evolve, and technologies advance the items of work for ITS elements could expand or be reduced.

Utilities

Existing utilities within the project limits have been identified and potholed as outlined in the Caltrans utility policy. Several existing utilities cross the roadway where construction activities are expected; however, no conflicts are anticipated, and these utilities will be protected in place. Fiber optic and electrical wiring in conduit that are attached to bridges will need to be relocated to accommodate bridge widening.

Borrow Site, Disposal Site, and Material Storage

No borrow sites will be utilized on this project.

Approximately 70,000 cubic yards of asphalt grindings and other materials will be generated from roadway excavation and cold planing. Grindings and other construction debris will become property of the contractor. Some excavated materials may be reused onsite as embankment and/or disposed of at an optional disposal site located at one of the Shasta County Road Department's disposal yards; the actual location is still to be determined.

Highway Planting and Erosion Control

Disturbed slopes in the median and new embankment slopes will be stabilized with erosion control measures as recommended by the landscape architect. Additional roadway planting and irrigation will be required to adjust, modify, or replace any highway planting disturbed during construction, which is anticipated near the northbound Oasis Road off-ramp.

Storm Water

This project will have a total disturbed soil area (DSA) of 32.0 acres. The DSA was calculated as all roadway excavation, widening, embankment areas, and staging areas. This project will be constructed under a Storm Water Pollution Prevention Program (SWPPP) Risk Level 2. The total project area is estimated at 260 acres. The existing impervious area is 53.1 acres. The impervious area after the project is completed is estimated at 69.8 acres. The net new impervious area is estimated at 16.6 acres. The replaced impervious area is estimated at 9.3 acres. The new impervious surface subject to MS4 threshold criteria is estimated at 25.9 acres (including 9.3 acres of replacement area). This project is within the boundary of the City of Redding Phase II Urban MS4 Permit Area.

Treatment best management practices (BMP) will be used within the project limits when feasible and are anticipated to utilize existing and proposed bio-strips, bio-swales, detention basins, and infiltration basins. Areas within the project where treatment BMPs are not feasible are anticipated to use alternative compliance credits established during the development and construction of the Redding to Anderson Six-Lane Project (RASL EA: 02-4C40V). The RASL Project's Storm Water Data Report stated, "The new and existing treatment BMPs will treat 87 acres of pavement area. The additional 43 treatment BMP acres will be documented and used as an alternative compliance credit source for the 02-0H920 North Redding 6 Lane and other future projects in this corridor/watershed, subject to RWQCB concurrence."

In-fill Walls

In-fill walls will be placed on the 6 existing structures being widened towards the median. This will add redundancy during a seismic event. As part of the Cascade SHOPP project infills wall will be placed on the existing NB 44 Separation and Connector.

Charging Station

A new medium and heavy-duty electric vehicle charging facility will be installed at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility along I-5 in Tehama County at PM 40.7 in the NB direction of travel. The charging station will include two truck-zero emission vehicle (ZEV) charging stations and security cameras.

Right-of-Way

All work would occur within Caltrans' existing right of way, which is owned in fee. No additional right-of-way would be acquired to complete the work.

CASCADE SHOPP PROJECT (EA 02-1J380)

This alternative proposes to rehabilitate the roadway with the following strategies:

Vertical Clearance Improvements

This project proposes to improve vertical clearance at locations listed in Table 3.

Table 3. Proposed Work at Locations Having Non-Standard Vertical Clearances

Post Mile	Location Name	Existing Vertical Clearance	Proposed Vertical Clearance	Proposed Work
R18.07	Twin View Boulevard UC (06 0143L & 06 0143R)	14 feet 7 inches	15 feet 0 inches	Excavate and reconstruct Twin View Boulevard between ramp intersections. Proposed structural section is 0.6' hot mix asphalt (HMA) and 0.75' class 2 aggregate base. No impact to existing curb and gutter.
R18.48	N273-N5 Connector OC (06 0137G)	15 feet 10 inches	16 feet 6 inches	Excavate existing SB I-5 pavement section, place new structural section from PM R18.43 to R18.53

The proposed pavement structural section for the section of I-5 under the N273-N5 Connector OC location is as follows:

- 0.10' Rubberized hot mix asphalt (RHMA) (open-graded)
- 0.20' RHMA (gap-graded)
- 0.45' hot mix asphalt – A
- 1.80' Class 2 aggregate base
- Subgrade enhancement geotextile

Additional work associated with the vertical clearance improvements includes shoulder backing, guardrail replacements, a drainage inlet adjustment and concrete barrier replacement. It is expected that K-rail will be used as a worker safety measure during construction at the N273-N5 Connector location.

Lane Cross Slope Improvement

This alternative includes a variable depth grind and replace with a 0.2' HMA overlay to bring lane cross slopes to 1.5% minimum. It is assumed that 0.1' RHMA-O will be added as part of the non-SHOPP work following the 0.2' HMA overlay.

- Dig-outs will be utilized to repair locations of failed pavement.

Polyester Overlay

This project includes removing the existing polyester overlay, preparing the decks, placing new polyester overlay, replacing joint seals, and replacing barrier rail on the non-widened side of the structure. on the following structures:

- East Redding (5/44) Separation (06 0126L)
- N5-W44 Connector UC (06 0127L)
- Route 5/299 Separation (06 0129L)
- Roue 5/299 Separation (06 0129R)
- Twin View Boulevard UC (06 0143L)
- Twin View Boulevard UC (06 0143R)
- Churn Creek (06 0107)

Bridge Rail

The outside bridge rail replacement will be funded with IIJA funds as part of the Cascade SHOPP Project. Excluding the Churn Creek Bridge rail which will be replaced as part of the 02-0H920 project.

In-fill Walls

This project will construct in-fills wall on the existing NB 44 Separation and Connector.

Rock Blanket

Rock blanket in the interchange gore areas will be added to meet Highway Design Manual standards. The rock blanket should match the look of the rock blanket included in the RASL Project.

Drainage

This project includes work on 26 culverts, as shown in Table 4 below.

Table 4. Proposed Drainage Work for the Cascade SHOPP Project

Location PM (Upstream ETNO[1] – Downstream ETNO)	Existing Culvert Length (feet)	Existing Diameter	Proposed Culvert	Proposed Work
R14.58 (3-6)	667	24"	24" RCP	Partial replacement; then apply cured-in-place pipeliner (CIPP)

Table 4. Proposed Drainage Work for the Cascade SHOPP Project

Location PM (Upstream ETNO[1] – Downstream ETNO)	Existing Culvert Length (feet)	Existing Diameter	Proposed Culvert	Proposed Work
R14.58(11)	N/A	24"	24" Concrete Flared End Section (FES)	Replace FES.
R14.96 (16-14)	78	24"	24" Reinforced Concrete Pipe (RCP)	Partial replacement; then CIPP
R14.96 (5-4)	111	24"	No change	CIPP
R14.96 (2-1)	168	24"	24" RCP	Cut and cover replace pipe and inlet/outlet.
R15.50 (3-2)	212	18"	24" RCP)	Cut and cover replace pipe. New DIs according to median design. Note: Potential to abandon SB DIs if cross slope drains water to outside shoulder as shown on ca002. New DIs needed in NB median (guardrail to barrier)
R15.50 (2-1)	98	24"	24" RCP	CIPP. Extend to new flowline/DI to accommodate median design.
R15.98 (3-2)	143	24"	24" RCP	Replace median drainage inlet (DI) and 20 ft of pipe (Not sure if any pipe needs replaced. The joint separation appears to have a band around it.)
R16.94 (3-2)	104	36"	No change	CIPP. Remove/replace DI 2.
R17.30 (2-1)	145	18"	18" CSP	Cut and cover replace pipe and inlet/outlet. Add approximately 10 ft circle of vegetation control (minor concrete) centered on the outlet.
R17.40 (2-1)	114	24"	24" RCP	Replace 8 ft of pipe at outlet.
R17.70 (1)	NA			Repair/replace inlet apron.
R17.75 (1)	NA			RSP at outlet
R17.85 (3-1)	18	N/A	N/A	Remove flume downdrain and replace with 4 ft wide RSP-lined ditch (abandon/remove)
R17.88 (1)	NA			Address scour at FES.
R18.04 (3-2)	189	24"	No change	CIPP
R18.50 (4-3)	95	18"	24" RCP	Cut and cover replace 8' segment of pipe, NOT including the inlet/outlet
R18.50 (3-2)	64	18"	24" RCP	Do NOT Cut and cover replace pipe and inlet/outlet, it just needs cleaning. Reconfigure DI to new FL

Table 4. Proposed Drainage Work for the Cascade SHOPP Project

Location PM (Upstream ETNO[1] – Downstream ETNO)	Existing Culvert Length (feet)	Existing Diameter	Proposed Culvert	Proposed Work
R18.72 (3-2)	95	18"	24" RCP	Cut and cover replace pipe and inlet/outlet. Reconfigure DI to new FL
R18.72 (2-1)	71	18"	24" RCP	Cut and cover replace pipe and inlet/outlet Reconfigure DI to new FL
R18.73 (2-1)	273	54"	No change	CIPP. A clear water diversion is likely needed.
R18.79 (3-2)	151	18"	24" RCP	Cut and cover replace pipe and inlet/outlet. Add 5 new inlets to replace existing slotted drain.
R19.27 (2-1)	50	24"	24" RCP	Cut and cover replace pipe and inlet/outlet
R19.38 (3-2)	13	24"	24" RCP	Cut and cover replace pipe and inlet/outlet
R19.38 (2-1)	159	24"	24" RCP	Cut and cover replace pipe and inlet/outlet
R19.74 (4-3)	161	18"	24" RCP	Cut and cover replace pipe and inlet/outlet. Add 5 new inlets to replace existing slotted drain.

[1]End Treatment Number

The District Office of Roadside Maintenance expressed an interest in using a UV-cured CIPP liner for the culvert at PM R18.73.

A change in drainage patterns could result from changing the lane cross slopes. Coordination with the Hydraulics Branch during design is necessary and is already in progress-for the Fix 5 Cascade Gateway companion project (02-0H920).

Traffic Management Systems and Census Loops

This project proposes to protect the 29 existing census loops in place or replace if damaged. No impacts to census loops from vertical clearance work are anticipated. Two new census loops are proposed: one at the SR 299/Lake NB on-ramp and one at the SB Twin View on-ramp. Existing and proposed traffic census stations within one mile of the project limits are shown in Table 5.

Table 5. Existing Traffic Census Stations Within One Mile of the Project Limits

No.	Cabinet*	County-Route - Actual PM	Description	Potential Impact	Condition
298	1	Hartnell Avenue Sha-5-R13.97	78' north of Hartnell Overcrossing (OC)	Protect or Replace (12 Loops and 6 Piezos)	Active
R214	0	Cypress NB off Sha-5-R14.37	Pull Box (PB) 12' north of (n/o) RIGHT LANE MUST TURN RIGHT	Protect-in-Place (3 Loops)	Active

Table 5. Existing Traffic Census Stations Within One Mile of the Project Limits

No.	Cabinet*	County-Route - Actual PM	Description	Potential Impact	Condition
			sign.		
R215	0	Cypress SB on Sha-5-R14.39	PB located on Left (Lt) shoulder 288' south of (s/o) Cypress	Protect-in-Place (1 Loop)	Active
304	1	Redding, Cypress Ave Sha-5-R14.94	South of NB off-ramp Central Redding Interchange	Protect or Replace (8 Loops)	Active
R216	0	Cypress Ave SB off Sha-5-R14.64	PB 950' n/o Cypress Ave Centerline (CL), by light standard (LS) #14651	Protect-in- Place (1 Loop)	Active
R217	0	Cypress Ave NB on Sha-5-R14.62	PB 834' n/o Cypress CL, 127' south of Merging Sign	Protect-in- Place (1 Loop)	Active
R1	0	NB off to WB 44 Sha-5-R15.71	Loop 72' south of end of MBGR before gore connecting Dana ramp. Pull box located by MERGING sign between ramp. Loop ends in cabinet with R360/R5	Protect or Replace (1 Loop)	Active
R360	0	Seg WB on from Dana Dr Sha-5-R15.149	Loop 202' west of ramp metering cabinet. Loops end in cabinet with R1/R5 located on south side of Dana on-ramp to WB 44	Protect or Replace (1 Loop)	Active
R2	0	Seg EB on from NB 5 Sha-44-R15.31	285' east of (e/o) Hilltop NB edge of traveled way (etw). PB shared with R94 EB on-ramp from Hilltop	Protect or Replace (1 Loop)	Active
R3	0	Hilltop NB off Sha-5-R15.27	PB 443' s/o Hilltop Dr, 2' behind SIGNAL AHEAD sign	Protect or Replace (1 Loop)	Active
R4	0	SB off to EB 44 Sha-5-R15.39	77' south of paved gore on Lt shoulder by 30 MPH Curve sign	Protect or Replace (1 Loop)	Active
196	1	Redding, Junction Route 44 Sha-5-R15.842	Cabinet on SB shoulder 825' s/o PM R16.0, pullout avail	Protect or Replace (6 Loops)	Active
R5	0	SB off to WB 44 Sha-5-R15.71	Pull box located in gore area by Merging sign between ramps. Loop in conduit with ramp metering loops and terminate in Ramp Metering side cabinet with R1/R360	Protect or Replace (1 Loop)	Active
R6	0	Route 299/Lake SB on Sha-5-R17.231	SB On from Route 299 / Lake Boulevard.	Protect or Replace (2 Loops)	Active

Table 5. Existing Traffic Census Stations Within One Mile of the Project Limits

No.	Cabinet*	County-Route - Actual PM	Description	Potential Impact	Condition
R7	0	Route 299/Lake NB off Sha-5-R17.278	PB on W shoulder 178' s/o 299 CL, 11' ETW, loops adjacent PB	Protect or Replace (3 Loops)	Active
R8	0	Route 299/Lake SB off Sha-5-R17.551	PB located on W shoulder 4' s/o LS 17551, 32' n/o edge paved gore	Protect or Replace (1 Loop)	Active
R9	0	Sha-5-R-TBD	Route 299/Lake NB on	1 Proposed Loop	Proposed
R10	0	Sha-5-R-TBD	Twin View SB on	1 Proposed Loop	Proposed
R11	0	Twin View NB off Sha R17.905	114' south of exit sign 681 near right of way fence east side	Protect or Replace (1 Loop)	Active
R12	0	Twin View SB off Sha-5-R18.21	4' south of double post direction sign	Protect or Replace (1 Loop)	Active
R13	0	Twin View NB on Sha-5-R18.02	3' north of PEDESTRIAN PROHIBITED sign	Protect or Replace (1 Loop)	Active
R14	0	Route 273 SB off Sha-273-R20.028	1320' north of Caterpillar Road SB	Protect or Replace (2 Loops)	Active
R15	0	Route 273 NB on Sha-273-R19.91	740' north of Caterpillar Road NB	Protect or Replace (1 Loop)	Active
R16A	0	Oasis Road SB on from EB Oasis Sha-5-R19.374	144' from Oasis Road CL across from PEDESTRIANS PROHIBITED sign.	Protect or Replace (1 Loop)	Active
R17	0	Oasis Road NB off Sha-5-R19.25	196' south of Oasis Road CL near PEDESTRIANS PROHIBITED sign.	Protect or Replace (2 Loops)	Active
312	1	Redding, Oasis Road Sha-5-R19.08 SB	291' north of Churn Creek Bridge	Protect or Replace (12 Loops and 6 Piezos)	Active
R16B	0	Oasis Road SB on from WB Oasis Sha-5-R19.43	PB on W shoulder near beg. MBGR, 60' n/o Lighting Standard 19419	Protect or Replace (1 Loop)	Active
R18	0	Oasis Road NB on Sha-5-R19.53	185' north of Oasis Road CL by PEDESTRIANS PROHIBITED sign	Protect or Replace (1 Loop)	Active
R19	0	Oasis Road SB off Sha-5-R19.45	292' north of Oasis Road CL, 50 s/o Beg. Concrete wall at PEDESTRIANS PROHIBITED sign	Protect or Replace (1 Loop)	Active
R20	0	Pine Grove SB on Sha-5-R20.86	173' south of Pine Grove CL at PEDESTRIANS PROHIBITED sign	Protect in Place (1 Loop)	Active
R21	0	Pine Grove NB off Sha-5-R20.86	Pine Grove NB off 186' south of Pine Grove CL at	Protect in Place (1 Loop)	Active

Table 5. Existing Traffic Census Stations Within One Mile of the Project Limits

No.	Cabinet*	County-Route - Actual PM	Description	Potential Impact	Condition
			PEDESTRIAN PROHIBITED sign		

*Cabinet: 0 = A station that does not connect to the Traffic Management Center (TMC) via phone line/wireless modem.
1 = A station that does connect to the TMC via phone line/wireless modem.

ITS Elements

This project proposes to upgrade four ITS elements within the project limits, as shown in Table 6.

Table 6: Proposed ITS Upgrades

PM	Location	Element
R16.13	Hilltop Drive	Highway Advisory Radio (HAR)
R18.60	SB 5-SB273 Connector	CCTV
R19.40	Oasis Road OC	CMS, FNBT
R19.40	Oasis Road OC	CMS, FSBT

Other existing ITS elements must be protected in place or replaced if damaged during construction. The changeable message signs (CMS) are currently bridge-mounted and will be replaced with stand-alone overhead (OH) sign structures.

Lighting

New and upgraded replacement lighting is included in this alternative. Three light poles along the ramp between SB I-5 to EB SR-44 will be relocated further up the cut slope.

Overhead Signs

This project includes 12 overhead signs. Eleven are new and one is a replacement (PM R18.80). Of the 12 overhead signs, ten will be with foundations, and two will be hung on bridges (Table 7).

Table 7: Proposed Overhead Signs

PM	Location	Notes
R16.10	Hilltop Drive	Bridge-mounted; FNBT
R16.10	Hilltop Drive	Bridge-mounted; FSBT
R16.60	Between Hilltop Drive and Lake Boulevard	FNBT

Table 7: Proposed Overhead Signs

PM	Location	Notes
R17.00	South of Lake Boulevard NB off-ramp	FNBT
R17.40	North of the Route 5/299 Separation	FNBT
R17.70	North of the Lake Boulevard NB on-ramp and SB off-ramp	FNBT
R17.80	South of the NB Twin View Boulevard off-ramp	Facing northbound traffic (FNBT)
R18.00	South of the Twin View Boulevard UC	FNBT and facing southbound traffic (FSBT)
R18.30	North of the Twin View Boulevard SB off-ramp	FSBT
R18.80	North of the SB 5-SB 273 Connector	FSBT; Remove existing OH sign and place new OH sign approximately 270 feet upstream.
R19.20	South of the Oasis Road NB off-ramp	FNBT

Safety Systems

Concrete Barrier
This project proposes to replace all existing nonstandard concrete median barrier throughout the project limits.

Cable Barrier

Four-strand cable barrier will be placed as part of this project, replacing some existing three-strand barrier, plus adding some new cable barrier. New cable barrier will be installed in unpaved medians, replacing the existing median earthen berm and in areas where the median width exceeds 36 feet.

Guardrail

Existing MBGR will be replaced with Midwest Guardrail Systems, including transition railings and terminal systems. Guardrail on ramps is included and the new guardrail will have metal posts.

Material Borrow and Disposal

Excess generated material should be used to flatten slopes within the right of way to improve the clear recovery zone (CRZ). The Fix 5 Cascade Gateway Project (02-0H920) will remove the existing earthen median berms. The material could be reused to make the fill slope recoverable at the north end of the NB5- WB44 Connector OC.

Earth Retaining Systems

This project has no effect on any existing earth retaining systems.

Reversible Lanes

This project does not qualify as a capacity increasing or a major street/highway realignment project, therefore reversible lanes have not been considered. However, this project's companion project, the Fix 5 Cascade Gateway Project (02-0H920), would widen the existing freeway to six lanes. Reversible lanes were analyzed during development of the Fix 5 Cascade Gateway Project (02-0H920) and determined not feasible.

Highway Planting and Irrigation

Highway planting and irrigation will need to be replaced following the CRZ improvement north of the N5-W44 Connector OC.

Erosion Control

Erosion control is proposed at culvert replacements, in the unpaved median where cable barrier is to be replaced, and in areas with CRZ improvements. It also may be needed around the OH sign work.

Noise Barriers

This project does not involve noise barriers.

Right-of-Way

Most work would occur within Caltrans' existing right of way, which is owned in fee. Two temporary construction easements are expected to be acquired from properties zoned Commercial and Miscellaneous Use for drainage work extending outside the state right of way. No additional right-of-way would be acquired to complete the work.

Construction of the project would start in spring 2025 and be completed by November 2026. A site plan including the environmental study limit evaluated is shown in Appendix A. Project design details are preliminary and are subject to change during the project design phase.

Standard Measures Incorporated into the Project

This project contains a number of standardized project measures which are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are addressed in more detail in Chapter 2 and Chapter 3 and are listed below.

Aesthetics

- **[AR-1]** Aesthetic treatment (such as tribal patterns) to the bridges/guardrails/retaining walls would be included to address context sensitivity.

- **[AR-2]** Temporary access roads, construction easements, and staging areas that were previously vegetated would be restored to a natural contour and revegetated with regionally appropriate native vegetation.

- **[AR-3]** Where feasible, guardrail terminals would be buried; otherwise, an appropriate terminal system would be used, if appropriate.

- **[AR-4]** Where feasible, construction lighting would be limited to within the area of work.

- **[AR-5]** Where feasible, the removal of established trees and vegetation would be minimized. Environmentally sensitive areas would have Temporary High Visibility Fencing (THVF) installed before start of construction to demarcate areas where vegetation would be preserved and root systems of trees protected.

Transportation

- **[T-1]** Pedestrian and bicycle access would be maintained during construction.

- **[T-2]** The contractor would be required to schedule and conduct work to avoid unnecessary inconvenience to the public and to maintain access to driveways, houses, and buildings within the work zones.

- **[T-3]** A Transportation Management Plan (TMP) would be applied to the project.

Public Services

- **[PS-1]** All emergency response agencies in the project area would be notified of the project construction schedule and would have access to Interstate 5 throughout the construction period.

- **[PS-2]** The project is located within the "Very High" CAL FIRE Threat Zone. The contractor would be required to submit a jobsite fire prevention plan as required

by CalOSHA before starting job site activities. In the event of an emergency or wildfire, the contractor would cooperate with fire prevention authorities.

- **[PS-3]** Prior to construction, the Transportation Management Plan prepared for the project will be subject to review/approval from the California Highway Patrol and CAL FIRE.

Cultural Resources

- **[CR-1]** Caltrans would coordinate with the Wintu_Tribe and incorporate measures to protect tribal resources, including potential work windows associated with tribal ceremonies.
- **[CR-2]** An archaeological monitor and Wintu_tribal monitor would be used during ground-disturbing activities.
- **[CR-3]** If cultural materials are discovered during construction, work activity within a 60-foot radius of the discovery would be stopped and the area secured until a qualified archaeologist can assess the nature and significance of the find in consultation with the State Historic Preservation Officer (SHPO).

- **[CR-4]** If human remains and related items are discovered on private or State land, they would be treated in accordance with State Health and Safety Code § 7050.5. Further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to California Public Resources Code (PRC) § 5097.98, if the remains are thought to be Native American, the coroner would notify the Native American Heritage Commission (NAHC) who would then notify the Most Likely Descendent (MLD).
- **[CR-5]** Human remains and related items discovered on federally-owned lands would be treated in accordance with the Native American Graves Repatriation Act of 1990 (NAGPRA) (23 USC 3001). The procedures for dealing with the discovery of human remains, funerary objects, or sacred objects on federal land are described in the regulations that implement NAGPRA 43 CFR Part 10. All work in the vicinity of the discovery shall be halted and the administering agency's archaeologist would be notified immediately. Project activities in the vicinity of the discovery would not resume until the federal agency complies with the 43 CFR Part 10 regulations and provides notification to proceed.

Hydrology and Water Quality

- **[WQ-1]** The project would comply with the Provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ) as amended by subsequent orders, which became effective July 1, 2013.

If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (Order 2009-0009-DWQ) is also required.

Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one acre) that includes erosion control measures and construction waste containment measures to protect Waters of the State during project construction.

The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the *Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase.

Construction may require one or more of the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (e.g., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.
- Temporary sediment control and soil stabilization devices would be installed.

- Existing vegetated areas would be maintained to the maximum extent practicable.

- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.

- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plan.

- For SWPPP projects (which are governed according to both the Caltrans NPDES permit and the Construction General Permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES and CGP and the corresponding requirements of these permits are adhered to. For WPCP projects (which are governed according to the Caltrans NPDES permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES permit is adhered to.

- **[WQ-2]** The project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans Storm Water Management Plan. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ) as amended by subsequent orders.

  The project design may include one or more of the following:

  - Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project.

  - Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants.

- **[WQ-3]** All construction site BMPs shall follow the most current edition of the Construction Site Best Management Practices (BMPs) Manual. For this project, these are likely to include erosion and sediment control BMPs such as ground cover, fiber rolls, gravel bag check dams, and other listed methods.

- **[WQ-4]** Prior to any ground-disturbing activities, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) that identifies measures to be implemented for erosion control, spill prevention, and construction waste

containment. These measures shall be implemented during construction to minimize impacts on water quality and the aquatic environment.

- **[WQ-5]** Environmentally sensitive areas (ESAs) shall be designated and clearly delineated with high-visibility fence on the contract plans during the design phase to avoid potential discharges and unauthorized disturbance to riparian habitat.

Hazards and Hazardous Materials

- **[HW-1]** Per Caltrans requirements, the contractor(s) would prepare a project-specific Lead Compliance Plan (CCR Title 8, § 1532.1, the "Lead in Construction" standard) to reduce worker exposure to lead-impacted soil. The plan would include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of lead-impacted soil.

- **[HW-2]** When identified as containing hazardous levels of lead, traffic stripes would be removed and disposed of in accordance with Caltrans Standard Special Provision "Residue Containing Lead from Paint and Thermoplastic."

- **[HW-3]** If treated wood waste (such as removal of sign posts or guardrail) is generated during this project, it would be disposed of in accordance with Standard Specification "Treated Wood Waste."

- **[HW-4]** Asphalt grindings associated with the removal of yellow and white road striping shall be removed and disposed of by the contractor in accordance with Caltrans Standard Special Provision 36-4, which requires the contractor to prepare a Lead Compliance Plan.

- **[HW-5]** A site investigation for aerially deposited lead and asbestos would be conducted in the Design phase to determine whether hazardous soils/asbestos are present and what actions, if any, would be required.

- **[HW-6]** A specification(s) related to excavation, management, and disposal of ADL soils would be included in the contract if needed.

- **[HW-7]** If asbestos containing materials are identified in the 1 Phase, specifications would be included in the construction contract to address health and safety, notification, removal, handling, containment, and disposal of ACM.

Noise

- **[N-1]** The contractor shall comply with Caltrans Standard Specification 14-8.02 "Noise Control", which includes provisions for minimizing construction-related noise and vibration. These include controlling and monitoring noise resulting from work activities and ensuring that construction-related noise levels do not exceed 86 dBA Lmax at 50 feet from the job site from 9 p.m. to 6 a.m.

Geology and Soils

- **[GS-1]** Bridges shall be designed in accordance with current seismic safety standards.

- **[GS-2]** The project would be designed to minimize slope failure, settlement, and erosion using recommended construction techniques and Best Management Practices (BMPs). New earthen slopes would be vegetated to reduce erosion potential.

- **[GS-3]** In the unlikely event that paleontological resources (fossils) are encountered, all work within a 60-foot radius of the discovery would stop, the area would be secured, and the work would not resume until appropriate measures are taken.

Air Quality

- **[AQ-1]** The contractor shall comply with Section 10-5 "Dust Control", Section 14-9 "Air Quality", and Section 18 "Dust Palliatives" in the *2023 Caltrans Standard Specifications*. Compliance with these Standard Specifications would include implementing the following dust and pollutant reduction/control measures to minimize any air quality impacts resulting from construction activities:

    - Water or a dust palliative shall be applied to the site and equipment as often as necessary to control fugitive dust emissions.

    - Construction equipment and vehicles shall be properly tuned and maintained. All construction equipment shall use low sulfur fuel as required by California Code of Regulations Title 17, Section 93114.

    - Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, shall be used.

- All transported loads of soils and wet materials shall be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) shall be provided to minimize emission of dust during transportation.

- Dust and mud that are deposited on paved, public roads due to construction activity and traffic shall be promptly and regularly removed to reduce PM emissions.

Greenhouse Gas Emissions

- **[GHG-1]** Caltrans Standard Specification "Air Quality" requires compliance by the contractor with all applicable laws and regulations related to air quality (Caltrans Standard Specification [SS] 14-9).

- **[GHG-2]** Compliance with Title 13 of the California Code of Regulations, which includes restricting idling of diesel-fueled commercial motor vehicles and equipment with gross weight ratings of greater than 10,000 pounds to no more than 5 minutes.

- **[GHG-3]** Caltrans Standard Specification "Emissions Reduction" ensures construction activities adhere to the most recent emissions reduction regulations mandated by the California Air Resource Board (CARB) (Caltrans SS 7-1.02C).

- **[GHG-4]** Use of a Transportation Management Plan (TMP) to minimize vehicle delays and idling emissions. As part of this, traffic would be scheduled and directed to reduce congestion and related air quality impacts caused by idling vehicles along the highway during peak travel times.

- **[GHG-5]** All areas temporarily disturbed during construction would be revegetated with appropriate native species, as appropriate. Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. This replanting would help offset any potential CO_2 emissions increase.

- **[GHG-6]** Pedestrian and bicycle access will be maintained during project activities.

Wildfire

- **[WF-1]** Standard Specification 7-1.02M(2) for fire prevention.

- **[WF-2]** It is Caltrans District 2 standard practice to require the contractor to produce an Emergency Evacuation Plan (EEP) for projects located within elevated fire danger areas mapped by the CAL FIRE Fire and Resource Assessment Program (FRAP). Standard Special Provision 12-4.02A(3)(c) would be included in contract specifications to require the contractor prepare an EEP.

Biological Resources

Sensitive Natural Communities and Wetlands

- **[BR-1]** Work in Churn Creek shall be completed during the period between June 1 and October 15, or as otherwise specified in resource-agency permits. Upon completion of work, the contractor shall restore temporarily disturbed streambed to near pre-construction conditions.

- **[BR-2]** Potential direct and indirect effects on water quality and the aquatic environment shall be avoided by implementing standard construction best management practices for erosion control and spill prevention.

- **[BR-3]** Upon completion of work, the contractor shall restore the topography of temporarily disturbed riparian areas to pre-construction conditions and stabilize soils with appropriate erosion control methods.

- **[BR-4]** Removal of existing riparian vegetation shall not exceed the minimum necessary to complete operations.

- **[BR-5]** All wetlands within the project area shall be protected by with environmentally sensitive area (ESA) fencing as a first order of work to ensure construction activities do not impact the areas.

Special-Status Species

- **[BR-6]** Invasive Species
    - Straw, straw bales, seed, mulch, or other material used for erosion control or landscaping which would be free of noxious weed seed and propagules.
    - All equipment would be thoroughly cleaned of all dirt and vegetation prior to entering the job site to prevent importing invasive non-native species. Project personnel would adhere to the latest version of the *California Department of Fish and Wildlife Aquatic Invasive Species Cleaning/Decontamination Protocol (Northern Region)* for all field gear and equipment in contact with water.
- **[BR-7]** Invasive Species
    - In accordance with Caltrans' non-standard specification 14-6.05, prior to beginning work, the contractor shall prepare an invasive species control plan that identifies measures to be implemented to prevent the introduction and/or spread of invasive species (e.g., noxious weeds). The invasive species control plan shall be approved by Caltrans environmental staff and implemented prior to beginning work.

Wildlife Corridors and Nursery Sites

- **[BR-8]** To avoid disturbing nesting birds, tree and shrub removal shall be restricted to the period between October 1 and January 31. If this is not practicable, a contractor-supplied biologist shall conduct a pre-construction survey for nesting birds within 7 days prior to removing trees and shrubs. If an active nest is discovered, the project engineer shall be notified immediately and all work within 100 feet of the nest shall cease. Work within the buffer zone may proceed only after a contractor-supplied biologist has determined that the nest is no longer active.

- **[BR-9]** In accordance with standard specification 14-6.03D, prior to construction, the contractor shall install bird exclusionary material on the Churn Creek Bridge outside the nesting season to prevent birds from nesting on the structure.

Utilities and Service Systems

- **[US-1]** Caltrans would coordinate with utility providers to plan for relocation of any utilities to ensure utility customers would be notified of potential service disruptions before relocation.

Alternative 2—No-Build Alternative

Fix 5 Cascade Gateway Project
The no-build alternative proposes no improvements to I-5, other than routine maintenance over the design life. Without the proposed improvements, assets in fair to poor condition would continue to deteriorate. Traffic operations would not improve and there would not be a reduction in merging conflicts and congestion. There would be no improvement in resiliency during emergency events.

Cascade SHOPP Project
The no-build alternative does not address the need for this project. If this alternative is selected, then the existing facility would continue to inadequately meet operational effectiveness and non-standard signage, lighting, guardrail, and median barrier would be perpetuated. Condition of ITS systems would continue to deteriorate, potentially impacting freeway operations, including operations during emergency events. Vertical clearance would continue to not meet the standard. The condition of culverts having fair or poor health would continue to degrade, having an adverse effect to overall facility drainage. The non-standard cross slope would not be improved.

Comparison of Alternatives
The no-build alternative would incur no financial cost and would result in no environmental or community impacts. However, for the Fix 5 Cascade Gateway Project, the no-build alternative would not address the continued deterioration of assets

in fair to poor condition, traffic operations would not improve and there would not be a reduction in merging conflicts and congestion, and there would be no improvement in resiliency during emergency events. For the Cascade SHOPP Project, the no-build alternative would not address the need to replace non-standard assets (e.g., signage, lighting, guardrail, median barrier), the deterioration of ITS systems, issues associated with non-standard vertical clearance and cross-slope, and deterioration of culverts in fair to poor condition. The no-build alternative would not meet the project purpose and need. In contrast, the build alternative would cost approximately $102,230,000 to construct and would result in environmental and community impacts. The project would increase the capacity of the State Highway System, but traffic data modeling predicts no increase in vehicle miles traveled (VMT). Because SB 743 does not apply to projects that install truck only lanes or install auxiliary lanes that are less than one mile in length and operate independently, an induced travel analysis is not required. CEQA Guidelines Section 15064.3(a) states, "for the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The Technical Advisory (2018) that OPR published to guide analysis of VMT clarifies "the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks" (p. 4). Trucks may be included in analysis for ease, but it is not required to include them. Impacts to air quality, greenhouse gas emissions, energy consumption, noise, hydrology and water quality, geology and soils, hazards and hazardous materials, and wildfire would not be substantial (these impacts would be less than significant). Community impacts would include a minimal increase in time to transit through the project area during construction (these impacts would be less than significant). In addition, impacts to public services and utilities and service systems would occur during construction but these impacts would not be substantial (these impacts would be less than significant). Changes to the aesthetics of the project area would be noticeable but would not have a substantial impact (these impacts would be less than significant). The addition of a truck only lane in each direction of travel would result in substantial and a potentially significant impact to wildlife movement. Widening the Churn Creek Bridge would require working in the bed and banks of Churn Creek and would result in a minimal amount of permanent and temporary impacts to riverine habitat and a minimal amount of permanent impacts to riparian habitat (these impacts would be less than significant). Unlike the no-build alternative, the build alternative would meet the project purpose and need. A comparison of the two alternatives is provided in Table 8.

Assembly Bill 2542 amended California Streets and Highways code to require, effective January 1, 2017, that Caltrans or a regional transportation planning agency demonstrate that reversible lanes were considered when submitting a capacity-increasing project or a major street or highway lane realignment project to the California Transportation Commission for approval (California Streets and Highways Code, Section 100.015). Because the build alternative would increase the capacity of the State Highway System due to the addition of a truck only lane in each direction of travel as part of the Fix 5 Cascade Gateway Project, reversible lanes were considered but determined to not be feasible.

Table 8. Comparison of the Build Alternative and the No-Build Alternative

Alternative	Cost	Environmental Impacts	Community Impacts	Permanent Acquisition of Right-of-Way	Meets Project Purpose
Alternative 1—Build Alternative	~$102,230,000	Yes	Yes	No	Yes
Alternative 2—No-Build Alternative	$0	No	No	No	No

After comparing and weighing the benefits and impacts of all feasible alternatives, the Project Development Team has identified the build alternative as the preferred alternative, subject to public review. Final identification of a preferred alternative would occur after the public review and comment period. The no-build alternative is not preferred because without the proposed improvements for the Fix 5 Cascade Gateway Project, assets in fair to poor condition would continue to deteriorate, traffic operations would not improve and there would not be a reduction in merging conflicts and congestion, and there would be no improvement in resiliency during emergency events. Additionally, without the proposed improvements for the Cascade SHOPP project, the existing facility will continue to inadequately meet operational effectiveness and non-standard signage, lighting, guardrail, and median barrier would be perpetuated. The condition of ITS systems would continue to deteriorate, potentially impacting freeway operations, including operations during emergency events. Vertical clearance would continue to not meet the standard. The condition of culverts having fair or poor health would continue to degrade, having an adverse effect to overall facility drainage. The non-standard cross slope would not be improved. The no-build alternative does not meet the purpose and need of the project. The build alternative is preferred because it would meet the project purpose.

After the public circulation period, all comments would be considered, and the Department would select a preferred alternative and make the final determination of the project's effect on the environment. Under the California Environmental Quality Act (CEQA), if no unmitigable significant adverse impacts are identified, the Department will prepare a Negative Declaration (ND) or Mitigated ND.

Alternatives Considered but Eliminated from Further Discussion

During the preliminary design phase, one additional alternative was considered, but was eliminated from further discussion prior to the draft Initial Study. Details of this alternative are provided below.

Alternative 3—Widen I-5 by Adding Lanes to the Outside

Alternative 3 would add an additional lane and shoulder on I-5 in both directions. The concept of this alternative was to widen primarily to the outside on the south end of the

project area. A Value Analysis study conducted in December 2019 evaluated each of the three alternatives. The Value Analysis team concluded that widening to the median provided the best assured value for the project. During the preliminary design phase Alternative 3 was found unfeasible for the following reasons:

- Widening to the outside near the 44 Interchange would require reconfiguration of both the southbound I-5 to eastbound 44 connector ramp and the Westbound 44 to southbound 5 connector ramp. This reconfiguration would generate extensive work and require several non-standard geometric features.

- Widening to the outside North of the 44 Interchange would negatively affect the environmentally sensitive park and trail area west of I-5, which is protected through the U.S. Department of Transportation Act of 1966 Section 4(f).

- Widening to the outside would generally not allow a consistent transition when conforming to the existing mainline configuration, forcing a non-desirable shift prior to conforming into the existing roadway.

For these reasons, this alternative was eliminated from further discussion prior to the draft Initial Study.

Permits and Approvals Needed

Work in jurisdictional waters and in associated riparian habitat would require permits from the California Department of Fish and Wildlife (CDFW), United States Army Corps of Engineers, and the Central Valley Regional Water Quality Control Board. In addition, a Notice of Intent would need to be filed with the State Water Resources Control Board to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Construction Permit (the permit regulates the discharge of storm water runoff from construction sites). Work occurring outside Caltrans' right-of-way would require a temporary construction easement. Following approval of the Project Report, the California Transportation Commission would be required to vote to approve funding for the project. Permits and approvals needed for the project are summarized in Table 9.

Table 9. Permits and Approvals Needed

Agency	Permit/Approvals
California Department of Fish and Wildlife	Lake or Streambed Alteration Agreement
U.S. Army Corps of Engineers	Nationwide Permit 14 (Linear Transportation Projects)
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification
NOAA Fisheries	Letter of Concurrence – Informal Section 7 Consultation
State Water Resources Control Board	A Notice of Intent would need to be filed to obtain coverage under the NPDES General Construction Permit

California Transportation Commission (CTC)	Following approval of the Project Report, the CTC would be required to vote to approve funding for the project.

Changes to the Work Scope Since Approval of the Initial Study for the Fix 5 Cascade Gateway Project in July 2020

The following changes have been made to the work scope since approval of the Initial Study for the Fix 5 Cascade Gateway Project in July 2020:

- The project limits along I-5 have changed. The original project limits were from PM R14.8 to PM R20.0 in Shasta County. The new project limits are from the Hartnell Avenue OC (PM R13.9) to 0.8-mile north of Union School Road (PM R23.2) in Shasta County and a spot location was added at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility (PM 40.7) in Tehama County.

- A truck only lane replaces the multi-use lane that was originally proposed in the NB and SB directions of travel.

- A truck only lane/emergency operations sign package was added to the work scope in both the NB and SB directions of travel.

- In-fill walls were added to the work scope.

- Construction of a new medium and heavy-duty electric vehicle charging facility with security cameras at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility along I-5 in Tehama County at PM 40.7 was added to the work scope.

- The Cascade SHOPP Project was added to the work scope.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. Please see the checklist beginning on page 42 for additional information.

X Aesthetics
X Air Quality
Cultural Resources
X Geology/Soils
X Hazards and Hazardous Materials
Land Use/Planning
X Noise
X Public Services
X Transportation
X Utilities/Service Systems
X Mandatory Findings of Significance
Agriculture and Forestry
X Biological Resources
X Energy
X Greenhouse Gas Emissions
X Hydrology/Water Quality
Mineral Resources
Population/Housing
Recreation
Tribal Cultural Resources
X Wildfire

DETERMINATION

On the basis of this initial evaluation (choose one):

__ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

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

___I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

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

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

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Chapter 2. CEQA Environmental Checklist

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

For each of the following CEQA Environmental Checklist questions, the "No-Build" alternative has been determined to have "No Impact". Under the "No-Build" alternative, no alterations to the existing conditions would occur and no proposed improvements would be implemented. The "No-Build" alternative will not be discussed further in this document.

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AESTHETICS—Except as provided in Public Resources Code Section 21099, would the project:

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

CEQA Significance Determinations for Aesthetics

See Aesthetics Section in Chapter 3. A discussion of impacts is provided on page 75 and CEQA significance determinations are provided on page 77.

AGRICULTURE AND FOREST RESOURCES—In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

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

CEQA Significance Determinations for Agriculture and Forest Resources

a-b) No Impact. Land within and adjacent to the project area is classified as Other Land and Urban and Built-Up Land. There is no prime farmland, unique farmland, or farmland of statewide importance within the project area (California Department of Conservation 2023c). Therefore, the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

c) No Impact. No properties within the project area are enrolled under a Williamson Act contract (California Department of Conservation 2023d). Therefore, the project would not conflict with existing zoning for agricultural use or a Williamson Act contract.

d) No Impact. No forest land or timberland is present within the project limits. Therefore, the project would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).

e) No Impact. The project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

Given the determinations above, the project would have no impact on agricultural and forest resources.

AIR QUALITY—Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

CEQA Significance Determinations for Air Quality

See Air Quality Section in Chapter 3. A discussion of impacts is provided on page 83 and CEQA significance determinations are provided on page 85.

BIOLOGICAL RESOURCES—Would the project:

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

CEQA Significance Determinations for Biological Resources

See Biological Resources Section in Chapter 3. A discussion of impacts is provided on page 94 and CEQA significance determinations are provided on page 104.

CULTURAL RESOURCES—Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				X
c) Disturb any human remains, including those interred outside of dedicated cemeteries?				X

CEQA Significance Determinations for Cultural Resources

a-c) No Impact. Caltrans completed a cultural resources study for the project (California Department of Transportation 2020a). The cultural resources study included literature and records review of the project area; visits to and/or contacts with a number of repositories, agencies, organizations, and Native American representatives; and an archaeological field survey of the project area. The purpose of these efforts was to identify and evaluate any cultural resources that may exist within the project area and to assess any effects that the project might have related to the cultural resources (e.g., historical resources, prehistoric archaeological resources, historical archaeological resources, built environment resources, and traditional cultural properties).

The cultural resources study determined that the project is located within the ancestral territory of the following tribes: Winnenem Wintu, Redding Rancheria, and Wintu Tribe of Northern California. Consultation with California Native American Tribes is ongoing and will continue through project completion.

No cultural resources were observed within or adjacent to the project area during field surveys.

It is Caltrans' policy to avoid cultural resources whenever possible. Compliance with the following Caltrans standard measures to protect known historical resources and buried cultural materials, including human remains, that may be encountered during construction would ensure that the project would have no adverse effect on historic/archaeological resources pursuant to §15064.5 or on buried human remains:

- **[CR-1]** Caltrans would coordinate with the Wintu Tribe and incorporate measures to protect tribal resources, including potential work windows associated with tribal ceremonies.

- **[CR-2]** An archaeological monitor and Wintu tribal monitor would be used during ground-disturbing activities.

- **[CR-3]** If cultural materials are discovered during construction, work activity within a 60-foot radius of the discovery would be stopped and the area secured until a qualified archaeologist can assess the nature and significance of the find in consultation with the State Historic Preservation Officer (SHPO).

- **[CR-4]** If human remains and related items are discovered on private or State land, they would be treated in accordance with State Health and Safety Code § 7050.5. Further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to California Public Resources Code (PRC) § 5097.98, if the remains are thought to be Native American, the coroner would notify the Native American Heritage Commission (NAHC) who would then notify the Most Likely Descendent (MLD).

- **[CR-5]** Human remains and related items discovered on federally-owned lands would be treated in accordance with the Native American Graves Repatriation Act of 1990 (NAGPRA) (23 USC 3001). The procedures for dealing with the discovery of human remains, funerary objects, or sacred objects on federal land are described in the regulations that implement NAGPRA 43 CFR Part 10. All work in the vicinity of the discovery shall be halted and the administering agency's archaeologist would be notified immediately. Project activities in the vicinity of the discovery would not resume until the federal agency complies with the 43 CFR Part 10 regulations and provides notification to proceed.

Given the determinations above, the project would have no impact on cultural resources.

ENERGY—Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

CEQA Significance Determinations for Energy

See Energy Section in Chapter 3. A discussion of impacts is provided on page 106 and CEQA significance determinations are provided on page 111.

GEOLOGY AND SOILS—Would the project:

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

CEQA Significance Determinations for Geology and Soils

See Geology and Soils Section in Chapter 3. A discussion of impacts is provided on page 112 and CEQA significance determinations are provided on page 116.

GREENHOUSE GAS EMISSIONS—Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

CEQA Significance Determinations for Greenhouse Gas Emissions

See Greenhouse Gas Emissions Section in Chapter 3. A discussion of impacts is provided on page 127 and CEQA significance determinations are provided on page 134.

CEQA Guidelines Section 15064.3(a) states, "for the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The Technical Advisory (2018) that OPR published to guide analysis of VMT clarifies "the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks" (p. 4). Trucks may be included in analysis for ease, but it is not required to include them.

HAZARDS AND HAZARDOUS MATERIALS—Would the project:

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

CEQA Significance Determinations for Hazards and Hazardous Materials

See Hazards and Hazardous Materials Section in Chapter 3. A discussion of impacts is provided on page 143 and CEQA significance determinations are provided on page 145.

HYDROLOGY AND WATER QUALITY—Would the project:

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

CEQA Significance Determinations for Hydrology and Water Quality

See Hydrology and Water Quality Section in Chapter 3. A discussion of impacts is provided on page 153 and CEQA significance determinations are provided on page 157.

LAND USE AND PLANNING—Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

CEQA Significance Determinations for Land Use and Planning

a-b) No Impact. Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. The portion of the project in Shasta County is mostly within the City of Redding and the City of Shasta Lake. The portion of the project in Tehama County is in an unincorporated area. The project is subject to the *City of Redding General Plan 2023–2045* (City of Redding 2023a), the City of Redding's *Oasis Road Specific Plan* (City of Redding 2006), the *City of Shasta Lake General Plan 2040* (City of Shasta Lake 2023), the *Shasta County General Plan* (Shasta County 2004), and the *Tehama County General Plan Update 2009–2029* (PMC 2009). The *City of Redding General Plan 2023–2045* recognizes the potential for future commercial growth in the Oasis Road/I-5 area and addresses this area specifically through various policies contained in the *Oasis Road Focus Area*. The development guidelines for the Focus Area call for preparation of a specific plan, the *Oasis Road Specific Plan*, to ensure orderly development. For the portion of the project in Shasta County, land use adjacent varies but is primarily single and multiple family homes. Other land use consists of commercial, industrial, office, open space, and public. Several subdivisions are planned in the project vicinity with most being planned in the area north of SR 299 and east of I-5 (City of Redding 2023b). For the portion of the project located in Tehama County, adjacent land use is primarily agricultural (ranching) and rural residential (Tehama County 2023). The project would not physically divide an established community (I-5 is an existing travel corridor), would not affect existing and/or future land uses, or cause a significant environmental impact due to a conflict with any applicable land use plan, policy, and/or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Given the determinations above, the project would have no impact on land use and planning.

MINERAL RESOURCES—Would the project:

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

CEQA Significance Determinations for Mineral Resources

a-b) No Impact. The *City of Redding General Plan 2023–2045*, the City of Redding's *Oasis Road Specific Plan*, the *Shasta County General Plan,* and the *Tehama County General Plan Update 2009–2029* do not identify the locations of known deposits of valuable or locally important mineral resources. The *City of Shasta Lake General Plan 2040* identifies a large portion of the project area that is within the city limits as MRZ-3 (Sand Gravel). No mineral resource zones have been mapped for Shasta County (California Department of Conservation 2023a) and no mines have been reported within the project area (California Department of Conservation 2023b). The project would not affect land use and would not result in the loss of availability of a known mineral resource that would be of value nor would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a General Plan, specific plan, or other land use plan.

Given the determinations above, the project would have no impact on mineral resources.

NOISE—Would the project result in:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

CEQA Significance Determinations for Noise

See Noise Section in Chapter 3. A discussion of impacts is provided on page 162 and CEQA significance determinations are provided on page 174.

POPULATION AND HOUSING—Would the project:

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

CEQA Significance Determinations for Population and Housing

a) No Impact. The project would not induce population growth, either directly or indirectly.

b) No Impact. The project would not displace any existing housing or people, necessitating the construction of replacement housing elsewhere.

Given the determinations above, the project would have no impact on population and housing.

PUBLIC SERVICES—Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?			X	
b) Police protection?			X	
c) Schools?			X	
d) Parks?				X
e) Other public facilities?			X	

CEQA Significance Determinations for Public Services

See Public Services Section in Chapter 3. A discussion of impacts is provided on page 175 and CEQA significance determinations are provided on page 176.

RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

CEQA Significance Determinations for Recreation

a-b) No Impact. The project would not increase the use of existing neighborhood and regional parks or other recreational facilities. In addition, the project does not include recreational facilities or require the construction or expansion of recreational facilities.

Two existing recreational facilities are present within the project area: the City of Redding's Sacramento River Trail beneath I-5 at the SR 44 interchange and a paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange. The portion of the Sacramento River Trail beneath I-5 at the SR 44 interchange has moderate daytime use as it links downtown with Hilltop Drive. The portion of the paved pedestrian/bicycle trail beneath I-5 and the SR 299 interchange has low daytime use and links Boulder Drive with College View Drive. Construction of the project would require brief periodic closure of the City of Redding's Sacramento River Trail beneath I-5 at the SR 44 interchange and brief periodic closure of the paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange. Without a temporary detour, bicyclists and pedestrians who utilize the Sacramento River Trail beneath I-5 at the SR 44 interchange and the paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange would be minimally impacted by work at these locations, which would require brief periodic closure to allow for installation of falsework and shoring or placement of girders to widen the roadway. The following measure shall be implemented to avoid impacts on pedestrians and bicyclists using recreational trails:

- When temporary closure of recreational trails is required, the contractor shall provide a temporary detour for pedestrians and bicyclists. Trail closures shall be kept to a minimum, restricted to night-time, and the contractor shall transport trail users around the construction zone as needed.

Given the determinations above, the project would have no impact on recreation.

TRANSPORTATION—Would the project:

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

CEQA Significance Determinations for Transportation

See Transportation Section in Chapter 3. A discussion of impacts is provided on page 181 and CEQA significance determinations are provided on page 187.

CEQA Guidelines Section 15064.3(a) states, "for the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The Technical Advisory (2018) that OPR published to guide analysis of VMT clarifies "the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks" (p. 4). Trucks may be included in analysis for ease, but it is not required to include them.

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				X

CEQA Significance Determinations for Tribal Cultural Resources

a-b) No Impact. Assembly Bill (AB) 52 (Chapter 532, California Statutes of 2014) establishes a formal consultation process for California tribes as part of the CEQA review process and equates significant impacts on "tribal cultural resources" with significant environmental impacts (Public Resources Code 21084.2). The cultural resources study determined that the project is located within the ancestral territory of the following tribes: Winnenem Wintu, Redding Rancheria, and Wintu Tribe of Northern California. Caltrans contacted these tribes to inform them of the project and request their participation. Caltrans has consulted with applicable California Native American tribes and none of the tribes consulted provided notification of the presence or potential presence of tribal cultural resources, defined in Public Resource Code section 2107, within the project area. Consultation with California Native American Tribes is ongoing and will continue through project completion. Currently, there are no tribal cultural resources that are listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources, or determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 within the project area.

Given the determinations above, the project would have no impact on tribal cultural resources.

UTILITIES AND SERVICE SYSTEMS—Would the project:

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

CEQA Significance Determinations for Utilities and Service Systems

See Utilities and Service Systems Section in Chapter 3. A discussion of impacts is provided on page 188 and CEQA significance determinations are provided on page 191.

WILDFIRE—If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

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

CEQA Significance Determinations for Wildfire

See Wildfire Section in Chapter 3. A discussion of impacts is provided on page 196 and CEQA significance determinations are provided on page 197.

MANDATORY FINDINGS OF SIGNIFICANCE

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

CEQA Significance Determinations for Mandatory Findings of Significance

See Mandatory Findings of Significance Section in Chapter 3. A discussion of impacts is provided on page 198 and CEQA significance determinations are provided on page 198.

Chapter 3. Discussion of Environmental Impacts

Aesthetics

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA), in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

The California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities" (CA Public Resources Code [PRC] Section 21001[b]).

California Streets and Highways Code Section 92.3 directs Caltrans to use drought resistant landscaping and recycled water when feasible, and incorporate native wildflowers and native and climate-appropriate vegetation into the planting design when appropriate.

Affected Environment

The aesthetics of the project area have been moderately affected by a variety of human activities including past construction of I-5 (including road cuts at multiple locations), construction of overpasses and interchanges, landscaping at some interchanges, and installation of signage, roadside lighting, and utilities within the right-of-way. Construction of commercial buildings, residential subdivisions, and roads adjacent to the project area have also contributed to affect the aesthetics of the project area.

Existing panel signs and overhead signs are present within the project area. Existing overhead panel signs that fully span the NB lanes are present at the Cypress Avenue Exit and north of Union School Road. An existing overhead panel sign that fully spans the SB lanes is present just north of the I-5/44 interchange. Existing overhead panel signs on cantilevered poles are present along the SB lanes at several locations. An existing overhead electronic changeable message sign with flashing lights that fully spans the NB lanes is present near Union School Road. Existing overhead electronic changeable message signs are also mounted to the Oasis Road Bridge and Pine Grove Avenue Bridge.

Interstate 5 within the project area is not an officially designated scenic highway (California Department of Transportation 2023a). A visual Impact Assessment was completed for the project (California Department of Transportation 2023b, 2023c) and the assessment found that there are no scenic resources present within the project area. However, the project area affords the traveling public scenic vistas of mountains and Mount Shasta to the north.

Environmental Consequences

Construction Impacts

The project includes various features that would impact the aesthetics of the project area. These elements include the addition of a new truck only lane in each direction of travel, construction/extension of auxiliary lanes, new signs, widening of existing bridges, relocation of existing lighting, removal of vegetated berms within the median of I-5, use of four-strand high tension cable barrier and concrete barrier, and installation of a charging station. A discussion of potential visual impacts associated with these project features is discussed below.

The addition of a truck only lane in each direction of travel and the construction/extension of auxiliary lanes would add additional pavement within the project area and would be noticeable to the traveling public. However, the additional pavement would have a minimal impact on the aesthetics of the project area as this section of I-5 currently has four lanes and associated auxiliary lanes. The new pavement added would not be a source of substantial glare.

The addition of new signs (particularly, the overhead electronic AVM/LMS signs) within the project area would be noticeable to the traveling public and would be a source of glare, new lighting, and affect views of mountains and Mt. Shasta to the north. The project would have installed a total of eight overhead electronic AVM signs. However, in order to reduce visual impacts, five overhead electronic AVM signs were eliminated from the scope of work. The project now proposes to add three overhead electronic AVM signs and two overhead electronic LMS signs in the NB direction of travel and one overhead electronic LMS sign would be added in the SB direction of travel. Glare from the new overhead electronic AVM/LMS signs would be minimal. Light emitted from the new overhead electronic AVM/LMS signs would be most noticeable at night-time but is anticipated to have a minimal visual impact on nearby receptors as existing vegetation between the receptors and the new overhead electronic AVM/LMS signs would shield the receptors from direct line of sight. The new overhead electronic AVM/LMS signs would impact views of mountains and Mt. Shasta to the north, but this is not a substantial visual impact. In summary, the addition of new signage (particularly, the overhead electronic AVM/LMS signs) would have a moderate impact on the aesthetics of the project area but would not result in any substantial impacts on the aesthetics of the project area.

The addition of a truck only lane in each direction of travel would require widening seven existing bridges within the project area. However, the widened bridges would have a negligible impact on the aesthetics of the project area.

The relocation of three light poles along the ramp between SB I-5 to EB SR-44 further up the cut slope would have a negligible impact on the aesthetics of the project area and would not be a source of new glare for nearby residences.

Construction of a truck only lane in each direction of travel would require the removal of vegetated berms within the median of I-5. The current extent of the earth berms is limited as most of the median is a grass or concrete area with a high-tension cable barrier. The addition of a truck only lane in each direction of travel in areas with earth berms would increase range-of-view. Currently, traveling with the 6-foot-tall earthen berm nearby can feel restrictive. Once the vegetated berms are removed, the entire interstate corridor would be visible, potentially reducing the feeling of constriction for small vehicles traveling next to commercial vehicles. Removal of the vegetated berms within the median of I-5 would have a minimal impact on the aesthetics of the project area.

The installation of four-strand high tension cable barrier in the unpaved median when the median width is greater than 36 feet and use of concrete barriers in the paved median sections when the median width is 36 feet or less would be noticeable to the traveling public but would have only a minimal impact on the aesthetics of the project area as these elements are low to the ground.

The installation of a new medium and heavy-duty electric vehicle charging facility with security cameras at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility along I-5 in Tehama County at PM 40.7 would have only a minimal impact on the aesthetics at this location as the charging station would be sited in an already built environment and it would not affect any scenic views.

Compliance with the following Caltrans standard measures would minimize impacts on aesthetics:

- **[AR-1]** Aesthetic treatment (such as tribal patterns) to the bridges/guardrails/retaining walls would be included to address context sensitivity.
- **[AR-2]** Temporary access roads, construction easements, and staging areas that were previously vegetated would be restored to a natural contour and revegetated with regionally appropriate native vegetation.
- **[AR-3]** Where feasible, guardrail terminals would be buried; otherwise, an appropriate terminal system would be used, if appropriate.
- **[AR-4]** Where feasible, construction lighting would be limited to within the area of work.
- **[AR-5]** Where feasible, the removal of established trees and vegetation would be minimized. Environmentally sensitive areas would have Temporary High Visibility Fencing (THVF) installed before start of construction to demarcate areas where vegetation would be preserved and root systems of trees protected.

Cumulative Impacts
The project's impact on aesthetics would not be substantial and when these impacts are considered along with impacts on aesthetics resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to an adverse cumulative impact. Therefore, the project's impact on aesthetics would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Aesthetics

The project would not have a substantial adverse effect on any scenic vistas, would not substantially damage scenic resources within a state scenic highway, or substantially degrade the existing visual character or quality of public views of the site and its surroundings. The project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. With a work scope that includes design features and standard measures to minimize visual impacts, impacts on aesthetics would not be substantial.

Given the determinations above, the project would have a less than significant impact on aesthetics.

AIR QUALITY

Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) —which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), Lead (Pb), and sulfur dioxide (SO_2). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Conformity
The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), sulfur dioxide (SO_2). California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the

implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope[1] that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

Affected Environment

The project is located in the northern Sacramento Valley. Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. The climate in the project vicinity is characterized by hot summers and wet winters with occasional snowfall. The average annual precipitation recorded at the Redding Municipal Airport between 1986 and 2016 is 33.68 inches (Western Regional Climate Center 2023). Wind direction and strength varies seasonally in the project vicinity. In spring, prevailing winds are generally from the northwest. In winter, storms moving across northern California bring strong south winds to the project vicinity. Inversion layers, which are common in winter, occur when a layer of warm air overlies a layer of dense cold air and prevents atmospheric mixing. If the trapped cold air contains large quantities of pollutants, air quality can be substantially impaired.

The project is located in the Sacramento Valley Air Basin. The portion of the project in Shasta County is within the jurisdiction of the Shasta County Air Quality Management District (SCAQMD) and ARB. The portion of the project within Tehama County is within the jurisdiction of the Tehama County Air Pollution Control District (TCAPCD) and ARB. The SCAQMD and TCAPCD are the primary local agencies responsible for regional air quality planning, monitoring, and stationary source and facility permitting in accordance with standards set by the California ARB.

The project is located in an attainment/unclassified area for all current NAAQS. Therefore, conformity requirements do not apply. Construction activities would not last for more than 5 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis. With regard to state air quality standards, the project is located in an attainment or unclassified area for all criteria pollutants excluding ozone (Shasta and Tehama counties) and PM 10 (Tehama County). The project area attainment status of state and federal criterial air pollutants for Shasta County is shown in Table 10. Shasta County is where the majority of the project, including the truck only lanes, would be located.

[1] "Design concept" means the type of facility that is proposed, such as a freeway or arterial highway. "Design scope" refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

Table 10. State and Federal Criteria Air Pollutant Standards and Status – Shasta County

Pollutant	Averaging Time	State Standard [i]	Federal Standard [ii]	State Project Attainment Status	Federal Project Area Attainment Status
O_3 [iii]	1 hour	0.09 ppm [iv]	N/A	Non-attainment	N/A
O_3	8 hours	0.070 ppm	0.070 ppm (4^{th} highest in 3 years)	Non-attainment	Unclassified/ Attainment
CO [v]	1 hour	20 ppm	35 ppm	Unclassified	Unclassified/ Attainment
CO	8 hours	9.0 ppm	9 ppm	Unclassified	Unclassified/ Attainment
CO	8 hours (Lake Tahoe)	6 ppm	N/A	Unclassified	N/A
PM_{10} [vi]	24 hours	50 µg/m^3 [vii]	150 µg/m^3 (expected number of days above standard < or equal to 1)	Attainment	Unclassified
PM_{10}	Annual	20 µg/m^3	N/A	Attainment	N/A
$PM_{2.5}$ [viii]	24 hours	N/A	35 µg/m^3 [vi]	N/A	Unclassified/ Attainment
$PM_{2.5}$	Annual	12 µg/m^3	12.0 µg/m^3	Attainment	Unclassified/ Attainment
NO_2	1 hour	0.18 ppm	0.100 ppm [ix]	Attainment	Unclassified/ Attainment
NO_2	Annual	0.030 ppm	0.053 ppm	Attainment	Unclassified/ Attainment
SO_2 [x]	1 hour	0.25 ppm	0.075 ppm (99^{th} percentile over 3 years)	Attainment	Unclassified/ Attainment
SO_2	3 hours	N/A	0.5 ppm [xi]	N/A	Unclassified/ Attainment
SO_2	24 hours	0.04 ppm	0.14 ppm (for certain areas)	Attainment	Unclassified/ Attainment
SO_2	Annual	N/A	0.030 ppm (for certain areas)	N/A	Unclassified/ Attainment
Pb [xii]	Monthly	1.5 µg/m^3	N/A	Attainment	N/A
Pb	Calendar Quarter	N/A	1.5 µg/m^3 (for certain areas)	N/A	Unclassified/ Attainment
Pb	Rolling 3-month average	N/A	0.15 µg/m^3 [xiii]	N/A	Unclassified/ Attainment
Sulfates	24 hours	25 µg/m^3	N/A	Attainment	N/A
H_2S	1 hour	0.03 ppm	N/A	Unclassified	N/A

Pollutant	Averaging Time	State Standard [i]	Federal Standard [ii]	State Project Attainment Status	Federal Project Area Attainment Status
Visibility Reducing Particles (VRP) [xiv]	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 %	N/A	Unclassified	N/A
Vinyl Chloride[xii]	24 hours	0.01 ppm	N/A	Not indicated on the California Air Resources Board website	N/A

Adapted from the California ARB Air Quality Standards chart Greenhouse Gases and Climate Change: Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

[i] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[ii] Federal standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[iii] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. Transportation conformity applies in newly designated nonattainment areas for the 2015 national 8-hour ozone primary and secondary standards on and after August 4th, 2019 (see Transportation Conformity Guidance for 2015 Ozone NAAQS Nonattainment Areas).

[iv] ppm = parts per million

[v] Transportation conformity requirements for CO no longer apply after June 1, 2018 for the following California Carbon Monoxide Maintenance Areas (see U.S. EPA CO Maintenance Letter).

[vi] On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m^3 to 12 µg/m^3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[vii] µg/m^3 = micrograms per cubic meter

[viii] The 65 µg/m^3 PM2.5 (24-hr) NAAQS was not revoked when the 35 µg/m^3 NAAQS was promulgated in 2006. The 15 µg/m^3 annual PM2.5 standard was not revoked when the 12 µg/m^3 standard was promulgated in 2012. Therefore, for areas designated nonattainment or nonattainment/maintenance for the 1997 and or 2006 PM2.5 NAAQS, conformity requirements still apply until the NAAQS are fully revoked.

[ix] Final 1-hour NO2 NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

[x] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[xi] Secondary standard, the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

[xii] The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[xiii] Lead NAAQS are not considered in Transportation Conformity analysis.

[xiv] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

In air quality studies, sensitive receptors are hospitals, schools, homes, daycare facilities, elderly housing, and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides, and other pollutants. Sensitive receptors that are present within or adjacent to the project area include single-family residences, hotels, commercial retail, schools (PACE Academy, Rother Elementary School, Parsons Junior High School, Country Christian School, Boulder Creek Elementary School, Bethel School, and Grand Oaks Elementary School) and assisted living facilities.

Environmental Consequences

Construction Impacts

An Air Quality/Greenhouse Gas Analysis Report (California Department of Transportation 2020b) was prepared for the Fix 5 Cascade Gateway Project to evaluate air quality impacts during construction and long-term operation of the project. With the primary difference between the currently proposed project and the Fix 5 Cascade Gateway Project being the addition of truck only lanes instead of multi-use lanes, the analysis and findings of the report remain valid.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities. Emissions from construction equipment also are expected and would include carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOCs), directly emitted particulate matter (PM10 and PM2.5), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NOx and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction typically involves clearing, cut-and-fill activities, grading, removing or improving existing roadways, building bridges, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. These activities could temporarily generate enough PM_{10}, $PM_{2.5}$, and small amounts of CO, SO_2, NO_x, and VOCs to be of concern. Sources of fugitive dust would include disturbed soils at the construction site, and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site could deposit mud on local streets, which could be an added source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Construction activities for large development projects are estimated by the United States Environmental Protection Agency (U.S. EPA) to add 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. The Department's Standard Specifications (Section 14) on dust minimization require use of water or dust palliative compounds and would reduce potential fugitive dust emissions during construction.

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

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Under California law and ARB regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel (not more than 15 ppm sulfur), so SO_2-related issues due to diesel exhaust will be minimal.

Some phases of construction, particularly asphalt paving, may result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

The Air Quality Report concluded that construction impacts to air quality would be temporary in duration and minimal in magnitude. Long-term operation of the project would result in an overall improvement in local air quality because fewer pollutants would be released from vehicles because of reduced traffic congestion and more efficient traffic flow. Compliance with the following Caltrans standard measures would minimize air quality impacts during construction:

- **[AQ-1]** The contractor shall comply with Section 10-5 "Dust Control", Section 14-9 "Air Quality", and Section 18 "Dust Palliatives" in the *2023 Caltrans Standard Specifications*. Compliance with these Standard Specifications would include implementing the following dust and pollutant reduction/control measures to minimize any air quality impacts resulting from construction activities:

    - Water or a dust palliative shall be applied to the site and equipment as often as necessary to control fugitive dust emissions.

    - Construction equipment and vehicles shall be properly tuned and maintained. All construction equipment shall use low sulfur fuel as required by California Code of Regulations Title 17, Section 93114.

    - Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, shall be used.

    - All transported loads of soils and wet materials shall be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) shall be provided to minimize emission of dust during transportation.

    - Dust and mud that are deposited on paved, public roads due to construction activity and traffic shall be promptly and regularly removed to reduce PM emissions.

Cumulative Impacts

The project's adverse impacts on air quality would be minimal and temporary and limited to the construction phase (long-term operation of the project is expected to improve air quality because fewer pollutants would be released from vehicles because of reduced traffic congestion and more efficient traffic flow). When these adverse impacts are considered along with adverse impacts on air quality resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to an adverse cumulative impact. Therefore, the project's adverse impacts on air quality would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Air Quality

Once constructed, the project would not substantially conflict with or obstruct implementation of the applicable air quality plan, result in a cumulatively considerable net increase of any criteria pollutant (in this case, ozone and PM 10) for which the project region is non-attainment under an applicable federal or state ambient air quality standard, expose sensitive receptors to substantial pollutant concentrations, or result in other emissions (such as those leading to odors) that could adversely affect a substantial number of people. During construction, the project could result in short-term

elevated levels of dust, criteria pollutants, and odors. However, compliance with Caltrans standard measures for dust and pollutant control and the rapid dissipation of any odors would ensure that any impacts on air quality would be less than significant.

Given the determinations above, the project would have a less than significant impact on air quality.

Biological Resources

The biological resources evaluation included a review of relevant literature, databases such as the California Natural Diversity Data Base (CNDDB) and the California Native Plant Society's Inventory of Rare and Endangered Plants of California, species lists obtained from the USFWS and NOAA Fisheries, and completion of field surveys. Biological field surveys were conducted to document habitats present within the project area and to evaluate the potential for special-status species to be present. Based on the information obtained during the records review and field surveys and consideration of the proposed improvements, an impact analysis was made to determine project level impacts on biological resources. Results and findings based on the above literature searches, surveys, and analyses are documented in the Natural Environment Study (California Department of Transportation 2020c) and presented below. In addition, applicable general plans, habitat conservation plans, natural community conservation plans, and other relevant plans were reviewed to evaluate the project's consistency with these plans.

Regulatory Setting

Wetlands and Other Waters

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities

when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (RWQCBs) and the California Department of Fish and Wildlife (CDFW). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section for more details.

Plant Species

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species

that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA).

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), found at California Public Resources Code, Sections 21000-21177.

Animal Species

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. All special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

Threatened and Endangered Species

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA) (and the Department, as assigned), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a

Biological Opinion with an Incidental Take Statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Invasive Species

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration (FHWA) guidance issued August 10, 1999 directs the use of the State's invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project.

Affected Environment

SENSITIVE NATURAL COMMUNITIES AND WETLANDS

Habitats present within the project area include riverine habitat, riparian habitat, wetlands, blue oak woodland, and annual grassland. The remainder of the project area consists of paved roadway and graveled roadside shoulders. Riverine, riparian, and wetland habitats are considered habitats of special concern and regulated under federal and state laws. A description of the onsite riverine, riparian, and wetland habitats is provided below. Descriptions of blue oak woodland and annual grassland are not provided as they are not sensitive natural communities.

Riverine habitat within the project area is limited to Churn Creek, Boulder Creek, Buckeye Creek, and several smaller unnamed seasonal drainages. In winter and spring, Churn Creek, Boulder Creek, and Buckeye Creek have cold flowing water with a combination of shallow riffle/run/pool habitats. In

summer and fall, these streams are intermittent with numerous pools that persist through summer. The substrate is variable in these streams. These creeks provide habitat for fish (including anadromous salmonids), turtles, amphibians, and a variety of aquatic invertebrates.

Riparian habitat within the project area occurs along the banks of Churn Creek, Boulder Creek, and Buckeye Creek. In general, the riparian woodland along these creeks occurs in a narrow band that has a moderately developed canopy layer composed predominantly of cottonwoods and willows. A dense shrub layer is present and consists predominantly of blackberry. The ground cover includes various species of annual grasses and forbs. Overall, the riparian woodland along these streams provides high quality habitat to various wildlife species. The riparian woodland also shades these streams, which is important to salmonids because it helps to keep water temperatures cool (particularly in those sections of these streams that retain water in summer).

Wetlands are located within the project area at various locations. Most of the wetlands are connected to larger wetlands adjacent to the project area. Wetlands within the project area are emergent wetlands consisting soft rush and poverty rush, with poverty rush being the more dominant. Cattails and water pepper occur in the lower, inundated locations of the wetlands.

Riverine, riparian, and wetland habitats are protected by state laws and regulations and Sections 401 and 404 of the federal Clean Water Act. Work within the bed and bank of Churn Creek or any other jurisdictional features would require a Nationwide Permit from the Army Corps of Engineers, Water Quality Certification from the Central Valley Regional Water Quality Control Board, and a Lake or Streambed Alteration Agreement from the California Department of Fish and Wildlife. Impacts to riparian vegetation would be addressed in applications for a Lake or Streambed Alteration Agreement and Water Quality Certification.

SPECIAL-STATUS SPECIES

No special-status plant species were observed within and/or adjacent to the project area during the field surveys during the field surveys nor are any special-status plant species expected to be present due to the absence of suitable habitat.

No special-status animal species were observed within and/or adjacent to the project area during the field surveys. The following special-status animal species are potentially present within and/or adjacent to the project area:

Reptiles

- Western pond turtle (SSC)

Fish

- Central Valley steelhead DPS (FT)
- Central Valley fall/late-fall-run Chinook salmon ESU (SSC)
- Sacramento River winter-run Chinook salmon ESU (FE, SE)
- Central Valley spring-run Chinook salmon ESU (FT, ST)

Status

FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate
FPT = Federal Proposed Threatened
FD = Federal Delisted

SFP = State Fully Protected
SE = State Endangered
ST = State Threatened
SCE = State Candidate Endangered
SD = State Delisted
SSC = State Species of Special Concern

The reaches of Churn Creek, Boulder Creek, and Buckeye Creek within the project area provide suitable habitat for the special-status fish species noted above and the western pond turtle. The reaches of Churn Creek, Boulder Creek, and Buckeye Creek within the project area provide potentially suitable rearing habitat for Central Valley steelhead, Central Valley fall/late-fall-run Chinook salmon ESU,-Sacramento River winter-run Chinook salmon, and Central Valley spring-run Chinook salmon during winter and spring when water temperatures are suitable for salmonids. By June 15, water temperatures in Churn Creek are expected to exceed 25 °C (77 °F), which is lethal to salmonids. The presence of warm water during the summer months would preclude the presence of salmonids. Western pond turtles could be present year-round. Life history and habitat requirements of special-status species present or potentially present within and/or adjacent to the project area are provided below.

Central Valley Steelhead DPS
Steelhead are the anadromous form of rainbow trout. In the Sacramento River basin, steelhead enter freshwater from August to April. They hold in the main-stem Sacramento River until flows are high enough in its tributaries to enter for spawning. Steelhead adults typically spawn from December to April, with peak spawning from January to March, in small streams and tributaries where cool, well-oxygenated water is available year-round. Juvenile steelhead generally migrate to the ocean in spring and early summer at 1 to 3 years of age. Juvenile steelhead would reside in the ocean for several years before returning as adults to freshwater rivers and streams to spawn.

Central Valley Fall/Late-Fall-Run Chinook Salmon ESU
Adult Central Valley fall-run/late fall-run Chinook salmon enter rivers fully mature and move quickly to spawning grounds. Peak spawning typically occurs during October-November but can continue into early January. Naturally spawned juveniles emerge from the gravel from December through March and rear in fresh water for 1 to 7 months, moving downstream into large rivers after only a few weeks, with most movement at night. Juveniles migrate to the ocean in spring before water temperatures become too warm. Adults spend 2 to 5 years at sea then return to freshwater rivers and streams to spawn.

Sacramento River Winter-Run Chinook Salmon ESU
Adult winter-run begin spawning migrations from December through July. Adults are sexually immature when upstream migration begins, and they must hold for several months in suitable habitat prior to spawning. Spawning occurs between late-April and mid-August. Adults spawn in clean, loose gravel, in swift, shallow riffles, or along the margins of deeper river reaches where suitable water temperatures, depths, and velocities favor red construction and oxygenation of incubating eggs. Fry emerge from mid-June through mid-October and seek streamside habitats containing beneficial aspects such as riparian vegetation and associated structures that provide invertebrates for food, predator avoidance cover, and slower water velocities for resting. Downstream migration of juveniles may begin after almost 1 year in the river. Most of the downstream migration activity occur at night. Juveniles enter the ocean where they would reside for several years before returning as adults to freshwater rivers and streams to spawn.

Central Valley Spring-Run Chinook Salmon ESU
Adult spring-run leave the ocean to begin their upstream migration in late-January to early February. Spring-run adults generally enter rivers as sexually immature fish and must hold in deep, freshwater pools with cold water for up to several months before spawning. Spawning normally occurs between mid-August and early October. Adults spawn in clean, loose gravel, in swift, relatively shallow riffles, or along the margins of deeper river reaches where suitable water temperatures, depths, and velocities favor red construction and oxygenation of incubating eggs. Spring-run spawn and rear in the clear, cool water. Fry emergence occurs from November through March and seek streamside habitats

containing beneficial aspects such as riparian vegetation and associated structures that provide invertebrates for food, predator avoidance cover, and slower water velocities for resting. Juveniles may reside in freshwater for 12 to 16 months, but some migrate downstream to the ocean as young-of-the-year in the winter or spring months within 8 months of hatching. Most downstream migration occurs at night. Juveniles enter the ocean where they would reside for several years before returning as adults to freshwater rivers and streams to spawn.

Western Pond Turtle
Western pond turtles associate with permanent or nearly permanent water in a wide variety of habitat types, including lakes, ponds, rivers, streams, and irrigation ditches. The species is reported from near sea level to 4,690 feet in elevation. Individuals are active all year where climate is warm; elsewhere, individuals may hibernate in response to the onset of winter conditions. Western pond turtles require basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. Egg laying occurs from March to August. Along large, slow-moving streams, eggs are deposited in nests constructed in sandy banks. Along foothill streams, females may climb hillsides, sometimes moving up to 325 feet to find a suitable nest site. Nests must have a relatively high internal humidity for eggs to develop and hatch properly.

Critical Habitat and Essential Fish Habitat
No critical habitat has been designated within the project area for any federally listed species. The reaches of Churn Creek, Boulder Creek, and Buckeye Creek within the project area are within a hydrologic unit that is designated as essential fish habitat (EFH) for salmon (NOAA Fisheries 2023).

Invasive Species
The project area contains ruderal species that include non-native, invasive, and noxious weeds. Noxious weeds are considered widespread in California and subject to regulations to stop their spread (California Department of Food and Agriculture 2020).

WILDLIFE CORRIDORS AND NURSERY SITES
The reach of Churn Creek, Boulder Creek, and Buckeye Creek within the project area provide wildlife migration corridors and nursery sites for fish, turtles, and amphibians. Riparian habitat along the reaches of these streams within the project provide migration corridors for amphibians and various small mammals. Trees within riparian habitat and in uplands provide potentially suitable nesting habitat for birds.

The construction of I-5 bisected a large blue oak woodland interspersed with annual grassland that continues to support a variety of mammals, both large and small. Under current conditions, while difficult, medium to large wildlife such as deer, raccoons, and fox can cross I-5 within the project area. The median barrier is either an earth berm or a high-tension cable barrier, both simple for an adult deer, fawn or medium mammal to navigate. Additionally, existing conditions only have wildlife crossing two lanes of traffic at a time. The median is wide enough for wildlife to pause without being harmed before either turning around or proceeding across the next two lanes.

LOCAL POLICIES AND ORDINANCES
Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. The portion of the project in Shasta County is mostly within the City of Redding and the City of Shasta Lake. The portion of the project in Tehama County is in an unincorporated area. Therefore, the project is subject to the *City of Redding General Plan 2023–2045*, the *City of Shasta Lake General Plan 2040*, the *Shasta County General Plan,* and the *Tehama County General Plan Update 2009–2029*. These plans include various policies and objectives related to the protection of biological resources.

HABITAT CONSERVATION PLANS, NATURAL COMMUNITY CONSERVATION PLANS, AND OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLANS

Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. The United States Fish and Wildlife Service has approved two habitat conservation plans in Shasta County; no habitat conservation plans have been approved in Tehama County (United States Fish and Wildlife Service 2023). A habitat conservation plan was approved to the Fruit Growers Supply Company (a corporation) for conservation of habitat for Chinook salmon (upper Klamath and Trinity Rivers ESU), coho salmon (southern Oregon/northern California coasts ESU), steelhead (Klamath Mountains Province), northern spotted owl, and Yreka phlox. A habitat conservation plan was also approved to Ox Yoke Road (a private Individual) for conservation of habitat for the valley elderberry longhorn beetle. The habitat conservation plans provide incidental take permits for federally listed species on privately owned land. Land subject to these habitat conservation plans is well-outside the project area. No natural community conservation plans have been designated in Shasta and Tehama counties (California Department of Fish and Wildlife 2023).

Environmental Consequences

SENSITIVE NATURAL COMMUNITIES AND WETLANDS

CONSTRUCTION IMPACTS

Construction of the project would permanently impact approximately 0.002 acres (~6 linear feet) of riverine habitat as a result of extending three piers and removing/replacing wing-walls within the ordinary high water mark of Churn Creek to accommodate the bridge widening. A draining ditch that flows north to south from the NB off-ramp to Churn Creek would be filled and relocated within the project area further to the east near the right-of-way fence. Additionally, small amounts of rock slope protection (RSP) would be placed at various other potentially jurisdictional aquatic features within the project area to dissipate energy. At many of these locations RSP already exists but needs supplemental RSP to function properly.

Approximately 0.065 acres (~100 linear feet) of riverine habitat would be temporarily impacted as a result of installation of a temporary work pad needed to widen the Churn Creek Bridge. The work pad would be clean, spawning-sized gravel and would be removed once construction has been completed. The amount of riverine habitat that would be permanently and temporarily impacted is not substantial.

Construction of the project would permanently impact approximately 0.006 acres (~25 linear feet) of riparian habitat and temporarily impact approximately 0.007 acres (~50 linear feet) of riparian habitat. These impacts would be associated with the widening of the Churn Creek Bridge and trimming vegetation to replace drainage features. The amount of riparian habitat that would be permanently and temporarily impacted is not substantial.

Construction of the project would not impact any wetlands.

Compliance with the following Caltrans standard measures would minimize impacts to sensitive natural communities and wetlands:

- **[BR-1]** Work in Churn Creek shall be completed during the period between June 1 and October 15, or as otherwise specified in resource-agency permits. Upon completion of work,

the contractor shall restore temporarily disturbed streambed to near pre-construction conditions.

- **[BR-2]** Potential direct and indirect effects on water quality and the aquatic environment shall be avoided by implementing standard construction best management practices for erosion control and spill prevention.

- **[BR-3]** Upon completion of work, the contractor shall restore the topography of temporarily disturbed riparian areas to pre-construction conditions and stabilize soils with appropriate erosion control methods.

- **[BR-4]** Removal of existing riparian vegetation shall not exceed the minimum necessary to complete operations.

- **[BR-5]** All wetlands within the project area shall be protected by with environmentally sensitive area (ESA) fencing as a first order of work to ensure construction activities do not impact the areas.

CUMULATIVE IMPACTS

The project's impact on riverine and riparian habitat would be minimal and when these impacts are considered along with similar impacts resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on riverine and riparian habitat would be individually limited but not cumulatively considerable.

SPECIAL-STATUS SPECIES

CONSTRUCTION IMPACTS

Work in Churn Creek could affect the following special-status species: western pond turtle, Central Valley steelhead DPS, Central Valley fall/late-fall-run Chinook salmon, Central Valley winter-run Chinook salmon ESU, and Central Valley spring-run Chinook salmon ESU.

Western pond turtles could be directly affected if present during in-channel work and harmed by construction equipment. Potential indirect effects on turtles could occur if sediments or pollutants were to enter drainages and degrade their habitat.

Salmonids could be directly affected if present during in-channel work and harmed by construction equipment. Potential indirect effects on salmonids could occur if sediments or pollutants were to enter drainages and degrade their habitat. However, because work in Churn Creek would be limited to the summertime when water temperature in Churn Creek would be lethal to salmonids and therefore would preclude their presence, salmonids would not be impacted. Construction of the project would directly and indirectly impact a minimal amount of EFH designated for salmon in Churn Creek.

As part of formal Section 7 consultation, Caltrans provided NOAA Fisheries a Biological Assessment. The Biological Assessment determined:

- The project may affect, and is not likely to adversely affect the Central Valley steelhead DPS.

- The project may affect, and is not likely to adversely affect the Sacramento River winter-run ESU.

- The project may affect, and is not likely to adversely affect the Central Valley spring-run ESU.

- The project will have no direct or indirect effects to designated critical habitat for federally listed species and species proposed to be listed.

- The project is not likely result in the destruction or adverse modification of designated critical habitat for the California Central Valley steelhead DPS, Sacramento River winter-run Chinook salmon ESU, or Central Valley spring-run Chinook salmon ESU.

NOAA Fisheries reviewed the Biological Assessment and issued a Letter of Concurrence (NOAA Fisheries 2020) in which they concurred with the findings above.

Compliance with the following Caltrans standard measures would minimize impacts to special-status species and the aquatic environment:

- **[WQ-1]** The project would comply with the Provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ) as amended by subsequent orders, which became effective July 1, 2013. If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (Order 2009-0009-DWQ) is also required.

  Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one acre) that includes erosion control measures and construction waste containment measures to protect Waters of the State during project construction.

  The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the *Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

  The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase.

  Construction may require one or more of the following temporary construction site BMPs:

    - Any spills or leaks from construction equipment (e.g., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.

- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.
- Temporary sediment control and soil stabilization devices would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.
- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plan.
- For SWPPP projects (which are governed according to both the Caltrans NPDES permit and the Construction General Permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES and CGP and the corresponding requirements of these permits are adhered to. For WPCP projects (which are governed according to the Caltrans NPDES permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES permit is adhered to.

- **[WQ-2]** The project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans Storm Water Management Plan. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ) as amended by subsequent orders.

  The project design may include one or more of the following:

  - Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project
  - Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants.

- **[WQ-3]** All construction site BMPs shall follow the most current edition of the *Construction Site Best Management Practices (BMPs) Manual*. For this project, these are likely to include erosion and sediment control BMPs such as ground cover, fiber rolls, gravel bag check dams, and other listed methods.

- **[WQ-4]** Prior to any ground-disturbing activities, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) that identifies measures to be implemented for erosion control, spill prevention, and construction waste containment. These measures shall be

implemented during construction to minimize impacts on water quality and the aquatic environment.

- **[WQ-5]** Environmentally sensitive areas (ESAs) shall be designated and clearly delineated with high-visibility fence on the contract plans during the design phase to avoid potential discharges and unauthorized disturbance to riparian habitat.

Construction of the project has the potential to introduce/spread invasive species into the project area and affect native plant and animal species. Of particular concern are noxious weed species, which crowd-out native plant species. Noxious weed species are often introduced or spread into construction areas as seeds embedded in mud that is attached to construction vehicles and equipment. Noxious weeds are considered widespread in California and subject to regulations to stop their spread. Compliance with the following Caltrans standard measures would minimize the potential for introduction or spread of invasive and/or noxious weed species and ensure that any impacts on native plant and animal species as a result of the introduction of noxious weed species into the project area would be minimal:

- **[BR-6]** Invasive Species
    - Straw, straw bales, seed, mulch, or other material used for erosion control or landscaping which would be free of noxious weed seed and propagules.
    - All equipment would be thoroughly cleaned of all dirt and vegetation prior to entering the job site to prevent importing invasive non-native species. Project personnel would adhere to the latest version of the *California Department of Fish and Wildlife Aquatic Invasive Species Cleaning/Decontamination Protocol (Northern Region)* for all field gear and equipment in contact with water.
- **[BR-7]** Invasive Species
    - In accordance with Caltrans' non-standard specification 14-6.05, prior to beginning work, the contractor shall prepare an invasive species control plan that identifies measures to be implemented to prevent the introduction and/or spread of invasive species (e.g., noxious weeds). The invasive species control plan shall be approved by Caltrans environmental staff and implemented prior to beginning work.

CUMULATIVE IMPACTS

Any impacts on special-status species would be minimal and when these impacts are considered along with similar impacts resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, any impacts on special-status species would be individually limited but not cumulatively considerable.

There would be no cumulative impacts on designated critical habitat as none would be impacted. Impacts on EFH for salmon would be minimal and when these impacts are considered along with similar impacts resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, impacts on EFH for salmon would be individually limited but not cumulatively considerable.

Any impacts on native plant and animal species related to the introduction/spread of invasive species would be minimal and when these impacts are considered along with similar impacts resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, any impacts on native plant and animal species related to the introduction/spread of invasive species would be individually limited but not cumulatively considerable.

WILDLIFE CORRIDORS AND NURSERY SITES

CONSTRUCTION IMPACTS

The project would expand I-5 from four lanes to six lanes by adding a truck only lane in each direction of travel (6.00 miles in the NB direction of travel and 8.19 miles in the SB direction of travel). With the addition of a truck only lane in each direction of travel, wildlife would have to navigate an additional 12 feet of active roadway for each lane added. Reducing the medium width also would reduce the area wildlife have to recuperate and prepare to cross another three to four lanes of active traffic. Moreover, the reduction in median width is exacerbated with the addition of standard concrete barriers. The addition of the barrier would eliminate all wildlife but adult deer from being able to cross the interstate. Medium to small wildlife would attempt to cross, be stopped by the concrete barrier, and would have to turn around. While adult deer would be able to cross the concrete median and additional lane, the median may affect their line of sight and the additional lane would require deer to continue across the entire Interstate instead of being able to stop in the median. With a sprint across the interstate wildlife may cross one side safely only to jump into oncoming traffic, making the travel way dangerous for wildlife and drivers alike. With the increase of 48 feet of additional active lanes, reduction in median size, and construction of high concrete median barrier, a total widening of 84 feet at the widest segment, impacts to wildlife movement across I-5 would be substantial. Therefore, the project would interfere substantially with the movement of native resident or migratory wildlife species.

The project would not interfere with the movement of native resident or migratory fish species because a temporary water diversion would be installed in Churn Creek to allow aquatic organisms to move freely around the in-channel work area during construction.

A variety of migratory bird species could nest in vegetation within and/or adjacent to the project area. If present, nesting birds could be directly and indirectly affected by the proposed work. Potential direct effects on nesting birds could include mortality resulting from destruction of nests during vegetation removal. Potential indirect effects on nesting birds could include disruption of feeding patterns or nest abandonment due to construction related noise. Compliance with the following Caltrans standard measure would avoid impacts on nesting migratory birds:

- **[BR-8]** To avoid disturbing nesting birds, tree and shrub removal shall be restricted to the period between October 1 and January 31. If this is not practicable, a contractor-supplied biologist shall conduct a pre-construction survey for nesting birds within 7 days prior to removing trees and shrubs. If an active nest is discovered, the project engineer shall be notified immediately and all work within 100 feet of the nest shall cease. Work within the buffer zone may proceed only after a contractor-supplied biologist has determined that the nest is no longer active.

- **[BR-9]** In accordance with standard specification 14-6.03D, prior to construction, the contractor shall install bird exclusionary material on the Churn Creek Bridge outside the nesting season to prevent birds from nesting on the structure.

CUMULATIVE IMPACTS

The project would expand I-5 from four lanes to six lanes by adding a truck only lane in each direction of travel (6.00 miles in the NB direction of travel and 8.19 miles in the SB direction of travel). Caltrans' recently completed RASL project, which expanded I-5 from four to six lanes between Redding and Anderson, added 6.9 miles of new lane in the NB direction of travel and 6.19 miles of new lane in the SB direction of travel. In addition, the RASL project added an approximately 0.5-mile long acceleration lane in the NB direction of travel and added an approximately 0.5-mile long acceleration lane in the SB direction of travel. Aside from the currently proposed project, there are no other locations on the I-5 corridor in Shasta County that are currently being considered for future expansion of the highway from four lanes to six lanes. The addition of a truck only lane in each direction of travel, when considered along with the new lanes added by the RASL project, would not have an adverse cumulative impact on wildlife corridors.

In summary, the project's impact on wildlife corridors would be substantial and potentially significant, but when these impacts are considered along with similar conflicts resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on wildlife corridors would not be cumulatively considerable.

LOCAL POLICIES AND ORDINANCES

CONSTRUCTION IMPACTS

The project is consistent with the *City of Redding General Plan 2023–2045*, the *City of Shasta Lake General Plan 2040*, the *Shasta County General Plan*, and the *Tehama County General Plan Update 2009–2029*.

CUMULATIVE IMPACTS

The project would have no cumulative impacts on (i.e., conflicts with) local policies and ordinances.

HABITAT CONSERVATION PLANS, NATURAL COMMUNITY CONSERVATION PLANS, AND OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLANS

CONSTRUCTION IMPACTS

The project would not conflict with any habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans.

CUMULATIVE IMPACTS

The project would have no cumulative impact on any habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plan.

Avoidance, Minimization, and/or Mitigation Measures

SENSITIVE NATURAL COMMUNITIES AND WETLANDS

The following measure shall be implemented to offset permanent and temporary impacts to riverine habitat:

- As part of permit-driven mitigation to offset permanent impacts to approximately 0.002 acres of riverine habitat (Churn Creek), compensatory mitigation for impacts to riverine habitat will be addressed in the permitting phase in coordination with the regulatory agencies.

The following measure shall be implemented to offset permanent and temporary impacts to riparian habitat:

- As part of permit-driven mitigation to offset permanent impacts to approximately 0.006 acres of riparian habitat, compensatory mitigation for impacts to riparian habitat will be addressed in the permitting phase in coordination with the regulatory agencies.

SPECIAL-STATUS SPECIES

The following measures shall be implemented to avoid/minimize direct and indirect effects on the western pond turtle:

- Potential direct effects on western pond turtles shall be avoided by having a contractor-supplied biologist conduct a pre-construction survey of in-water work areas each day that in-water work would occur until a water diversion is established. If present, turtles shall be relocated to suitable habitat outside of work areas.

- Potential indirect effects on turtles shall be avoided by implementing standard construction best management practices for erosion control and spill prevention.

The following measures shall be implemented to avoid/minimize direct and indirect effects on Central Valley steelhead DPS, Central Valley fall/late-fall-run Chinook salmon, Central Valley spring-run Chinook salmon ESU, and Central Valley winter-run Chinook salmon ESU:

- Work in Churn Creek shall be limited to the period between June 1 and October 15, or as otherwise specified in resource-agency permits. Upon completion of work, the contractor shall restore temporarily disturbed streambed to pre-construction conditions.

- Potential indirect effects on salmonids shall be avoided by implementing standard construction best management practices for erosion control and spill prevention.

WILDLIFE CORRIDORS AND NURSERY SITES

To offset substantial impacts to the movement of native resident or migratory wildlife species, two options, or a combination of the two, are proposed as CEQA mitigation.

- First, the fifth worst hot spot for mule deer collisions in the entire state would be remedied. This section of roadway, also along I-5 is in Tehama County is about 1.5 miles from Dibble Creek to the Antelope Boulevard intersection (Post miles R28.2 – R26.5). Caltrans proposes to attach outriggers to the top of the existing 4 -foot-tall fence to discourage wildlife from jumping the

fence, or in some areas replacing the existing fence with a six-foot-tall fence. Wildlife would be channeled to multiple existing waterway bridge locations to cross underneath the Interstate.

- A second alternative to mitigate for impacts would be to fund a California Department of Fish and Wildlife program to purchase collars for use on deer herds around the City of Redding. This would help understand the ecology and movement of urban deer so that treatments can be properly implemented in the future.

- The final alternative would be a combination of the two above scenarios. Collars on a small number of individuals would have a large impact in understanding the movement of urban deer in the City of Redding. This option would be based on CDFW staff availability to conduct the research. Because the collars auto-drop and can be refurbished, a combination of the two alternatives would lead to multiple years of important data, while addressing the existing known critical vehicle-wildlife incident hotspot.

LOCAL POLICIES AND ORDINANCES

Implementation of measures for habitat protection, species protection (including nesting migratory birds), and invasive species control would ensure consistency with the *City of Redding General Plan 2023–2045*, the *City of Shasta Lake General Plan 2040*, the *Shasta County General Plan*, and the *Tehama County General Plan Update 2009–2029*.

HABITAT CONSERVATION PLANS, NATURAL COMMUNITY CONSERVATION PLANS, AND OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLANS

Not applicable.

CEQA Significance Determinations for Biological Resources

SENSITIVE NATURAL COMMUNITIES AND WETLANDS

Implementation of standard measures for wetland protection would ensure that there would be no impacts on wetlands. Impacts on riverine and riparian habitat would be less than significant.

SPECIAL-STATUS SPECIES

Implementation of measures for protection of special-status species would ensure that the project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries. Any impacts on special-status species would be less than significant.

WILDLIFE CORRIDORS AND NURSERY SITES

Implementation of standard measures to protect nesting birds would ensure that there would be no impact on wildlife nursery sites.

The project includes the use of water diversions during construction to allow the free movement of aquatic organisms. However, the addition of a truck only lane in the NB and SB directions of travel on I-5 would interfere substantially with the movement of native terrestrial wildlife species within migratory wildlife corridors and therefore would have a potentially significant impact. However, with incorporated mitigation measures to mitigate for impacts to the movement of native resident wildlife species within migratory wildlife corridors, the project would have a less than significant impact to wildlife movement within wildlife corridors.

LOCAL POLICIES AND ORDINANCES

The project would not conflict with any local policies or ordinances protecting biological resources. Therefore, there would be no impact.

HABITAT CONSERVATION PLANS, NATURAL COMMUNITY CONSERVATION PLANS, OR OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLANS

The project would not conflict with any habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plan. Therefore, there would be no impact.

Given the determinations above, the proposed project would have a potentially significant impact to biological resources. However, with incorporated mitigation measures to mitigate for impacts to the movement of native resident wildlife species within migratory wildlife corridors, the project would have a less than significant impact to biological resources.

Energy

Regulatory Setting

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

The California Environmental Quality Act (CEQA) Guidelines section 15126.2(b) and Appendix F, Energy Conservation, require an analysis of a project's energy use to determine if the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources.

Affected Environment

Energy use (consumption) in the project area is affected by existing infrastructure that requires the input of energy to operate. Within the project area, existing infrastructure that requires the input of energy to operate include roadside lighting, CCTV cameras, census loops, and various equipment at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility. Existing underground fiber optic cables within the project area do not require the input of energy to operate.

Energy use in the project area is also affected by the amount of traffic that passes through the project area, the rate of travel, patterns of travel, and type of automobile engine (e.g., electric, gasoline, diesel). The segment of I-5 that includes the project area has a relatively high amount of annual vehicle traffic and consequently is assumed to have a high amount of annual energy use by vehicles traveling through the project area.

Transportation energy is generally described in terms of direct and indirect energy. Direct energy is the energy consumed in the actual propulsion of automobiles, trains, and airplanes. This energy consumption is a function of traffic characteristics such as VMT, speed, vehicle mix, and thermal value of the fuel being used. Some projects may also include features such as new or replacement roadway lighting or other features requiring electricity, which is an ongoing and permanent source of direct energy consumption. Indirect energy is defined as all of the remaining energy consumed to run a transportation system, including maintenance energy, and any substantial impacts on energy consumption related to project-induced land use changes and mode shifts, as well as any substantial changes in energy associated with vehicle operation, manufacturing, or maintenance due to

increased automobile use. The one-time energy expenditure involved in constructing a project is also considered indirect energy.

Environmental Consequences

Construction Impacts

The project would install various infrastructure (e.g., overhead electronic AVM/LMS signs, CCTV cameras, census loops, and a charging station with security cameras) that would require the input of energy to operate. This infrastructure would be powered by connecting to existing electrical power sources. The addition of a truck only lane in each direction of travel would affect traffic operations and energy consumption.

Study Methods

An Energy Analysis Report (California Department of Transportation 2023d) was prepared for the project to evaluate energy use during construction and long-term operation of the project.

The basic procedure for analyzing direct energy consumption from mobile sources is to calculate fuel consumption using CT-EMFAC2017, which is an emission model developed by Caltrans that calculates project-level emissions and fuel consumption using data from the California Air Resources Board's EMFAC model. The fuel consumption can be easily derived from the CT-EMFAC model run prepared for the criteria pollutant and GHG emissions analyses. The basic procedure for analyzing indirect energy consumption from construction activities is to obtain fuel consumption projections in gallons from the Caltrans Construction Emission Tool (CAL-CET 2021, v1.0.2).

With regard to VMT, the project level VMT distribution data and speed bins for the existing, no-build alternative, and build alternative, along with the CT-EMFAC2017 emission rates, were used to calculate the fuel consumptions for 2016 (existing), 2026 (opening year), and 2046 (horizon year) conditions between the build alternative and the no-build alternative.

Energy Consumption Modeling Results

The results of the energy consumption modeling are shown in Table 11 and Table 12.

Table 11. Comparison of Fuel Consumption Between Existing, No-Build Alternative, and Build Alternative in 2026 (Opening Year) and 2046 (Horizon Year)

Energy Consumption	2016 (Existing)	2026 (Opening Year)		2046 (Horizon Year)	
		No-Build	Build	No-Build	Build
Gasoline (gal/day)	13,311.5	10,500.1	10,539.7	9,914.8	10,091.3
Diesel (gal/day)	3,238.7	3,648.8	3,668.6	4,880.9	5,014.9
^Combined Gasoline+Diesel	2,046.1	1,764.3	1,771.8	1,863.2	1,902.8

Table 11. Comparison of Fuel Consumption Between Existing, No-Build Alternative, and Build Alternative in 2026 (Opening Year) and 2046 (Horizon Year)

Energy Consumption	2016 (Existing)	2026 (Opening Year)		2046 (Horizon Year)	
		No-Build	Build	No-Build	Build
(million BTU/day)					
^Fuel Consumption Change with No-Build/Build		NA	0.4%	NA	2.1%
^Fuel Consumption Change with Existing/No-Build/Build		-13.8%	-13.4%	-8.9%	-7.0%

^Conversion factors were applied (120,286 BTU/gal gas and 137,381 BTU/gal Diesel)

Table 12. Project-Level Fuel Consumption During Construction

Construction	Diesel	Gasoline	Electricity
On-Road (gal or kWh per project)	50,688	46,245	7,042,994
Off-Road (gal or kWh per project)	32,110	NA	NA
^Combined (million BTU per project)	11,375	5,563	24,031

^Conversion factors were applied
(120,286 BTU/gal gas, 137,381 BTU/gal diesel, and 3,412 BTU/kWh)

Direct Energy Consumption (Permanent Impacts)

As documented in Table 11, the build alternative would increase fuel consumption about 0.4% in 2026 (opening year) and 2.1% in 2046 (horizon year). In addition, when balancing energy used during construction and operation against energy consumed by relieving congestion and other transportation efficiencies, the project would have an incremental energy impact in 2026 (opening year). Although there is a modeled increase in energy consumption, during operation of the project over the long-term, newer and more fuel-efficient vehicles with electric vehicles would enter the fleet, resulting in an overall lower potential for an increase in energy consumption due to vehicle traffic in the future.

When compared with the no-build alternative, the build alternative would result in a 0.4% increase in energy consumption in 2026 (opening year) and a 2.1% increase in energy consumption in 2046 (horizon year). When compared with the 2016 (existing), the build alternative would result in energy savings of about 13.4% in 2026 (opening year) and a savings of about 7.0% in 2046 (horizon year).

When compared with 2016 (existing), the no- build alternative would result in energy savings of about 13.8% in 2026 (opening year) and a savings of about 8.9% in 2046 (horizon year).

Indirect Energy Consumption (Temporary and Permanent Impacts)

The no-build alternative would not involve any construction energy impacts. Therefore, no impact on energy consumption would occur.

The build alternative would result in short-term energy consumption related to the manufacture of construction materials, the use of construction equipment that requires petroleum fuels, and the use of construction workers' motor vehicles as they travel to and from the site. Construction activities would last approximately two years. Thus, construction-related energy consumption anticipated under the build alternative would be finite and limited and would have an incremental impact on area energy supplies.
With the inclusion of project features as seen in Table 12, no adverse temporary impacts regarding construction are anticipated. As indicated above, energy use associated
with proposed project construction under the build alternative is conservatively estimated to result in the short-term consumption of 82,797 gallons of diesel, 46,245 gallons of gasoline, and 7,042,994 kWh of electricity from construction equipment. This represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete. Moreover, construction-related energy consumption would be temporary and not a permanent new source of energy demand, and demand for fuel would have no noticeable effect on peak or baseline demands for energy.

Construction indirect energy consumption would result from traffic delays due to construction. The project's TMP would reduce construction related traffic impacts. The TMP would assist in managing traffic congestion and provide signage to affected residents and businesses in the event temporary closures or detours are warranted during construction activities. Compared with indirect energy use by construction vehicles and equipment, indirect energy use due to construction-related traffic delays would be minimal and would be reduced with implementation of the TMP.

For indirect energy of maintaining the project (permanent impacts) in the long-term, it will incorporate the use of energy-efficient lighting, such as LED traffic signals and street lights, to the extent feasible. LED lights consume 10 percent of the electricity of traditional lights.

Summary

The build alternative would increase the capacity of the State Highway System and modeling predicts this would result in an estimated 0.4% increase in energy consumption between the build alternative and the no-build alternative in 2026 (opening year) and a 2.1% increase in energy consumption between the build alternative and the no-build alternative in 2046 (horizon year). However, compared with the no-build alternative, the project's proposed improvements under the build alternative would improve roadway operations and reduce traffic delay within the project limits. Thus, vehicle delay and congestion within the project limits would decrease compared with the no-build alternative.

Once constructed, the project would contribute to roadway improvement and improved traffic operations that would reduce fuel consumption and when factored with other projected transportation efficiencies, is anticipated to offset the projected increase in energy consumption and offset the energy used to power overhead electronic AVM/LMS signs, CCTV cameras, and charging station during the long-term operation of the project. During construction, there would be a short-

term increase in energy use. However, the increase in energy use during construction would be minimal and temporary. When practical, implementation of the following energy savings measures would minimize energy use:

- Reuse of existing rail, steel, and lumber, wherever possible, such as for falsework, shoring, and other applications during the construction process.

- Recycling of asphalt taken up from roadways, if practicable and cost-effective.

- Use of newer, more energy-efficient equipment, where feasible, and maintenance of older construction equipment to keep in good working order.

- Promoting of scheduling of construction operations to efficiently use construction equipment (i.e., only haul waste when haul trucks are full and combine smaller dozer operations into a single comprehensive operation, where possible).

- Promotion of construction employee carpooling.

Cumulative Impacts
Once constructed, the project would contribute to roadway improvement and improved traffic operations that would reduce fuel consumption and when factored with other projected transportation efficiencies, is anticipated to offset the projected increase in energy consumption and offset the energy used to power overhead electronic AVM/LMS signs, CCTV cameras, and charging station during the long-term operation of the project. The project's impact on energy resources during construction would be minimal and temporary. When these impacts are considered along with impacts on energy resources resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on energy resources would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are warranted.

CEQA Significance Determinations for Energy

Once constructed, the project would contribute to roadway improvement and improved traffic operations that would reduce fuel consumption and when factored with other projected transportation efficiencies, is anticipated to offset the projected increase in energy consumption and offset the energy used to power overhead electronic AVM/LMS signs, CCTV cameras, and charging station during the long-term operation of the project. Construction-related energy consumption would be temporary and is unlikely to substantially increase direct energy consumption through increased fuel usage. Therefore, the proposed project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Additionally, the project would not substantially conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Given the above findings, the project would have a less than significant impact on energy resources.

Geology and Soils

Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

Affected Environment

The project is located in the northern portion of the Sacramento Valley, which is generally characterized relatively flat topography. Landslides are uncommon on the valley floor. Review of aerial photographs found no evidence of large landslides within or adjacent to the project area. Review of the California Department of Conservation's Landslide Inventory Mapper found no data for the project area (California Department of Conservation 2023e). Given that that the topography within the project area is relatively level and there is no history of highway repairs due to landslides or subsidence within the project area, the soils are presumed to be relatively stable. Most of the underlying geology in the project area consists of non-marine sedimentary rocks from the Pliocene-Pleistocene with insertions of marine sedimentary and metasedimentary rocks (California Department of Conservation 2023f). The northern portion of the project area includes metavolcanic rocks. The project is not located in an area that has a known active earthquake fault, as delineated on the most recent Alquist-Priolo earthquake fault zoning map (California Department of Conservation 2023g). The project location is subject to moderate seismic ground shaking from earthquakes (California Department of Conservation 2023h). The project area is not in an area characterized by seismic-related ground failure and/or liquefaction (California Department of Conservation 2023i).

Soil types within the project area include Redding, Clough, Churn, Gaviota, Newtown, Newville-Dibble Complex, Arbuckle gravelly loam, and Red Bluff gravelly loam (Natural Resources Conservation Service 2020, 2023). All these soils have low infiltration rates. Potential for erosion does occur.

Expansive soils present hazards for development because they expand and shrink depending on water content. A hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The Natural Resource Conservation Service recognizes four hydrologic soil groups (A through D). Group D soils have a high shrink-swell potential due to their high clay content. All soils within the project area are classified as Group D soils except Newtown, Arbuckle gravelly loam, and Red Bluff gravelly loam. However, the current roadway is on fill from soil groups outside of Group D.

Environmental Consequences

Construction Impacts
Although the new structures and roadway could be subjected to moderate to high seismic ground shaking in the event of a strong earthquake, any such limitations can be overcome through proper planning, design, and/or construction. The work includes grading, excavation, and widening of the Churn Creek Bridge, which would result in approximately 26.8 acres of ground disturbance. These activities would result in the loss of a small amount of soil and have the potential to cause soil erosion.

Compliance with the following Caltrans standard measures would overcome the effects of strong seismic ground shaking, account for the presence of expansive soils, and minimize the potential for erosion and loss of topsoil:

- **[GS-1]** Bridges shall be designed in accordance with current seismic safety standards.
- **[GS-2]** The project would be designed to minimize slope failure, settlement, and erosion using recommended construction techniques and Best Management Practices (BMPs). New earthen slopes would be vegetated to reduce erosion potential.
- **[GS-3]** In the unlikely event that paleontological resources (fossils) are encountered, all work within a 60-foot radius of the discovery would stop, the area would be secured, and the work would not resume until appropriate measures are taken.
- **[WQ-1]** The project would comply with the Provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ) as amended by subsequent orders, which became effective July 1, 2013. If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (Order 2009-0009-DWQ) is also required.

  Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one acre) that includes erosion control measures and construction waste containment measures to protect Waters of the State during project construction.

  The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the *Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase.

Construction may require one or more of the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (e.g., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.
- Temporary sediment control and soil stabilization devices would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.
- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plan.
- For SWPPP projects (which are governed according to both the Caltrans NPDES permit and the Construction General Permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES and CGP and the corresponding requirements of these permits are adhered to. For WPCP projects (which are governed according to the Caltrans NPDES permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES permit is adhered to.

- **[WQ-2]** The project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans Storm Water Management Plan. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ) as amended by subsequent orders.

  The project design may include one or more of the following:

  - Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project.
  - Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants.

- **[WQ-3]** All construction site BMPs shall follow the most current edition of the *Construction Site Best Management Practices (BMPs) Manual*. For this project, these are likely to include erosion and sediment control BMPs such as ground cover, fiber rolls, gravel bag check dams, and other listed methods.

- **[WQ-4]** Prior to any ground-disturbing activities, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) that identifies measures to be implemented for erosion control, spill prevention, and construction waste containment. These measures shall be implemented during construction to minimize impacts on water quality and the aquatic environment.

- **[WQ-5]** Environmentally sensitive areas (ESAs) shall be designated and clearly delineated with high-visibility fence on the contract plans during the design phase to avoid potential discharges and unauthorized disturbance to riparian habitat.

Cumulative Impacts
The project's impact on geology and soils would be minimal and when these impacts are considered along with impacts on geology and soils resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on geology and soils would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Geology and Soils

The project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, seismic-related ground failure (including liquefaction), and landslides. The project is not located on a soil that is unstable or that would become unstable as a result of the project and potentially result in onsite/offsite landslide, lateral spreading, subsidence, liquefaction, or collapse. Expansive soils are present within the project area, but would not create substantial direct or indirect risks to life and/or property. The project does not include the use of septic tanks and/or alternative waste water disposal systems and would not directly or indirectly destroy a unique paleontological resource/site or unique geologic feature. The project would result in the loss of a small amount of soil, but this quantity would not constitute a substantial loss of soil. By designing the new truck only lanes and widening bridges in accordance with current seismic safety standards and implementation of standard construction site BMPs for erosion control during construction, the project would have a less than significant impact on geology and soils.

Given the determinations above, the project would have a less than significant impact on geology and soils.

Greenhouse Gas Emissions

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. The Intergovernmental Panel on Climate Change, established by the United Nations and World Meteorological Organization in 1988, is devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy. Climate change in the past has generally occurred gradually over millennia, or more suddenly in response to cataclysmic natural disruptions. The research of the Intergovernmental Panel on Climate Change and other scientists over recent decades, however, has unequivocally attributed an accelerated rate of climatological changes over the past 150 years to GHG emissions generated from the production and use of fossil fuels.

Human activities generate GHGs consisting primarily of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring and necessary component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2 that is the main driver of climate change. In the U.S. and in California, transportation is the largest source of GHG emissions, mostly CO_2.

The impacts of climate change are already being observed in the form of sea level rise, drought, more intense heat, extended and severe fire seasons, and historic flooding from changing storm patterns. Both mitigation and adaptation strategies are necessary to address these impacts. The most important mitigation strategy is to reduce GHG emissions. In the context of climate change (as distinct from CEQA and NEPA), "mitigation" involves actions to reduce GHG emissions or to enhance the "sinks" that store them (such as forests and soils) to lessen adverse impacts. "Adaptation" is planning for and responding to impacts to reduce vulnerability to harm, such as by adjusting transportation design standards to withstand more intense storms, heat, and higher sea levels. This analysis will include a discussion of both in the context of this transportation project.

REGULATORY SETTING

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2022). This

approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values— "the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

The federal government has taken steps to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 USC Section 6201) as amended by the Energy Independence and Security Act (EISA) of 2007; and Corporate Average Fuel Economy (CAFE) Standards. This act established fuel economy standards for on-road motor vehicles sold in the United States. The U.S. Department of Transportation's National Highway Traffic and Safety Administration (NHTSA) sets and enforces the CAFE standards based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States. The Environmental Protection Agency (U.S. EPA) calculates average fuel economy levels for manufacturers, and also sets related GHG emissions standards under the Clean Air Act. Raising CAFE standards leads automakers to create a more fuel-efficient fleet, which improves our nation's energy security, saves consumers money at the pump, and reduces GHG emissions (U.S. DOT 2014).

U.S. EPA published a final rulemaking on December 30, 2021, that raised federal GHG emissions standards for passenger cars and light trucks for model years 2023 through 2026, increasing in stringency each year. The updated GHG emissions standards will avoid more than 3 billion tons of GHG emissions through 2050. In April 2022, NHTSA announced corresponding new fuel economy standards for model years 2024 through 2026, which will reduce fuel use by more than 200 billion gallons through 2050 compared to the old standards and reduce fuel costs for drivers (U.S. EPA 2022a; NHTSA 2022).

State

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders (EOs) including, but not limited to, the following:

EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill (AB) 32 in 2006 and Senate Bill (SB) 32 in 2016.

Assembly Bill (AB) 32, Chapter 488, 2006, N??ez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that the California Air Resources Board (ARB) create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code [H&SC] Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Senate Bill (SB) 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

EO B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). [GHGs differ in how much heat each traps in the atmosphere, called global warming potential, or GWP. CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent", or CO_2e. The global warming potential of CO_2 is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO_2.] Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, Safeguarding California, every 3 years, and to ensure that its provisions are fully implemented.

SB 32, Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

SB 1386, Chapter 545, 2016, declared "it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state's greenhouse gas reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

SB 743, Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on vehicle miles traveled, to promote the state's goals of reducing greenhouse gas emissions and traffic related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

SB 150, Chapter 150, 2017, Regional Transportation Plans: This bill requires ARB to prepare a report that assesses progress made by each metropolitan planning organization in meeting their established regional greenhouse gas emission reduction targets.

EO B-55-18 (September 2018) sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

AB 1279, Chapter 337, 2022, The California Climate Crisis Act: This bill mandates carbon neutrality by 2045 and establishes an emissions reduction target of 85% below 1990 level as part of that goal. This bill solidifies a goal included in EO B-55-18. It requires ARB to work with relevant state agencies to ensure that updates to the scoping plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in California, as specified.

ENVIRONMENTAL SETTING

Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. The portion of the project in Shasta County is mostly within the City of Redding and the City of Shasta Lake. The portion of the project in Tehama County is in an unincorporated area. The proposed project is in a rural area, with a primarily natural resources-based agricultural and tourism economy. Interstate 5 is the main

transportation route to and through the area for both passenger and commercial vehicles. There are no alternative NB/SB routes, other than local roads. Traffic counts for this section of I-5 are high. The proposed project is within the jurisdiction of the Shasta Regional Transportation Agency (SRTA), which is the federally designated metropolitan planning organization (MPO) and state-designated Regional Transportation Planning Agency (RTPA) for Shasta County, and guides transportation development within the County. The *2018 Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region* (Shasta Regional Transportation Agency 2018) and the *2019 Tehama County Regional Transportation Plan* (Green Dot Transportation Solutions 2019a) addresses GHGs in the project area.

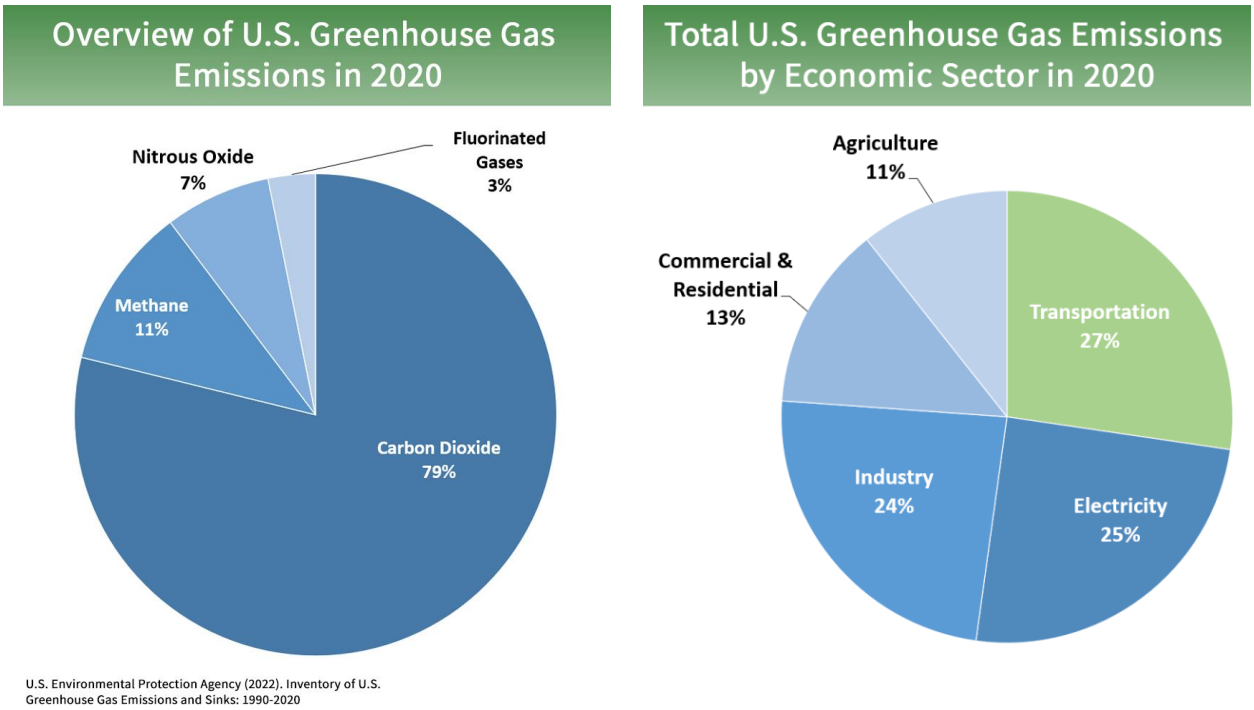
GHG Inventories

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the ARB does so for the state, as required by H&SC Section 39607.4. Cities and other local jurisdictions may also conduct local GHG inventories to inform their GHG reduction or climate action plans.

NATIONAL GHG INVENTORY

The annual GHG inventory submitted by the U.S. EPA to the United Nations provides a comprehensive accounting of all human-produced sources of GHGs in the United States. Total GHG emissions from all sectors in 2020 were 5,222 million metric tons (MMT), factoring in deductions for carbon sequestration in the land sector. Of these, 79 percent were CO_2, 11 percent were CH_4, and 7 percent were N_2O; the balance consisted of fluorinated gases. Total GHGs in 2020 decreased by 21% from 2005 levels and 11% from 2019. The change from 2019 resulted primarily from less demand in the transportation sector during the COVID-19 pandemic. The transportation sector was responsible for 27 percent of total U.S. GHG emissions in 2020, more than any other sector (Figure 3), and for 36% of all CO_2 emissions from fossil fuel combustion. Transportation CO_2 emissions for 2020 decreased 13 percent from 2019 to 2020, but were 7 percent higher than transportation CO_2 emissions in 1990 (Figure 3) (U.S. EPA 2022b).

Figure 3. U.S. 2020 Greenhouse Gas Emissions (Source: U.S. EPA 2022b)



U.S. Environmental Protection Agency (2022). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020

STATE GHG INVENTORY

ARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2022 edition of the GHG emissions inventory reported emissions trends from 2000 to 2020. Total California GHG emissions in 2020 were 369.2 $MMTCO_2e$, a reduction of 35.3 $MMTCO_2e$ from 2019 and 61.8 $MMTCO_2e$ below the 2020 statewide limit of 431 $MMTCO_2e$. Much of the decrease from 2019 to 2020, however, is likely due to the effects of the COVID-19 pandemic on the transportation sector, during which vehicle miles traveled declined under stay-at-home orders and reductions in goods movement. Nevertheless, transportation remained the largest source of GHG emissions, accounting for 37 percent of statewide emissions (Figure 4). (Including upstream emissions from oil extraction, petroleum refining, and oil pipelines in California, transportation was responsible for about 47 percent of statewide emissions in 2020; however, those emissions are accounted for in the industrial sector.) California's gross domestic product (GDP) and GHG intensity (GHG emissions per unit of GDP) both declined from 2019 to 2020 (Figure 5). It is expected that total GHG emissions will increase as the economy recovers over the next few years (ARB 2022a).

Figure 4. California 2020 Greenhouse Gas Emissions by Scoping Plan Category (Source: ARB 2022a)

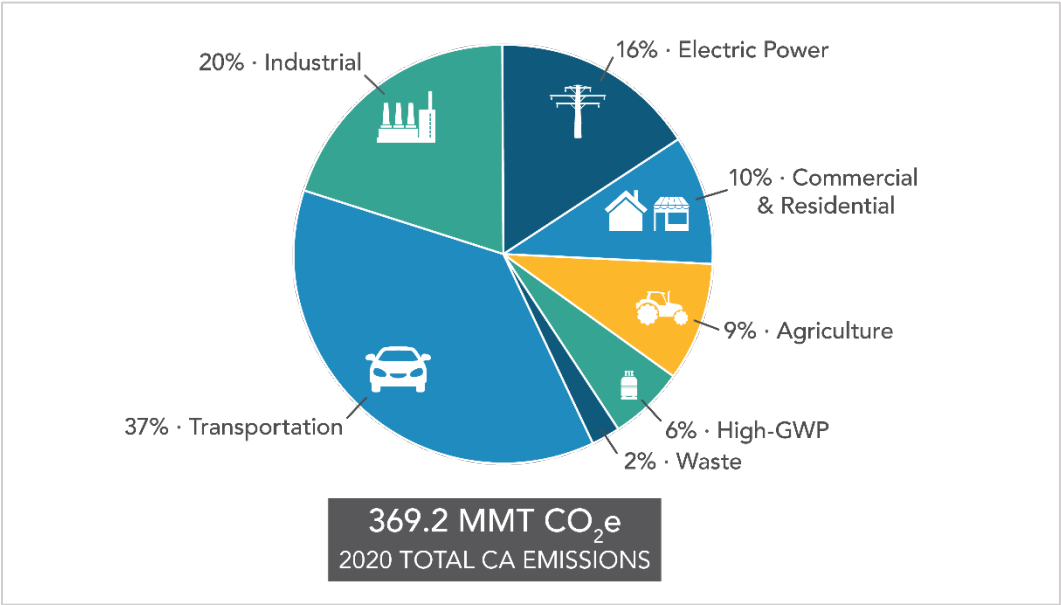
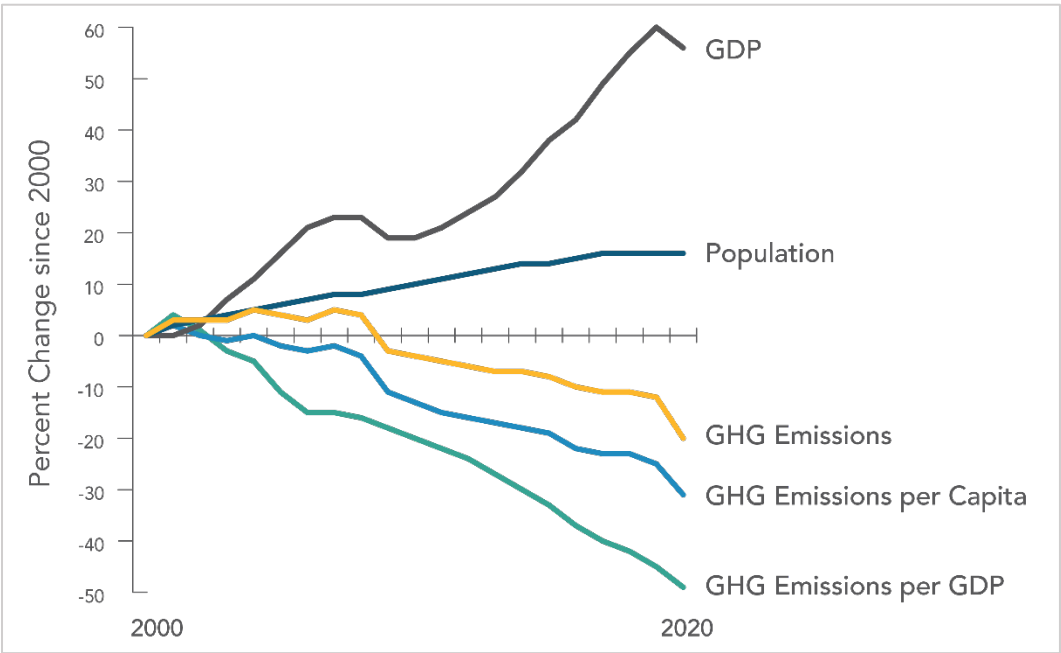


Figure 5. Change in California GDP, Population, and GHG Emissions since 2000 (Source: ARB 2022a)



AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every 5 years. ARB adopted the first scoping plan in 2008. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The draft 2022 Scoping Plan Update additionally lays out a path to achieving carbon neutrality by 2045 (ARB 2022b).

Regional Plans

ARB sets regional GHG reduction targets for California's 18 metropolitan planning organizations (MPOs) to achieve through planning future projects that will cumulatively achieve those goals, and reporting how they will be met in the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The proposed project is included in the RTP/SCS for the Shasta Regional Transportation Agency (SRTA), the applicable MPO for the region in which the proposed project is located. The regional reduction target for SRTA is four percent by 2035 (ARB 2022c).

Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. The small portion of the project that is in Tehama County is not within the jurisdiction of an MPO. The portion of the project in Shasta County is within the jurisdiction of the SRTA, which is the federally designated MPO and state-designated RTPA for Shasta County, and guides transportation development within the County. The project is subject to various local and regional plans including the *2022 Regional Transportation Plan & Sustainable Communities Strategy for the Shasta Region* (SRTA 2023), the *Shasta County General Plan,* the *City of Redding General Plan 2023–2045*, the *City of Shasta Lake General Plan 2040*, the *Tehama County General Plan Update 2009–2029*, the *2019 Tehama County Regional Transportation Plan*, and the *2019 Tehama County Active Transportation Plan* (Green Dot Transportation Solutions 2019b). These local and regional plans include goals, policies, and strategies aimed at reducing greenhouse gas emissions and these are listed in Table 13.

Table 13. Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies or Strategies
2022 Shasta County Regional Transportation Plan & Sustainable Communities Strategy for the Shasta Region	Executive Summary "The SCS features seven Strategic Growth Areas (SGAs) where various strategies are focused to reduce per capita vehicle miles traveled and associated greenhouse gas emissions. Strategies are intended to increase population and employment density within SGAs and to provide a range of practical mobility alternatives."
Shasta County General Plan	Air Quality Element AQ 1 Objective—To protect and improve the County's air quality in accordance with Federal and State clean air laws in order to: (1) safeguard human health, and (2) minimize crop, plant, and property damage. Policies: AQ 1a–1e AQ 2 Objective—To meet the requirements of the: (1) Federal Clean Air Act, and (2) the California Clean Air Act as soon as feasible. Policies: AQ 2a–2j AQ 3 Objective—To integrate air quality, land use, housing, transportation, and energy planning efforts to achieve the most efficient use of

Table 13. Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies or Strategies
	public resources and to create a healthier and more livable environment through reductions in air pollution contaminants. Policies: AQ 3a–3j AQ 4 Objective—To reduce traffic congestion, vehicle trips, vehicle miles traveled, and increase average vehicle ridership through more efficient use of infrastructure and support for trip reduction programs. Policies: AQ 4a–4g AQ 5 Objective—To coordinate the County's air quality program with regional programs as well as those of other local agencies. Policies: AQ 5a–5b AQ 6 Objective—To promote site designs that encourage walking, cycling, and transit use. Policies: AQ 6a–6b AQ 7 Objective—To educate the public on the impact of individual transportation, lifestyle, and land use decisions on air quality. Policies: AQ 7a AQ 8 Objective—To reduce emissions related to energy consumption and area sources. Policies: AQ 8a–8b
City of Redding General Plan 2023–2045	Natural Resources Element NR 13 Goal—Coordinate with surrounding jurisdictions, the Shasta County Air Quality Management District (SCAQMD), the California Air Resources Board (ARB), and other partners where feasible toward the development of a consistent and effective approach to the regional air pollution problem. Policies: NR 13a–13g NR 14 Goal—Improve the sustainability of the community through continued local efforts to reduce GHG emissions and to meet the climate action goals of the State of California. Policies: NR 14a–14e

Table 13. Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies or Strategies
City of Shasta Lake General Plan 2040	Conservation Element CON 4 Goal—Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change. IMPL–CON–4.4—Continue to implement policies, programs, and projects to reduce greenhouse gas emissions and meet target energy consumption reductions, as identified in the City's Climate Action Plan.
Tehama County General Plan Update 2009–2029	Open Space and Conservation Goals, Policies, and Implementation Measures Air Quality Goal OS-2—To maintain, protect, and improve the air quality in Tehama County at acceptable levels as defined by state and federal standards. Policies: OS-2.1–OS-2.7
2019 Tehama County Active Transportation Plan (adopted May 2019 – Amended April 2020)	Goals and Objectives Goal 1—Create vibrant, people-centered communities. Goal 2—Develop a continuous countywide bicycle system that is part of the multi-modal regional transportation network. Goal 3—Make the existing transportation system more bicycle-friendly. Goal 4—Promote bicycling as a part of the multimodal transportation system. Goal 5—Modify the transportation system to encourage safe and convenient bicycling. Goal 6—Train and encourage pedestrians, bicyclists and motorists to share the road network in a safe and cooperative manner. Goal 7—Integrate bicycle and pedestrian networks with existing and potential recreational opportunities. Goal 8—Develop bicycle and pedestrian facilities and programs that will enhance the County's appeal as a recreational destination. Goal 9—Explore all opportunities for funding bicycle and pedestrian projects.
2019 Tehama County Regional Transportation	Policy Element Regional Goals, Objectives, and Strategies

Table 13. Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies or Strategies
Plan (adopted May 2019 – Amended April 2020)	Goal 1—Provide and maintain a safe and efficient transportation system for the movement of people and goods within the region and connect to points beyond. Goal 6—Create vibrant, people-centered communities. Goal 7—Provide an integrated, multimodal range of practical transportation choices.

The following strategies, if implemented, are believed to offer the highest greenhouse gas emission reduction benefit-per-dollar and greatest community support due to their direct and collateral benefits, including economic development, public health and safety, and quality of life benefits:

- Expansion of SRTA's Infill and Redevelopment Incentive Program combined with first-and last-mile strategies.
    - Utilizing SB 1 formula funds, SRTA may increase incentives available for infill and redevelopment projects inside strategic growth areas and along high-frequency transit corridors and designated active transportation trunk lines.
    - SRTA plans to also lead and participate in complementary projects and programs that address the crucial first- and last-mile between transit stops and trip origins and destinations.
- Enhanced management of interregional corridors during exceptional events.
    - Intelligent transportation systems (ITS) traffic operations.
    - Advanced vehicle-to-vehicle and vehicle-to-infrastructure technologies.
    - Other such strategies are planned to reduce the scale and duration of traffic congestion as a result of winter storm and collision-related closures and lane restrictions, thereby minimizing idling and low-speed stop-and-go travel.

PROJECT ANALYSIS

GHG emissions from transportation projects can be divided into those produced during operation and use of the State Highway System (SHS) (operational emissions) and those produced during construction. The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of burning gasoline or diesel fuel in internal combustion engines, along with relatively small amounts of CH_4 and N_2O. A small amount of HFC emissions related to refrigeration is also included in the transportation sector.

The CEQA Guidelines generally address greenhouse gas emissions as a cumulative impact due to the global nature of climate change (Pub. Resources Code, § 21083(b)(2)). As the California Supreme

Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself." (Cleveland National Forest Foundation v. San Diego Assn. of Governments (2017) 3 Cal.5th 497, 512.) In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits greenhouse gases must necessarily be found to contribute to a significant cumulative impact on the environment.

Operational Emissions

For Capacity-Increasing Projects

Capacity-increasing projects require a quantitative analysis, using EMFAC or CT-EMFAC to estimate operational GHG emissions.

ARB developed the EMission FACtors (EMFAC) model to facilitate preparation of statewide and regional mobile source emissions inventories. The model generates emissions rates that can be multiplied by vehicle activity data from all motor vehicles, including passenger cars to heavy-duty trucks, operating on highways, freeways, and local roads in California. Caltrans' CT-EMFAC model uses data derived from EMFAC to streamline project-level emissions analyses. Caltrans recommends using the CT-EMFAC model for quantifying mobile source emissions from transportation projects on the California State Highway System.

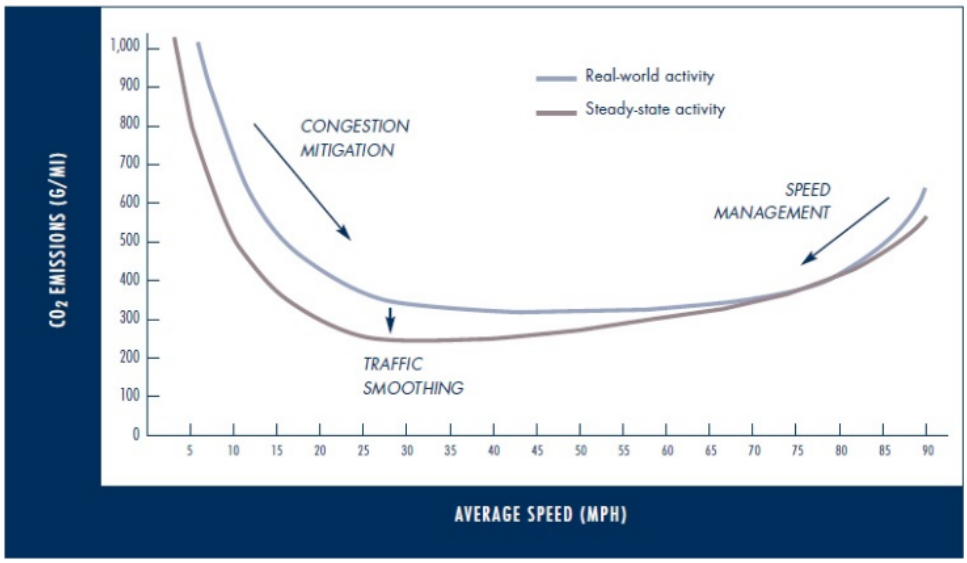
ARB released EMFAC2021 in January 2021, and an update (v1.0.1) in April 2021. EMFAC2021 includes updated vehicle emissions and fuel consumption data and incorporates the latest default travel activity data for car and truck fleets as of that time. Caltrans recommends using EMFAC2021 to quantify GHG emissions because it incorporates the latest planning assumptions and quantification methods. U.S. EPA has approved EMFAC2021 for use in conformity analysis in NEPA documents.

CO_2 from fossil fuel combustion is the largest component of U.S. GHG emissions, and transportation is the largest contributor of CO_2. The largest emitters of transportation CO_2 emissions in 2020 were passenger cars (38.5 percent), freight trucks (26.3 percent), and light-duty trucks (18.9 percent). The remainder came from other modes of transportation, including aircraft, ships, boats, and trains, as well as pipelines and lubricants (U.S. EPA 2022b). Because CO_2 emissions represent the greatest percentage of GHG emissions, it has been selected as a proxy for the following analysis of potential climate change impacts.

The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (see Figure 6). To the extent that a project enhances operational efficiency and improves travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced, provided that improved travel times do not induce additional VMT.

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity (e.g. vehicle miles travelled), (3) transitioning to lower GHG emitting fuels, and (4) improving vehicle technologies and efficiency. To be most effective, all four strategies should be pursued concurrently.

Figure 6. Possible Use of Traffic Operation Strategies in Reducing On-road CO_2 Emissions (Source: Barth and Boriboonsomsin 2010)



The project would expand I-5 from four lanes to six lanes by adding a truck only lane in each direction of travel (6.00 miles in the NB direction of travel and 8.19 miles in the SB direction of travel). The addition of a truck only lane in each direction of travel would be accomplished through a combination of constructing new lanes (2.64 miles in the NB direction of travel and 3.29 miles in the SB direction of travel) and converting existing multi-use lanes (3.36 miles in the NB direction of travel and 4.90 miles in the SB direction of travel). The conversion of multi-use lanes into truck only lanes would not result in an increase in congestion in the remaining multi-use lanes. The project includes design features such as a truck only lane/emergency operations sign package in each direction of travel to minimize weaving conflicts as trucks merge into and out of the truck only lane. The project would construct/extend four auxiliary lanes and each auxiliary lane would operate independently and be less than one mile in length (the total length of all auxiliary lanes when added together would be 2.9 miles). The construction/extension of the auxiliary lanes would reduce merging conflicts and improve safety.

As discussed previously, the project is subject to various local and regional plans. Because the project includes design features that would improve traffic flow and would not result in a substantial increase in construction GHG emissions or operational GHG emissions, the project is generally consistent with the *2022 Regional Transportation Plan & Sustainable Communities Strategy for the Shasta Region*, the *Shasta County General Plan*, the *City of Redding General Plan 2023–2045*, the *City of Shasta Lake General Plan 2040*, the *Tehama County General Plan Update 2009–2029*, the *2019 Tehama County Active Transportation Plan*, and the *2019 Tehama County Regional Transportation Plan*.

Quantitative Analysis

Vehicle miles traveled (VMT) is the primary metric utilized by Caltrans to evaluate impacts of greenhouse gases to the State Highway System. As part of the traffic modeling analysis to analyze/estimate daily VMT, three years were considered: the base year (2016), which is the year that environmental studies were initiated); the opening year (2026), which is the year the project would be completed and open to traffic); and the design year (2046), which is the conclusion of a 20-year planning period after the project has been constructed and open to the public. In 2016, daily

VMT was estimated at 330,400. The project would increase the capacity of the State Highway System, but traffic modeling analysis predicted no difference in daily VMT between the no-build alternative and the build alternative for the opening year (daily VMT is estimated at 369,600 in each scenario) and design year (daily VMT is estimated at 481,600 in each scenario). Because SB 743 does not apply to projects that install truck only lanes or install auxiliary lanes that are less than one mile in length and operate independently, an induced travel analysis is not required. CEQA Guidelines Section 15064.3(a) states, "for the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The Technical Advisory (2018) that OPR published to guide analysis of VMT clarifies "the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks" (p. 4). Trucks may be included in analysis for ease, but it is not required to include them.

ARB developed the EMission FACtors (EMFAC) model to facilitate preparation of statewide and regional mobile source emissions inventories. The model generates emissions rates that can be multiplied by vehicle activity data from all motor vehicles, including passenger cars to heavy-duty trucks, operating on highways, freeways, and local roads in California. EMFAC has a rigorous scientific foundation, has been approved by U.S. EPA, and has been vetted through multiple stakeholder reviews. Caltrans developed CT-EMFAC to apply project-specific factors to ARB's model.

EMFAC's GHG emission rates are based on tailpipe emissions test data and the model does not account for factors such as the rate of acceleration and vehicle aerodynamics, which influence the amount of emissions generated by a vehicle. GHG emissions quantified using CT-EMFAC are therefore estimates and may not reflect actual on-road emissions. Furthermore, the model does not account for induced travel. Modeling GHG estimates with EMFAC or CT-EMFAC nevertheless remains the most precise means of estimating future greenhouse gas emissions. While CT-EMFAC is currently the best available tool for calculating GHG emissions from mobile sources, it is important to note that the GHG results are only useful for a comparison of alternatives. Federal CAFE and GHG emissions standards continue to evolve, and models will be updated to account for regulatory changes.

Using the latest approved version of the EMFAC model to evaluate annual CO_2 emissions in relation to annual VMT, a separate model run was conducted for the base year, the opening year, and the design-year for both the no-build alternative and the build alternative (Table 14). For the opening year (2026), CO_2 emissions associated with the build alternative are expected to increase slightly (but not substantially) compared to the no-build alternative. For the design year (2046), CO_2 emissions associated with the build alternative are expected to increase slightly (but not substantially) compared to the no-build alternative. Under the future build conditions, CO_2 emissions are expected to decrease compared to existing conditions probably due to improvements in speeds and emission factors.

Table 14. Modeled Annual CO_2e Emissions and Vehicle Miles Traveled, by Alternative

Alternative	CO_2e Emissions (U.S. tons/year)[1]	Annual Vehicle Miles Traveled[2]
Existing/Baseline 2016	57,230.905	114,648,800
Open to Traffic 2026		
No-Build Alternative	49,751.325	128,251,200
Build Alternative	49,970.690	128,251,200
20-Year Horizon 2046		
No-Build Alternative	52,796.520	167,115,200

Build Alternative	53,968.900	167,115,200

CO_2 = carbon dioxide
Source: EMFAC 2014
1 Annual CO_2 emissions derived from daily CO_2 values multiplied by 365.
2 Annual vehicle miles traveled (VMT) values derived from Daily VMT values multiplied by 347, per ARB methodology (ARB 2008).

It should be noted that while these emissions numbers are useful for comparing alternatives, they do not necessarily accurately reflect what the true CO_2 emissions would be because CO_2 emissions are dependent on other factors that are not part of the CT-EMFAC model such as fuel mix, rate of acceleration, and the aerodynamics and efficiency of vehicles.

A summary of operational emissions of CO and NO_x by alternative is shown in Table 15. The overall operational emissions of CO and NO_x within the proposed project area under the future build alternatives is not expected to increase in comparison with those under the baseline year (2016) or be substantially higher than those under the no-build alternative.

Table 15. Summary of Operational Emissions of CO and NO_x by Alternative

Scenario/ Analysis Year	Segment/Location	CO (US Tons/Day)	NOx (US Tons/Day)
Baseline Year (2016)	Existing 4-Lanes	0.455	0.192
	Existing 6-Lanes	0.166	0.070
No-Build Alternative Opening Year (2026)	Existing 4-Lanes	0.166	0.075
	Existing 6-Lanes	0.061	0.028
No-Build Alternative Design Year (2046)	Existing 4-Lanes	0.126	0.058
	Existing 6-Lanes	0.046	0.021
Build Alternative Opening Year (2026)	Full Project	0.226	0.104
Build Alternative Design Year (2046)	Full Project	0.170	0.084

Construction Emissions

An Air Quality/Greenhouse Gas Analysis Report (California Department of Transportation 2020b) was prepared for the Fix 5 Cascade Gateway Project to evaluate greenhouse gas emissions during construction and long-term operation of the project. With the primary difference between the currently proposed project and the Fix 5 Cascade Gateway Project being the addition of truck only lanes instead of multi-use lanes, the analysis and findings of the report remain valid.

Construction GHG emissions would result from material processing and transportation, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced

through innovations in plans and specifications and by implementing better traffic management during construction phases.
Use of long-life pavement, improved traffic management plans, and changes in materials can also help offset GHG emissions produced during construction by allowing longer intervals between maintenance and rehabilitation activities.

GHG emissions would occur during construction. Estimates of various GHG including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydroflourocarbons (HFCs) were made for each year of construction using Cal-CET2018 (version 1.3). As shown in Table 16, the primary GHG released during construction is CO_2. Table 17 shows projected CO_2 emissions by alternative.

Table 16. Estimates of GHG Emissions During Construction (in U.S. Tons)

Construction Year	CO_2	CO	NOx	ROGs
2025/2026	1,144	4.67	6.41	<1

Table 17. Modeled CO_2 Emissions by Alternatives (in U.S. Tons)

Scenario/ Analysis Year	Segment/Location	CO_2 Emissions (U.S. Tons/Day)	Daily Vehicle Miles Traveled
Baseline Year (2016)	Existing 4-Lanes	114.798	241,900
	Existing 6-Lanes	41.999	88,500
No-Build Alternative Opening Year (2026)	Existing 4-Lanes	99.795	270,600
	Existing 6-Lanes	36.510	99,000
No-Build Alternative Design Year (2046)	Existing 4-Lanes	105.903	352,600
	Existing 6-Lanes	38.745	129,000
Build Alternative Opening Year (2026)	Full Project	136.906	369,600
Build Alternative Design Year (2046)	Full Project	147.860	481,600

In summary, the quantitative analysis found that while some GHG emissions during the construction period would be unavoidable, no substantial increase in operational GHG emissions is expected.

All construction contracts include Caltrans Standard Specifications related to air quality. Section 7-1.02A and 7 1.02C, Emissions Reduction, requires contractors to comply with all laws applicable to the project and to certify they are aware of and will comply with all ARB emission reduction regulations. Section 14-9.02, Air Pollution Control, requires contractors to comply with all air pollution control rules,

regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

CEQA Conclusion

While the project would result in direct and indirect GHG emissions during construction, it is anticipated that the project would not result in a substantial increase in operational GHG emissions [the predicted GHG emissions for both the opening year (2026) build alternative and the opening year (2026) no-build alternative are less than the emissions for the baseline year (2016)]. With implementation of construction GHG-reduction measures, construction-related impacts on the environment would not be substantial. Therefore, the project would not conflict substantially with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases nor would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Given the above findings, the project would have a less than significant impact on greenhouse gas emissions.

Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

GREENHOUSE GAS REDUCTION STRATEGIES

Statewide Efforts

In response to AB 32, California is implementing measures to achieve emission reductions of GHGs that cause climate change. Climate change programs in California are effectively reducing GHG emissions from all sectors of the economy. These programs include regulations, market programs, and incentives that will transform transportation, industry, fuels, and other sectors, to take California into a sustainable, low-carbon and cleaner future, while maintaining a robust economy (ARB 2022d).

Major sectors of the California economy, including transportation, will need to reduce emissions to meet 2030 and 2050 GHG emissions targets. The Governor's Office of Planning and Research identified five sustainability pillars in a 2015 report: (1) increasing the share of renewable energy in the State's energy mix to at least 50 percent by 2030; (2) reducing petroleum use by up to 50 percent by 2030; (3) increasing the energy efficiency of existing buildings by 50 percent by 2030; (4) reducing emissions of short-lived climate pollutants; and (5) stewarding natural resources, including forests, working lands, and wetlands, to ensure that they store carbon, are resilient, and enhance other environmental benefits (OPR 2015). OPR later added strategies related to achieving statewide carbon neutrality by 2045 in accordance with EO B-55-18 and AB 1279 (OPR 2022).

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled (VMT). Reducing today's petroleum use in cars and trucks by 50% is a key state goal for reducing greenhouse gas emissions by 2030 (California Environmental Protection Agency 2015).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide

from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

Subsequently, Governor Gavin Newsom issued Executive Order N-82-20 to combat the crises in climate change and biodiversity. It instructs state agencies to use existing authorities and resources to identify and implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular low-income, disadvantaged, and vulnerable communities. To support this order, the California Natural Resources Agency (2022a) released *Natural and Working Lands Climate Smart Strategy*, with a focus on nature-based solutions.

Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

Climate Action Plan for Transportation Infrastructure

The California Action Plan for Transportation Infrastructure (CAPTI) builds on executive orders signed by Governor Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all polluting emissions, to reach the state's climate goals. Under CAPTI, where feasible and within existing funding program structures, the state will invest discretionary transportation funds in sustainable infrastructure projects that align with its climate, health, and social equity goals (California State Transportation Agency 2021).

California Transportation Plan

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. It serves as an umbrella document for all the other statewide transportation planning documents. The CTP 2050 presents a vision of a safe, resilient, and universally accessible transportation system that supports vibrant communities, advances racial and economic justice, and improves public and environmental health. The plan's climate goal is to achieve statewide GHG emissions reduction targets and increase resilience to climate change. It demonstrates how GHG emissions from the transportation sector can be reduced through advancements in clean fuel technologies; continued shifts toward active travel, transit, and shared mobility; more efficient land use and development practices; and continued shifts to telework (Caltrans 2021a).

Caltrans Strategic Plan

The *Caltrans 2020–2024 Strategic Plan* includes goals of stewardship, climate action, and equity. Climate action strategies include developing and implementing a Caltrans Climate Action Plan; a robust program of climate action education, training, and outreach; partnership and collaboration; a VMT monitoring and reduction program; and engaging with the most vulnerable communities in developing and implementing Caltrans climate action activities (Caltrans 2021b).

CALTRANS POLICY DIRECTIVES AND OTHER INITIATIVES

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) established a Department policy to ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. *Caltrans Greenhouse Gas Emissions and Mitigation Report* (Caltrans 2020) provides a comprehensive overview of Caltrans' emissions. The report documents and evaluates current Caltrans procedures and activities that track and reduce GHG emissions and identifies additional opportunities for further reducing GHG emissions from Department-controlled emission sources, in support of Departmental and State goals.

Project-Level GHG Reduction Strategies

The following measures will also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

- **[GHG-1]** Caltrans Standard Specification "Air Quality" requires compliance by the contractor with all applicable laws and regulations related to air quality (Caltrans Standard Specification [SS] 14-9).

- **[GHG-2]** Compliance with Title 13 of the California Code of Regulations, which includes restricting idling of diesel-fueled commercial motor vehicles and equipment with gross weight ratings of greater than 10,000 pounds to no more than 5 minutes.

- **[GHG-3]** Caltrans Standard Specification "Emissions Reduction" ensures construction activities adhere to the most recent emissions reduction regulations mandated by the California Air Resource Board (CARB) (Caltrans SS 7-1.02C).

- **[GHG-4]** Use of a Transportation Management Plan (TMP) to minimize vehicle delays and idling emissions. As part of this, traffic would be scheduled and directed to reduce congestion and related air quality impacts caused by idling vehicles along the highway during peak travel times.

- **[GHG-5]** All areas temporarily disturbed during construction would be revegetated with appropriate native species, as appropriate. Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. This replanting would help offset any potential CO_2 emissions increase.

- **[GHG-6]** Pedestrian and bicycle access will be maintained during project activities.

ADAPTATION

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and

indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

Federal Efforts

Under NEPA Assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The *Fourth National Climate Assessment*, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways."

The U.S. DOT Policy Statement on Climate Adaptation in June 2011 committed the federal Department of Transportation to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (U.S. DOT 2011). The U.S. DOT Climate Action Plan of August 2021 followed up with a statement of policy to "accelerate reductions in greenhouse gas emissions from the transportation sector and make our transportation infrastructure more climate change resilient now and in the future," following this set of guiding principles (U.S. DOT 2021):

- Use best-available science
- Prioritize the most vulnerable
- Preserve ecosystems
- Build community relationships
- Engage globally

U.S. DOT developed its climate action plan pursuant to the federal EO 14008, *Tackling the Climate Crisis at Home and Abroad* (January 27, 2021). EO 14008 recognized the threats of climate change to national security and ordered federal government agencies to prioritize actions on climate adaptation and resilience in their programs and investments (White House 2021).

FHWA order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events, December 15, 2014) established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. A number of state policies and tools have been developed to guide adaptation efforts.

California's Fourth Climate Change Assessment (Fourth Assessment) (2018) is the state's effort to "translate the state of climate science into useful information for action." It provides information that will help decision makers across sectors and at state, regional, and local scales protect and build the resilience of the state's people, infrastructure, natural systems, working lands, and waters. The State's

approach recognizes that the consequences of climate change occur at the intersections of people, nature, and infrastructure. The Fourth Assessment reports that if no measures are taken to reduce GHG emissions by 2021 or sooner, the state is projected to experience a 2.7 to 8.8 degrees Fahrenheit increase in average annual maximum daily temperatures, with impacts on agriculture, energy demand, natural systems, and public health; a two-thirds decline in water supply from snowpack and water shortages that will impact agricultural production; a 77% increase in average area burned by wildfire, with consequences for forest health and communities; and large-scale erosion of up to 67% of Southern California beaches and inundation of billions of dollars' worth of residential and commercial buildings due to sea level rise (State of California 2018).

Sea level rise is a particular concern for transportation infrastructure in the coastal zone. Major urban airports will be at risk of flooding from sea level rise combined with storm surge as early as 2040; San Francisco airport is already at risk. Miles of coastal highways vulnerable to flooding in a 100-year storm event will triple to 370 by 2100, and 3,750 miles will be exposed to temporary flooding. The Fourth Assessment's findings highlight the need for proactive action to address these current and future impacts of climate change.

In 2008, then-governor Arnold Schwarzenegger recognized the need when he issued EO S-13-08, focused on sea level rise. Technical reports on the latest sea level rise science were first published in 2010 and updated in 2013 and 2017. The 2017 projections of sea level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018. This EO also gave rise to the *California Climate Adaptation Strategy* (2009), updated in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan), which addressed the full range of climate change impacts and recommended adaptation strategies. The Safeguarding California Plan was updated in 2018 and again in 2021 as the *California Climate Adaptation Strategy*, incorporating key elements of the latest sector-specific plans such as the *Natural and Working Lands Climate Smart Strategy*, *Wildfire and Forest Resilience Action Plan*, *Water Resilience Portfolio,* and the CAPTI (described above). Priorities in the 2021 California Climate Adaptation Strategy include acting in partnership with California Native American Tribes, strengthening protections for climate-vulnerable communities that lack capacity and resources, nature-based climate solutions, use of best available climate science, and partnering and collaboration to best leverage resources (California Natural Resources Agency 2022b).

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change in addition to sea level rise also threaten California's infrastructure. At the direction of EO B-30-15, the Office of Planning and Research published *Planning and Investing for a Resilient California: A Guidebook for State Agencies* in 2017, to encourage a uniform and systematic approach.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group to help actors throughout the state address the findings of California's Fourth Climate Change Assessment. It released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*, in 2018. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts (Climate Change Infrastructure Working Group 2018).

Caltrans Adaptation Efforts

Caltrans Vulnerability Assessments

Caltrans completed climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects of precipitation, temperature, wildfire, storm surge, and sea level rise.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments guide analysis of at-risk assets and development of Adaptation Priority Reports as a method to make capital programming decisions to address identified risks.

Vulnerability assessments prepared by Caltrans District 2 in 2019 indicated that the State Highway System within the District is subject to the effects of climate change, primarily through changes in precipitation and flooding, frequency and intensity of wildfire, and changes in temperature (California Department of Transportation 2019). The State Highway System within District 2 would not be subject to the effects of sea level rise as the District is outside the coastal zone.

Project Adaptation Analysis

Sea Level Rise

The project is outside the coastal zone and not in an area subject to sea level rise. Accordingly, direct impacts to transportation facilities due to projected sea level rise are not expected.

Precipitation and Flooding

Precipitation volatility is expected to increase in the future, with longer dry periods interspersed with unusually wet ones. Increases in heavy precipitation events combined with other changes in land use and land cover can increase the risk of flash flooding. The effects of increased precipitation were especially significant in District 2 during the winter of 2016–2017. Rainstorms and mudslides caused road closures and damage in the District, and intense storms caused roadway flooding and transportation infrastructure washouts, costing Caltrans millions of dollars in maintenance and repair costs.

The Floodplain Evaluation Report Summary determined that the project is located within mapped 100-year flood hazard areas that are subject to flooding. However, the project would only minimally alter surface elevations within the mapped 100-year floodplains of Churn Creek and Boulder Creek and would not result in a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q).

Key project features include the addition of a new truck only lane in each direction of travel, which would add approximately 16.6 acres of new impervious surface within the project area. If left untreated, new impervious surfaces could exacerbate flooding in the project area. However, project design features include the incorporation of onsite post-construction stormwater treatment BMPs to treat stormwater runoff within the project area which would improve water quality and minimize the rate of runoff and flooding.

The project would not result in a substantial increase in short-term or operational emissions of greenhouse gases that would cause climate change, which could affect precipitation and flooding.

WILDFIRE

Wildfires in the region have caused traffic delays, road blocks, and detours on District 2's portion of the State Highway System. In addition to direct impacts of wildfire, the indirect impacts of smoke can affect visibility and cause public health concerns. Caltrans expects wildfire events to increase in frequency and severity due to climate change.

The project would not result in a substantial increase in short-term or operational emissions of greenhouse gases that would cause climate change, which could exacerbate the hazard of wildfire. Project features that will protect the project from wildfire include use of guardrail with metal posts, cross-culverts made of concrete, and culverts made of corrugated steel pipe. In addition, the following standard measures will be included for fire prevention:

- **[WF-1]** Standard Specification 7-1.02M(2) for fire prevention.
- **[WF-2]** It is Caltrans District 2 standard practice to require the contractor to produce an Emergency Evacuation Plan (EEP) for projects located within elevated fire danger areas mapped by the CAL FIRE Fire and Resource Assessment Program (FRAP). Standard Special Provision 12-4.02A(3)(c) would be included in contract specifications to require the contractor prepare an EEP.

TEMPERATURE

Temperature increase is a direct outcome of increasing GHG emissions. Heat waves have directly damaged infrastructure in California, causing pavement buckling and blackouts. District 2 has a Mediterranean climate, characterized by hot, dry summers and cold, wet winters. Temperatures in lower-lying District 2 areas (e.g., the City of Redding) can be very hot. The average summer temperature in Redding is approximately 95 degrees Fahrenheit, with a record temperature of 114 degrees Fahrenheit recorded in August 2017. Extreme heat events could affect maintenance activities by increasing maintenance costs due to material damage and causing schedule changes to protect maintenance workers from the effects of high temperatures.

The project area has a Mediterranean-like climate, characterized by hot, dry summers and cold, wet winters. As temperatures rise from higher GHG concentrations in the atmosphere, the average and maximum temperatures are expected to increase. More frequent extreme heat events could affect maintenance needs, cause material damage, and cause changes in maintenance schedule during high heat to protect worker safety. Because the project area is projected to experience substantial changes in the maximum or minimum temperatures over the project design life, the pavement and maintenance choices made will increase the project's resilience to the effects of temperature.

Hazards and Hazardous Materials

Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976. The purpose of CERCLA, often referred to as "Superfund," is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

Affected Environment

As documented in the Initial Site Assessment (California Department of Transportation 2020d), lead-contaminated soils may exist throughout the project area due to the historical use of leaded gasoline on the roadway, asbestos may exist within existing structures, lead/chromium may be present in yellow and white road striping, and various hazardous materials may be present in treated wood waste.

Environmental Consequences

Construction Impacts
Construction of the project would require excavation of soil, removal/replacement of wood post guardrail and roadside sign wood posts, widening/demolishing of existing structures, and generate asphalt grindings containing road striping. These activities have the potential to release a minimal amount of hazardous materials into the environment as described below.

1. **Aerially deposited lead (ADL)** from the historical use of leaded gasoline, exists along roadways throughout California. There is the likely presence of soils with elevated concentrations of lead as a result of ADL on the State Highway System right of way within the limits of the project alternatives. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. This ADL Agreement allows such soils to be safely reused within the project area as long as all requirements of the ADL Agreement are met. It would be determined in Phase 1 whether an ADL site investigation with soil testing would be required. If it is determined that aerially deposited lead exists within the project area and would be disturbed during construction, a Caltrans contract specification(s) related to excavation, management, and disposal of ADL soils would be included in the construction contract. **Lead Containing Paint (LCP)**--LCP may be present on the structures that would be widened/demolished. As a result, this office may conduct a structural survey with sampling and testing of existing paint in Phase 1 (approximately six months prior to PS&E) to access the presence and extent of LCP so that specifications can be provided. The specifications, if necessary, would address health and safety, removal, handling, containment, and disposal of LCP.

2. **Asbestos Containing Material (ACM)**—ACM may be present on the structures that would be widened/demolished. As a result, a structural survey with sampling and testing of suspect bridge components would be conducted in Phase 1 to access the presence and extent of ACM so that specifications can be included in the construction contract to ensure proper handling. The specifications, if necessary, would address health and safety, notification, removal, handling, containment, and disposal of ACM.

3. **Paint and Thermoplastic Striping Containing Lead**- The project would likely involve cold planning and grinding pavement, the residue would likely have non-hazardous levels of lead from the paint and thermoplastic striping that is removed with the pavement. In addition, the project may also involve striping removal separate from pavement cold planning and grinding. Specification(s) o be included in the construction contract for handling and

disposing traffic paint and striping. The contractor would be required to prepare a lead compliance plan.

4. **Treated Wood Waste** - Since the project would likely remove and dispose of treated wood waste from existing guardrail and roadside sign wood posts, the project would require specifications to address disposal of these items. These wood products are typically treated with preserving chemicals that may be hazardous (carcinogenic) and include, but are not limited to arsenic, chromium, copper, creosote, and pentachlorophenol. The contract specification provides requirements for handling, storing, transporting, and disposing of treated wood waste.

5. **Naturally Occurring Asbestos -** There is no known naturally occurring asbestos within the project area based upon geologic mapping and previous hazardous waste studies carried out within project area.

6. **Cortese List -** The project should not be considered a listed hazardous waste site (not on the Cortese List).

Compliance with the following Caltrans standard measures would ensure that the any impacts related to hazards and hazardous materials would be minimal:

- **[HW-1]** Per Caltrans requirements, the contractor(s) would prepare a project-specific Lead Compliance Plan (CCR Title 8, § 1532.1, the "Lead in Construction" standard) to reduce worker exposure to lead-impacted soil. The plan would include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of lead-impacted soil.

- **[HW-2]** When identified as containing hazardous levels of lead, traffic stripes would be removed and disposed of in accordance with Caltrans Standard Special Provision "Residue Containing Lead from Paint and Thermoplastic."

- **[HW-3]** If treated wood waste (such as removal of sign posts or guardrail) is generated during this project, it would be disposed of in accordance with Standard Specification "Treated Wood Waste."

- **[HW-4]** Asphalt grindings associated with the removal of yellow and white road striping shall be removed and disposed of by the contractor in accordance with Caltrans Standard Specification 36-4, which requires the contractor to prepare a Lead Compliance Plan.

- **[HW-5]** A site investigation for aerially deposited lead and asbestos would be conducted in the Design phase to determine whether hazardous soils/asbestos are present and what actions, if any, would be required.

- **[HW-6]** A specification(s) related to excavation, management, and disposal of ADL soils would be included in the contract if needed.

- **[HW-7]** If asbestos containing materials are identified in the 1 Phase, specifications would be included in the construction contract to address health and safety, notification, removal, handling, containment, and disposal of ACM.

Cumulative Impacts

The project's impact on hazards and hazardous materials would be minimal and when these impacts are considered along with impacts on hazards and hazardous materials resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on hazards and hazardous materials would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Hazards and Hazardous Materials

The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, nor would it create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, any impacts would be less than significant.

Schools present within a 1/4-mile radius of the project area include PACE Academy, Rother Elementary School, Parsons Junior High School, Country Christian School, Boulder Creek Elementary School, Bethel School, and Grand Oaks Elementary School. Construction and operation of the project would not emit hazardous emissions. Construction of the project would require workers to handle hazardous or acutely hazardous materials or substances, but any impacts to nearby schools within a ¼-mile radius would be less than significant.

The project is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, there would be no impact related to Cortese sites.

The project is not located within two miles of a public airport. However, the project is located approximately 0.5 miles west of a private airstrip identified as Tews Field. Tews Field is operated by a private landowner and likely services small propeller-driven aircraft and helicopters. The airport generally has very few departures/arrivals. The project would not result in a safety hazard or excessive noise for people residing or working in the project area. Therefore, there would be no impact.

The project would not impair implementation or physically interfere with an adopted emergency response plan or emergency evacuation plan. In the event of an emergency during construction, Caltrans would coordinate with the California Highway Patrol to resolve any traffic-related concerns. Once constructed, the project would improve conditions during emergency response and emergency evacuations in the project area. Therefore, any impacts would be less than significant.

The project does not expose people or structures to additional risk of loss, injury, or death as a result of wildfire by using the existing highway. Rather, the project maintains the roadway for use as an evacuation route during wildfire emergencies and provides fire vehicles a means of accessing/suppressing wildfires. Therefore, any impacts would be less than significant.

Given the determinations above, the project would have a less than significant impact related to hazards and hazardous materials.

Hydrology and Water Quality

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[2] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in

[2] A point source is any discrete conveyance such as a pipe or a man-made ditch.

conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[3] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial

[3] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- **National Pollutant Discharge Elimination System (NPDES) Program**

  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 under federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

  The Department's MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) has three basic requirements:

  1. The Department must comply with the requirements of the Construction General Permit (see below);

  2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and

  3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

  To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

  Construction General Permit

  Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011)

and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with the Department's SWMP and Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Affected Environment

As documented in the Water Quality Assessment Report (California Department of Transportation 2020e), the project area is located within the Sacramento River Basin and the San Joaquin River Basin Planning Area, which is located within the Sacramento River watershed and is managed by the Central Valley Regional Water Quality Control Board. The primary receiving water bodies in the project area are Churn Creek, Boulder Creek, and Buckeye Creek. Boulder Creek and Buckeye Creek are tributary to Churn Creek, which is tributary to the Sacramento River. According to the *Water Quality Control Plan for the Central Valley Region* (Central Valley Regional Water Quality Control Board 2019), beneficial uses of surface waters in the Sacramento River from Shasta Dam to the Colusa Basin Drain are identified as:

- **Municipal and Domestic Supply (MUN)**—Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

- **Agricultural Supply (AGR)**—Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.

- **Industrial Service Supply (IND)**—Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

- **Hydropower Generation (POW)**—Uses of water for hydropower generation.

- **Water Contact Recreation (REC-1)**—Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

- **Non-Contact Water Recreation (REC-2)**—Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

- **Warm Freshwater Habitat (WARM)**—Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- **Cold Freshwater Habitat (COLD)**—Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- **Migration of Aquatic Organisms (MIGR)**—Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

- **Spawning, Reproduction, and/or Early Development (SPWN)**—Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

- **Wildlife Habitat (WILD)**—Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

- **Navigation (NAV)**—Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

Environmental Consequences

Construction Impacts

Construction activities that have the potential to impact hydrology and water quality include excavation/grading activities, dewatering/water diversions associated with widening the bridge that spans Churn Creek, and the addition of new impervious surfaces within the project area.

Excavation/grading activities would generally involve relatively minor excavations, except at a median segment where higher ground currently exists. The soil excavated from these areas would be removed and used as embankment for leveling depressions and low-lying ground elsewhere in the project area. The earthwork associated with widening bridges, including the associated in-channel work at the bridge that spans Churn Creek, has the potential to degrade water quality onsite and offsite due to erosion and siltation. Widening of the bridge that spans Churn Creek would require working within the streamed and streambank of Churn Creek. This work would include dewatering the in-channel work area or diverting water around the in-channel work area if water is present. Other work at this location would include extending three existing piers and removing/replacing wingwalls. Pier work would include modifying the spread footing. This work would require excavating below ordinary high water mark and removing some riparian vegetation. Excavation/grading activities would minimally alter the natural topography of the project area but would not substantially alter the hydrology of the area. Excavation/grading activities may result in a minimal amount of erosion and siltation on- and off-site, which could degrade water quality. However, construction-related impacts on hydrology and water quality would be minimal and temporary.

The project would add approximately 16.6 acres of new impervious surface and replace approximately 9.3 acres of existing impervious surface. Project design features include the installation of post-construction stormwater treatment Best Management Practices (BMPs) for onsite stormwater treatment to minimize impacts on hydrology and water quality. With incorporation of post-construction stormwater treatment BMPs, post-construction stormwater flows would not exceed pre-construction stormwater flows and would not increase the amount of pollutants in surface runoff above existing levels.

The project would not affect the beneficial uses of surface waters downstream of the project area in the Sacramento River or affect suitable/potentially suitable uses of ground water as identified in the *Water Quality Control Plan (Basin Plan) for the Central Valley Region*.

Because more than one acre of ground disturbance would occur, a Storm Water Pollution Prevention Plan would need to be prepared in accordance with the *2023 Caltrans Standard Specifications* (California Department of Transportation 2023e).

Compliance with the following Caltrans standard measures and construction site Best Management Practices would ensure that any impacts to water quality during construction would be minimal:

- **[WQ-1]** The project would comply with the Provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ) as amended by

subsequent orders, which became effective July 1, 2013. If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (Order 2009-0009-DWQ) is also required.

Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one acre) that includes erosion control measures and construction waste containment measures to protect Waters of the State during project construction.

The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the *Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase.

Construction may require one or more of the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (e.g., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.
- Temporary sediment control and soil stabilization devices would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.
- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plan.

- For SWPPP projects (which are governed according to both the Caltrans NPDES permit and the Construction General Permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES and CGP and the corresponding requirements of these permits are adhered to. For WPCP projects (which are governed according to the Caltrans NPDES permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES permit is adhered to.

- **[WQ-2]** The project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans Storm Water Management Plan. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ) as amended by subsequent orders.

  The project design may include one or more of the following:

  - Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project.

  - Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants

The following standard measures identified in the Water Quality Assessment Report shall be implemented to avoid/minimize impacts to water quality during construction:

- **[WQ-3]** All construction site BMPs shall follow the most current edition of the *Construction Site Best Management Practices (BMPs) Manual*. For this project, these are likely to include erosion and sediment control BMPs such as ground cover, fiber rolls, gravel bag check dams, and other listed methods.

- **[WQ-4]** Prior to any ground-disturbing activities, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) that identifies measures to be implemented for erosion control, spill prevention, and construction waste containment. These measures shall be implemented during construction to minimize impacts on water quality and the aquatic environment.

- **[WQ-5]** Environmentally sensitive areas (ESAs) shall be designated and clearly delineated with high-visibility fence on the contract plans during the design phase to avoid potential discharges and unauthorized disturbance to riparian habitat.

The following standard measure identified in the Natural Environment Study shall be implemented to avoid/minimize impacts to water quality during construction:

- **[BR-1]** Work in Churn Creek shall be completed during the period between June 1 and October 15, or as otherwise specified in resource-agency permits. Upon completion of work, the contractor shall restore temporarily disturbed streambed to near pre-construction conditions.

Additional construction site BMPs will likely be incorporated in the approved project SWPPP during the construction phase of the project to address BMPs for specific items of work.

The Floodplain Evaluation Report Summary (California Department of Transportation 2020f) determined that the project is located within mapped 100-year flood hazard areas that are subject to flooding. However, the project would only minimally alter surface elevations within the mapped 100-year floodplains of Churn Creek and Boulder Creek and would not result in a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q). As such a Floodplain Only Practicable Alternative Finding would not be required for work within the floodplains.

Cumulative Impacts

The project's impact on hydrology and water quality would be minimal and when these impacts are considered along with impacts on hydrology and water quality resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on hydrology and water quality would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Hydrology and Water Quality

The project is consistent with the water quality objectives in the *Water Quality Control Plan for the Central Valley Region*. Therefore, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The project would not substantially alter the existing hydrology or affect groundwater supplies within the project area. Therefore, the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Construction activities that have the potential to impact hydrology and water quality include excavation/grading activities, dewatering/water diversions associated with widening the bridge that spans Churn Creek, and the addition of new impervious surfaces within the project area. With incorporation of project design features for onsite post-construction stormwater treatment, compliance with Caltrans standard measures for erosion control/spill prevention, and implementation of other standard measures to protect water quality, the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

The addition of a truck only lane in each direction of travel would increase the amount of new impervious surface within the project area. Additionally, construction of the project may require dewatering or water diversion if water is present in Churn Creek at the time of construction. The project includes design features such as installation of post-construction stormwater treatment BMPs to treat stormwater runoff within the project area. Additionally, if dewatering or water diversion is required for widening the bridge that spans Churn Creek, it would be temporary, localized, and would not substantially alter the course of the stream. Therefore, the project would not substantially

alter the existing drainage pattern of the site or area (including through the alteration of the course of a stream or river or through the addition of impervious surfaces) in a manner that would: (1) result in substantial erosion or siltation on- or off-site; (2) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (3) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (4) impede or redirect flows.

The project is not within the coastal zone and therefore would not be affected by a tsunami (California Department of Conservation 2023j). Additionally, the project are does not include lakes or other large water bodies and therefore would not be affected by a seiche. Portions of the project area are within mapped floodplains and subject to flooding. However, the project would not risk release of pollutants due to inundation by flood, tsunami, or seiche.

Given the determinations above, the project would have a less than significant impact on hydrology and water quality.

Noise

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section will focus on the NEPA/Title 23 Part 772 of the Code of Federal Regulations (23 CFR 772) noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

Section 216 of the California Streets and Highways Code

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed freeway project, noise levels exceed 52 dBA-Leq(h) in the interior of public or private elementary or secondary classrooms, libraries, multipurpose rooms, or spaces. This requirement does not replace the "approach or exceed" NAC criterion for FHWA Activity Category E for classroom interiors, but it is a requirement that must be addressed in addition to the requirements of 23 CFR 772.

If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA-Leq(h). If the noise levels generated from freeway and roadway sources exceed 52 dBA-Leq(h) prior to the construction of the proposed

freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

NATIONAL ENVIRONMENTAL POLICY ACT AND 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) involvement (and the Department, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 18 lists the noise abatement criteria for use in the NEPA/23 CFR 772 analysis.

Table 18: Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, Leq(h)	Description of activity category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	67 (Exterior)	Residential.
C[1]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No NAC— reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.

Table 18: Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, Leq(h)	Description of activity category
G	No NAC—reporting only	Undeveloped lands that are not permitted.
[1] Includes undeveloped lands permitted for this activity category.		

Figure 7 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

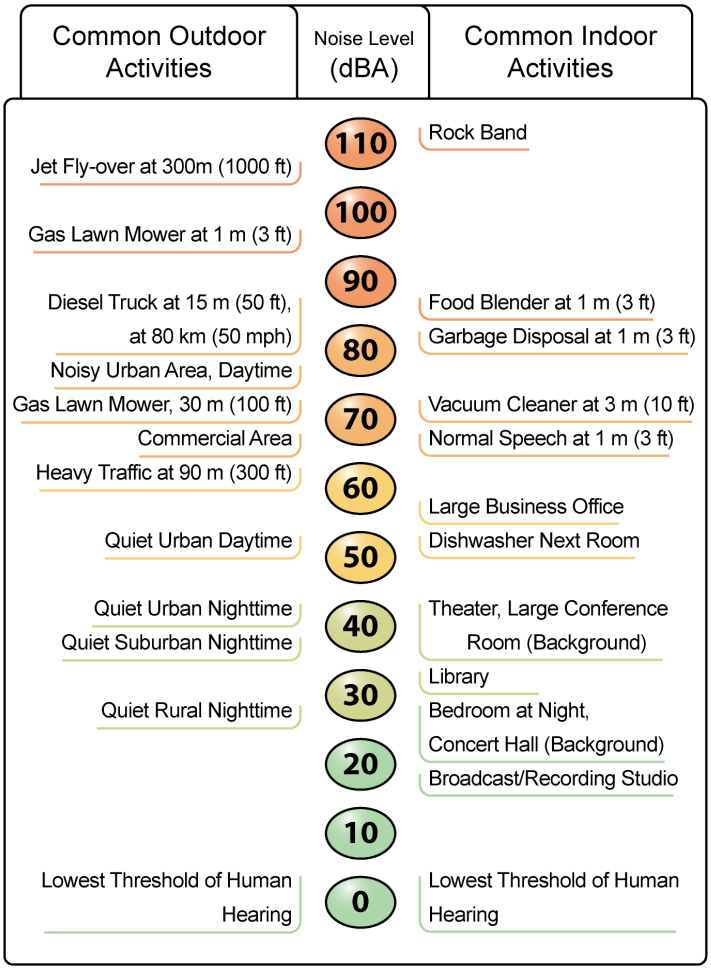


Figure 7. Noise Levels of Common Activities

According to the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, April 2020*, a noise impact occurs when the predicted future noise level with

the project substantially exceeds the existing noise level (defined as a 12 dBA or more) or when the future noise level with the project approaches or exceeds the NAC. A noise level is considered to approach the NAC if it is within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Department's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 dB at an impacted receptor to be considered feasible from an acoustical perspective. It must also be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: 1) the noise reduction design goal of 7 dB at one or more impacted receptors; 2) the cost of noise abatement; and 3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

Affected Environment

The project area is subjected to a high level of noise disturbance on a daily basis due to vehicles traveling at high speed on I-5. In noise/vibration studies, sensitive receptors are hospitals, schools, homes, daycare facilities, elderly housing, residential areas, and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to noise and vibration. Sensitive receptors present within or adjacent to the project area include single-family residences, hotels, commercial retail, schools (PACE Academy, Rother Elementary School, Parsons Junior High School, Country Christian School, Boulder Creek Elementary School, Bethel School, and Grand Oaks Elementary School) and assisted living facilities. Noise measurements were performed at various locations in the project area to determine existing background noise levels and to validate the traffic noise model. The measured noise levels at these locations currently range from 50 to 72 A-weighted decibels hourly equivalent sound level (dBA Leq[h]).

Environmental Consequences

Construction Impacts

A Noise Study Report (California Department of Transportation 2023f, 2020g) was completed for this project which included researching land uses, measuring existing noise levels at a number of locations in the project study area, modeling existing noise levels in areas that could not be measured due to restrictions during field measurements (e.g. such as barking dogs, receiver exposure limitations), and modeling future noise levels to predict what noise levels would be if the project is constructed.

Under controlled conditions, the trained healthy human ear is able to discern a one decibel change in noise levels. In typical noisy environments, a change in noise levels of one to two decibels is generally not perceptible. It is generally accepted that people are able to begin to detect sound level increases of three decibels in typical noisy environments and that a five-decibel increase is perceived as a distinctly noticeable increase. A ten-decibel increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy, such as doubling the volume of traffic on a highway that would result in a three decibel increase in sound would generally be perceived as barely detectable. The general consideration for a community noise environment would be that a change in noise levels over five decibels would be a noticeable change and a change of less than three decibels would not be noticeable.

Due to the complexity of the project area, traffic noise modeling was broken down into the six areas identified in the Table 19 to determine noise level impacts.

Table 19. Areas Evaluated for Noise Impacts

Area ID	Location
A — 2020 NSR	Begin Project Limit (PM R14.8) to Route 44 (PM R15.45)
B — 2020 NSR	Route 44 (PM R15.45) to Route 299 (PM R17.32)
C — 2020 NSR	Route 299 (PM R17.32) to End Project Limit (PM R20.0)
D — 2023 NSR Addendum	Hartnell Road (PM R13.9) to PM R14.8
E — 2023 NSR Addendum	PM R20.0 to R23.2
F — 2023 NSR Addendum	Tehama County PM 40.7

Area A

The traffic noise modeling results indicate traffic noise levels at residences in Area A are predicted to be in the range of 64 to 73 dBA Leq(h) in the design-year and that the increase in noise be 2 dB in the design-year. Because the predicted noise level in the design-year exceeds 67 dBA Leq (h), traffic noise impacts are predicted at residences in this area and noise abatement must be considered in this area. The predicted noise levels at two hotels ranges from 64 to 66 dBA Leq(h), this is below the noise abatement criteria of 72 dBA, therefore, no traffic noise impact is predicted to occur.

Area B

The traffic noise modeling results indicate traffic noise levels at residences in Area B are predicted to be in the range of 60 to 73 dBA Leq(h) in the design-year, and that the increase in noise would be 2 dB in the design-year. Because the predicted noise level in the design-year exceeds 67 dBA Leq (h), traffic noise impacts are predicted at residences in this area and noise abatement must be considered in this area.

The traffic noise levels at commercial uses in Area B would be 73 dBA Leq(h) in the design-year. The results also indicate that the increase in noise between existing conditions and the design-year is 2

dB. Because there is no noise abatement criterion for this category of use and because the project would not result in a substantial increase in noise, noise abatement does not need to be considered.

Area C

The traffic noise modeling results indicate traffic noise levels at residences in Area C are predicted to be in the range of 61 to 73 dBA Leq(h) in the design-year, and that the increase in noise would be 2 dB in the design-year. Because the predicted noise level in the design-year exceeds 67 dBA Leq (h), traffic noise impacts are predicted at residences in this area and noise abatement must be considered in this area.

The traffic noise levels at commercial uses in Area C would be 70 dBA Leq(h) in the design-year. The results also indicate that the increase in noise between existing conditions and the design-year is 2 dB. The predicted noise levels at hotels ranges from 66 to 70 dBA Leq(h), which is below the noise abatement criteria of 72 dBA. Therefore, no traffic noise impact is predicted to occur and noise abatement measures are not considered.

Area D

The traffic noise modeling results indicate traffic noise levels at residences in Area D are predicted to be in the range of 54 to 77 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. Because the predicted noise level in the design-year exceeds 67 dBA Leq (h), traffic noise impacts are predicted at residences in this area and noise abatement must be considered.

The traffic noise modeling results indicate traffic noise levels at churches in Area D are predicted to be in the range of 59 to 63 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. Because the predicted noise levels in the design year would be below the noise abatement criteria of 67 dBA and the project would not result in a substantial increase in noise in this area, noise abatement measures are not considered.

The traffic noise levels at hotels in Area D are predicted to be in the range of 56 dBA and 62 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. Because the predicted noise levels in the design year would be below the noise abatement criteria of 73 dBA and the project would not result in a substantial increase in noise in this area, noise abatement measures are not considered.

The traffic noise levels at commercial and vacant land uses in Area D are predicted to be in the range of 65 dBA and 73 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. There is no noise abatement criteria for commercial or vacant land. Therefore, noise abatement measures are not considered.

Parsons Junior High School is located within Area D. Traffic noise levels are predicted to be in the range of 54 to 69 dBA Leq(h) in the design-year, and the maximum increase in noise would be 1 dB in the design-year. The location that exceeds 67 dBA Leq (h) is vacant and does not have an area of frequent human use that would benefit from noise abatement. Therefore, noise abatement measures are not considered. Traffic noise levels inside classrooms are estimated to range between 34 dBA and 49 dBA. Because the predicted noise levels in the design year would be below the interior noise abatement criteria of 52 dBA and the project would not result in a substantial increase in noise in this area, noise abatement measures are not considered.

Area E

The traffic noise modeling results indicate traffic noise levels at residences in Area E are predicted to be in the range of 54 to 68 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. Because the predicted noise level in the design-year exceeds 67 dBA Leq (h), traffic noise impacts are predicted at residences in this area and noise abatement must be considered.

The traffic noise modeling results indicate traffic noise levels at churches, playgrounds and recreation facilities in Area E are predicted to be in the range of 59 to 64 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. Because the predicted noise levels in the design year would be below the noise abatement criteria of 67 dBA and the project would not result in a substantial increase in noise in this area, noise abatement measures are not considered.

The traffic noise levels at commercial and vacant land uses in Area E are predicted to be in the range of 58 dBA and 74 dBA Leq(h) in the design-year, and the maximum increase in noise would be 2 dB in the design-year. There is no noise abatement criteria for commercial or vacant land. Therefore, noise abatement measures are not considered.

Area F

The traffic noise levels at commercial, agricultural and vacant land uses in Area E are predicted to be in the range of 60 dBA and 68dBA Leq(h) in the design-year, and the maximum increase in noise would be 1 dB in the design-year. There is no noise abatement criteria for commercial, agricultural, and vacant land.

Table 20 compares measured sound levels and summarizes the traffic noise modeling results for existing conditions and design-year conditions with and without the project including noise barrier analysis for the noise study prepared in 2020. Table 21 compares measured sound levels and summarizes the traffic noise modeling results for existing conditions and design-year conditions with and without the project including noise barrier analysis for the 2023 noise study addendum.

Table 20. I-5 Worst-Hour Noise Levels – 2020 Noise Study

			I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA

									Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																	
									6 feet			8 feet			10 feet			12 feet			14 feet			16 feet		
		Existing Noise Level $L_{eq}(h)$, dBA	Design Year Noise Level without Project $L_{eq}(h)$, dBA	Design Year Noise Level with Project $L_{eq}(h)$, dBA	Design Year Noise Level without Project minus Existing Conditions $L_{eq}(h)$, dBA	Design Year Noise Level with Project Minus No Project Conditions $L_{eq}(h)$, dBA	Activity Category (NAC)	Impact Type	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
ST-1	Residential	70	71	71	1	0	B (67)	A/E	67	4	0	65	6	3	63	8	3	62	-9	3	61	-10	3	61	-10	3
ST-1A	Residential	61	63	64	2	1	B (67)	None	63	1	0	63	1	0	63	1	0	61	2	0	60	4	0	60	4	0
R-1	Residential	71	73	73	2	0	B (67)	A/E	69	4	0	66	6	2	64	9	2	63	10	2	63	10	2	62	11	2
R-1A	Residential	64	65	66	1	1	B (67)	A/E	65	1	0	63	3	0	61	5	4	60	6	4	60	6	4	59	7	4
R-2	Hotel	64	65	66	1	1	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-2A	Hotel	62	63	64	1	1	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-2	Residential	69	70	71	1	1	B (67)	A/E	67	4	0	65	6	3	63	8	3	61	10	3	61	10	3	61	10	3
R-3	Residential	69	70	70	1	0	B (67)	A/E	67	3	0	65	5	3	64	6	3	62	8	3	61	9	3	61	9	3
R-4	Residential	70	72	73	2	1	B (67)	A/E	73	0	0	70	2	0	67	5	4	65	7	4	64	8	4	63	9	4
ST-3A	Residential	61	62	62	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-5	Commercial	71	73	73	2	0	F N/A	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R-5A	Commercial	70	71	71	1	0	F N/A	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ST-3	Residential	63	65	65	2	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R-6A	Residential	63	64	64	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R-6B	Residential	63	64	65	1	1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R-7	Residential	58	60	60	2	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R-7B	Residential	59	60	60	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ST-4	RV Park	62	64	65	2	1	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ST-5	Residential	63	65	65	2	0	B (67)	None	65	0	0	65	0	0	64	1	0	63	2	0	63	2	0	62	3	0
ST-5A	Residential	62	63	64	1	1	B (67)	None	63	1	0	62	2	0	61	3	0	60	4	0	59	5	5	59	5	5
ST-7	Residential	70	72	72	2	0	B (67)	A/E	70	2	0	69	3	0	67	5	6	66	6	6	65	7	6	65	7	6
R-8	Residential	64	66	66	2	1	B (67)	A/E	66	0	0	66	0	0	65	1	0	65	1	0	64	2	0	63	3	0
R-8A	Residential	67	68	69	1	1	B (67)	A/E	67	2	0	66	3	0	65	4	0	65	4	0	63	6	4	61	8	4
R-10	Residential	68	69	70	1	1	B (67)	A/E	67	3	0	67	3	0	66	4	0	63	7	9	62	8	9	61	9	9
ST-6	Residential	64	66	66	2	0	B (67)	A/E	64	2	0	63	3	0	59	7	6	58	8	6	57	9	6	57	9	6
ST-8	Residential	72	73	73	1	0	B (67)	A/E	70	3	0	70	3	0	69	4	0	67	6	3	67	6	3	67	6	3
R-9	Residential	65	66	66	1	0	B (67)	A/E	62	4	0	61	5	7	59	7	7	57	9	7	57	9	7	57	9	7
R-11	Residential	64	65	66	1	1	B (67)	A/E	63	2	0	63	2	0	59	6	5	58	7	5	58	7	5	58	7	5
R-11A	Residential	64	65	65	1	0	B (67)	None	63	2	0	62	3	0	60	5	4	59	6	4	59	6	4	59	6	4
R-9A	Residential	63	64	64	1	0	B (67)	None	62	3	0	61	3	0	61	3	0	61	3	0	60	4	0	60	4	0
R-9B	Residential	60	61	61	1	0	B (67)	None	59	2	0	59	2	0	58	3	0	58	3	0	58	3	0	57	4	0
R-12	Residential	62	64	65	2	1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-13	Commercial	63	65	66	2	1	F N/A	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-14	Commercial	62	64	65	2	1	F N/A	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 20. I-5 Worst-Hour Noise Levels – 2020 Noise Study

Receptor I.D.	Land Use		I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA																						
									Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
									6 feet			8 feet			10 feet			12 feet			14 feet			16 feet		
		Existing Noise Level L_{eq}(h), dBA	Design Year Noise Level without Project L_{eq}(h), dBA	Design Year Noise Level with Project L_{eq}(h), dBA	Design Year Noise Level without Project minus Existing Conditions L_{eq}(h), dBA	Design Year Noise Level with Project Minus No Project Conditions L_{eq}(h), dBA	Activity Category (NAC)	Impact Type	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-15	Hotel	69	70	71	2	1	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-15A	Hotel	70	71	73	1	2	E (72)	A/E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-16	Hotel	68	69	70	1	1	E (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-17	Commercial	69	70	72	1	2	F N/A	None																	
R-18	Commercial	68	69	71	1	1	F N/A	None																	
R-19	Commercial	69	70	72	1	2	F N/A	None																	
R-20	CHP Center	67	69	70	2	1	F NA	None																	
R-21	Fun Center	62	64	65	2	1	F N/A	None																	
R-22	Commercial	69	70	71	1	1	F N/A	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-23	Commercial	70	72	72	2	1	F N/A	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 21. I-5 Worst-Hour Noise Levels – 2023 Noise Study Addendum

Receptor I.D.	Land Use		I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA																						
									Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
									8 feet			10 feet			12 feet			14 feet			16 feet				
		Existing Noise Level Leq(h), dBA	Design Year Noise Level without Project L_{eq}(h), dBA	Design Year Noise Level with Project L_{eq}(h), dBA	Design Year Noise Level without Project minus Existing Conditions L_{eq}(h), dBA	Design Year Noise Level with Project Minus No Project Conditions L_{eq}(h), dBA	Activity Category (NAC)	Impact Type	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
ST-1	Residential	68	69	69	1	0	B (67)	A/E	65	4	0	62	7	1	61	8	1	60	9	1	60	9	1		
ST-2	School (Vacant)	68	70	69	2	-1	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ST-3	Residential	55	56	56	1	0	B (67)	None	56	0	0	56	0	0	55	1	0	55	2	0	54	2	0		
ST-4	Residential (vacant)	72	74	73	2	-1	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ST-5	Hotel	61	63	62	2	-1	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ST-6	Hotel	59	60	60	1	0	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ST-7	Commercial	68	69	69	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ST-8	Residential (vacant)	58	59	59	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
ST-9	Assisted Living	59	60	60	1	0	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Table 21. I-5 Worst-Hour Noise Levels – 2023 Noise Study Addendum

Receptor I.D.	Land Use	Existing Noise Level Leq(h), dBA	I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA																				
			Design Year Noise Level without Project L_{eq}(h), dBA	Design Year Noise Level with Project L_{eq}(h), dBA	Design Year Noise Level without Project minus Existing Conditions L_{eq}(h), dBA	Design Year Noise Level with Project Minus No Project Conditions L_{eq}(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
									8 feet			10 feet			12 feet			14 feet			16 feet		
									L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
ST-10	Residential	57	59	58	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-11	Residential - Multi Family	62	64	63	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-12	Residential	59	61	60	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-13	Residential (vacant)	59	60	60	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-14	Residential - Multi Family (vacant)	69	70	70	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-15	Residential	52	54	53	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-16	Residential - Multi Family	63	64	64	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-17	Residential	62	63	63	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-18	Residential - Multi Family	64	64	65	0	1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-18A	Residential	62	62	63	0	1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-19	Residential	61	62	62	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ST-20	Residential	57	58	58	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-1	Residential - Multi Family	73	74	73	1	-1	B (67)	A/E	68	6	1	66	7	1	64	9	1	63	10	1	62	11	1
R-2	Residential - Multi Family	64	65	65	1	0	B (67)	None	63	2	0	63	2	0	62	3	0	62	3	0	61	3	0
R-3	Residential - Multi Family	62	63	62	1	-1	B (67)	None	62	1	0	61	1	0	61	2	0	60	2	0	60	3	0
R-4	Residential	71	73	72	2	-1	B (67)	A/E	65	7	1	64	8	1	63	9	1	62	10	1	61	11	1
R-5	Residential	62	63	62	1	-1	B (67)	None	60	2	0	60	3	0	58	4	0	58	5	1	57	5	1
R-6	Residential - Multi Family	58	59	59	1	0	B (67)	None	58	1	0	57	2	0	56	3	0	55	4	0	55	4	0
R-7	Residential	76	77	76	1	-1	B (67)	A/E	68	8	1	66	10	1	65	11	1	64	12	1	63	13	1
R-8	Residential - Multi Family	77	78	77	1	-1	B (67)	A/E	68	9	1	66	11	1	65	12	1	63	14	1	62	15	1
R-9	Residential - Multi Family	57	58	57	1	-1	B (67)	None	56	1	0	55	2	0	54	4	0	53	5	1	52	5	1
R-10	Residential - Multi Family	53	54	54	1	0	B (67)	None	54	0	0	54	0	0	53	0	0	53	0	0	52	0	0
R-11	Residential - Multi Family	76	77	77	1	0	B (67)	A/E	68	9	2	66	10	2	65	12	2	64	13	2	63	14	2
R-12	Residential - Multi Family	59	60	59	1	-1	B (67)	None	58	1	0	57	2	0	57	3	0	55	4	0	54	5	3
R-13	Residential - Multi Family	54	56	55	2	-1	B (67)	None	57	-2	0	57	-2	0	56	-2	0	55	-2	0	54	-2	0
R-14	Residential - Multi Family	59	60	59	1	-1	B (67)	None	56	0	0	55	1	0	55	1	0	54	3	0	52	4	0
R-15	Residential	71	73	72	2	-1	B (67)	A/E	70	2	0	68	4	0	66	6	1	64	8	1	63	9	1
R-16	Residential	62	64	63	2	-1	B (67)	None	63	0	0	63	1	0	62	1	0	61	2	0	60	4	0
R-17	Residential	69	70	70	1	0	B (67)	A/E	69	1	0	68	3	0	66	5	1	64	6	1	63	7	1
R-18	Residential	65	67	66	2	-1	B (67)	A/E	66	0	0	66	1	0	65	2	0	63	3	0	63	4	0
R-19	Residential	63	65	65	2	0	B (67)	None	64	0	0	64	1	0	64	1	0	63	2	0	62	3	0
R-20	Residential	62	63	63	1	0	B (67)	None	63	0	0	63	0	0	63	1	0	62	1	0	62	1	0
R-21	Commercial	69	70	70	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-22	Commercial	68	69	69	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 21. I-5 Worst-Hour Noise Levels – 2023 Noise Study Addendum

Receptor I.D.	Land Use	Existing Noise Level Leq(h), dBA	I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA																				
			Design Year Noise Level without Project L_{eq}(h), dBA	Design Year Noise Level with Project L_{eq}(h), dBA	Design Year Noise Level without Project minus Existing Conditions L_{eq}(h), dBA	Design Year Noise Level with Project Minus No Project Conditions L_{eq}(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
									8 feet			10 feet			12 feet			14 feet			16 feet		
									L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-23	School	59	60	59	1	-1	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-24	Residential - Multi Family	61	62	62	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-25	Residential - Multi Family	60	62	61	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-26	Residential - Multi Family	60	61	60	1	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-27	Residential - Multi Family	60	61	61	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-28	School	59	61	60	2	-1	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-29	Residential - Multi Family	58	60	59	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-30	Commercial	68	69	68	1	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-31	Commercial	71	72	72	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-32	Commercial	70	72	71	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-33	Commercial	67	69	68	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-34	Commercial	66	67	67	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-35	Hotel	61	63	62	2	-1	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-36	Residential	66	67	67	1	0	B (67)	A/E	66	1	0	63	4	0	61	5	1	60	6	1	60	7	1
R-37	Residential	65	67	66	2	-1	B (67)	A/E	66	0	0	66	1	0	64	2	0	63	4	0	62	5	1
R-38	Residential	64	65	65	1	0	B (67)	None	65	0	0	65	0	0	65	0	0	64	1	0	63	2	0
R-39	Residential	63	64	64	1	0	B (67)	None	64	0	0	64	0	0	64	0	0	63	0	0	63	1	0
R-40	Commercial	68	70	69	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-41	Church	58	60	59	2	-1	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-42	Residential - Multi Family	73	74	74	1	0	B (67)	A/E	69	5	1	66	7	1	65	8	1	64	9	1	64	10	1
R-43	Residential - Multi Family	73	74	74	1	0	B (67)	A/E	68	6	1	66	8	1	65	9	1	64	10	1	63	10	1
R-44	Residential - Multi Family	73	74	74	1	0	B (67)	A/E	68	6	1	66	8	1	65	9	1	64	10	1	64	10	1
R-45	Residential - Multi Family	60	62	61	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-46	Commercial	65	67	66	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-47	Commercial	66	68	67	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-48	Residential (vacant)	64	65	65	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-49	Church	62	64	63	2	-1	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-50	Hotel	56	58	57	2	-1	E (72)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-51	Residential - Multi Family	72	74	72	2	-2	B (67)	A/E	68	5	2	65	8	2	63	10	2	62	11	2	61	12	2
R-51A	Residential - Multi Family	76	78	75	2	-3	B (67)	A/E	75	0	0	74	1	0	72	3	0	69	6	2	65	10	2
R-52	Residential - Multi Family	68	70	69	2	-1	B (67)	A/E	66	2	0	65	4	0	62	7	2	61	8	2	60	9	2
R-52A	Residential - Multi Family	74	75	72	1	-3	B (67)	A/E	71	1	0	70	2	0	68	4	0	67	5	2	65	7	2
R-53	Residential - Multi Family	65	67	66	2	-1	B (67)	A/E	64	1	0	64	2	0	62	4	0	60	6	2	59	7	2
R-53A	Residential - Multi Family	69	71	69	2	-2	B (67)	A/E	68	1	0	67	3	0	66	4	0	65	4	0	63	6	2

Table 21. I-5 Worst-Hour Noise Levels – 2023 Noise Study Addendum

Receptor I.D.	Land Use	Existing Noise Level Leq(h), dBA	I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA																				
			Design Year Noise Level without Project L_{eq}(h), dBA	Design Year Noise Level with Project L_{eq}(h), dBA	Design Year Noise Level without Project minus Existing Conditions L_{eq}(h), dBA	Design Year Noise Level with Project Minus No Project Conditions L_{eq}(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
									8 feet			10 feet			12 feet			14 feet			16 feet		
									L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-54	Residential - Multi Family	63	64	64	1	0	B (67)	None	63	1	0	63	1	0	62	2	0	60	3	0	60	4	0
R-54A	Residential - Multi Family	67	68	68	1	0	B (67)	A/E	66	1	0	65	2	0	65	3	0	64	3	0	63	5	2
R-55	Residential - Multi Family	61	62	62	1	0	B (67)	None	61	1	0	61	1	0	60	2	0	58	4	0	57	5	2
R-55A	Residential - Multi Family	65	67	66	2	-1	B (67)	A/E	65	1	0	64	2	0	63	3	0	62	4	0	60	6	2
R-56	Residential - Multi Family	72	73	73	1	0	B (67)	A/E	70	3	0	68	5	1	67	6	1	66	7	1	66	7	1
R-57	Residential - Multi Family	68	69	69	1	0	B (67)	A/E	67	2	0	67	2	0	64	5	1	63	6	1	62	7	1
R-58	Residential - Multi Family	67	68	68	1	0	B (67)	A/E	66	2	0	66	2	0	64	4	0	62	6	1	61	7	1
R-59	Residential - Multi Family	65	67	66	2	-1	B (67)	A/E	65	1	0	65	1	0	64	3	0	61	5	1	61	6	1
R-60	Residential	65	66	66	1	0	B (67)	A/E	65	1	0	64	1	0	64	2	0	61	5	1	60	6	1
R-61	Residential - Multi Family	62	64	63	2	-1	B (67)	None	62	1	0	62	1	0	61	2	0	59	5	1	58	5	1
R-62	Commercial	71	72	72	1	0	F (N/A)	None															
R-63	Residential - Multi Family	73	75	74	2	-1	B (67)	A/E	70	4	0	67	7	1	66	8	1	65	9	1	65	9	1
R-64	Residential - Multi Family	68	70	69	2	-1	B (67)	A/E	67	3	0	66	4	0	64	5	1	63	7	1	62	7	1
R-65	Residential - Multi Family	65	67	66	2	-1	B (67)	A/E	64	3	0	63	3	0	62	4	0	60	6	1	60	7	1
R-66	Commercial	60	61	61	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-67	Commercial	57	58	58	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-68	Residential	59	60	60	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-69	Recreation	58	59	59	1	0	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-70	Residential - Multi Family	56	57	57	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-71	Commercial	72	74	73	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-72	Residential	57	58	58	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-73	Commercial	69	71	70	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-74	Commercial	61	62	62	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-75	Residential	55	56	56	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-76	Residential (vacant)	62	64	64	2	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-77	Residential - Multi Family	57	58	58	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-78	Residential	61	63	63	2	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-79	Commercial	69	71	71	2	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-80	Residential	59	60	59	1	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-81	Residential	57	58	58	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-82	Commercial	67	69	69	2	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-83	Residential	60	61	61	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-84	Commercial	65	67	66	2	-1	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-85	Commercial	63	65	65	2	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 21. I-5 Worst-Hour Noise Levels – 2023 Noise Study Addendum

Receptor I.D.	Land Use	Existing Noise Level Leq(h), dBA	I-5 Future Worst-Hour Noise Levels - L_{eq}(h), dBA																					
			Design Year Noise Level without Project L_{eq}(h), dBA	Design Year Noise Level with Project L_{eq}(h), dBA	Design Year Noise Level without Project minus Existing Conditions L_{eq}(h), dBA	Design Year Noise Level with Project Minus No Project Conditions L_{eq}(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
									8 feet			10 feet			12 feet			14 feet			16 feet		
									L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-86	Residential	60	61	61	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-87	Residential (vacant)	64	65	65	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-88	Residential	60	62	62	2	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-89	Residential	62	64	64	2	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-90	Residential (vacant)	66	68	68	2	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-91	Residential - Multi Family	53	55	54	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-92	Residential - Multi Family	56	57	57	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-93	Commercial	66	67	67	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-94	Commercial	64	65	65	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-95	Residential (vacant)	72	74	74	2	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-96	Commercial	66	67	67	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-97	Residential	55	57	57	2	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-98	Residential	63	64	64	1	0	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-99	Residential (vacant)	63	64	64	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-100	Residential	58	60	59	2	-1	B (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-101	Residential - Multi Family	65	67	66	2	-1	B (67)	A/E	64	2	0	63	4	0	62	5	4	61	5	4	61	6	4
R-102	Residential - Multi Family	67	69	68	2	-1	B (67)	A/E	66	2	0	65	4	0	63	5	4	62	6	4	61	7	4
R-103	Residential	61	62	62	1	0	B (67)	None	61	1	0	60	1	0	60	2	0	59	3	0	59	3	0
R-104	Residential	62	63	63	1	0	B (67)	None	62	1	0	62	2	0	61	3	0	60	4	0	59	4	0
R-105	Residential	63	65	65	2	0	B (67)	None	64	1	0	63	1	0	63	2	0	61	3	0	61	4	0
R-106	Residential (vacant)	68	70	70	2	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-107	Residential (vacant)	69	70	70	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-108	Residential (vacant)	68	70	70	2	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-109	Residential (vacant)	64	66	66	2	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-110	Agricultural	61	62	62	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-111	Playground	61	62	62	1	0	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-112	Church	63	64	64	1	0	C (67)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-113	Agricultural	62	63	63	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-114	Agricultural	64	65	65	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-115	Residential (vacant)	66	67	67	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-116	Residential (vacant)	59	60	60	1	0	G (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-117	Commercial	67	68	68	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-118	Agricultural	63	64	64	1	0	F (N/A)	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Once built, it is anticipated that an increase in noise levels would occur over an approximate twenty-year timeframe and traffic increases are anticipated at the same levels with either the build alternative or the no-build alternative. The maximum modeled increase in decibel level with the project is 2 decibels. Additionally, the project would not be a new source of permanent ground-borne vibrations.

During construction, temporary noise impacts would occur from the use of stationary and mobile construction equipment and vehicles during construction. Construction vehicles and equipment could include excavators, compressors, generators, haul trucks, pavers, and material loaders. Project construction noise levels would fluctuate depending on the construction phase, equipment type, and quantity and duration of use. Peak noise levels during construction would likely result from the use of excavators to break up concrete/asphalt and place these materials into haul trucks. Noise levels associated with these activities could be up to 90 decibels.

Although ground-borne vibrations may be noticeable during construction, they would be temporary in duration and minimal in magnitude.

Compliance with the following Caltrans standard measure for noise/vibration control would ensure that any noise/vibration impacts during construction would be minimal:

- **[N-1]** The contractor shall comply with Caltrans Standard Specification 14-8.02 "Noise Control", which includes provisions for minimizing construction-related noise and vibration. These include controlling and monitoring noise resulting from work activities and ensuring that construction-related noise levels do not exceed 86 dBA Lmax at 50 feet from the job site from 9 p.m. to 6 a.m.

Cumulative Impacts
The project's noise impacts would be minimal and when these impacts are considered along with noise impacts resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to an adverse cumulative impact. Therefore, the project's noise impacts would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

Although not required for CEQA mitigation, Title 23, Code of Federal Regulations (CFR), Part 772 of the Federal Highway Administration (FHWA) standards (23 CFR 772) and the protocol require that noise abatement be considered for projects that are predicted to result in traffic noise impacts. A traffic noise impact is considered to occur when future predicted design-year noise levels with the project "approach or exceed" Noise Abatement Criteria (NAC) defined in 23 CFR 772 or when the predicted design-year noise levels with the project substantially exceed existing noise levels. A predicted design-year noise level is considered to "approach" the NAC when it is within 1 decibel (dB) of the NAC. A substantial increase is defined as being a 12-dB increase above existing conditions.

23 CFR 772 requires that noise abatement measures that are reasonable and feasible and are likely to be incorporated into the project be identified before adoption of the final environmental document.

The protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft environmental document, a preliminary noise abatement decision is made. The preliminary noise abatement decision is based on the feasibility of evaluated abatement and the preliminary reasonableness determination. Noise abatement is considered to be acoustically feasible if it provides noise reduction of at least 5 dBA at receivers subject to noise impacts. Other non-acoustical factors relating to geometric standards (e.g., sight distances), safety, maintenance, and security can also affect feasibility.

The preliminary reasonableness determination is made by calculating an allowance that is considered to be a reasonable amount of money, per benefited residence, to spend on abatement. This reasonable allowance is then compared to the engineer's cost estimate for the abatement. If the engineer's cost estimate is less than the allowance, the preliminary determination is that the abatement is reasonable. If the cost estimate is higher than the allowance, the preliminary determination is that abatement is not reasonable.

A Noise Abatement Decision Report was completed for the project and potential traffic noise impacts to local receptors within the project area were studied. All sound walls studied were for abatement, not mitigation. Sound wall locations identified in the project noise study report were considered for economic effectiveness. All sound walls studied were acoustically feasible and would provide a minimum of 5-dBA attenuation. However, all nine acoustically feasible sound walls did not meet the reasonable allowance criterion (i.e., construction cost would be greater than the estimated benefit value). The project as currently proposed, does not include sound attenuation walls.

CEQA Significance Determinations for Noise

Although construction activities may periodically generate noise levels that exceed established standards, implementation of Caltrans' standard measures to control noise during construction would ensure that any impacts would be minimal. Once built, the maximum modeled increase in noise decibel level is 2 decibels, which is not a substantial increase. Therefore, the project would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies Noise impacts associated with construction and long-term operation of the project would be less than significant.

Although construction activities may periodically generate ground-borne vibration levels that exceed established standards, implementation of measures to control ground-borne vibration during construction would ensure that any impacts would be minimal. Once built, long-term operation of the project would not expose nearby receptors to a substantial increase in ground-borne vibration. Therefore, the project would not result in the generation of excessive ground-borne vibration or ground-borne noise levels. Ground-borne vibration impacts associated with construction and long-term operation of the project would be less than significant.

The project is not located within two miles of a public airport. However, the project is located approximately 0.5 miles west of a private airstrip identified as Tews Field. Tews Field is operated by a private landowner and likely services small propeller-driven aircraft and helicopters. Tews Field likely has very few daily departures/arrivals. The combination of noise resulting from airport operations at

Tews Field and noise from construction/long-term operation of the project would not expose people residing or working in the project area to excessive noise levels. Therefore, there would be no impact.

Given the determinations above, the project would have a less than significant impact related to noise impacts.

Public Services

Regulatory Setting

Not applicable.

Affected Environment

Interstate 5 within the project area is a public highway utilized by various public transportation service providers. The Redding Area Bus Authority (RABA) is the primary public transit service provider for the City of Redding and City of Shasta Lake. Other transportation service providers that operate within the project area include ShastaConnect and school districts that provide buses to transport students to and from schools. Emergency service providers that operate within the project area include CAL FIRE, Shasta County Fire Department, California Highway Patrol, Shasta County Sheriff Department, Tehama County Fire Department, Tehama County Sherriff Department, and ambulances that transport patients to local hospitals. These emergency service providers are vital to the safety of local communities and residents living in unincorporated areas; their effectiveness is often measured in the time required to respond to an emergency.

Environmental Consequences

Construction Impacts
Construction activities may require lane closures and lane reductions which could limit traffic to one lane in each direction of travel. As a result of these lane closures and lane reductions, travel time through the project area is expected to be delayed by only a few minutes. However, any impacts on public transportation service providers and response time of emergency service providers would be negligible. Compliance with the following Caltrans standard measures would ensure that any impacts on public transportation service providers and emergency services would be minimal.

- **[PS-1]** All emergency response agencies in the project area would be notified of the project construction schedule and would have access to Interstate 5 throughout the construction period.

- **[PS-2]** The project is located within the "Very High" CAL FIRE Threat Zone. The contractor would be required to submit a jobsite fire prevention plan as required by CalOSHA before starting job site activities. In the event of an emergency or wildfire, the contractor would cooperate with fire prevention authorities.

- **[PS-3]** Prior to construction, the Transportation Management Plan prepared for the project will be subject to review/approval from the California Highway Patrol and CAL FIRE.

Cumulative Impacts
The project's impact on public services would be minimal, and when these impacts are considered along with impacts on public services resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to an adverse cumulative impact. Therefore, the project's impact on public services would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Public Services

The project would not provide new governmental facilities or affect demand for governmental facilities or public services. Implementation of Caltrans standard measures prior to construction would ensure that the project would have a less than significant impact on response time for emergency services (e.g., police, fire, and ambulance) and travel time for public transportation services (e.g., RABA, ShastaConnect, and school buses). Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives for police and fire protection, schools, parks, or other public facilities.

Given the determinations above, the project would have a less than significant impact on public services.

Transportation

Regulatory Setting

The Department, as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 Code of Federal Regulations [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). The FHWA has enacted regulations for the

implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

Affected Environment

Interstate 5 is a public highway on the State Highway System and is maintained by the California Department of Transportation. Interstate 5 serves a mix of interregional traffic, as well as regional and local traffic. The I-5 corridor in Shasta County has the highest traffic volumes in California north of Sacramento and interregional traffic is projected to continue to grow over time. Recent projects on the I-5 corridor from the Tehama/Shasta County line to the City of Redding have added a third lane in each direction to reduce traffic congestion. The currently proposed project would increase the capacity of the State Highway System by adding a truck only lane in the northbound direction of travel from the Hilltop Drive OC (PM R16.14) to the junction with state route 151 (PM R22.14) in the City of Shasta Lake and in the southbound direction of travel from the junction with state route 151 (PM R22.14) to the Hartnell Avenue OC (PM R13.95). Work includes widening almost exclusively to the median with limited outside widening as needed to provide a 12-foot-wide lane and 10-foot median shoulder in each direction. Currently, there is not a need to improve capacity within the project area. Redding's population has grown minimally from 89,901 in 2010 to 92,896 in 2022 (U.S. Census Bureau 2023a) and the City of Shasta Lake's population has grown minimally from 10,081 in 2010 to 10,399 in 2021 (U.S. Census Bureau 2023b), but there is a need to improve operations within the project area. This need is most evident during regular winter storms and multiple recent wildfire events. During winter storms, traffic backs up from highway closures or chain control check points north of Redding creating backups south through the City Redding. This segment was identified as a bottleneck during mass evacuations from the City of Redding and surrounding areas that occurred during the Carr Fire in 2018. This four-lane gap section of freeway is the only bottleneck point on I-5 in Shasta County from the Tehama County line to the City of Shasta Lake, restricting freeway operations and interregional goods movement. Once completed, the project would improve traffic circulation and improve system resiliency on this portion of I-5.

The proposed project is consistent with state and local transportation plans and programs. Operational improvements to enhance interregional connectivity for motorized travel on I-5 is consistent with the corridor vision described in the *2008 Interstate 5 Transportation Concept Report* (California Department of Transportation 2008) and is shared with the Shasta Regional Transportation Agency. The *2008 Interstate 5 Transportation Concept Report* stated that the twenty-year facility concept at this location is a six-lane freeway and the post-twenty-year concept is an eight-lane freeway. The Shasta Regional Transportation Agency identified the I-5 corridor from the Tehama/Shasta County line north to the Mountain Gate near Lake Shasta as a top priority. The *2018 Regional Transportation Plan and Sustainable Communities Strategy for the Shasta Region* (Shasta Regional Transportation Agency 2018) identified the currently proposed project as a high priority to alleviate forecasted congestion and bottlenecks on I-5 between Redding and the City of Shasta Lake.

Existing freeway features in the project area include freeway interchanges (Table 22) and bridges in each direction of traffic. Two existing recreational facilities are present within the project area: the City of Redding's Sacramento River Trail beneath I-5 at the SR 44 interchange and a paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange. The Sacramento River Trail links downtown with Hilltop Drive. The paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange links Boulder Drive with College View Drive.

Table 22. Freeway Interchanges

Exit Number	Road Served	Ramp Movements Provided	Post Mile (PM)	Local government jurisdiction and comments
677	Cypress Avenue	• NB Off • NB On • SB Off • SB On	R14.46	City of Redding
678	44	• NB Off • NB On • SB Off • SB On	R15.45	State Facility Weaving concerns SB 5 and EB 44
680	299	• NB Off • NB On • SB Off • SB On	R17.32	State Facility
681	Twin View Boulevard	• NB Off • NB On	R18.07	City of Redding
681A	Twin View Boulevard	• SB Off • SB On	R18.07	
681B	273	• NB On • SB Off	R18.48	State Facility
682	Oasis Road	• NB Off • NB On • SB Off • SB On	R19.40	City of Redding
684	Pine Grove Ave	• NB Off • NB On • SB Off • SB On	R21.00	City of Shasta Lake City
685	Shasta Dam Blvd / SR 151	• NB Off • NB On • SB Off • SB On	R22.14	State Facility

Level of Service (LOS) is a qualitative measure of traffic operating conditions as perceived by drivers, which varies from LOS "A" (un-congested conditions) to LOS "F" (congested conditions). Figure 8 illustrates and describes the LOS thresholds from the *Highway Capacity Manual* for freeway sections.

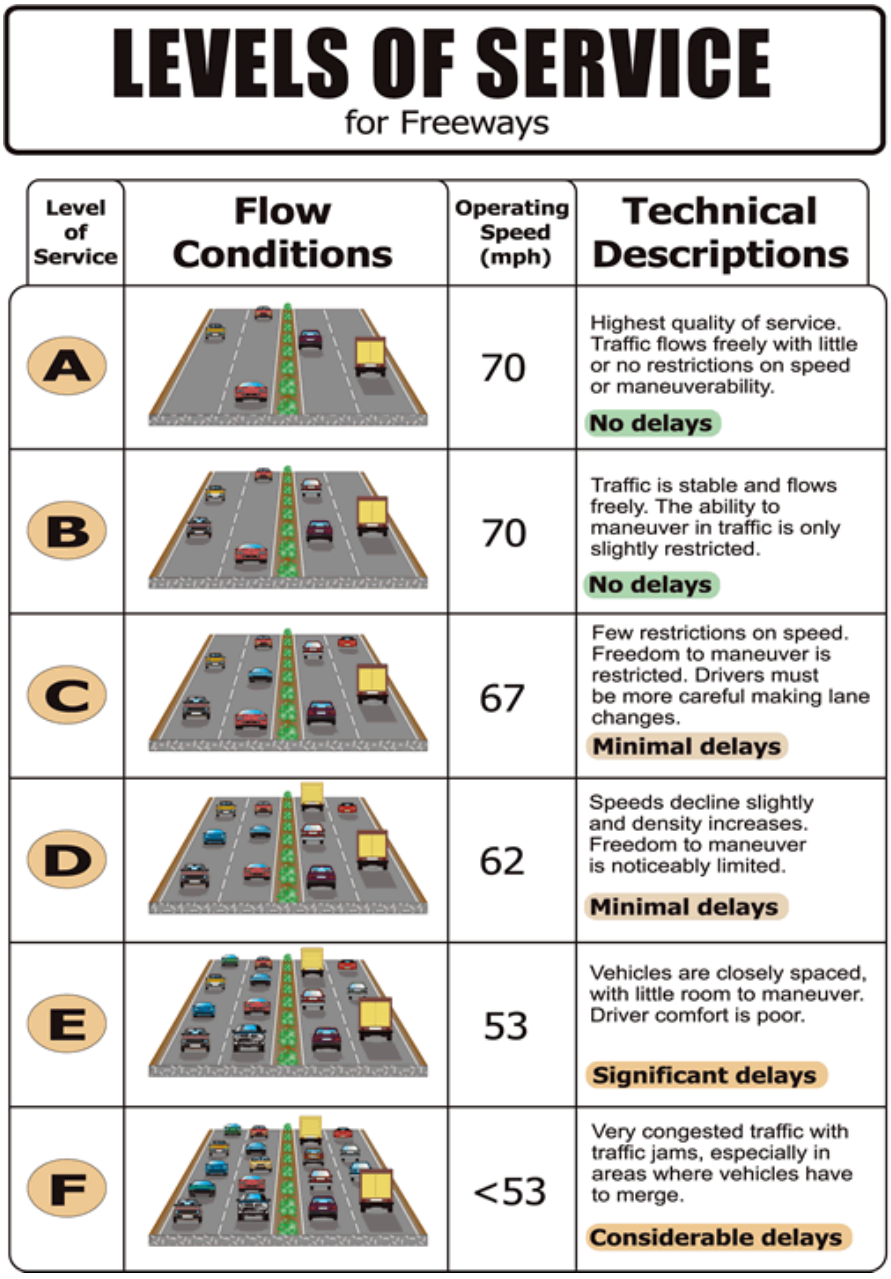


Figure 8. Levels of Service for Freeways

Caltrans District 2 seeks to implement improvements on I-5 when LOS is projected to fall below LOS "C". This improvement standard is commonly referred to as the "C/D Threshold." When projections show a segment would fall to LOS "D" under average monthly conditions, improvements should be pursued. Without the proposed improvements to this section of I-5, traffic congestion that reduces the LOS below the "C/D" Threshold is anticipated by 2035.

Interstate 5 within the project area is a public highway utilized by various public transportation service providers. The Redding Area Bus Authority (RABA) is the primary public transit service provider for the City of Redding and the City of Shasta Lake. Other public transportation service providers that operate within the project area include ShastaConnect and school districts that provide buses to transport students to and from schools.

Environmental Consequences

Construction Impacts

Projected vehicle miles traveled (VMT) for the project area was calculated utilizing three different models: Caltrans District 2 Traffic Operations Unit modeling, the National Center for Sustainable Transportation's (NCST) Induced Travel Calculator, and the Shasta Regional Transportation Agency's (SRTA) ShastaSIM 1.2 Regional Travel Model. The results of each model are discussed below.

CALTRANS VMT MODELING

Traffic data for this project is based on and compared to the existing traffic counts and classifications determined by the Caltrans District 2 Traffic Operations Unit as well as projected data provided by the Caltrans District 2 Office of System Planning. The Caltrans volumes are based on two data sources:

1. Historical traffic counts collected by Caltrans Traffic Census and corresponding growth trends.

2. The Shasta Regional Travel Model (ShastaSim 1.2).

Growth was calculated based on historical growth and adjusted with consideration of the Regional model data and anticipated development in the area. Shasta Regional Transportation Agency, an MPO, uses their traffic model for the Regional Transportation Plan and it is accepted by FHWA. Existing and projected traffic volumes and other metrics are shown in Table 23.

Table 23. Existing and Projected Traffic Volumes and Other Metrics

Scenario/ Analysis Year	[1]Segment/ Location	Average Annual Daily Traffic (AADT)	Vehicle Miles Traveled (Daily)	Time Saved (Hours/Day)	Corridor Travel Time (Hours/Day)	Average Speed (MPH)		Level of Service
						Peak Travel	Off-Peak Travel	
Baseline Year (2016)	Existing 4-Lanes	59,000	241,900	—	—	59	60	C
	Existing 6-Lanes		88,500	—	—	60	60	B
No-Build Alternative Opening Year (2026)	Existing 4-Lanes	66,000	270,600	—	6,397	50	57	D
	Existing 6-Lanes		99,000			59	60	B
No-Build Alternative Design Year (2046)	Existing 4-Lanes	86,000	352,600	—	9,202	43	50	E
	Existing 6-Lanes		129,000			58	60	C

Table 23. Existing and Projected Traffic Volumes and Other Metrics

Scenario/ Analysis Year	[1]Segment/ Location	Average Annual Daily Traffic (AADT)	Vehicle Miles Traveled (Daily)	Time Saved (Hours/Day)	Corridor Travel Time (Hours/Day)	Average Speed (MPH)		Level of Service
						Peak Travel	Off-Peak Travel	
Build Alternative Opening Year (2026)	Full Project	66,000	369,600	237	6,160	60	60	B
Build Alternative Design Year (2046)	Full Project	86,000	481,600	1,125	8,027	59	60	C

[1] Segment/Location
Existing 4-lane section (Post Miles R14.4–R18.5)
Existing 6-lane section (Post Miles R18.5–R20.0)
Full Project: 6-lanes throughout entire project area (Post Miles R14.4–R20.0)

Using 2016 as the base year, AADT in the project area was estimated at 59,000. Traffic modeling predicts no difference in AADT between the no-build and build alternative for the opening year (2026) and design year (2046). The AADT is predicted to be 66,000 and 86,000 for the no-build and build alternative in 2026 and 2046, respectively. Without the proposed improvements, congestion that reduces LOS below the "C/D" Threshold is anticipated for the existing 4-lane section of roadway by 2024; the existing 6-lane section of roadway is anticipated to remain above the "C/D" Threshold until approximately 2064. With the proposed improvements, the addition of a truck only lane in each direction of travel would increase the capacity of the State Highway System and the LOS for the entire project area would remain above the "C/D" Threshold until approximately 2054. The project would increase the capacity of the State Highway System, but traffic data modeling predicts no increase in vehicle miles traveled (VMT). Because SB 743 does not apply to projects that install truck only lanes or install auxiliary lanes that are less than one mile in length and operate independently, an induced travel analysis is not required. CEQA Guidelines Section 15064.3(a) states, "for the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The Technical Advisory (2018) that OPR published to guide analysis of VMT clarifies "the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks" (p. 4). Trucks may be included in analysis for ease, but it is not required to include them.

Time saved, expressed as time saved by comparing VMT and vehicle hours traveled (VHT), and corridor travel time was calculated for each scenario. No time is saved in the baseline year and the no-build scenarios. When compared to the baseline year (2016), the time saved for the build alternative is 237 hours in the opening year (2026) and 1,125 hours in the design year (2046). In both the opening year (2026) and horizon year (2046), the project would have a favorable global effect on travel time for vehicles traveling through the project limits.

NCST VMT MODELING

The NCST at the University of California at Davis developed the Induced Travel Calculator, which allows users to estimate the VMT induced annually because of adding general-purpose or high-occupancy-vehicle lane miles to roadways managed by Caltrans in urbanized counties (counties within a metropolitan statistical area). The calculator applies only to Caltrans-managed facilities with

FHWA functional classifications of 1, 2 or 3. That corresponds to interstate highways (class 1), other freeways and expressways (class 2), and other principal arterials (class 3). The Induced Travel Calculator, when factored to include the Redding geographic area and a total of 14.19 miles (6.00 miles in the NB direction of travel + 8.19 miles in the SB direction of travel = 14.19 miles total) of new truck only lanes added, predicts an increase in 36.4 million VMT per year. However, the Induced Travel Calculator is limited to use for capacity expansions (lane additions, roadway lengthening, and new facility construction). It cannot be used to estimate VMT effects of capacity reductions or lane type conversions. Given that Shasta County is not an urbanized county and limitations of the Induced Travel Calculator for predicting VMT when lane type conversions are involved, the Induced Travel Calculator is not a suitable predictor of VMT for the project area.

SHASTA REGIONAL TRANSPORTATION AGENCY VMT MODELING

According to SRTA's ShastaSIM 1.2 Regional Travel Model, without changes resulting from implementation of the 2015 RTP, total daily VMT in Shasta County would increase by approximately 32% between 2005 and 2035 (Table 24). Daily per capita VMT would remain relatively steady, increasing by only 6% over the same 30-year period. However, given that SRTA's ShastaSim 1.2 Regional Travel Model is most useful for modeling VMT at a regional level and not at the project-level, this model may not be an accurate predictor of VMT for the project area.

Table 24. Total Daily VMT and VMT Per Capita[1]

Year	Total Daily VMT	VMT/Capita
2005	5,606,121	26.81
2020	6,171,441	26.88
2035	7,390,629	28.51

[1] Results from the ShastaSIM 1.2 Regional Travel Model reflect the current growth trend of the region without changes resulting from implementation of the 2015 RTP. Includes all trip types (inter-regional, intra-regional, and through trips).

COMPARISON OF VMT MODEL RESULTS

As described previously, the Caltrans model shows no change in VMT between the build alternative and the no-build alternative for 2026 and 2046; the NCST Induced Travel Calculator shows an increase of 36.4 million VMT per year because of the lane additions; and SRTA'S ShastaSIM 1.2 Regional Travel Model shows a 32% increase in total daily VMT between 2005 and 2035 and a 6% increase in daily per capita VMT over that same period. Given the results of the three models and considering their applicability to the specific project location, it was determined that the most accurate model to predict VMT for the project area is the Caltrans model. As such, the results of Caltrans model are the basis for the CEQA significance determination regarding VMT.

IMPACTS

The project would expand I-5 from four lanes to six lanes by adding a truck only lane in each direction of travel (6.00 miles in the NB direction of travel and 8.19 miles in the SB direction of travel). The addition of a truck only lane in each direction of travel would be accomplished through a combination of constructing new lanes (2.64 miles in the NB direction of travel and 3.29 miles in the SB direction of travel) and converting existing multi-use lanes (3.36 miles in the NB direction of travel and 4.90 miles in the SB direction of travel). The conversion of multi-use lanes into truck only lanes would

not result in an increase in congestion in the remaining multi-use lanes. The project includes design features such as a truck only lane/emergency operations sign package in each direction of travel to minimize weaving conflicts as trucks merge into and out of the truck only lane. The project would construct/extend four auxiliary lanes and each auxiliary lane would operate independently and be less than one mile in length (the total length of all auxiliary lanes when added together would be 2.9 miles). The construction/extension of the auxiliary lanes would reduce merging conflicts and improve safety. The project would increase the capacity of the State Highway System, but traffic data modeling predicts no increase in vehicle miles traveled (VMT). Because SB 743 does not apply to projects that install truck only lanes or install auxiliary lanes that are less than one mile in length and operate independently, an induced travel analysis is not required. CEQA Guidelines Section 15064.3(a) states, "for the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project." The Technical Advisory (2018) that OPR published to guide analysis of VMT clarifies "the term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks" (p. 4). Trucks may be included in analysis for ease, but it is not required to include them.

Construction of the project would require day and night work, lane and ramp closures, reducing the posted speed limit in construction zones, brief periodic closure of the City of Redding's Sacramento River Trail beneath I-5 at the SR 44 interchange, and brief periodic closure of the paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange. Short-term impacts during construction would include a slightly longer travel time for motorists to transit through construction zones because the posted speed limit in the available lane(s) would be reduced from 65 miles per hour to 55 miles per hour or lower. However, no substantial delays in travel time are expected. Cross traffic on roadways beneath I-5 would be minimally impacted during placement of girders for new bridges because full roadway closures at night would be required periodically. Without a temporary detour, bicyclists and pedestrians who utilize the Sacramento River Trail beneath I-5 at the SR 44 interchange and the paved pedestrian/bicycle trail beneath I-5 at the SR 299 interchange would be minimally impacted by work at these locations, which would require brief periodic closure to allow for installation of falsework and shoring or placement of girders to widen the roadway.

The addition of an auxiliary lane to the SR 44/I-5 connector is considered a connector improvement. However, given that the proposed project would not induce vehicle traffic on the interstate, freeway connector volumes are not expected to change.

Construction and long-term operation of the project would have minimal to no impact on local roads.

A Transportation Management Plan was prepared for the project during the design phase (California Department of Transportation 2023g) and an updated Transportation Management Plan will be prepared for the contractor at the time of construction.
Compliance with the following Caltrans standard measures would ensure that any impacts on transportation would be minimal:

- **[T-1]** Pedestrian and bicycle access would be maintained during construction.

- **[T-2]** The contractor would be required to schedule and conduct work to avoid unnecessary inconvenience to the public and to maintain access to driveways, houses, and buildings within the work zones.

- **[T-3]** A Transportation Management Plan (TMP) would be applied to the project.

Cumulative Impacts
The project would expand I-5 from four lanes to six lanes by adding a truck only lane in each direction of travel (6.00 miles in the NB direction of travel and 8.19 miles in the SB direction of travel). Caltrans' recently completed RASL project, which expanded I-5 from four to six lanes between Redding and Anderson, added 6.9 miles of new lane in the NB direction of travel and 6.19 miles of new lane in the SB direction of travel. Aside from the currently proposed project, there are no other locations on the I-5 corridor in Shasta County that are currently being considered for future expansion of the highway from four lanes to six lanes. The addition of a truck only lane in each direction of travel, when considered along with the new lanes added by the RASL project, would not have an adverse cumulative impact on transportation.

The project would also construct/extend four auxiliary lanes and each auxiliary lane would operate independently and be less than one mile in length. The total length of all constructed/extended auxiliary lanes when added together would be 2.9 miles. The four auxiliary lanes are not collectively influencing capacity or otherwise potentially significantly inducing travel in the corridor. Caltrans' recently completed RASL project added an approximately 0.5-mile long acceleration lane in the NB direction of travel and added an approximately 0.5-mile long acceleration lane in the SB direction of travel. Aside from the currently proposed project, no other future projects are currently planned that would add new auxiliary lanes or that would connect currently independent auxiliary lanes within the project area. Therefore, impacts related to constructing/extending the four auxiliary lanes are not cumulatively considerable.

In summary, the project's impact on transportation would be minimal and when these impacts are considered along with impacts on transportation resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to an adverse cumulative impact. Therefore, the project's impact on transportation would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

In addition to standard measures, the following measures identified in the TMP shall be implemented to avoid impacts on pedestrians and bicyclists using recreational trails:

Lane Closures

- Lane closures on I-5 are not allowed when traffic volumes exceed the carrying capacity of the remaining open lane. For this segment of I-5, the carrying capacity is estimated at 1,200 vehicles per lane. Based on review of traffic volumes, two lanes must remain open during the day after 3 p.m. Fridays, on weekends, or "designated holidays."

Coordinate Construction

- Coordinate construction with other overlapping or adjacent projects.

Portable Changeable Message Signs

- A portable changeable message sign (PCMS) shall be placed before the first traffic control sign for each approach. Additional PCMSs be required to inform motorists of ramp and highway closures and speed zone reductions.

Positive Protection Devices

- Positive protection devices should be considered in work zone situations that place workers on foot at increased risk from motorized traffic travelling over 45 miles per hour. When the protection is only needed during work hours and the situation is expected to last only a few days, a Stationary Impact Attenuator Vehicle or mobile barrier could be used.

Work Zone Speed Limit Reduction

- Per *2020 California Manual for Setting Speed Limits*, for construction work zones on the State Highway System, the speed limit shall be reduced by 10 miles per hour from the posted speed limit unless an exception is granted.

Public Information Campaign

- Implement a public information campaign (e.g., news releases and worker safety media campaign).

Although not identified in the TMP, the following measure will be needed.

- When temporary closure of recreational trails is required, the contractor shall provide a temporary detour for pedestrians and bicyclists. Trail closures shall be kept to a minimum, restricted to night-time, and the contractor shall transport trail users around the construction zone as needed.

CEQA Significance Determinations for Transportation

The project work scope includes lane and ramp closures and brief closure of bicycle/pedestrian trails which would minimally delay travel time through the project area. However, the project would not substantially conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. The project would not substantially conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), based on VMT modeling and would not substantially increase hazards due to a geometric design feature or incompatible uses. The project would not result in inadequate emergency access. Implementation of Caltrans standard measures during construction would ensure that construction of the project would have a less than significant impact on response time for emergency services.

Given the determinations above, the project would have a less than significant impact on transportation.

Utilities and Service Systems

Regulatory Setting

Not applicable.

Affected Environment

Various utilities are present within the project area. These include overhead electrical lines mounted on utility poles, underground telephone cables, and underground fiber optic cables. In addition, solid waste collection service providers transit through the project area as part of solid waste collection.

Environmental Consequences

Construction Impacts
No conflicts with underground or above-ground utilities are anticipated during construction. However, fiber optic cables and electrical wires enclosed in conduit attached to bridges would need to be relocated to accommodate bridge widening. This activity may require that utilities be turned off for short periods and would result in minimal impacts to local residents.

Once built, the project would not generate solid waste material. During construction, approximately 70,000 cubic yards of asphalt grindings and other materials would be generated from roadway excavation and cold planing. Grindings and other construction debris would become property of the contractor. Asphalt grindings may be reused onsite (excluding a minimal amount of grindings associated with yellow and white road striping, which would be disposed of in accordance with Caltrans standard measures). Some excavated materials may be reused onsite as embankment and/or disposed of at an optional disposal site located at one of the Shasta County Road Department's disposal yards. Use of the County's disposal yards would have only a minimal impact on the overall capacity of the disposal yards.

The project's impact on solid waste collection services would be limited to the construction phase and may include a slightly longer travel time for collection vehicles to transit through the project area during construction. Any impacts on solid waste collection services would be minimal.

The contractor would need water for implementing palliative dust control, and a municipal supply location would be identified prior to awarding the contract. The water needed for dust control is anticipated to have a minimal impact on the municipal water supply.

The project would improve stormwater drainage facilities and earthwork associated with making these improvements as well as other construction-related activities has the potential to minimally impact water quality and the aquatic environment.

Compliance with the following Caltrans standard measures would ensure that any impacts on local residents and water quality/aquatic environment during construction would be minimal:

- **[US-1]** Caltrans would coordinate with utility providers to plan for relocation of any utilities to ensure utility customers would be notified of potential service disruptions before relocation.

- **[WQ-1]** The project would comply with the Provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ) as amended by subsequent orders, which became effective July 1, 2013. If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (Order 2009-0009-DWQ) is also required.

  Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one

acre) that includes erosion control measures and construction waste containment measures to protect Waters of the State during project construction.

The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the *Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase.

Construction may require one or more of the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (e.g., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.
- Temporary sediment control and soil stabilization devices would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.
- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plan.
- For SWPPP projects (which are governed according to both the Caltrans NPDES permit and the Construction General Permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES and CGP and the corresponding requirements of these permits are adhered to. For WPCP projects (which are governed according to the Caltrans NPDES permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES permit is adhered to.

- **[WQ-2]** The project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans Storm Water Management Plan. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ) as amended by subsequent orders.

  The project design may include one or more of the following:

  - Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project.

  - Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants.

- **[WQ-3]** All construction site BMPs shall follow the most current edition of the *Construction Site Best Management Practices (BMPs) Manual*. For this project, these are likely to include erosion and sediment control BMPs such as ground cover, fiber rolls, gravel bag check dams, and other listed methods.

- **[WQ-4]** Prior to any ground-disturbing activities, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) that identifies measures to be implemented for erosion control, spill prevention, and construction waste containment. These measures shall be implemented during construction to minimize impacts on water quality and the aquatic environment.

- **[WQ-5]** Environmentally sensitive areas (ESAs) shall be designated and clearly delineated with high-visibility fence on the contract plans during the design phase to avoid potential discharges and unauthorized disturbance to riparian habitat.

Cumulative Impacts

The project's impact on utilities and service systems would be minimal and temporary and when these impacts are considered along with impacts on utilities and service systems resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact on utilities and service systems would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Utilities and Service Systems

Construction of the project would require the relocation of fiber optic cables and electrical wires enclosed in conduit attached to bridges. However, any potential environmental effects of related to this activity would be less than significant. Earthwork associated with making improvements to storm water drainage facilities has the potential to degrade water quality and the aquatic environment.

However, measures to protect water quality and the aquatic environment would be implemented during construction to ensure that any environmental impacts would be less than significant.

Once built, the project would not require a water supply to service the project. Water needed for dust control during construction would have a less than significant impact on local water supply.

The project would not require a wastewater treatment provider to service the project once built or during construction. As such, there would be no impact on local wastewater treatment providers.

Solid waste generated during construction would not be in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Therefore, the project would have a less than significant impact related to the generation of solid waste and a less than significant impact related to compliance with federal, state, and local management and reduction statutes and regulations related to solid waste.

Given the determinations above, the project would have a less than significant impact on utilities and service systems.

Wildfire

Regulatory Setting

Senate Bill 1241 required the Office of Planning and Research, the Natural Resources Agency, and the California Department of Forestry and Fire Protection to develop amendments to the "CEQA Checklist" for the inclusion of questions related to fire hazard impacts for projects located on lands classified as very high fire hazard severity zones. The 2018 updates to the CEQA Guidelines expanded this to include projects "near" these very high fire hazard severity zones.

Affected Environment

Most of the project is located along the I-5 corridor in Shasta County, although a very small portion (a charging station) is located along the I-5 corridor in Tehama County. For the portion of the project in Shasta County, most of the project is located within the City of Redding and the City of Shasta Lake, which are classified as a Local Responsibility Area by the California State Department of Forestry and Fire Protection's (CAL FIRE) Fire and Resource Assessment Program (FRAP). The City of Redding and City of Shasta Lake are responsible for providing fire protection within their respective jurisdictions in this area. FRAP classifications in the project area include Very High Fire Severity zones, High Fire Severity zones, Moderate Fire Severity zones, and un-zoned areas. The majority of land outside the City of Redding and City of Shasta Lake is classified by FRAP as State Responsibility Area meaning the State of California through CAL FIRE is responsible for providing fire protection. Figure 9 and Figure 10 illustrate the Shasta County mapped Fire Hazard Severity Zones provided by the FRAP program. This portion of I-5 was identified as a bottleneck segment during the evacuation of over 40,000 people during the Carr Fire in 2018.

The small portion of the project located along I-5 in Tehama County at the California Highway Patrol Cottonwood Commercial Vehicle Enforcement Facility (PM 40.7) is classified by FRAP as a State Responsibility Area. CAL FIRE is responsible for providing fire protection at this location. The FRAP classifies this location as having a High Fire Severity zone (Figure 11).

FIGURE 9. Draft Fire Hazard Severity Zones in Local Responsibility Area – Shasta County

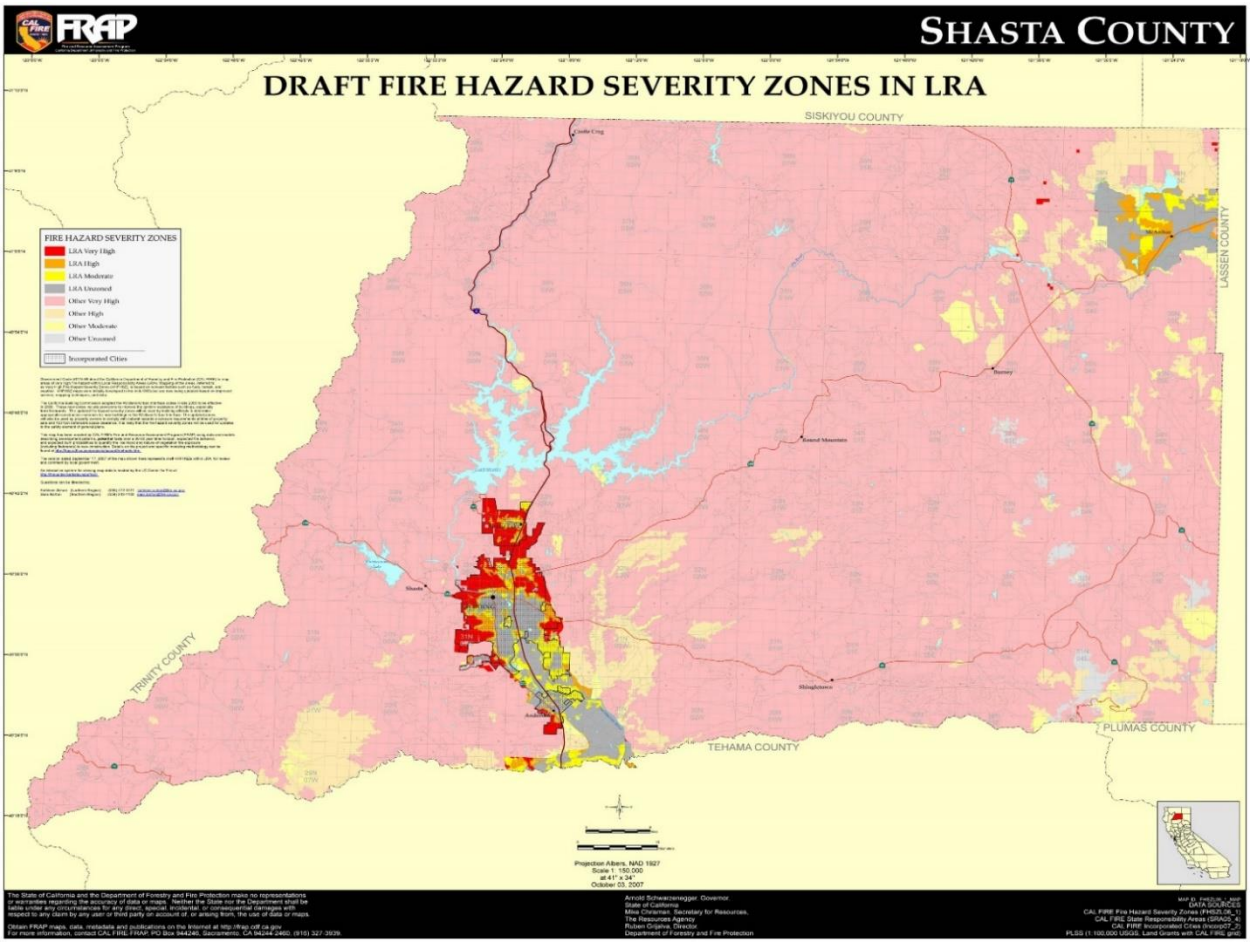


FIGURE 10. Fire Hazard Severity Zones in State Responsibility Areas – Shasta County

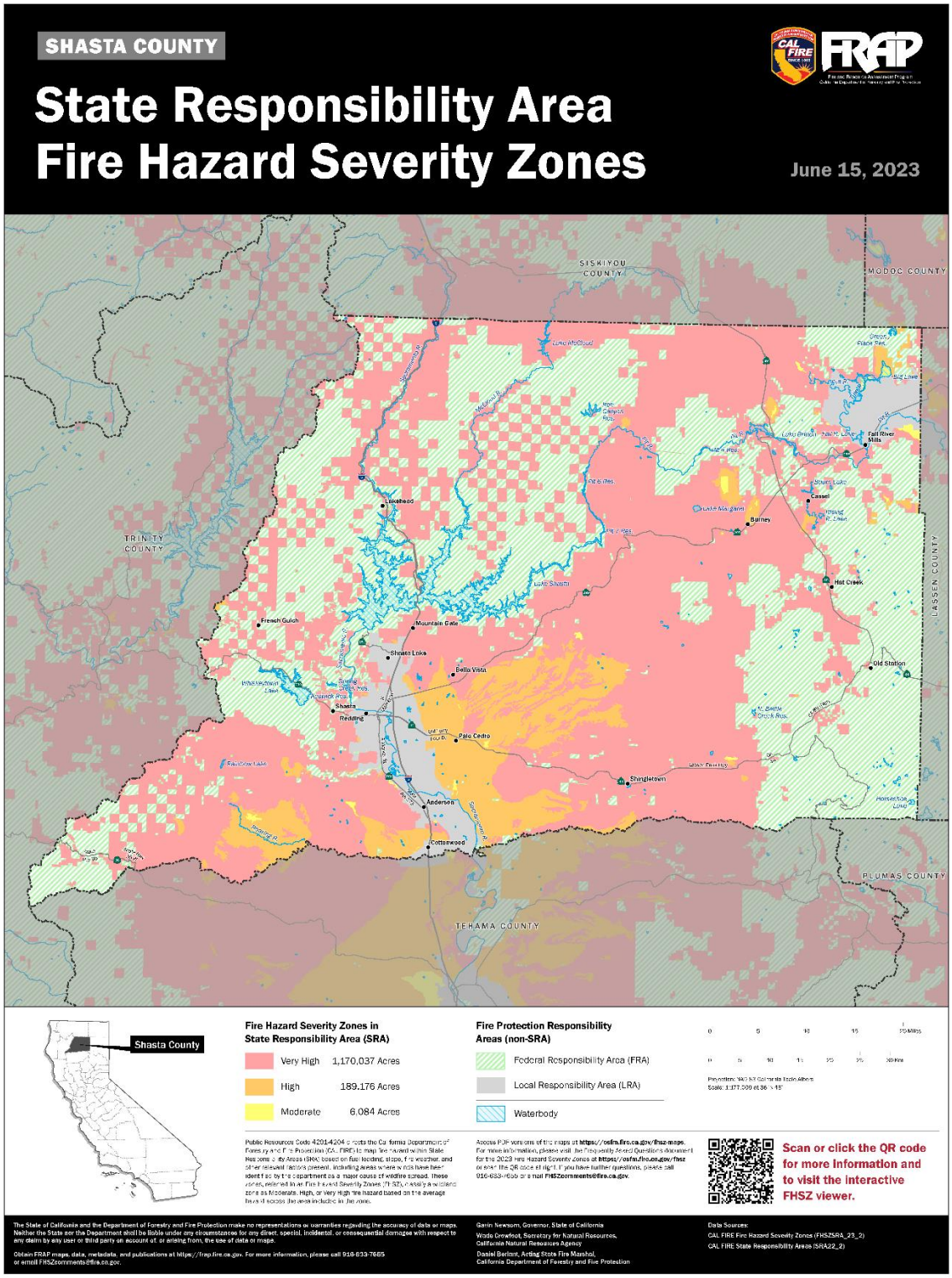
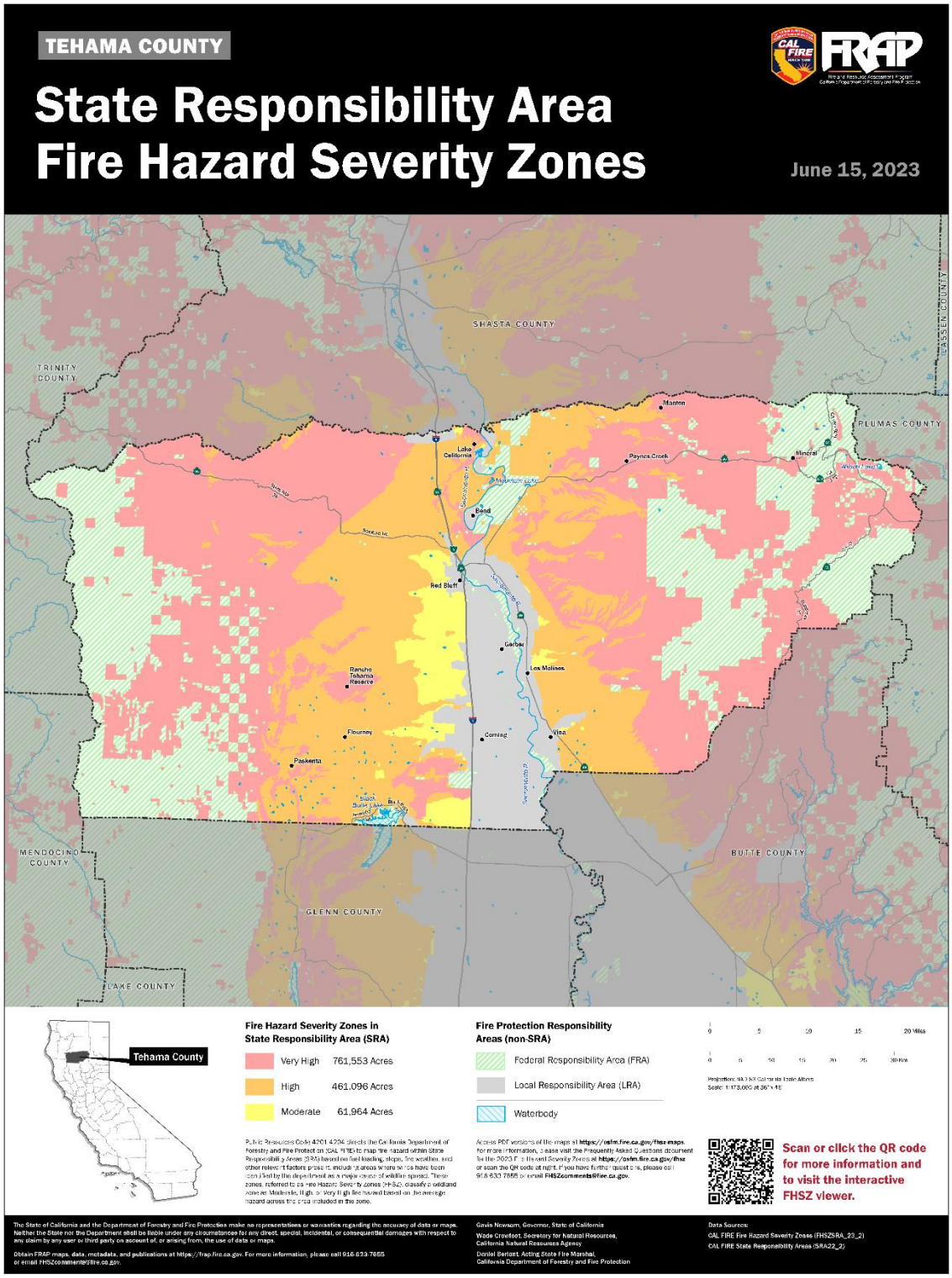


Figure 11. Fire Hazard Severity Zones in State Responsibility Areas – Tehama County



Caltrans is one of two primary state agencies tasked with the essential function of transportation within the Shasta County Emergency Operations Plan. According to the Plan, the immediate use of transportation systems for emergency operational activities may exceed local capabilities thus requiring assistance from the Mutual Aid system. With multiple large wildfires (e.g., the Carr Fire, Delta Fire, and Hirtz Fire) impacting I-5 within the last five years, improved system resiliency is needed.

Environmental Consequences

Construction Impacts
The proposed project would improve existing transportation infrastructure by adding a truck only lae and widening the paved shoulders on both sides of the road in each direction of travel within the project area. The project would convert the existing 4-lane highway into a 6-lane highway by adding a truck only lane in each direction of travel. Currently, the existing roadway within the project area has 2 lanes of traffic in each direction (north and south). Outside the project area to the north and south, the highway has 3 lanes of traffic in each direction of travel. The proposed project would fill in the last gap of 6-lane highway, creating over 22 miles of continuous 6-lane highway serving the entire corridor between the City of Shasta Lake to the north and the unincorporated community of Cottonwood to the south.

During construction, work would be staged to maintain 2 lanes of traffic in each direction through the project area. Construction could require lane reductions for items of work such as lifting bridge girders into place for bridge widening. If needed, lane reductions and traffic closures would be closely coordinated and approved by the Caltrans Traffic Management Branch. Coordination and outreach with the California Highway Patrol, local law enforcement, and emergency response agencies would occur prior to the closures and a public information campaign would be implemented. Construction of the project would not substantially impede emergency response or potential evacuations. Materials used to construct the project would be non-combustible. All sources of electrical power would either be underground or contained in conduit and would meet current electrical, building, and fire code, standards. Changeable Message Signs would be available to provide critical information during an emergency and would be used to alert the public during times of high fire danger.

Once built, the project would improve traffic operations through the project area and improve the ability of the highway to serve the public during wildfire emergencies (e.g., faster emergency response times, evacuation plans and capacity, etc.). The built project would increase the width of the road which would improve its function as a firebreak. In addition, the built project would reduce vegetation adjacent to the roadside and provide additional paved areas for staging of emergency response vehicle. Constructed bioswales and detention basins would also function improve firebreak function. If wildfire burned within the project area, the built project would reduce exposure to the public by increasing the distance between the travelling public and combustible material.

The following standard measures will be included for fire prevention:

- **[WF-1]** Standard Specification 7-1.02M(2) for fire prevention.

- **[WF-2]** It is Caltrans District 2 standard practice to require the contractor to produce an Emergency Evacuation Plan (EEP) for projects located within elevated fire danger areas mapped by the CAL FIRE Fire and Resource Assessment Program (FRAP). Standard Special Provision 12-4.02A(3)(c) would be included in contract specifications to require the contractor prepare an EEP.

Cumulative Impacts
The project's impact related to wildfire would be minimal and temporary and when these impacts are considered along with impacts related to wildfire resulting from other Caltrans projects on I-5 in Shasta and Tehama counties constructed in the last 20 years or that are reasonably foreseeable, they would not contribute to have an adverse cumulative impact. Therefore, the project's impact related to wildfire would be individually limited but not cumulatively considerable.

Avoidance, Minimization, and/or Mitigation Measures

No additional measures beyond design features and standardized measures are warranted.

CEQA Significance Determinations for Wildfire

The project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Therefore, any impacts would be less than significant.

The project would not construct a new highway on a new alignment that would introduce the public to a different environment. The project does not include facilities for human occupation, shelter or storage such as housing, habitable structures or gathering areas. The project does not include facilities that would delay, hold, or limit movement of the traveling public such as, an intersection, tunnel, or a long bridge high above the ground, which could expose the public to increased risk in the event of a wildfire. As such, the project does not exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Therefore, there would be no impact.

The project does not require the installation or maintenance of additional associated infrastructure that may exacerbate fire risk or that may result in temporary ongoing impacts to the environment. Therefore, there would be no impact.

The project does not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Therefore, there would be no impact.

Given the determinations above, the project would have a less than significant impact related to wildfire.

Mandatory Findings of Significance

Construction of the project would not substantially degrade the quality of the environment, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The addition of a truck only lane in each direction of travel would be a barrier to the movement of wildlife and therefore would reduce access to available habitat for terrestrial wildlife species. This is a potentially significant impact. However, the incorporation of mitigation measures to mitigate for impacts to the movement of native resident wildlife species within migratory wildlife corridors would reduce this impact to levels that are less than significant. Compliance with Caltrans standard measures and implementation of other avoidance/minimization measures would ensure that other environmental impacts do not reach levels that are potentially significant.

Construction of the project would affect but would not substantially impact various other resources (e.g., aesthetics, air quality, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, public services, transportation, utilities and service systems, and wildfire) in the human environment. Compliance with Caltrans standard

measures and implementation of other avoidance/minimization measures would ensure that any impacts on human beings, either directly or indirectly, would be less than significant.

The project would result in impacts that are individually limited, but not cumulatively considerable. Therefore, any cumulative impacts would be less than significant.

Given the determinations above, the project would have a less than significant impact related to mandatory findings of significance.

Chapter 4. List of Preparers

This Initial Study was prepared by the California Department of Transportation, North Region Office of Environmental Management, with input from the following staff:

Russell Adamson, Archaeologist
Contribution: Archaeological Survey Report and Historic Properties Survey Report

Julie Casey, Senior Design Engineer
Contribution: Project design

Rajive Chadha, Hazardous Waste Specialist
Contribution: Initial Site Assessment Report

Youngil Cho, Transportation Engineer
Contribution: Air Quality/Greenhouse Gas Report

Reed Crane, Design Engineer
Contribution: Site plan

Darrin Doyle, Environmental Coordinator
Contribution: Document writer

Brandon Evangelista, Transportation Engineer
Contribution: Transportation Management Plan Data Sheet

Travis Gurney, Design Engineer
Contribution: Project design and Project Report

Nicki Johnston, Senior Landscape Architect
Contribution: Visual Impact Assessment

Jason Lee, Transportation Engineer
Contribution: Energy Analysis

Steve Mintz, Hydraulic Engineer
Contribution: Floodplain Evaluation Report Summary

Logan Moore, Landscape Associate
Contribution: Visual Impact Assessment Report

Jeremiah Pearce, Transportation Engineer
Contribution: Transportation Management Plan Data Sheet

Ryan Pommerenck, Transportation Engineer
Contribution: Noise Study
Frank Rivas, Transportation Engineer
Contribution: Traffic Engineering and Operations

Eric Rulison, Biologist
Contribution: Biological Assessment and Natural Environment Study

Jesse Solorio, Transportation Engineer
Contribution: Traffic data modeling

Bill Southerland, Transportation Engineer
Contribution: Transportation Management Plan Data Sheet

Wesley Stroud, Environmental Office Chief
Contribution: Document oversight

Carolyn Sullivan, Senior Environmental Planner
Contribution: Document oversight

Kelly Timmons, Project Manager
Contribution: Project management

Miguel Villicana, Water Quality Specialist
Contribution: Water Quality Assessment Report

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Appendix A Site Plan

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INDEX OF PLANS

SHEET No.	DESCRIPTION
1	TITLE AND LOCATION MAP
X-X	TYPICAL CROSS SECTIONS
X	KEY MAP AND LINE INDEX
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XX-XX	PROFILES AND SUPERELEVATION DIAGRAMS
XX-XX	CONSTRUCTION DETAILS
XX-XX	TEMPORARY WATER POLLUTION CONTROL PLANS
XX-XX	CONTOUR GRADING PLANS
XX-XX	DRAINAGE PLANS, PROFILES, DETAILS AND QUANTITIES
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XX	CONSTRUCTION AREA SIGNS
XX-XX	MOTORIST INFORMATION PLANS
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XX-XX	TRAFFIC HANDLING PLANS AND QUANTITIES
XX-XX	PAVEMENT DELINEATION PLANS, DETAILS AND QUANTITIES
XX-XX	SIGN PLANS, DETAILS AND QUANTITIES
XX-XX	SUMMARY OF QUANTITIES
XX-XX	REVISED STANDARD PLANS
XX-XX	VENDOR DRAWINGS

STRUCTURES

XX-XXX	NAME OF BRIDGE, Br No. XX-XXXX
XXX-XXX	NAME OF BRIDGE, BR No. XX-XXXXX

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA

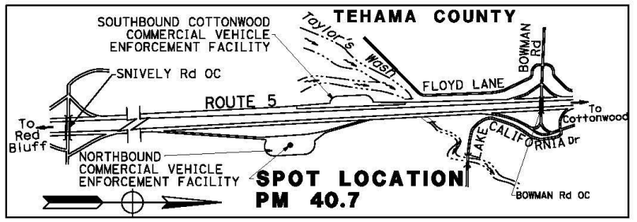
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PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

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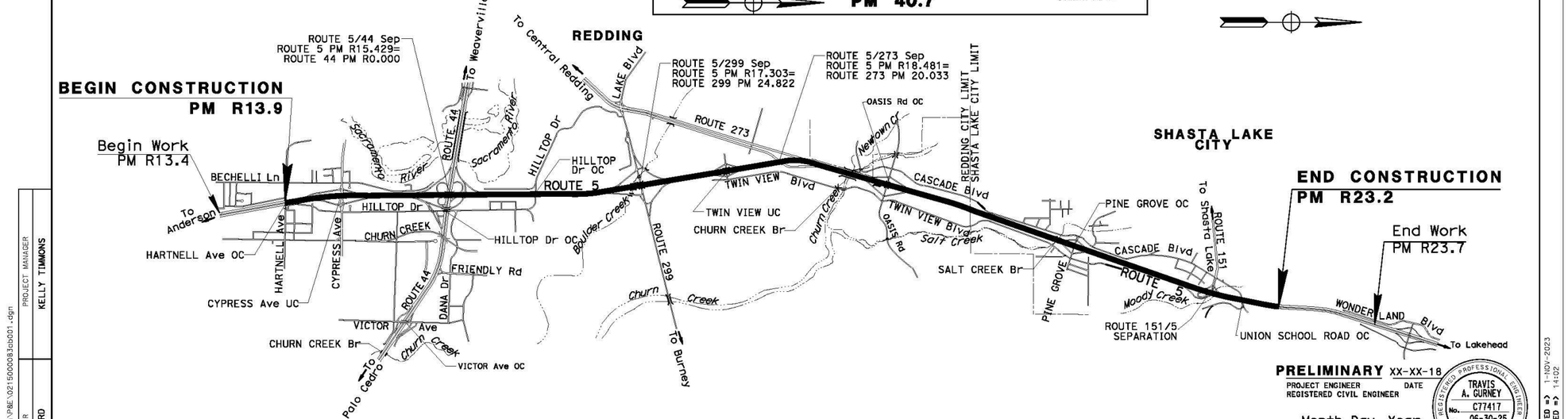
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	005	R13.9/R23.2 40.7	1	1



LOCATION MAP



PRELIMINARY XX-XX-18

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

Month Day, Year
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 06-30-25
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.

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

NO SCALE

CONTRACT No.	02-0H9204
PROJECT ID	0215000083

DESIGN MANAGER: TOBY CRAWFORD
PROJECT MANAGER: KELLY TIMMONS

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TIME PLOTTED => 14:02
LAST REVISED: 11-1-23

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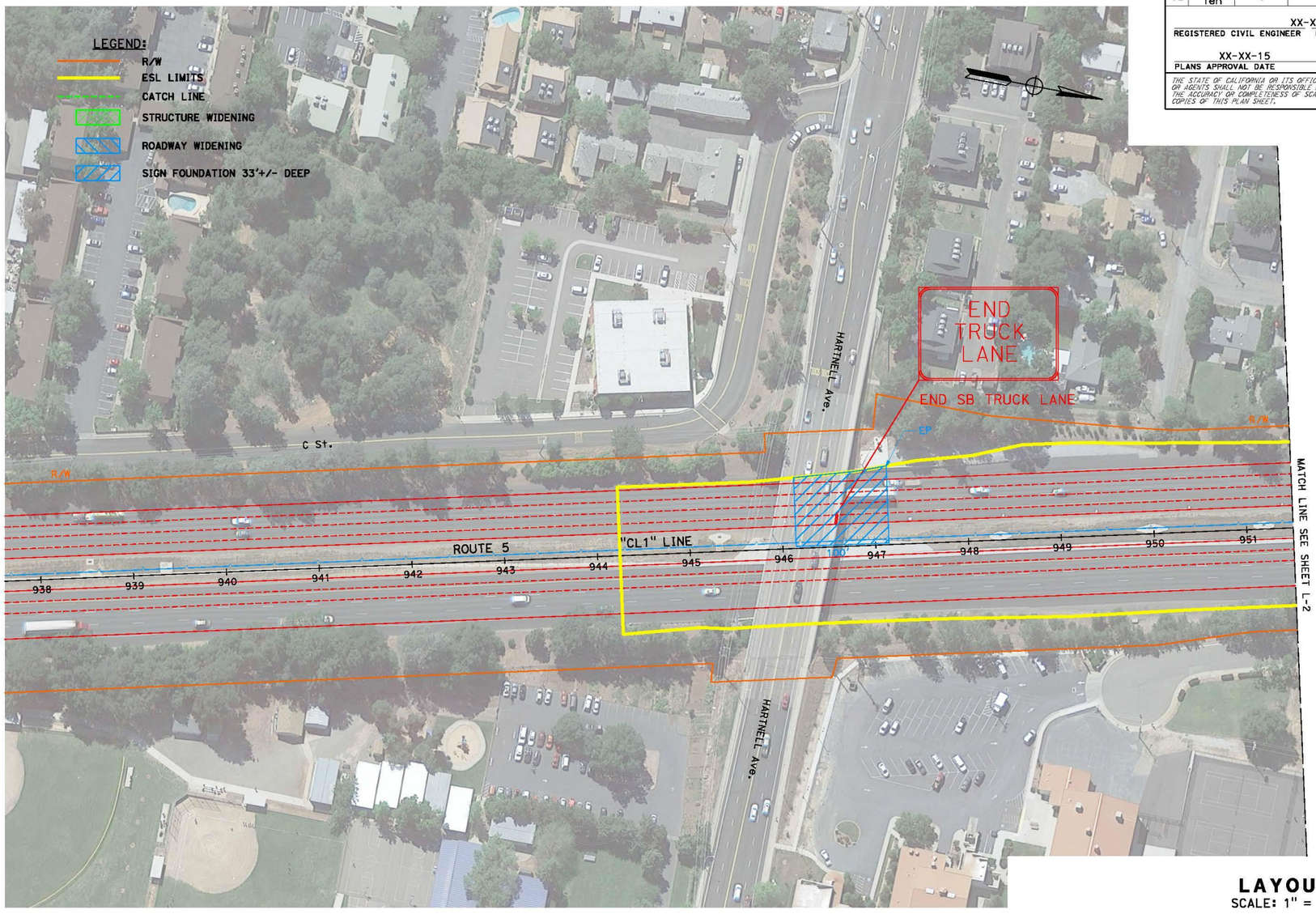
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XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
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No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-1

CALCULATED-DESIGNED BY	REVISED BY				
CHECKED BY	DATE REVISED				
TRAVIS A. GURNEY					
FUNCTIONAL SUPERVISOR					
TOBY CRAWFORD					
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION					
DESIGN					

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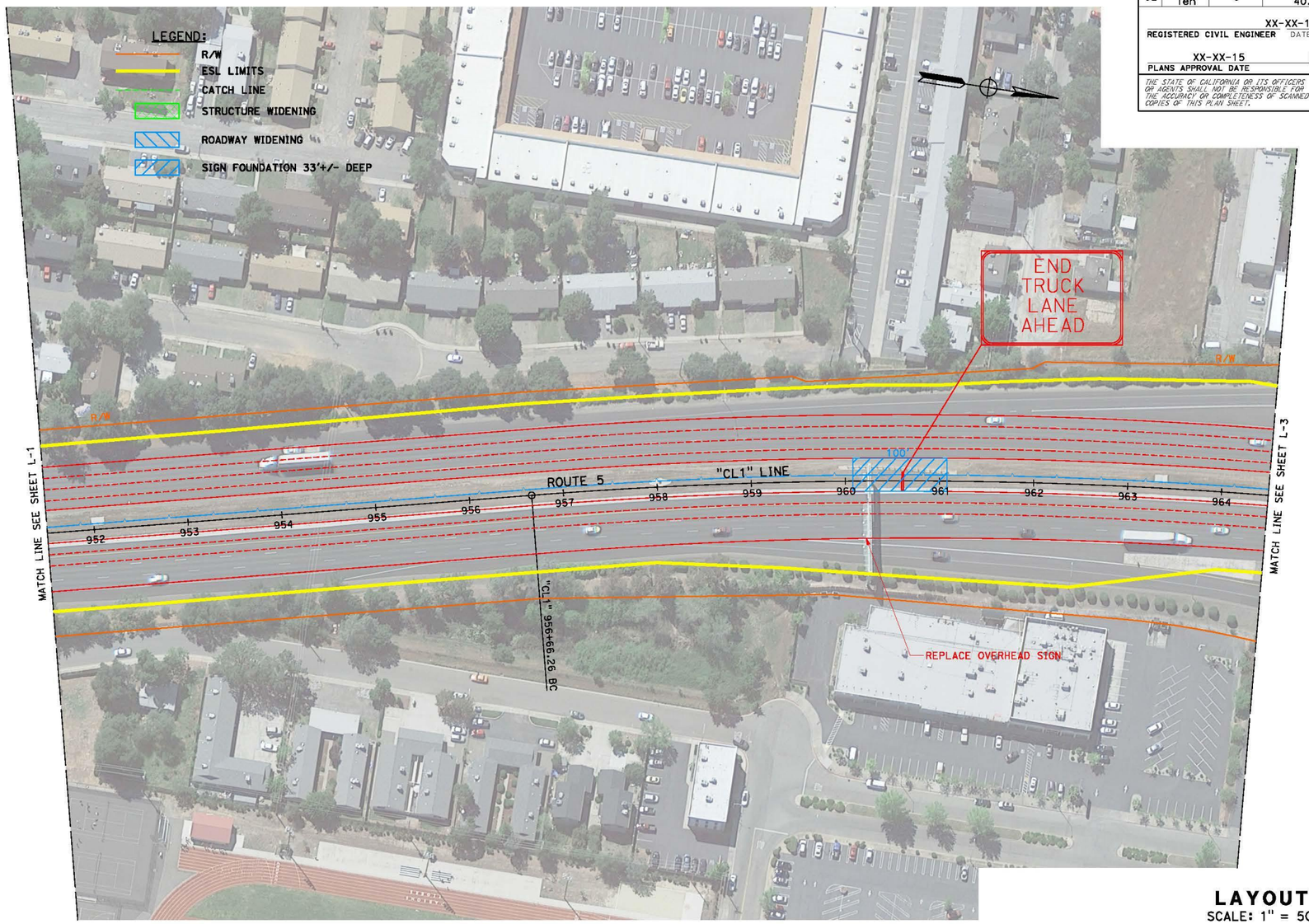
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XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
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TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-2

REVISED BY	DATE REVISED

CALCULATED-
DESIGNED BY

CHECKED BY

TRAVIS A. GURNEY

FUNCTIONAL SUPERVISOR

TOBY CRAWFORD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

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UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

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XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP

END TRUCK LANE AHEAD

CYPRESS Ave.

CYPRESS Ave-NB ON

CYPRESS Ave-SB OFF

CYPRESS Ave-NB OFF

R/W

ROUTE 5

100'

"CL1" LINE

965 966 967 968 969 970 971 972 973 974 975 976 977 978

"CL1" 988+28.00 EB

MATCH LINE SEE SHEET L-2

MATCH LINE SEE SHEET L-4

LAYOUT
SCALE: 1" = 50'

L-3

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: TRAVIS A. GURNEY
CHECKED BY:

FUNCTIONAL SUPERVISOR: TOBY CRAWFORD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN

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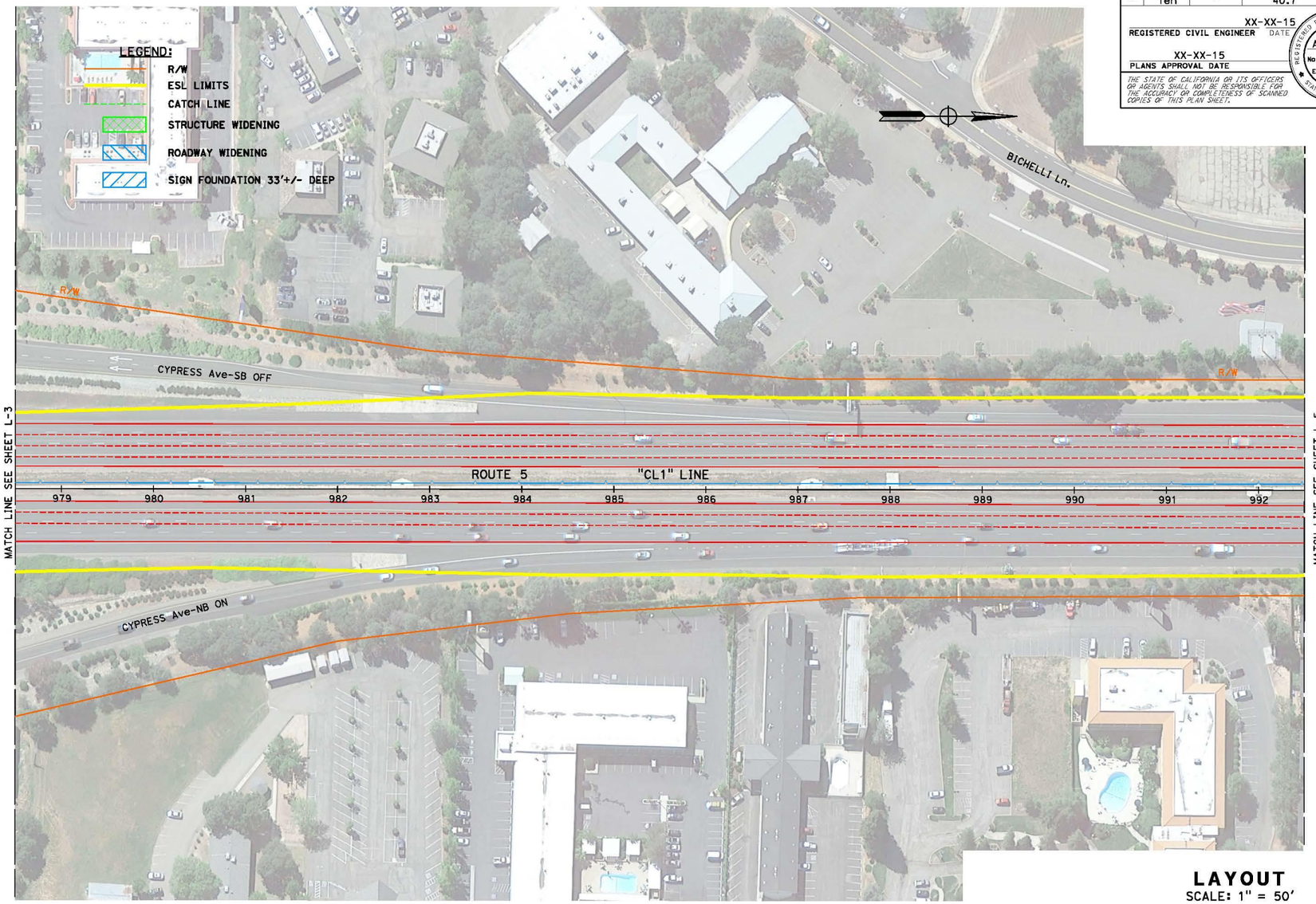
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XX-XX-15
REGISTERED CIVIL ENGINEER DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-4

FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY
CHECKED BY: TRAVIS A. GURNEY
REVISED BY
DATE REVISED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

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DGN FILE => OH920_ESL_004.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP

BICHELLI Ln.

R/W

MATCH LINE SEE SHEET L-4

ROUTE 5 "CL1" LINE

993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006

MATCH LINE SEE SHEET L-6

MONARDAS Dr.

MONARDAS Dr.

AZALEA Av.

IRIS Dr.

LAYOUT
SCALE: 1" = 50'

L-5

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY

CHECKED BY

TRAVIS A. GURNEY

FUNCTIONAL SUPERVISOR

TOBY CRAWFORD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

P:\gprod\3\02\0h920\design\requests\PLANS\0H920_ESL_005.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:45

BORDER LAST REVISED 7/2/2010

USERNAME => s146292
DGN FILE => 0H920_ESL_005.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

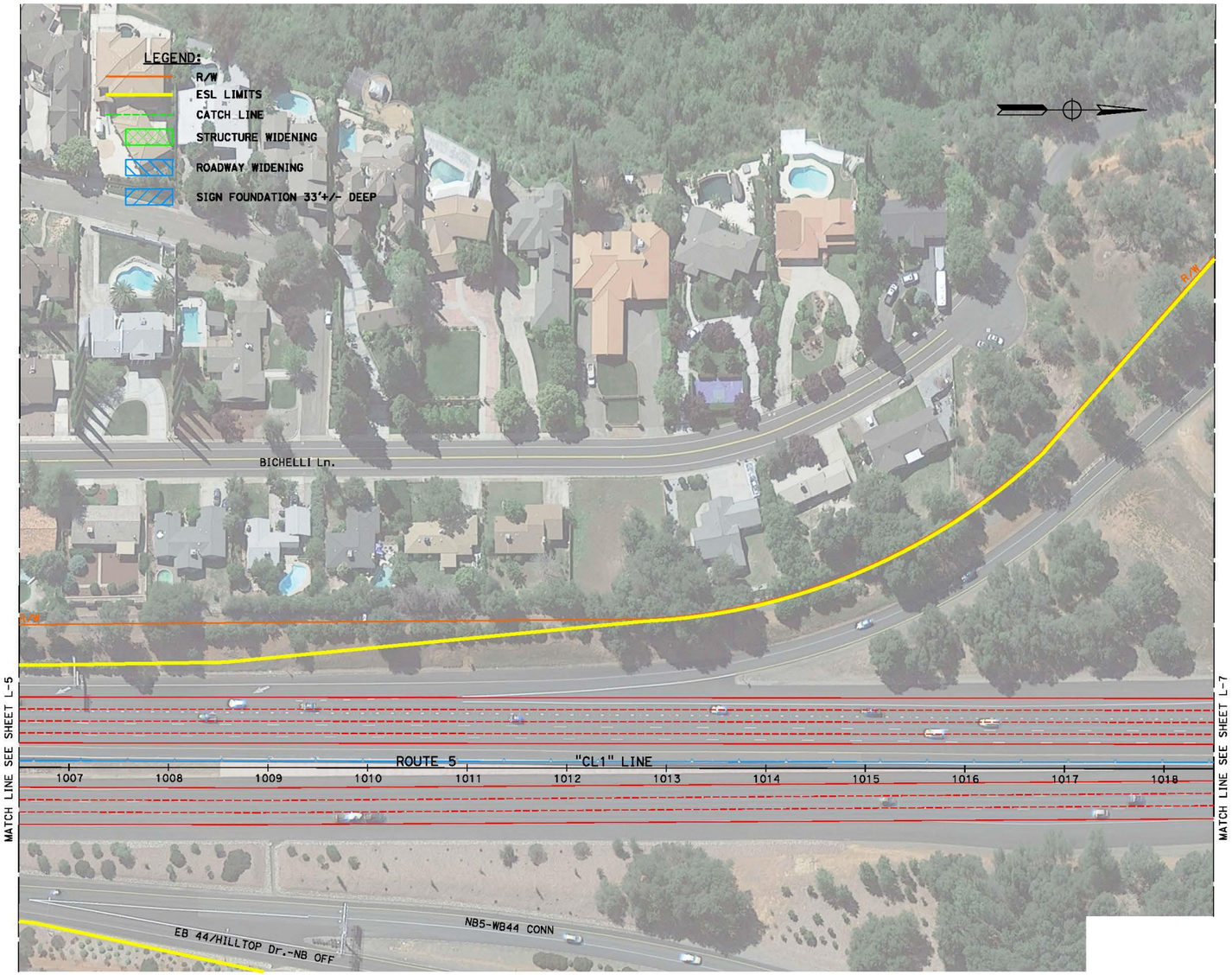
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY
CHECKED BY: TRAVIS A. GURNEY
REVISED BY
DATE REVISED

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LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:46

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_006.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

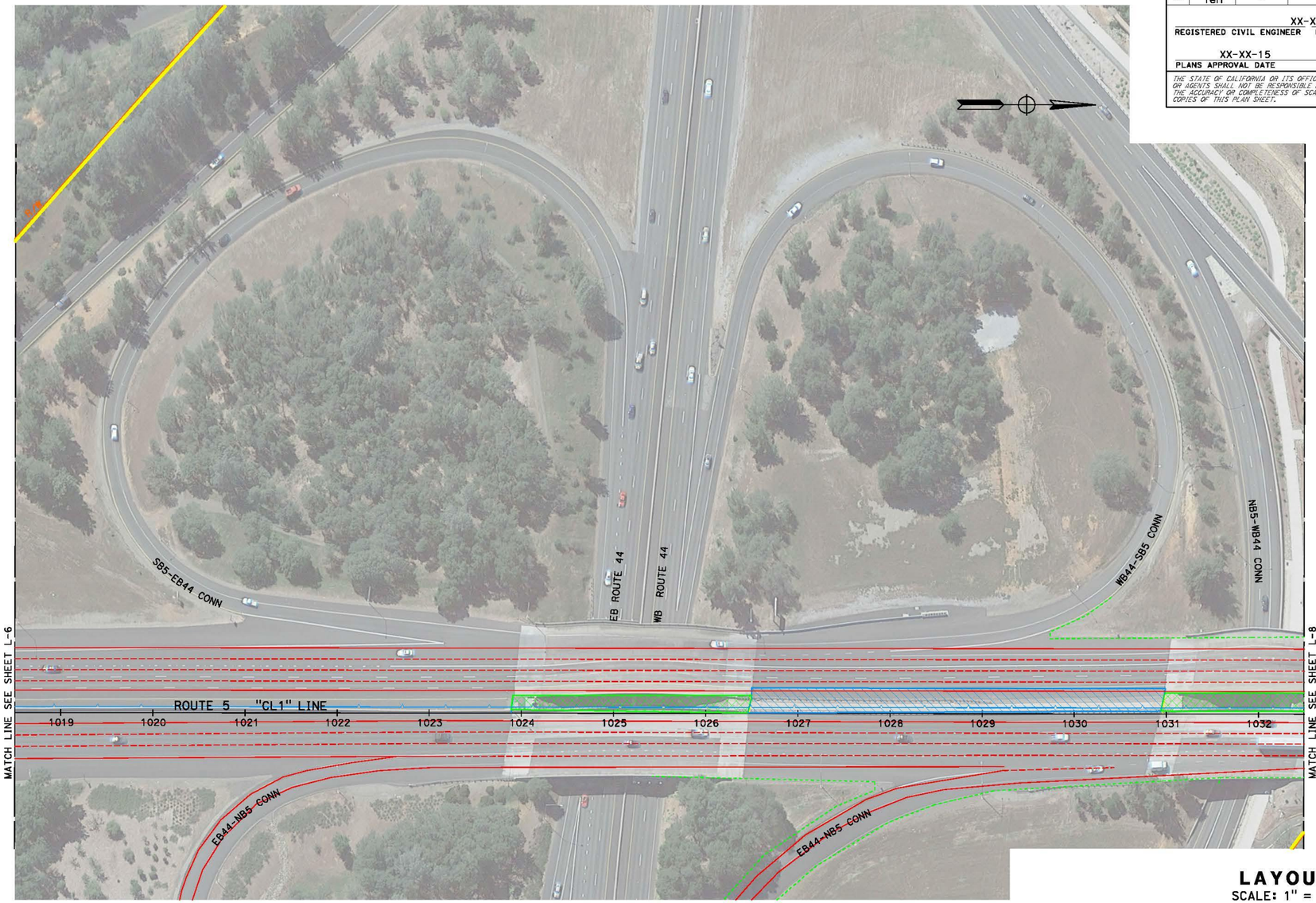
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-7

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:48

P:\proj\3\02\0H920\des\gpr\requests\PLANS\0H920_ESL_007.dgn

CALCULATED-DESIGNED BY
CHECKED BY
TRAVIS A. GURNEY
REVISED BY
DATE REVISED

FUNCTIONAL SUPERVISOR
TOBY CRAWFORD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

BORDER LAST REVISED 7/2/2010

USERNAME => s146292
DGN FILE => 0H920_ESL_007.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

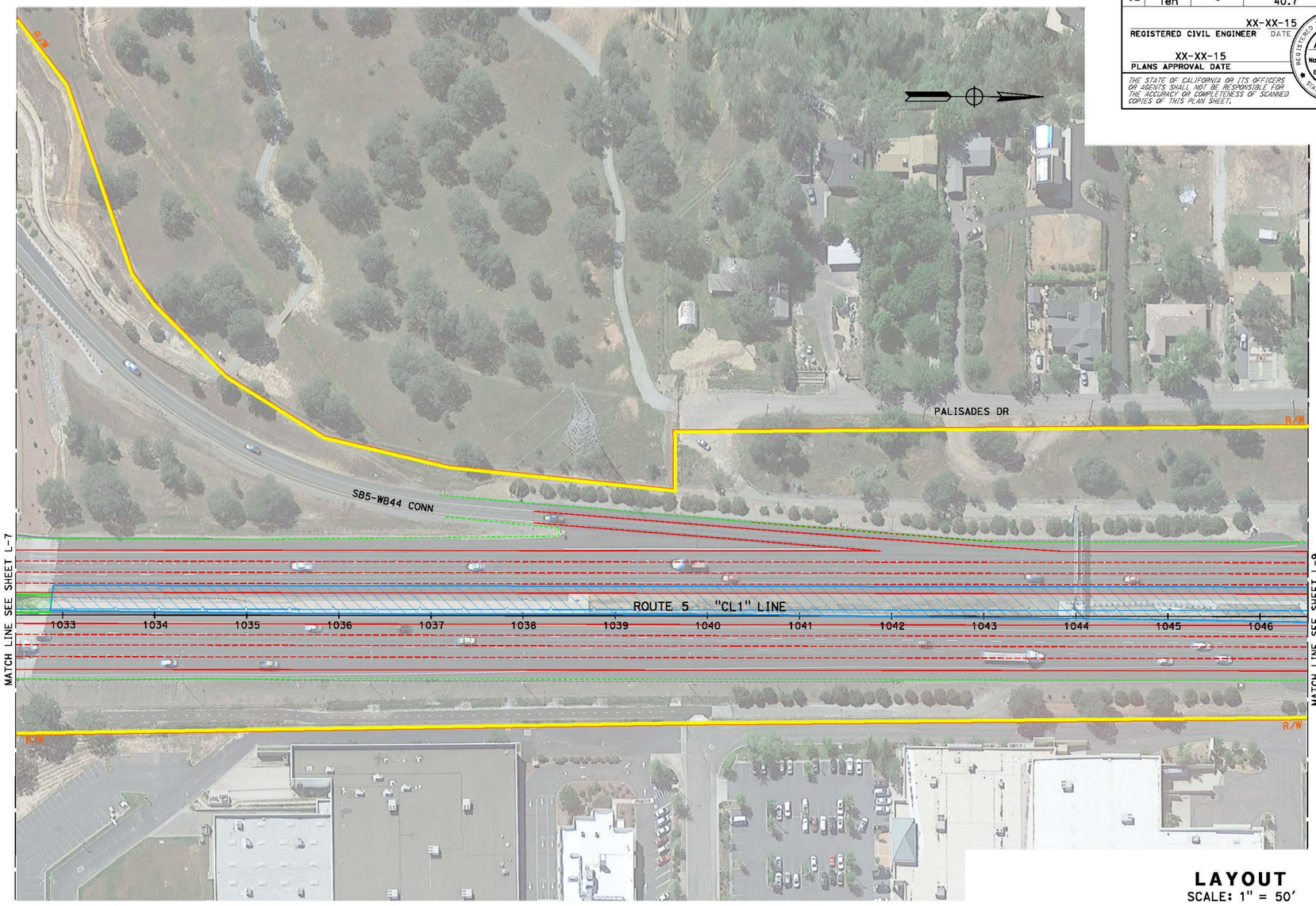
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/Teh	5	R14.8/R20.0 40.7		7

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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Exp. 6-30-25
CIVIL
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LAYOUT
SCALE: 1" = 50'

L-8

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY:
CHECKED BY: TRAVIS A. GURNEY
REVISED BY
DATE REVISED

P:\pro\13\02\0H920\design\pro\requests\PLANS\0H920_ESL_008.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:51

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_008.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

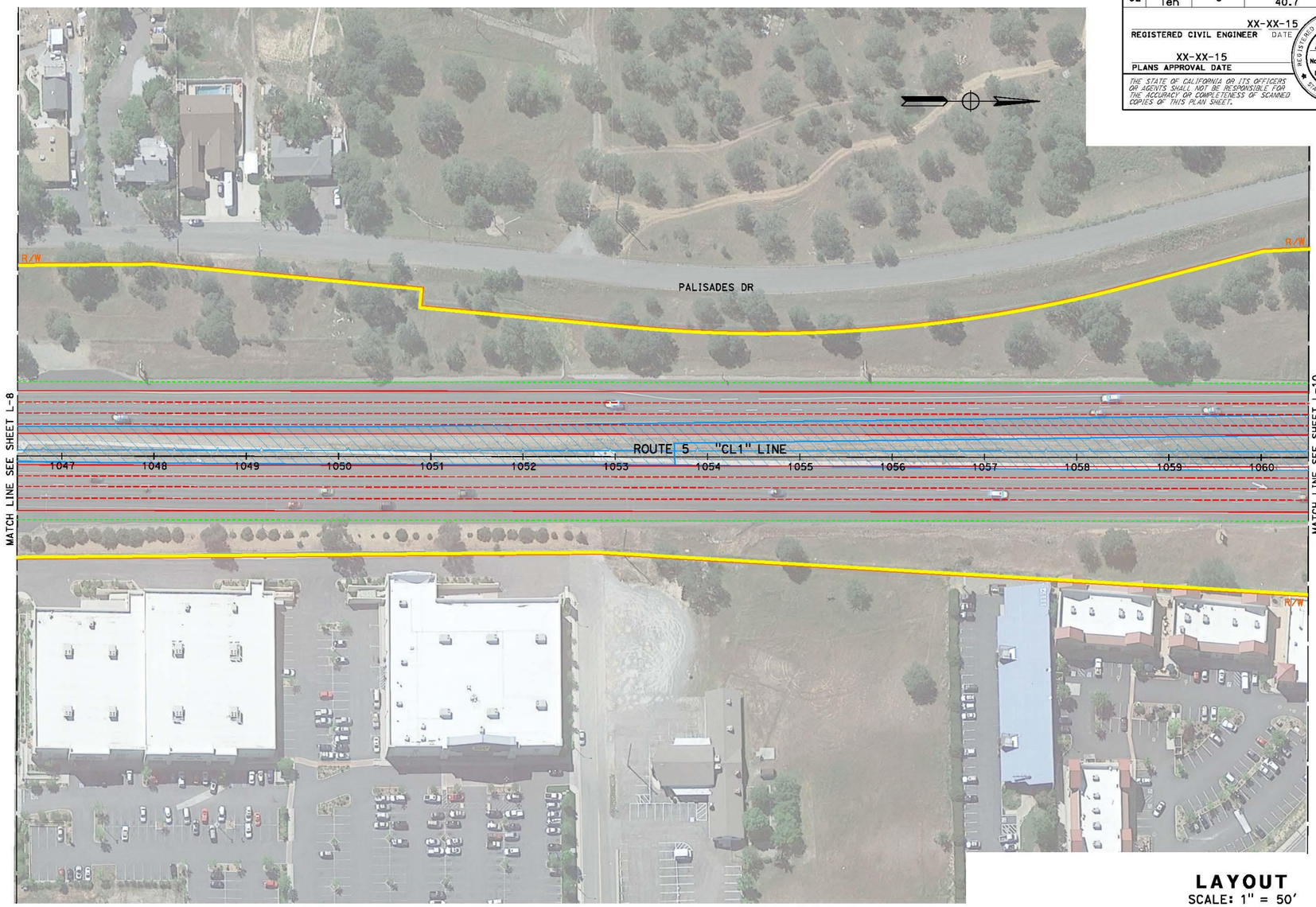
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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No. C77417
Exp. 6-30-25
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LAYOUT
SCALE: 1" = 50'

L-9

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FUNCTIONAL SUPERVISOR	TOBY CRAWFORD				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN				

P:\proj\3102\0h920\design\request\PLANS\0h920_ESL_009.dgn

BORDER LAST REVISED 7/2/2010

USERNAME => s146292
DGN FILE => 0h920_ESL_009.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:53

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

TRUCKS ONLY

Lake Blvd (299) 1
Twin View Blvd 2
Oasis Rd 3 1/4

C

Jct (44) WEST 1/2
EAST 3/4
Cypress Ave 1 1/2

C

R/W

HILLTOP DR

HILLTOP DR OC

R/W

MATCH LINE SEE SHEET L-9

ROUTE 5 "CL1" LINE

1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074

MATCH LINE SEE SHEET L-11

165'

200'

R/W

THRU TRUCKS ONLY

Beg. NB TRUCK LANE

AVMS SIGN

R/W

MISSION DEL OR DR

LAYOUT
SCALE: 1" = 50'

L-10

P:\proj\3.0@\OH920\design\requests\PLANS\OH920_ESL_010.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

FUNCTIONAL SUPERVISOR: TOBY CRAWFORD

CALCULATED-DESIGNED BY

CHECKED BY: TRAVIS A. GURNEY

REVISED BY	DATE REVISED

LAST REVISION
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:56

BORDER LAST REVISED 7/2/2010

USERNAME => s146292
DGN FILE => OH920_ESL_010.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

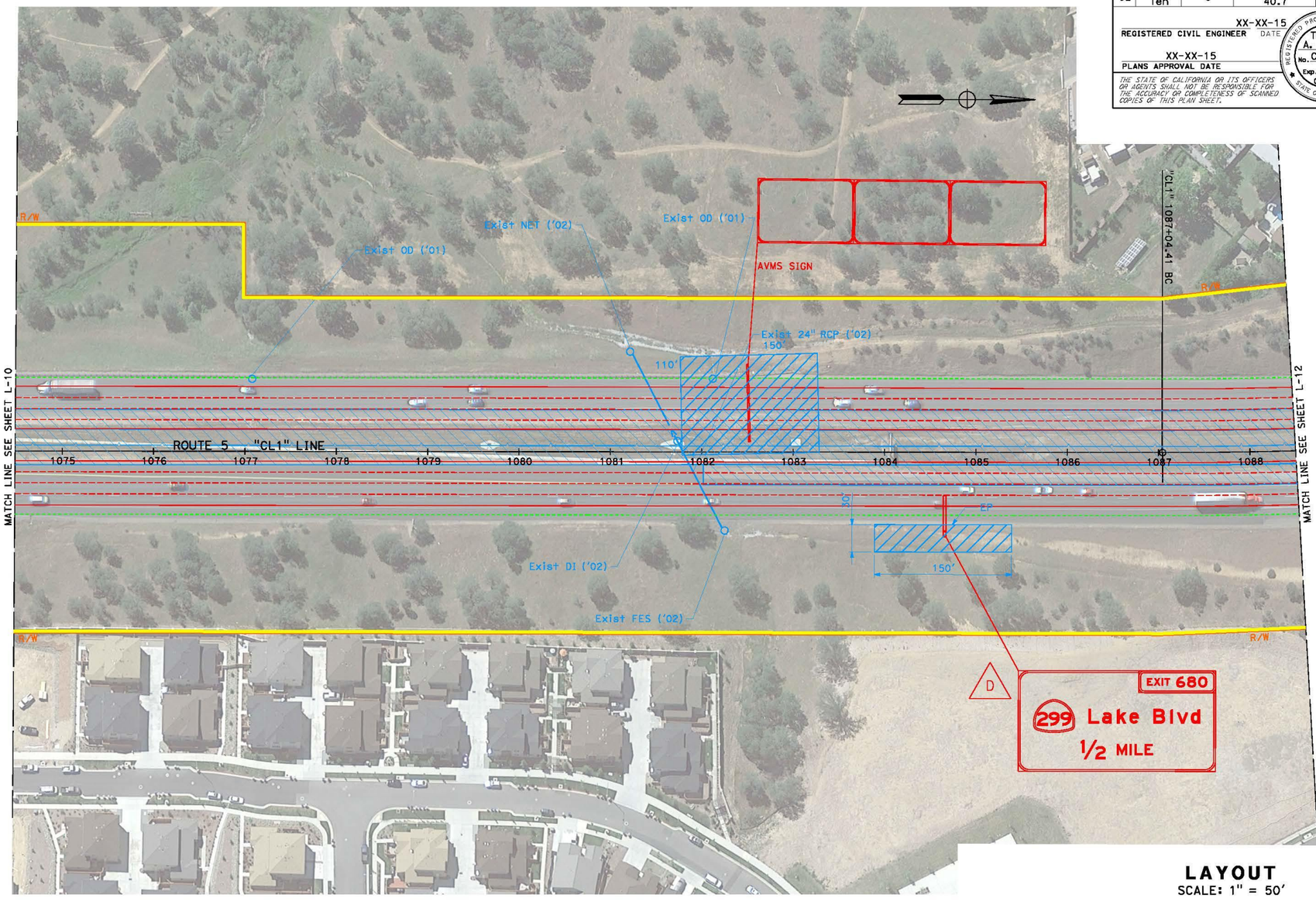
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		7

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-11

REVISED BY				
DATE REVISED				
TRAVIS A. GURNEY				
CALCULATED-DESIGNED BY				
CHECKED BY				
FUNCTIONAL SUPERVISOR	TOBY CRAWFORD			
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN			
Caltrans				

P:\proj\13_X2\0H920\desi\gnr\requests\PLANS\0H920_ESL_011.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 11:58

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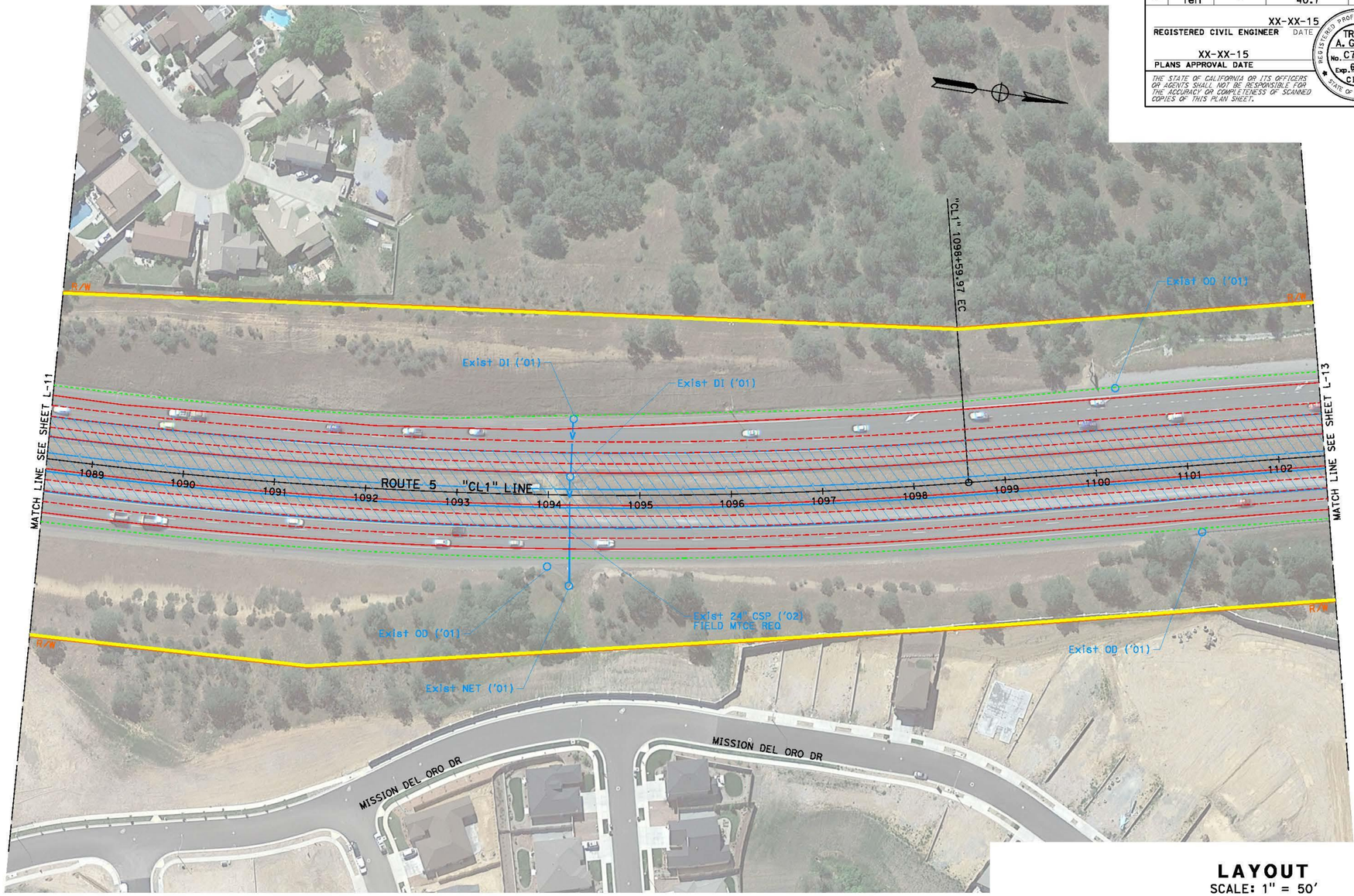
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-12

P:\proj\3\02\0H920\des\grn\requests\PLANS\0H920_ESL_012.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY:
CHECKED BY: TRAVIS A. GURNEY
REVISED BY:
DATE REVISED:

LAST REVISION DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 13:19
11-1-23

BORDER LAST REVISED 7/2/2010 | USERNAME => s146292 | DGN FILE => 0H920_ESL_012.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0316 | PROJECT NUMBER & PHASE 0215000083 1

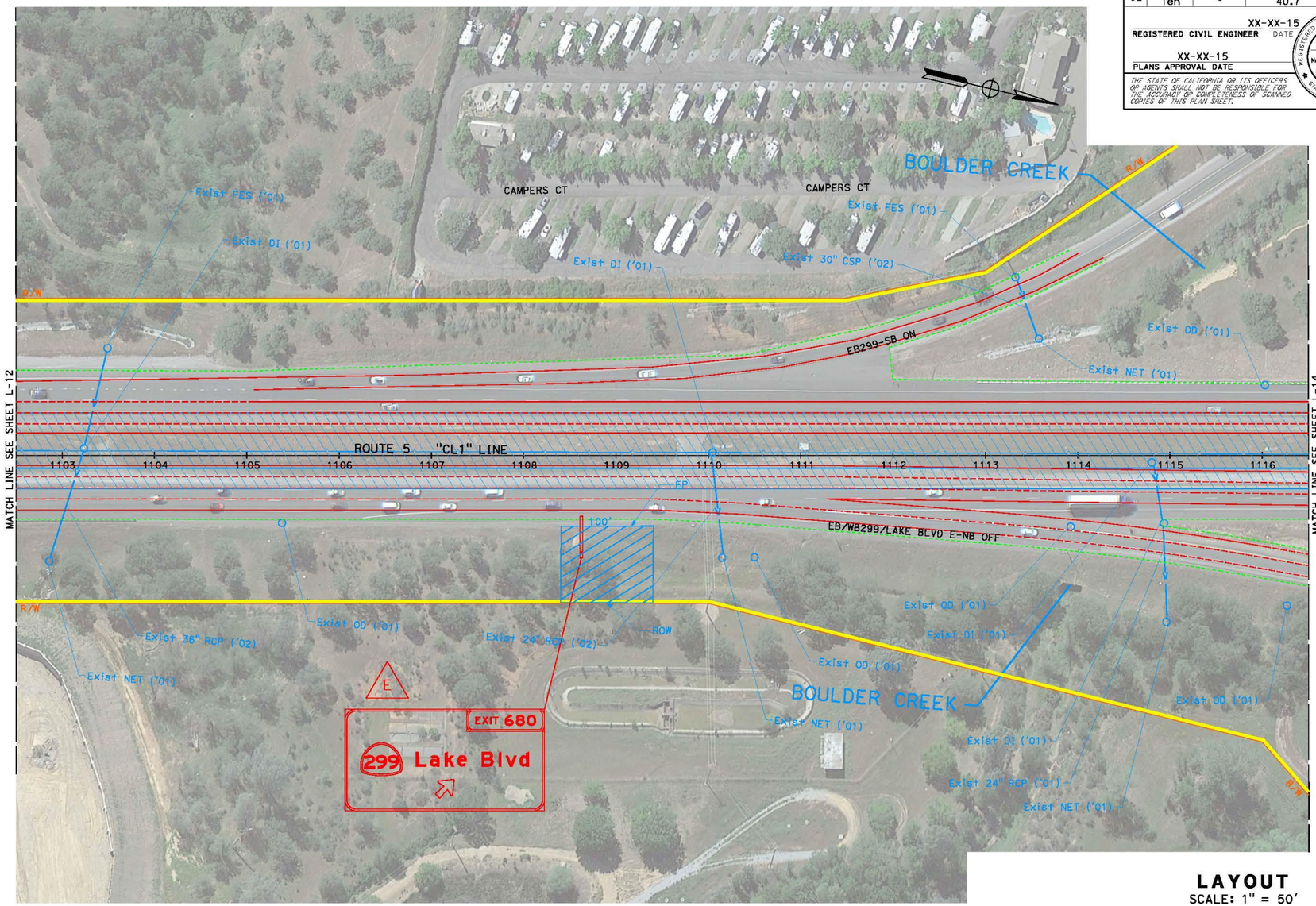
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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TRAVIS A. GURNEY
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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-13

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY
CHECKED BY: TRAVIS A. GURNEY
REVISED BY
DATE REVISED

P:\proj\3\02\0h920\design\requests\PLANS\0H920_ESL_013.dgn

LAST REVISION: DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:03
11-1-23

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_013.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

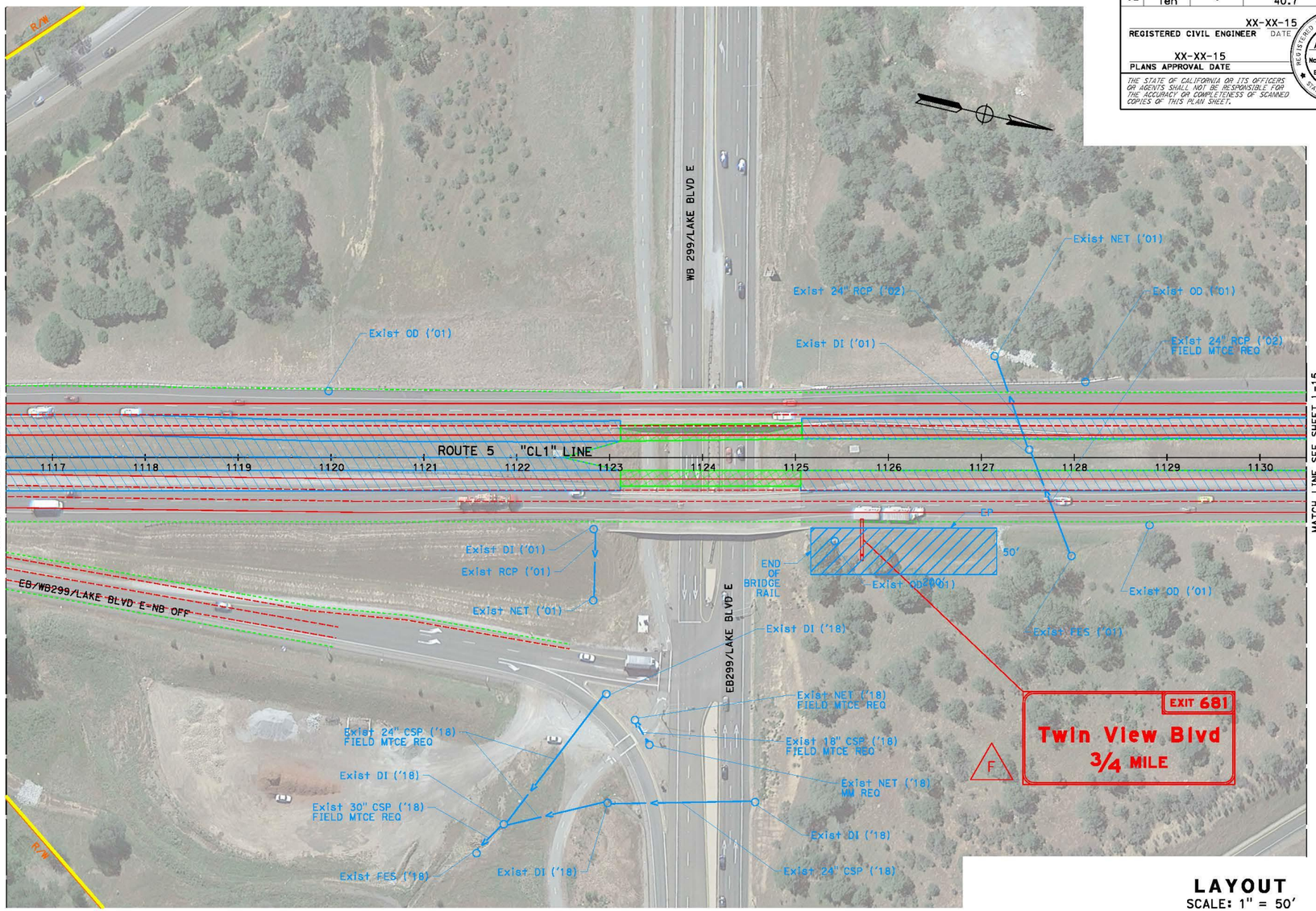
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-14

REVISED BY					
DATE REVISED					
CALCULATED-DESIGNED BY	TRAVIS A. GURNEY				
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FUNCTIONAL SUPERVISOR	TOBY CRAWFORD				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN				
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P:\projects\02\OH920\design\request\PLANS\OH920_ESL_014.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:05

BORDER LAST REVISED 7/2/2010 | USERNAME => s146292 DGN FILE => OH920_ESL_014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0316 | PROJECT NUMBER & PHASE 0215000083 1

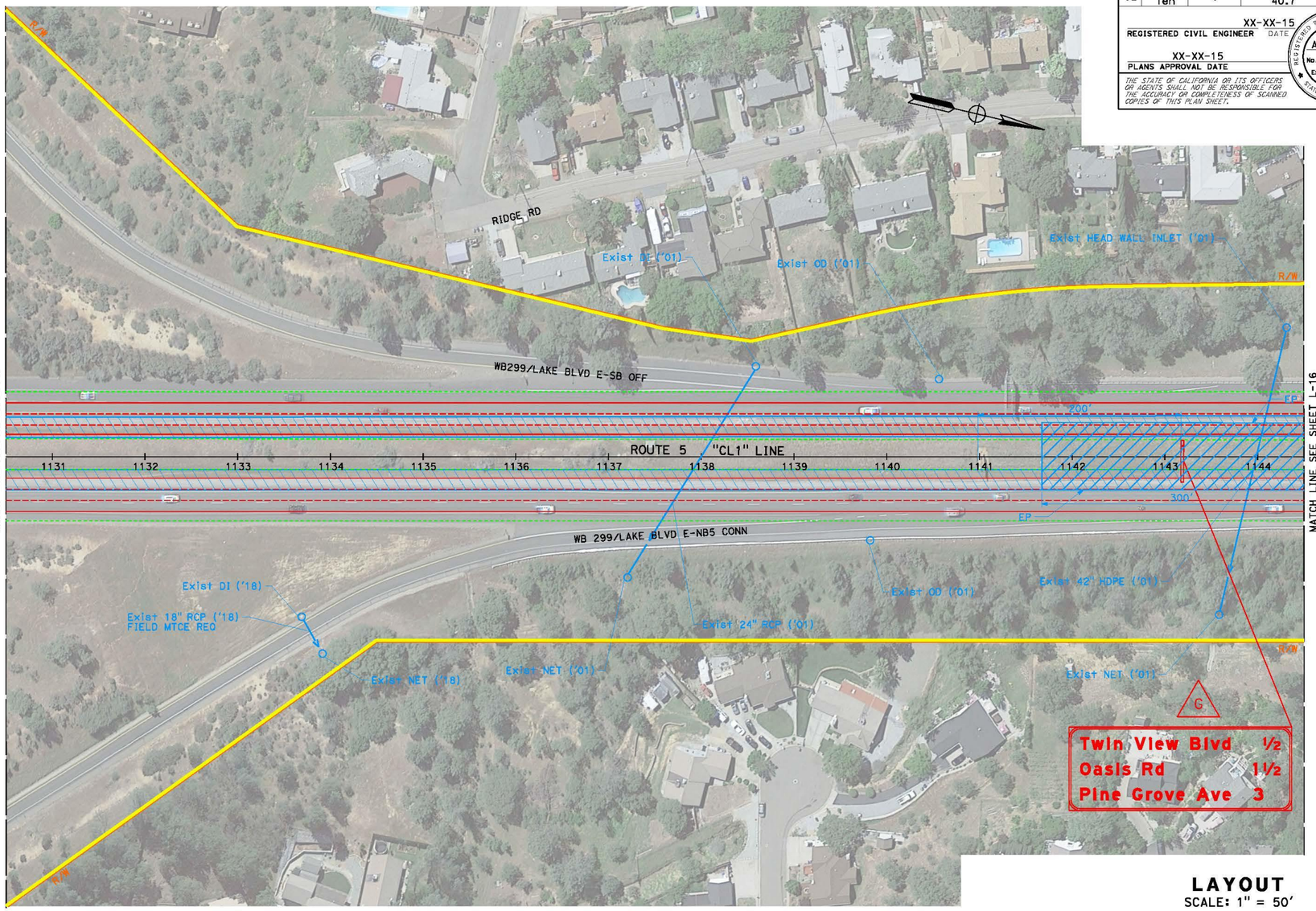
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

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TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-15

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DATE REVISED			
CALCULATED/ DESIGNED BY	TRAVIS A. GURNEY		
CHECKED BY			
FUNCTIONAL SUPERVISOR	TOBY CRAWFORD		
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN		

P:\proj\02\0H920\design\requests\PLANS\0H920_ESL_015.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:07

BORDER LAST REVISED 7/2/2010 | USERNAME => s146292 DGN FILE => 0H920_ESL_015.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0316 | PROJECT NUMBER & PHASE 0215000083 1

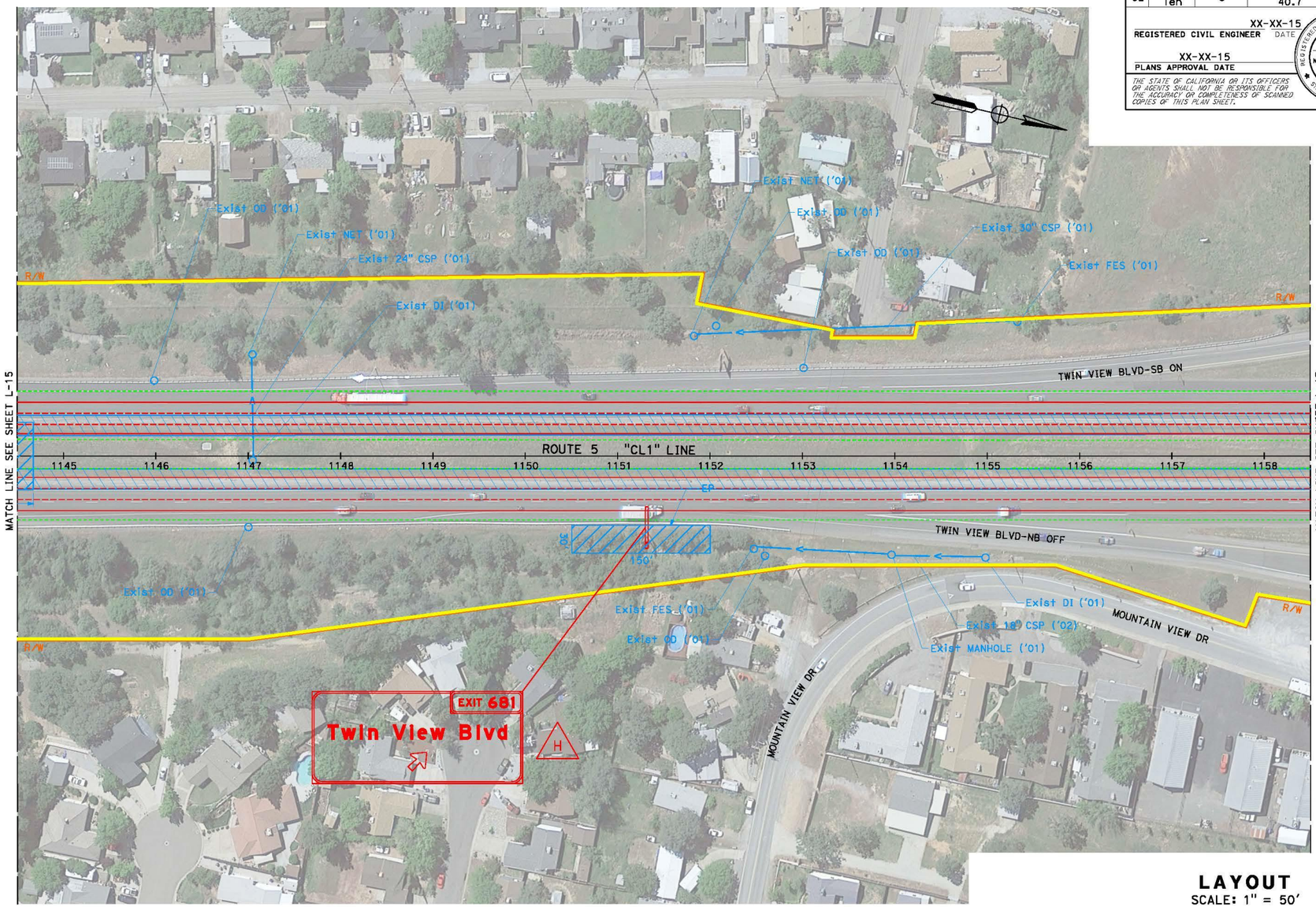
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-16

LAST REVISION DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:09

REVISED BY					
DATE REVISED					
CALCULATED-DESIGNED BY					
CHECKED BY	TRAVIS A. GURNEY				
FUNCTIONAL SUPERVISOR	TOBY CRAWFORD				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN				

P:\proj\3\00\OH920\design\requests\PLANS\OH920_ESL_016.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => s146292 DGN FILE => OH920_ESL_016.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0316 | PROJECT NUMBER & PHASE 0215000083 1

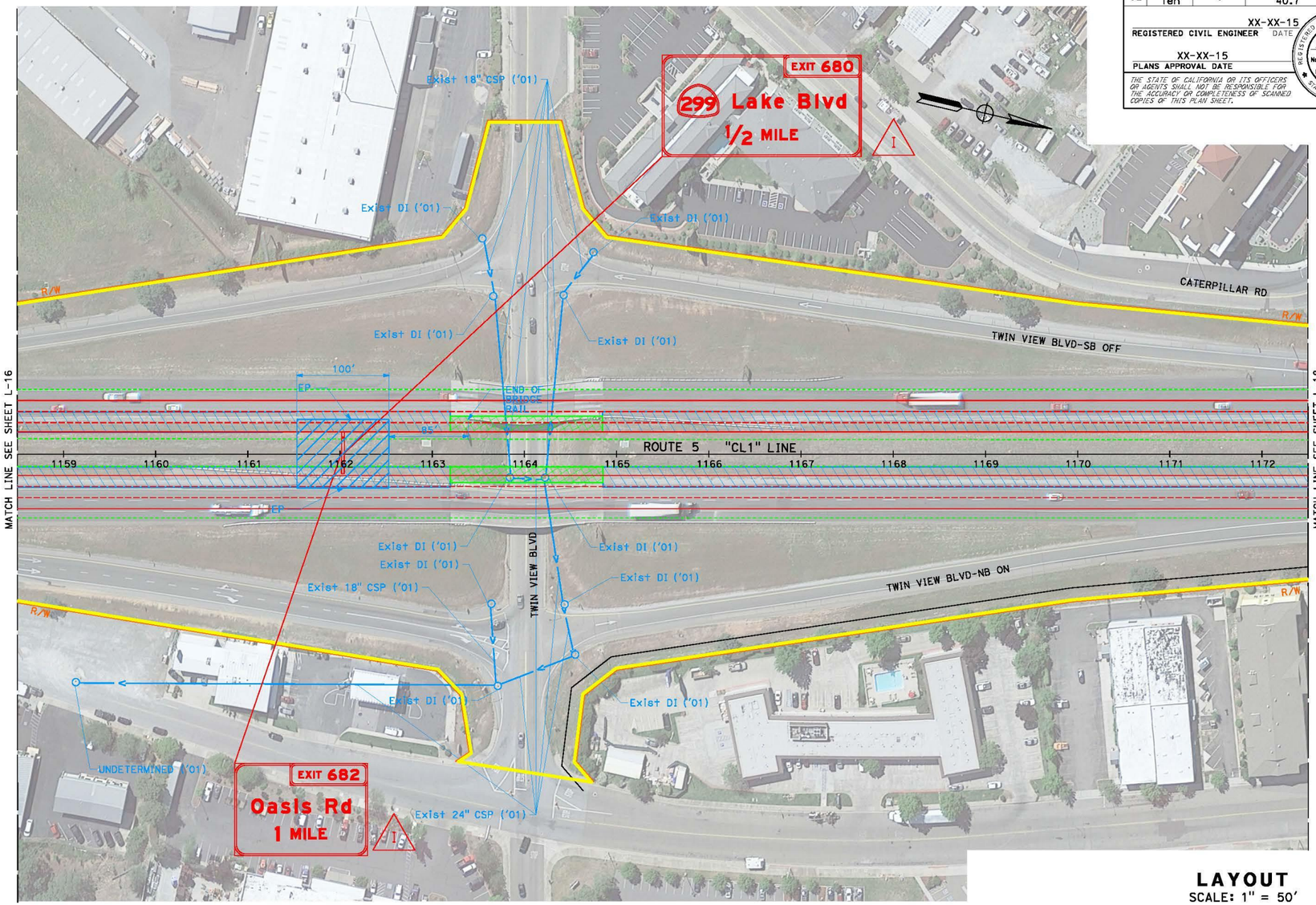
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-17

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN	FUNCTIONAL SUPERVISOR	TOBY CRAWFORD	CALCULATED-DESIGNED BY	TRAVIS A. GURNEY
Caltrans				CHECKED BY	

REVISED BY	DATE REVISED

P:\proj\31\07\0H920\design\request\PLANS\0H920_ESL_017.dgn

LAST REVISION	DATE PLOTTED => 1-NOV-2023
11-1-23	TIME PLOTTED => 12:12

BORDER LAST REVISED 7/2/2010 | USERNAME => s146292 DGN FILE => 0H920_ESL_017.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0316 | PROJECT NUMBER & PHASE 0215000083 1

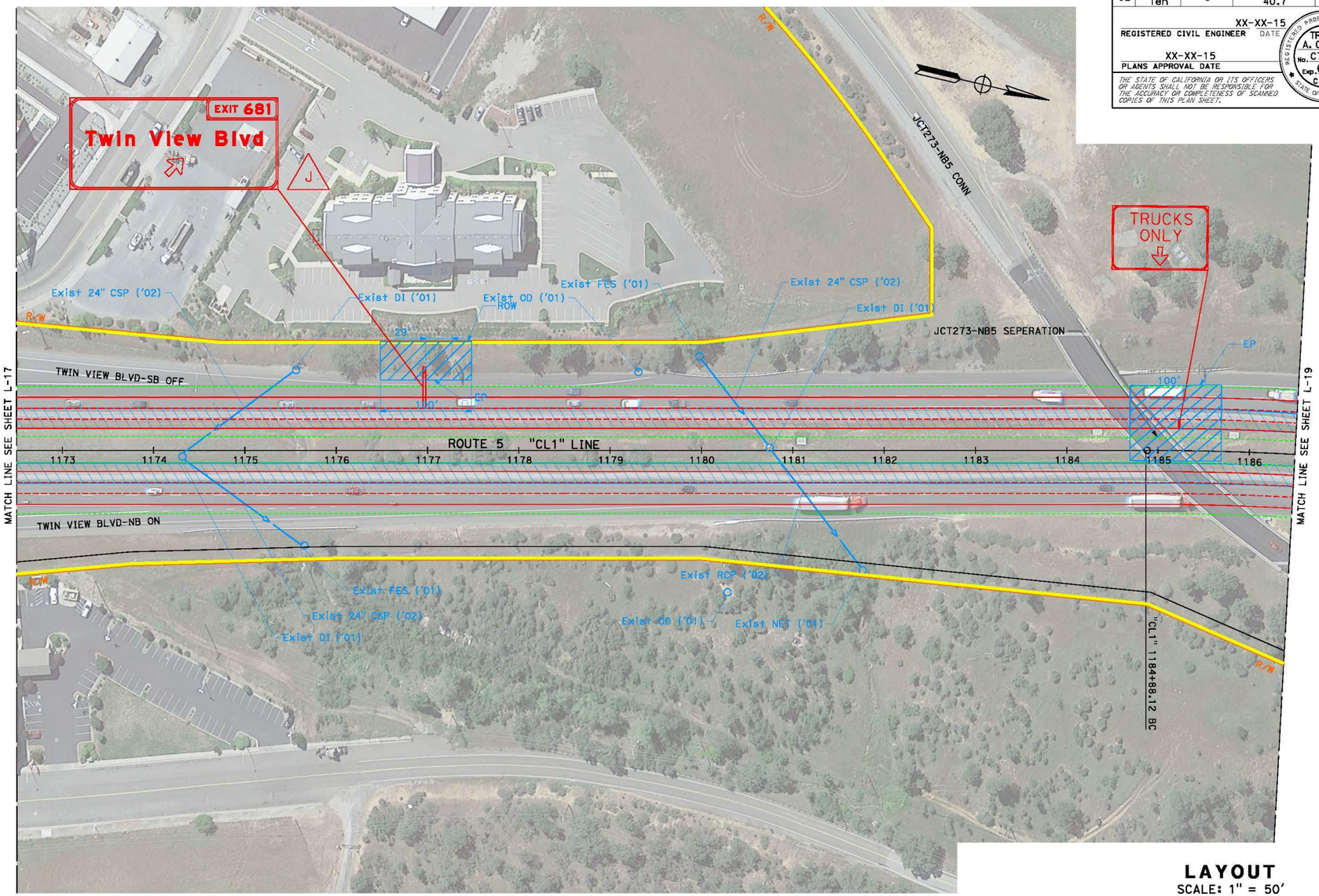
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
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No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-18

REVISED BY | DATE REVISED
TRAVIS A. GURNEY
CALCULATED-DESIGNED BY
CHECKED BY
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

P:\proj\3\02\0h920\design\request\PLANS\0H920_ESL_018.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:14

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_018.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

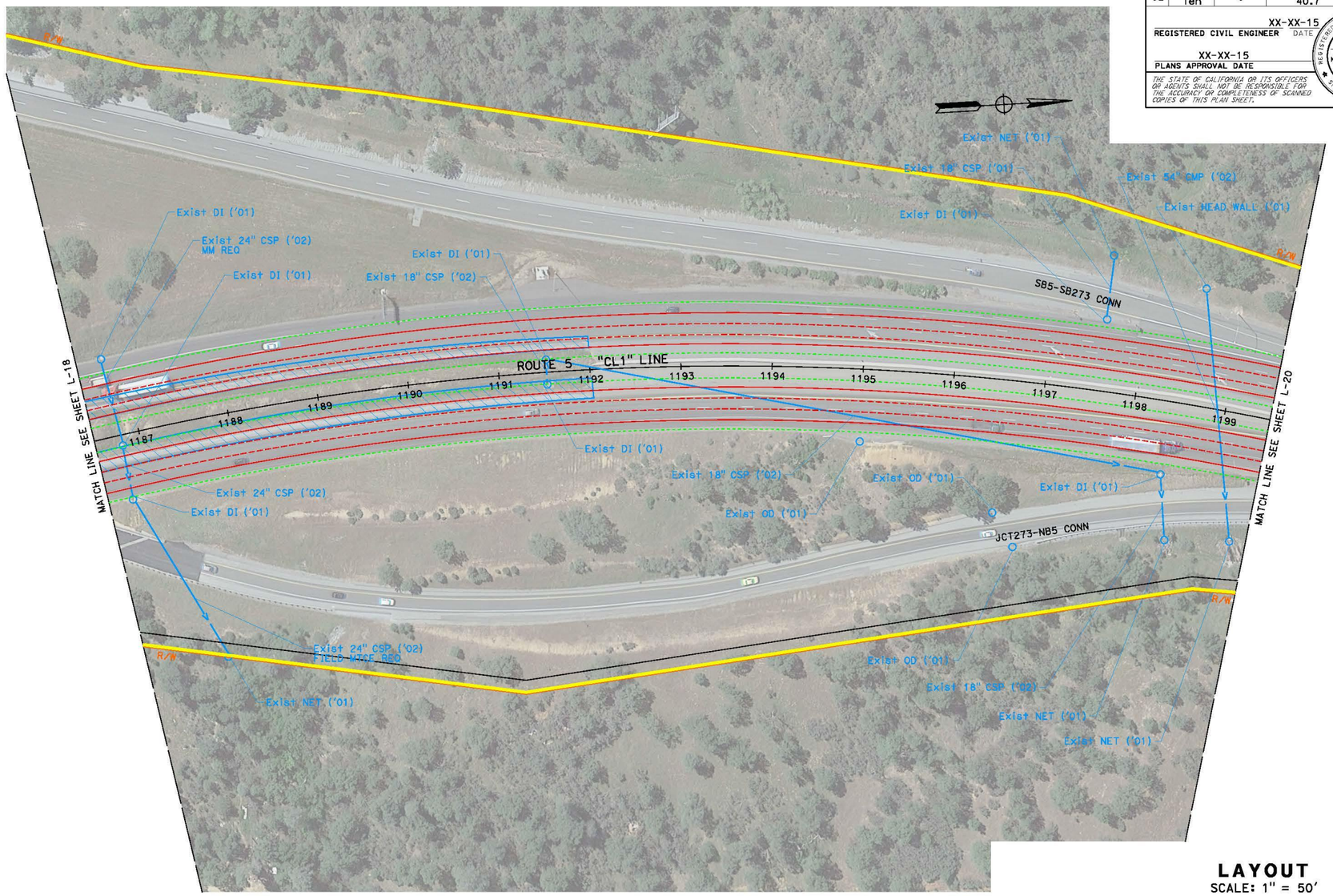
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		7

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-19

STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/ DESIGNED BY	REVISED BY	LAST REVISION	DATE PLOTTED => 1-NOV-2023
DESIGN	TOBY CRAWFORD	CHECKED BY	DATE REVISED	11-1-23	TIME PLOTTED => 12:16
		TRAVIS A. GURNEY			

P:\proj\02\0H920\design\request\PLANS\0H920_ESL_019.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => s146292 DGN FILE => 0H920_ESL_019.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0316 | PROJECT NUMBER & PHASE 0215000083 1

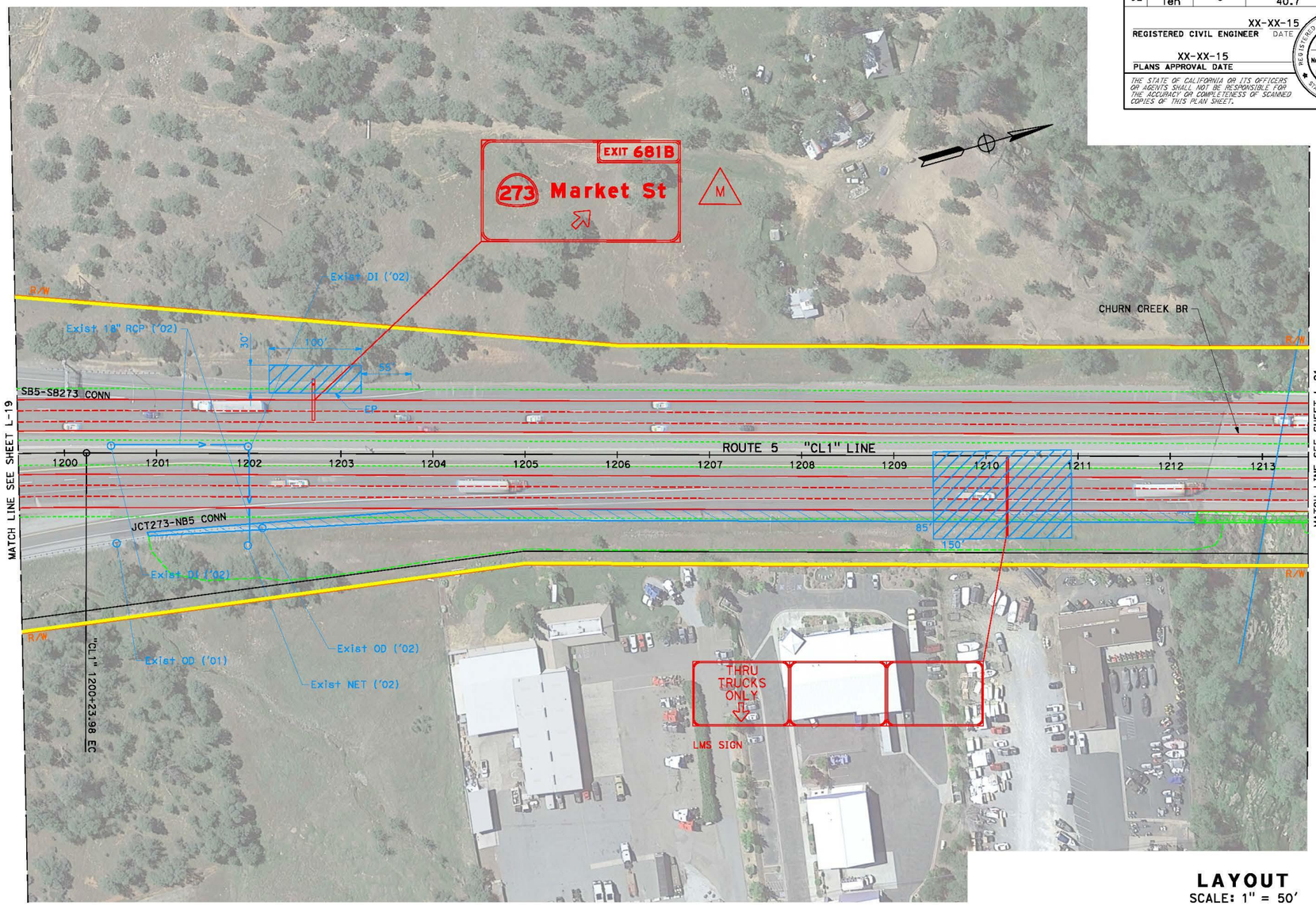
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-20

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY
CHECKED BY: TRAVIS A. GURNEY
REVISED BY
DATE REVISED

P:\prc\13\02\0H920\design\requests\PLANS\0H920_ESL_020.dgn

LAST REVISION: 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:18

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_020.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

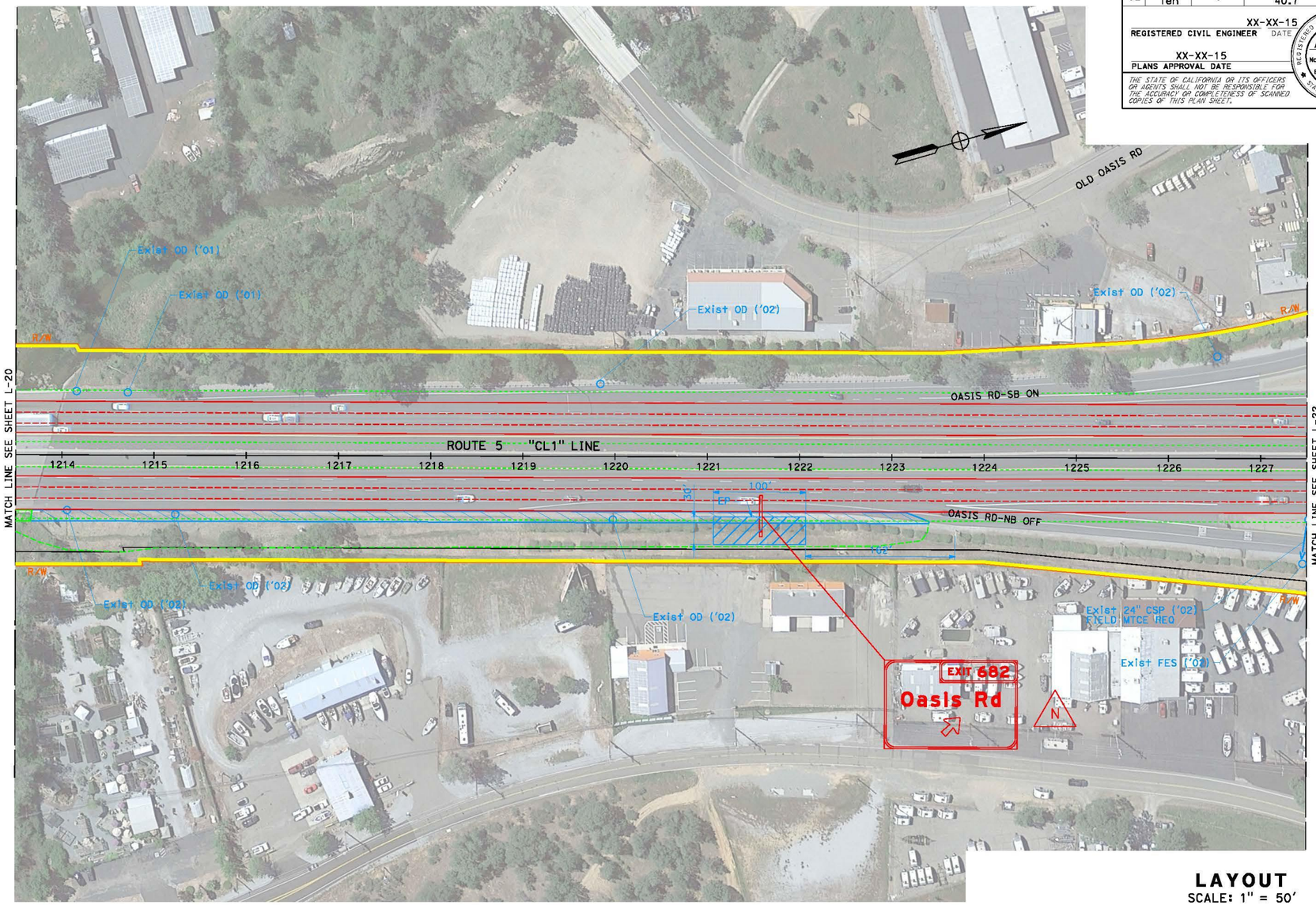
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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TRAVIS A. GURNEY
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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-21

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REVISED BY
DATE REVISED
FUNCTIONAL SUPERVISOR
TOBY CRAWFORD
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
P:\proj\3\021\0h920\design\request\PLANS\0H920_ESL_021.dgn

LAST REVISION
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:21
11-1-23

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_021.dgn
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UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

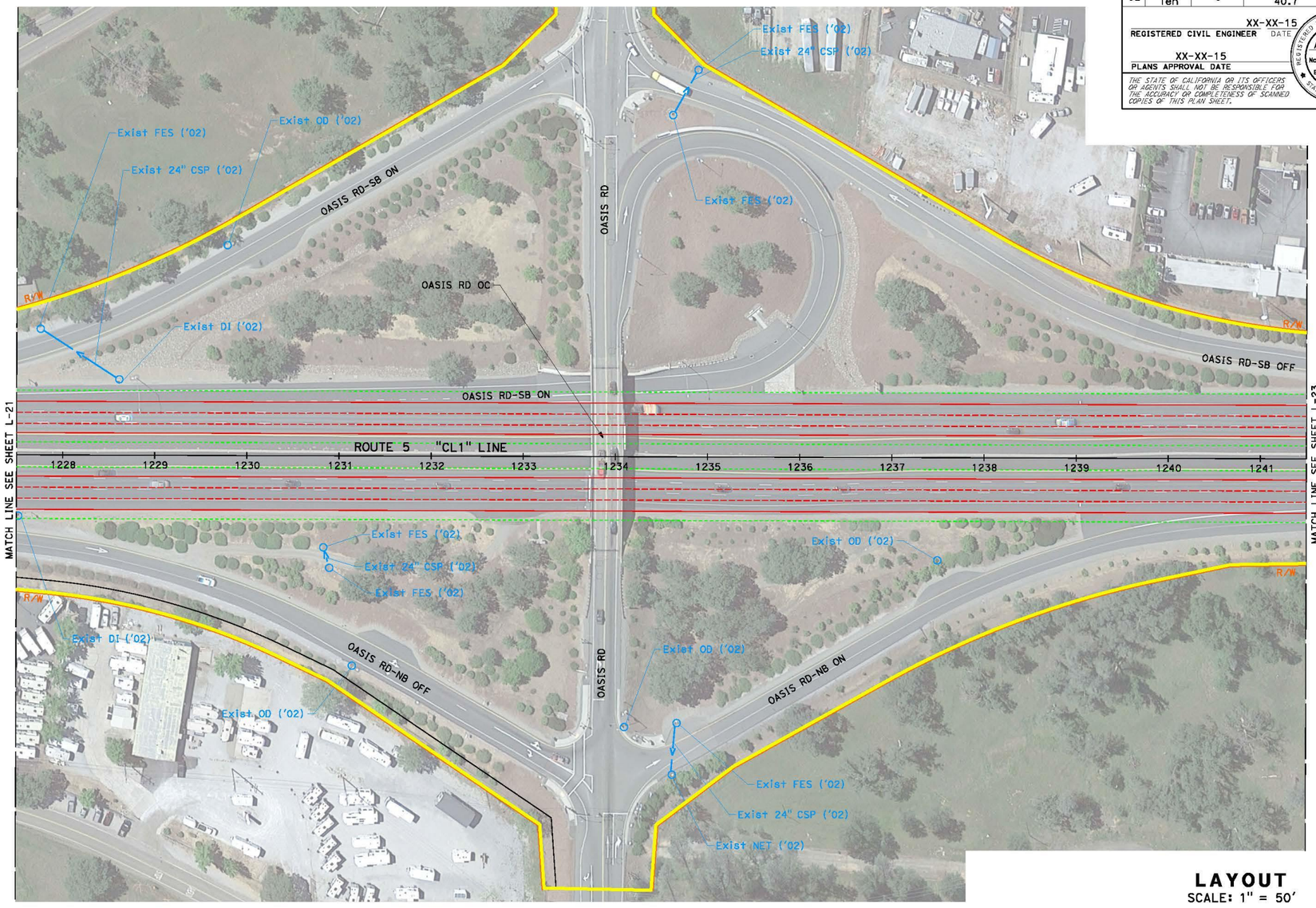
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02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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TRAVIS A. GURNEY
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Exp. 6-30-25
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LAYOUT
SCALE: 1" = 50'

L-22

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FUNCTIONAL SUPERVISOR	TOBY CRAWFORD				
DEPARTMENT OF TRANSPORTATION	DESIGN				
STATE OF CALIFORNIA	Caltrans				

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LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:23

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

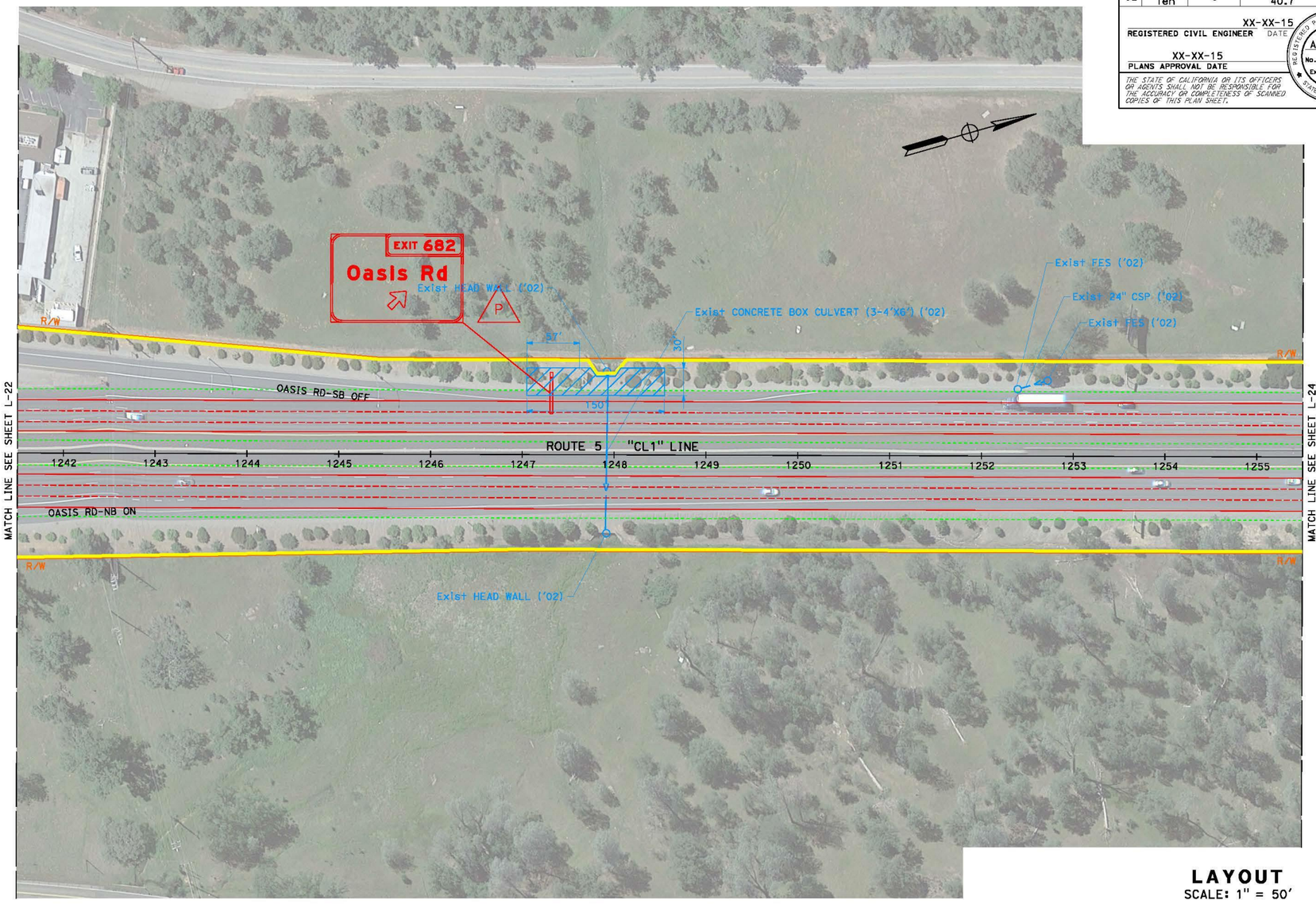
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02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

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PLANS APPROVAL DATE

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TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



SEE SHEET L-22
MATCH LINE
SEE SHEET L-24
MATCH LINE

LAYOUT
SCALE: 1" = 50'

L-23

LAST REVISION
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:25
11-1-23

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Caltrans® DESIGN

P:\proj\3.02\0H920\design\requests\PLANS\0H920_ESL_023.dgn

BORDER LAST REVISED 7/2/2010
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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

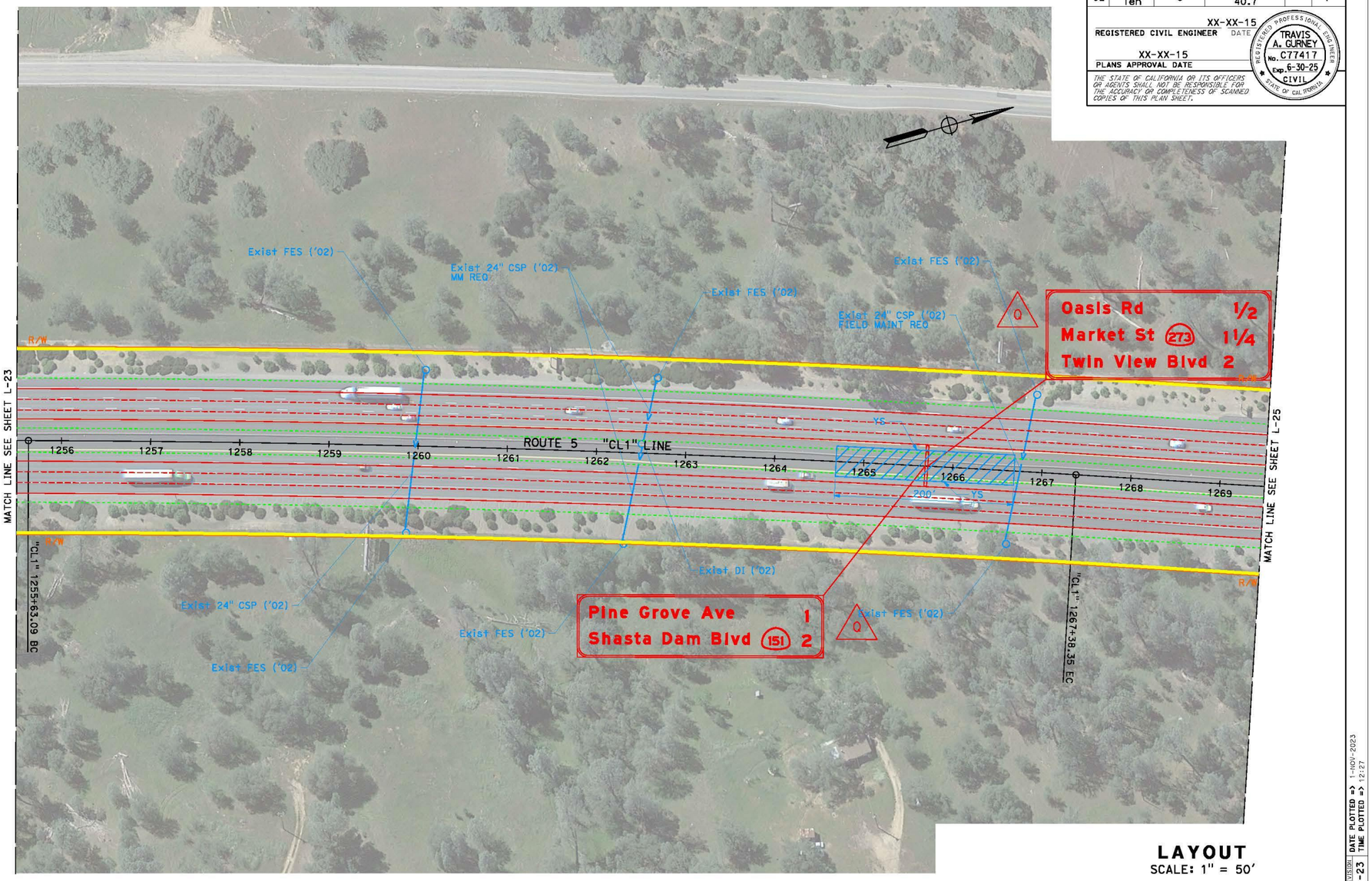
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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LAYOUT
SCALE: 1" = 50'

L-24

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FUNCTIONAL SUPERVISOR	TOBY CRAWFORD	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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P:\proj\3\02\oh920\design\request\PLANS\OH920_ESL_024.dgn

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:27

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

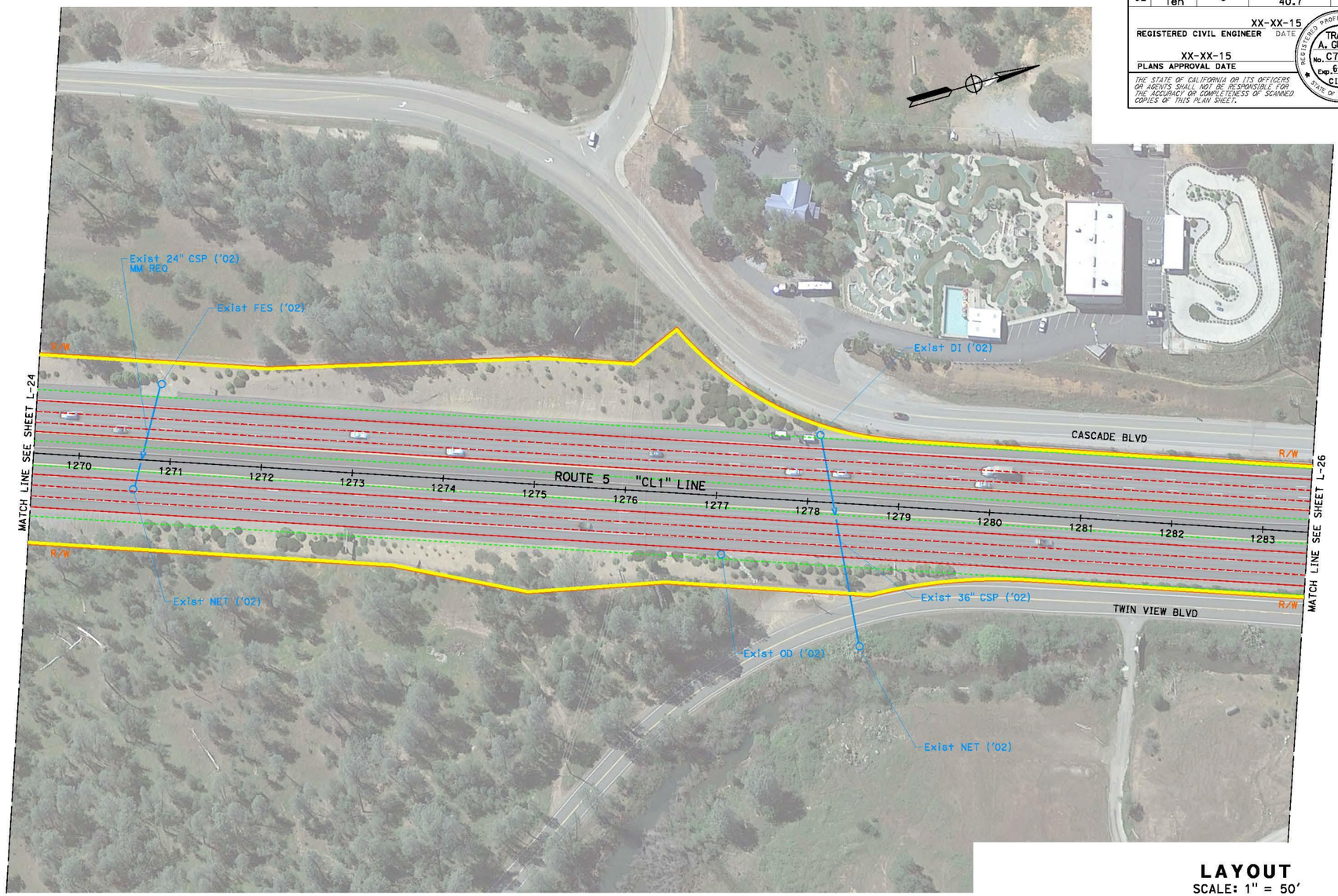
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	-	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-25

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CHECKED BY
REVISED BY
DATE REVISED
TRAVIS A. GURNEY
FUNCTIONAL SUPERVISOR
TOBY CRAWFORD
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

LAST REVISION
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:29
11-1-23

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BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_025.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

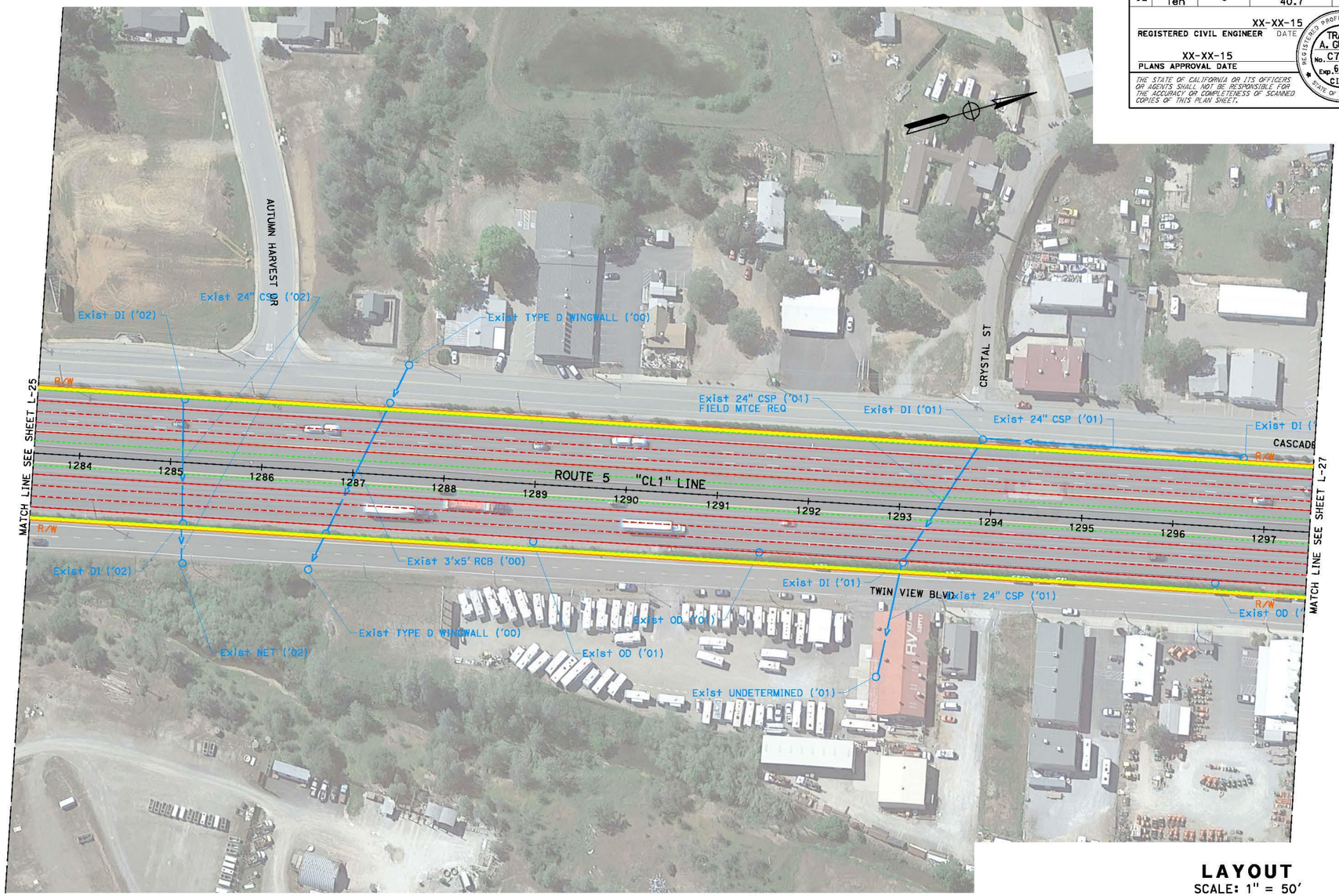
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-26

P:\proj\302\0H920\design\requests\PLANS\0H920_ESL_026.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

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CALCULATED-DESIGNED BY:
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REVISED BY
DATE REVISED

LAST REVISION DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:31
11-1-23

BORDER LAST REVISED 7/2/2010	USERNAME => s146292 DGN FILE => 0H920_ESL_026.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0316	PROJECT NUMBER & PHASE 0215000083 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP

MULBERRY ST
TRINITY ST
BLVD
R/W
MATCH LINE SEE SHEET L-26
MATCH LINE SEE SHEET L-28
ROUTE 5
"CL1" LINE
1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311
MENDOCINO ST

LAYOUT
SCALE: 1" = 50'

L-27

LAST REVISION DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:34

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CHECKED BY	DATE REVISED	

FUNCTIONAL SUPERVISOR: TOBY CRAWFORD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

P:\proj\3\02\0h920\design\requests\PLANS\0h920_ESL_027.dgn

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

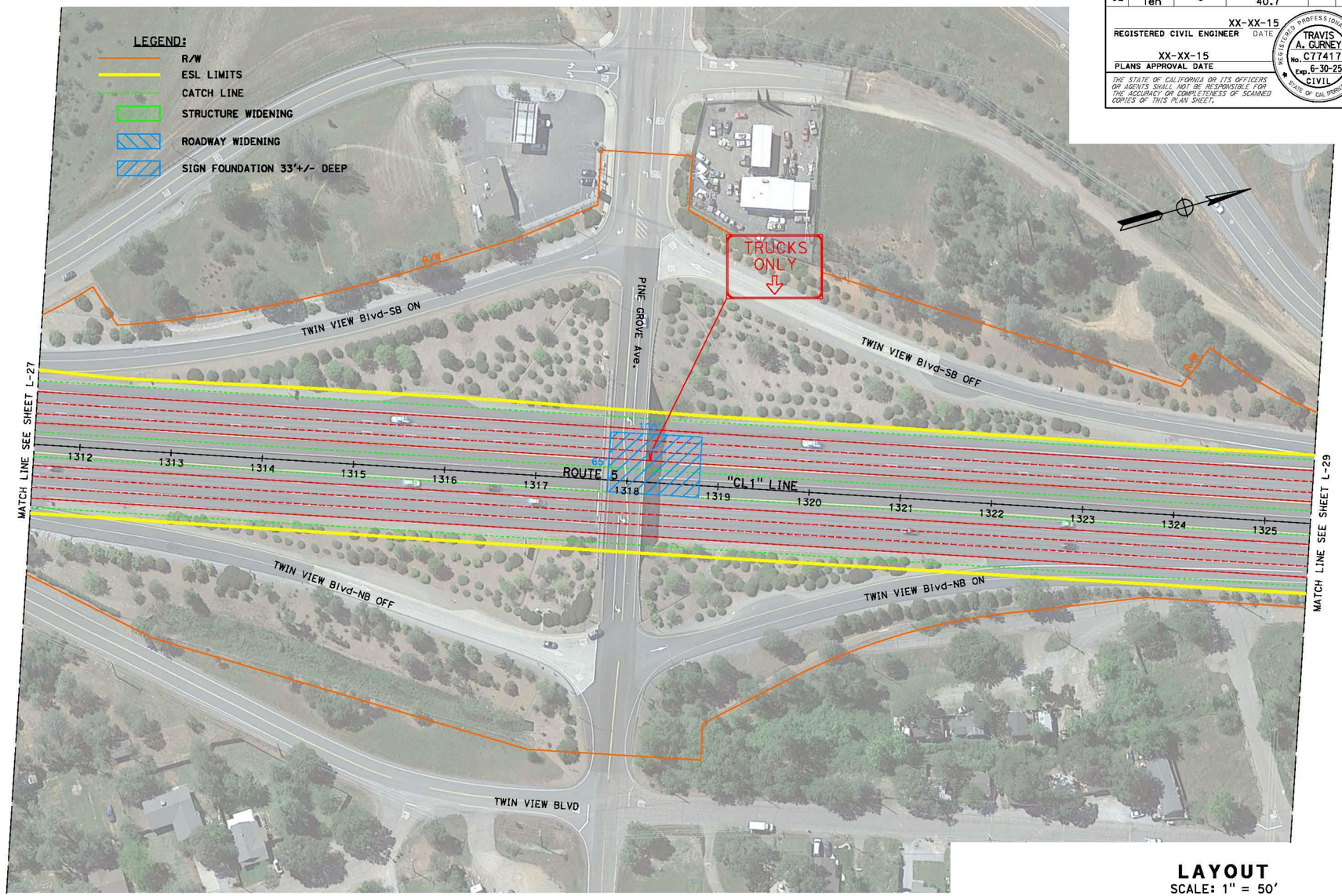
XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP



LAYOUT
SCALE: 1" = 50'

L-28

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TRAVIS A. GURNEY			

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LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 13:35

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USERNAME => s146292
DGN FILE => 0H920_ESL_028.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP

MATCH LINE SEE SHEET L-28

ROUTE 5 "CL1" LINE

1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339

R/W

150'

85'

END THRU TRUCKS

LMS SIGN

MATCH LINE SEE SHEET L-30

LAYOUT
SCALE: 1" = 50'

L-29

FUNCTIONAL SUPERVISOR: TOBY CRAWFORD	CALCULATED/DESIGNED BY	REVISED BY			
STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION	CHECKED BY: TRAVIS A. GURNEY	DATE REVISED			
Caltrans® DESIGN					

P:\proj\13-02\0H920\design\requests\PLANS\0H920_ESL_029.dgn

LAST REVISION: DATE PLOTTED => 1-NOV-2023 TIME PLOTTED => 12:38
11-1-23

BORDER LAST REVISED 7/2/2010	USERNAME => s146292 DGN FILE => 0H920_ESL_029.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0316	PROJECT NUMBER & PHASE	0215000083 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP

MATCH LINE SEE SHEET L-29

ROUTE 5 "CL1" LINE

1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353

R/W

R/W

MATCH LINE SEE SHEET L-31

LAYOUT
SCALE: 1" = 50'

L-30

REVISED BY	DATE REVISED

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LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:40

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_030.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP

MATCH LINE SEE SHEET L-30

1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367

ROUTE 5

"CL1" LINE

R/W

MATCH LINE SEE SHEET L-32

LAYOUT
SCALE: 1" = 50'

L-31

REVISED BY					
DATE REVISED					
CALCULATED-DESIGNED BY					
CHECKED BY	TRAVIS A. GURNEY				
FUNCTIONAL SUPERVISOR	TOBY CRAWFORD				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN				

P:\proj\[3\02\0H920\design\prj\requests\PLANS\0H920_ESL_031.dgn

BORDER LAST REVISED 7/2/2010

USERNAME => s146292
DGN FILE => 0H920_ESL_031.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:42

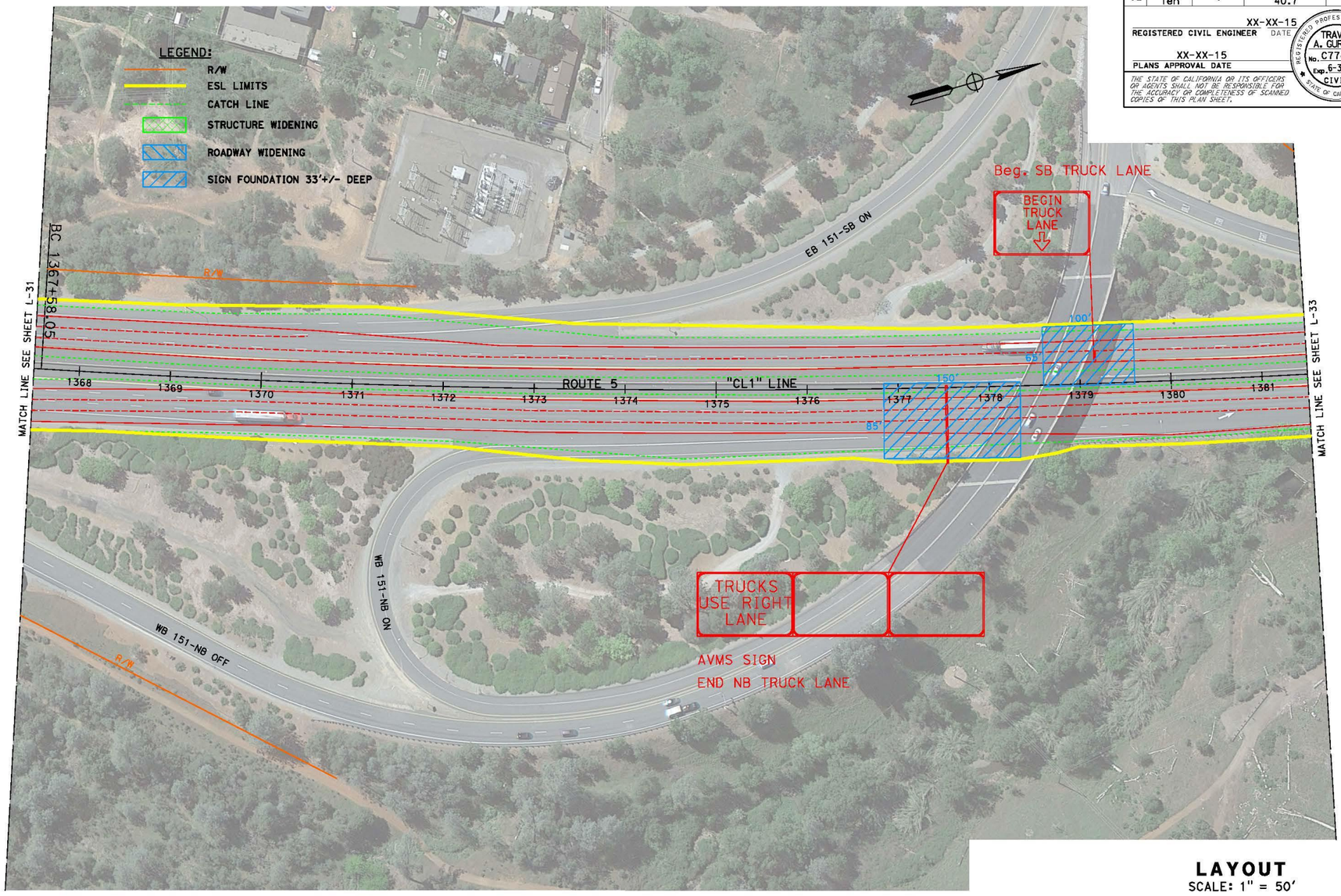
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02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
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Exp. 6-30-25
CIVIL
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LAYOUT
SCALE: 1" = 50'

L-32

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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P:\proj\3\02\0h920\design\requests\PLANS\0H920_ESL_032.dgn

LAST REVISED: 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 13:40

BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => 0H920_ESL_032.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

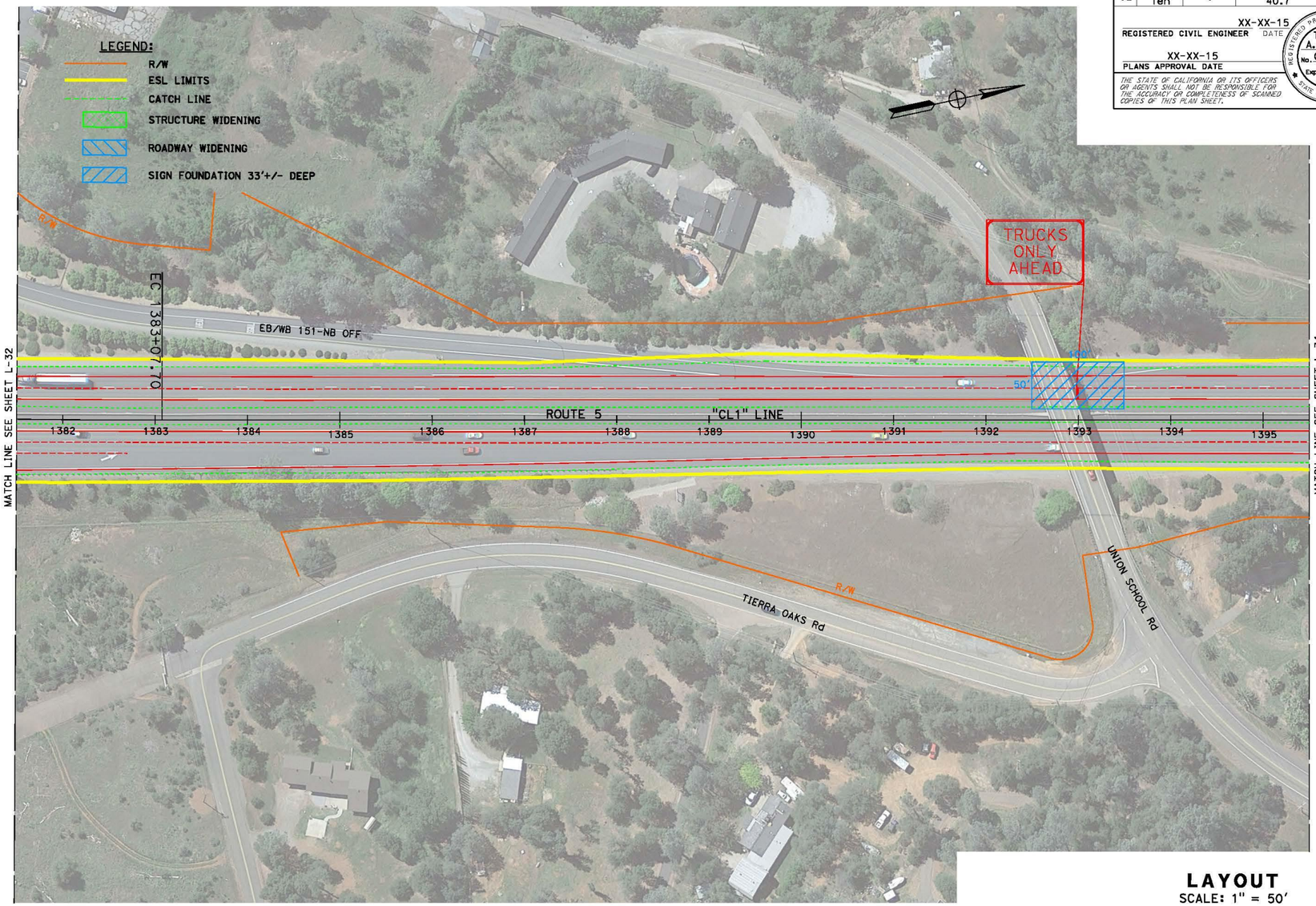
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

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LAYOUT
SCALE: 1" = 50'

L-33

REVISED BY	DATE REVISED

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TOBY CRAWFORD

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P:\proj\13\02\0H920\design\prj\requests\PLANS\0H920_ESL_033.dgn

LAST REVISION
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 13:43
11-1-23

BORDER LAST REVISED 7/2/2010

USERNAME => s146292
DGN FILE => 0H920_ESL_033.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0316

PROJECT NUMBER & PHASE 0215000083 1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

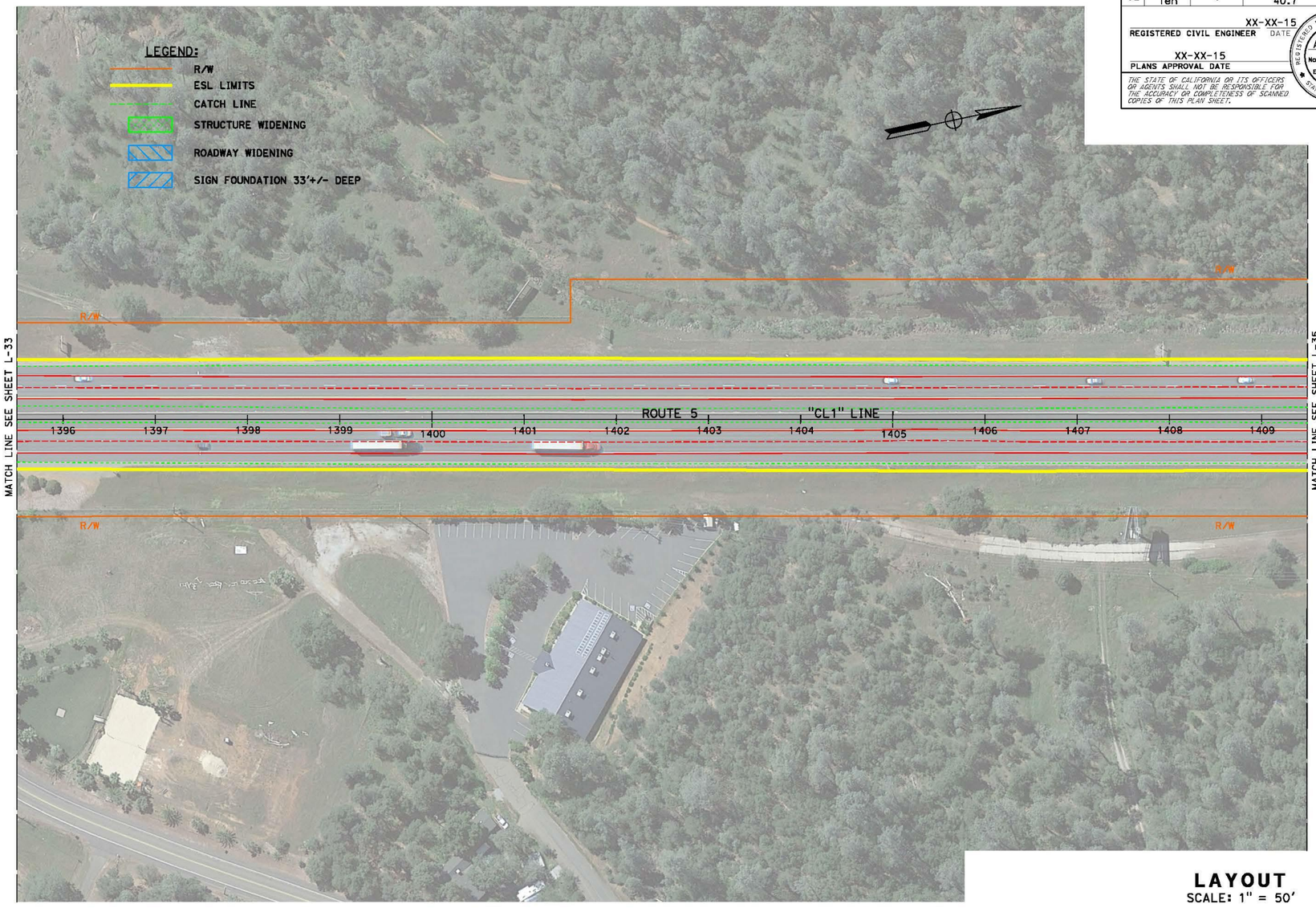
XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
TRAVIS A. GURNEY
No. C77417
Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA

LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP



LAYOUT
SCALE: 1" = 50'

L-34

REVISED BY | DATE REVISED
CALCULATED-DESIGNED BY: TRAVIS A. GURNEY
CHECKED BY
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

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LAST REVISION | DATE PLOTTED => 11-NOV-2023
TIME PLOTTED => 12:49
11-1-23

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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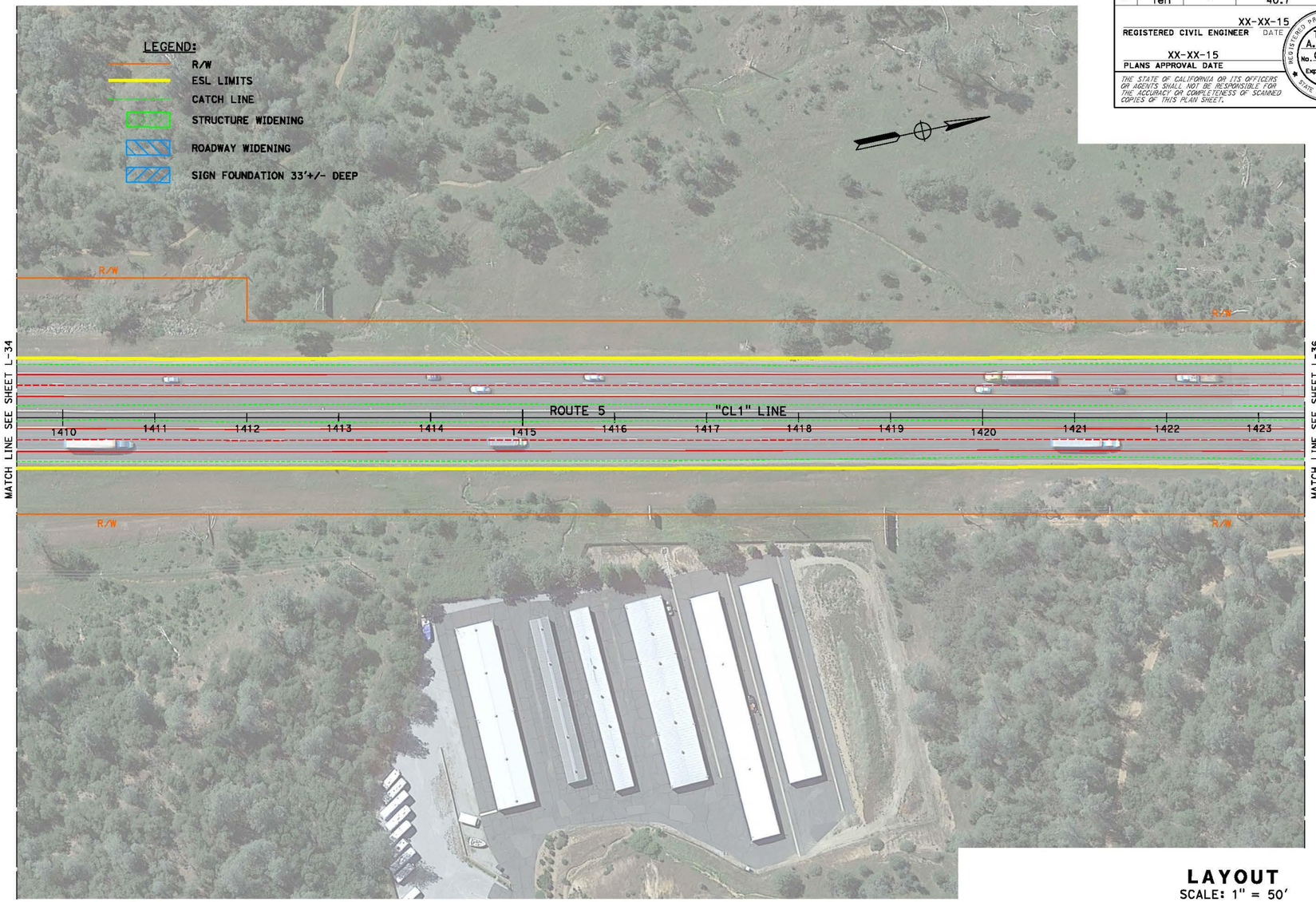
XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
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LEGEND:
- R/W
- ESL LIMITS
- CATCH LINE
- STRUCTURE WIDENING
- ROADWAY WIDENING
- SIGN FOUNDATION 33'+/- DEEP



LAYOUT
SCALE: 1" = 50'

L-35

LAST REVISION 11-1-23
DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:51

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: TOBY CRAWFORD
CALCULATED-DESIGNED BY
CHECKED BY: TRAVIS A. GURNEY
REVISED BY | DATE REVISED

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BORDER LAST REVISED 7/2/2010
USERNAME => s146292
DGN FILE => OH920_ESL_035.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0316
PROJECT NUMBER & PHASE 0215000083 1

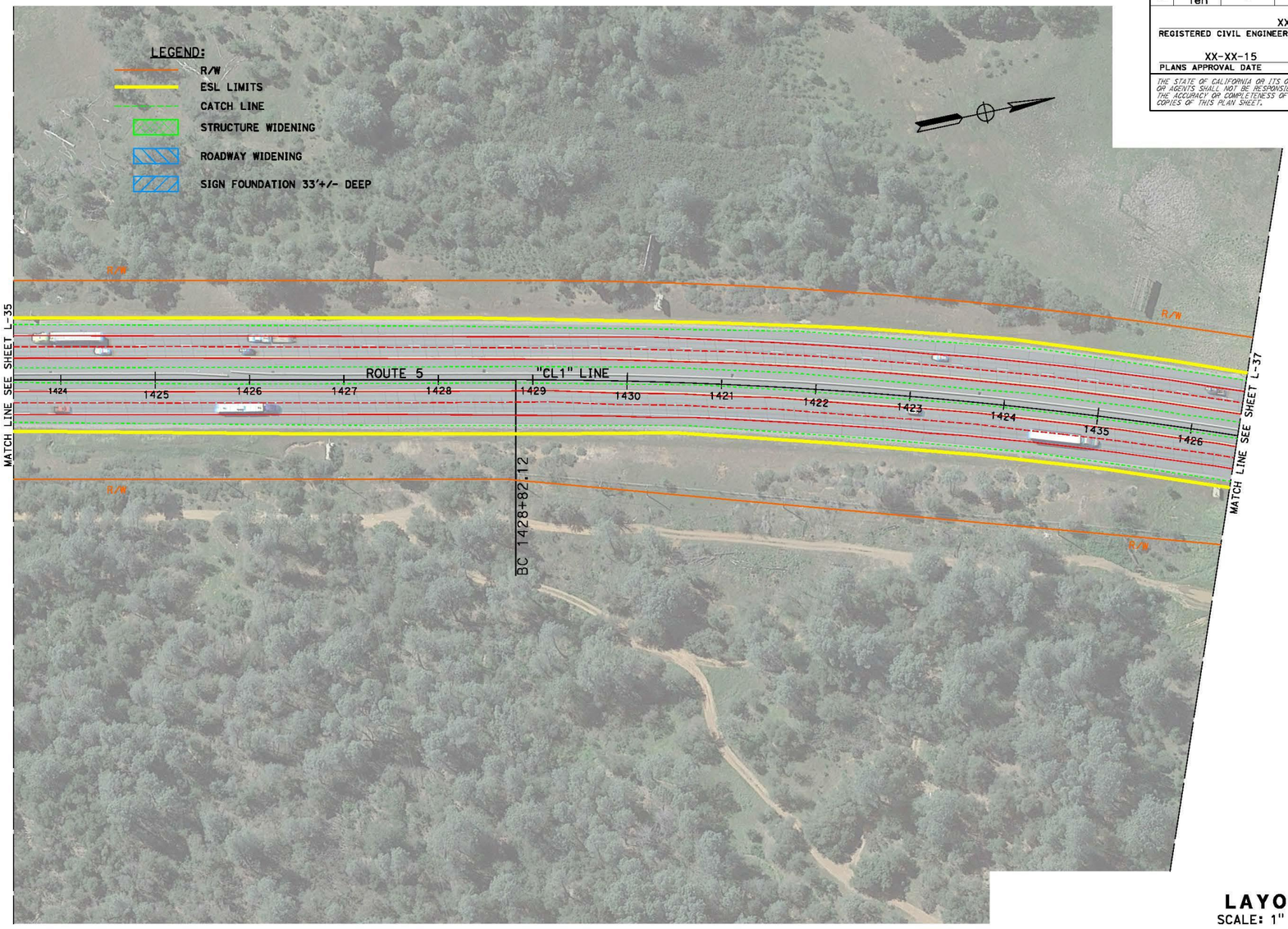
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02	Sha/ Teh	5	R14.8/R20.0 40.7	.	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

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LAYOUT
SCALE: 1" = 50'

L-36

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	TRAVIS A. GURNEY	REVISED BY	DATE REVISED
DESIGN	TOBY CRAWFORD	CHECKED BY			

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DATE PLOTTED => 1-NOV-2023
TIME PLOTTED => 12:54
LAST REVISION 11-1-23

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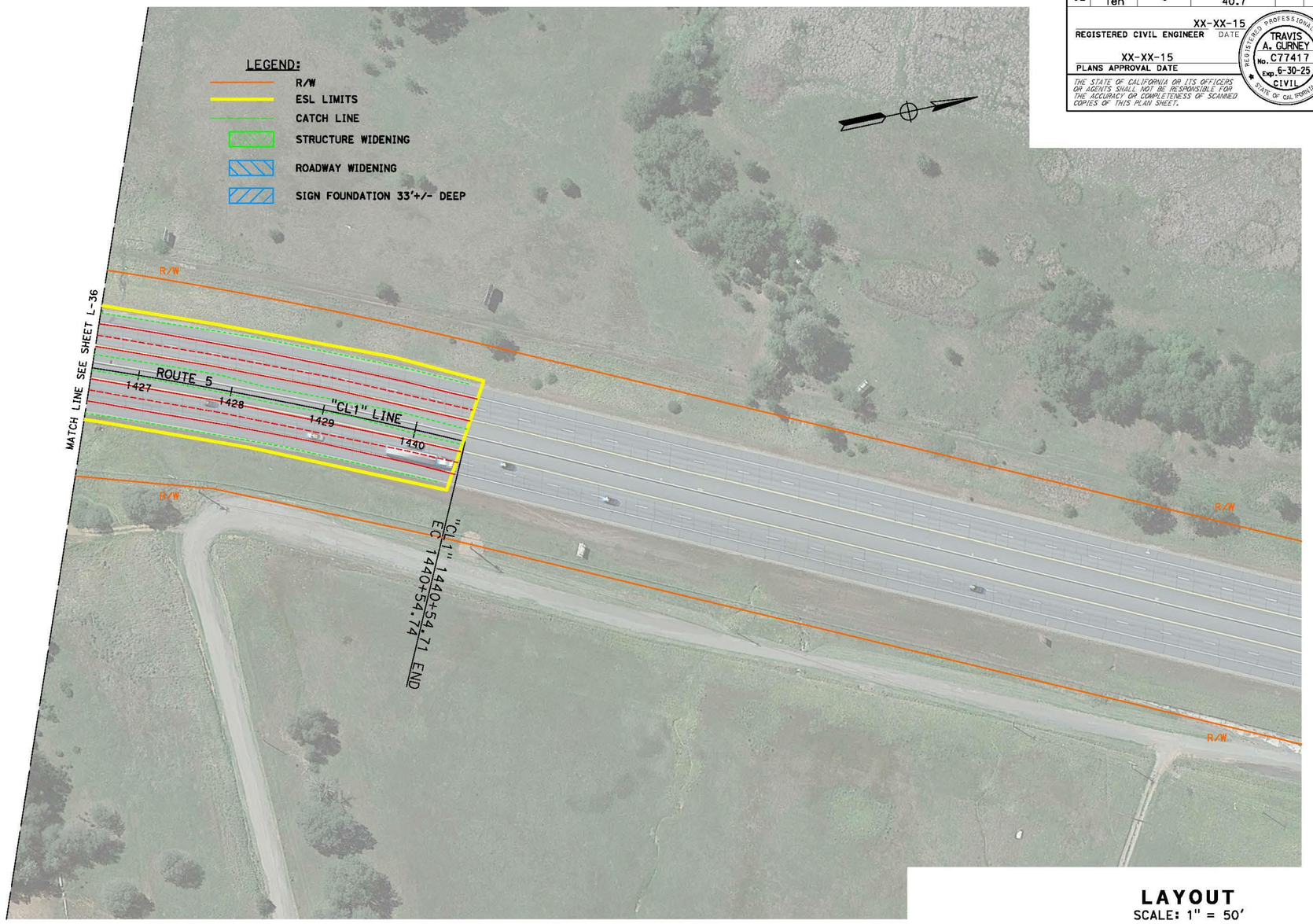
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7		?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
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Exp. 6-30-25
CIVIL
STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-37

REVISED BY					
DATE REVISED					
CALCULATED-DESIGNED BY					
CHECKED BY	TRAVIS A. GURNEY				
FUNCTIONAL SUPERVISOR	TOBY CRAWFORD				
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGN				
LAST REVISION	11-1-23	DATE PLOTTED => 1-NOV-2023			
		TIME PLOTTED => 12:57			

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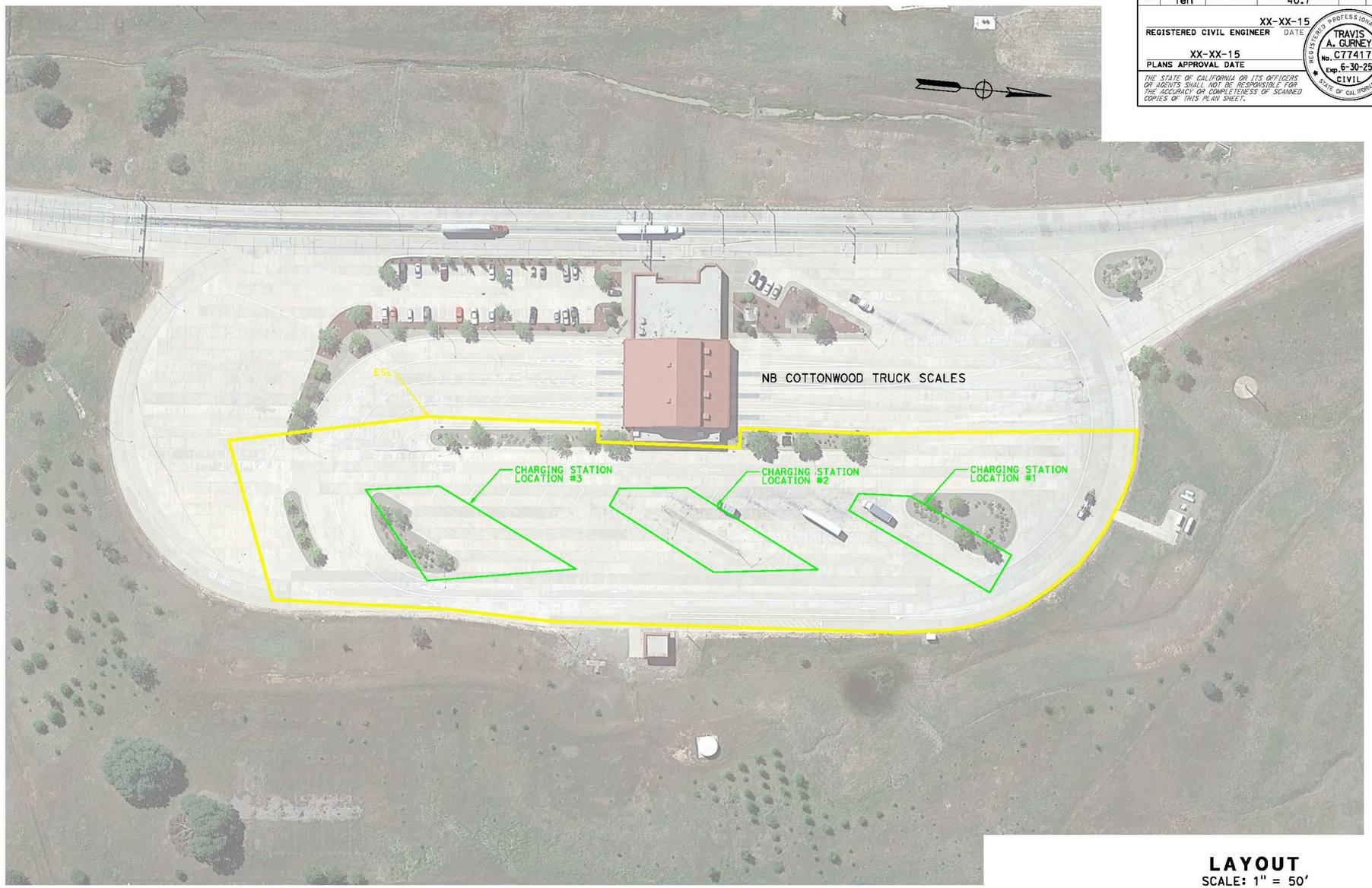
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
02	Sha/ Teh	5	R14.8/R20.0 40.7	-	?

XX-XX-15
REGISTERED CIVIL ENGINEER DATE

XX-XX-15
PLANS APPROVAL DATE

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Exp. 6-30-25
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STATE OF CALIFORNIA



LAYOUT
SCALE: 1" = 50'

L-38

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TRAVIS A. GURNEY
CALCULATED-DESIGNED BY
CHECKED BY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR
TOBY CRAWFORD

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LAST REVISION | DATE PLOTTED => 1-NOV-2023
11-1-23 | TIME PLOTTED => 12:59

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