SR 65 Capacity and Operational Improvements Project

Water Quality Assessment Report

State Route 65, Cities of Roseville, Rocklin, and Lincoln, Placer County

03-PLA-65 PM R6.5 to R12.8

EA 03-1F170

March 2017

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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STATE OF CALIFORNIA
Department of Transportation

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The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by the California Department of Transportation under its assumption of responsibility pursuant to 23 USC 327.

Executive Summary

This Water Quality Assessment Report (WQAR) identifies potential water quality impacts associated with the State Route (SR) 65 Capacity and Operational Improvements Project (proposed project), and recommends avoidance and/or minimization measures for potentially adverse impacts. This WQAR is intended to assist with compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to the extent possible, with federal, state, and local permitting requirements related to hydrology and water quality.

The proposed project involves the widening a 6.6-mile segment and includes three sections of roadway along SR 65 from Lincoln Boulevard to Galleria Boulevard in the cities of Roseville, Lincoln, and Rocklin. The project will add capacity to relieve existing congestion, improve traffic operations and safety in this segment of the highway, and address planned and anticipated growth along the corridor. The project involves standard work consistent with roadway construction and widening, which includes grading, paving, reconstruction of drainage facilities, placement of roadside signs, and striping. The work would require relocation of existing utilities, bridge widening, and cross culvert extensions. The project corridor includes bridge widening of both the northbound and southbound bridges over Pleasant Grove Creek.

The proposed project alignment is approximately 16 miles east of the Sacramento River and 8.5 miles northwest of the American River within the North American Subbasin of the larger Sacramento Valley Groundwater Basin. Water quality is influenced by historical mining activities and municipal land and agricultural use. The Sacramento River (Knights Landing to the Delta) is impaired for chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, mercury, polychlorinated biphenyls (PCBs), and unknown toxicity.

Project construction would require a water quality study to investigate project-related impacts on the hydrology and water quality, as well as other associated environmental impacts, of Orchard Creek, Pleasant Grove Creek, and their watersheds. Potential impacts of the proposed project on existing water quality conditions in the Sacramento River would consist of short-term discharges of sediments, oil, grease, and chemical pollutants generated during construction into nearby storm drains or Orchard Creek and Pleasant Grove Creek, as well as potential long-term discharges of sediments and other pollutants collected in stormwater runoff. Short-term or temporary construction impacts on water quality have the potential to occur during grading, demolition, land-disturbance activities, material and equipment use and storage at staging areas, and other construction activities. Long-term impacts on water quality could occur from increased impervious area, and operation and maintenance activities, such as bridge maintenance and inspections. The proposed project would extend three culverts—two cross culverts within the Pleasant Grove watershed and one within the Orchard Creek watershed—and widen bridges over Pleasant Grove Creek, which would result in permanent fill of waters of the United States.

Impacts from these activities would be avoided or minimized because all construction activities within Orchard Creek and Pleasant Grove Creek would comply with the necessary permits and requirements from regulatory agencies, including the State Water Resources Control Board, Central Valley Regional Water Quality Control Board, United States Army Corps of Engineers,

California Department of Fish and Wildlife, and Placer County. Table 1 in Chapter 2, *Regulatory Setting*, identifies the water quality permits required for the proposed project. In addition to agency coordination and permit compliance, the proposed project design includes permanent treatment best management practices including biofiltration strips and biofiltration swales. The project is designed to direct runoff from watershed areas into the same, existing discharge points, minimizing the impact to the hydrology of drainage facilities. These measures would maintain pre-project drainage patterns (i.e., flow and rates) as much as possible and minimize the potential for discharges of pollutants to nearby storm drains, local tributaries of Pleasant Grove Creek, and ultimately the Sacramento River.

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List of Acronyms and Abbreviations

µg/l	microgram per liter
AMSL	above mean sea level
ASBS	Areas of Special Biological Significance
basin plan	Water Quality Control Plan
Bay-Delta Plan	Basin Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary
BMPs	best management practices
Caltrans	California Department of Transportation
CBSC	California Building Standards Code
CCR	California Code of Regulation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGP	Construction General Permit
CVFMP	Central Valley Flood Management Program
CVFPA	Central Valley Flood Protection Act
CVFPP	Central Valley Flood Protection Plan
CVWB	Central Valley Regional Water Quality Control Board
CVWB Basin Plan	Basin Plan for the Sacramento River and San Joaquin River Basins
CWA	Clean Water Act
CWC	California Water Code
DDT	dichlorodiphenyltrichloroethane
DWR	California Department of Water Resources
EC	electrical conductivity
EPA	United States Environmental Protection Agency
ETW	edge of travel way
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FRWLP	Feather River West Levee Project
HOV	high-occupancy vehicle
H:V	horizontal-to-vertical ratio
I-80	Interstate 80
Kw	soil erodibility factor
LID	low-impact development
Low-Threat General Order	General Waste Discharge Requirements/NPDES Permit for Dewatering and Other Low-Threat Discharges to Surface Waters
MCLs	maximum contaminant levels
Ml	milliliter
MS4	Municipal Separate Storm Sewer Systems
MS4 Permit	NPDES General Permit for Municipal Separate Storm Sewer Systems
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NFIP	National Flood Insurance Program
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PCB	polychlorinated biphenyl

PCTPA	Placer County Transportation Planning Agency
PCWA	Placer County Water Agency
Porter-Cologne Act	Porter Cologne Water Quality Control Act
PPMRP	Pollution Prevention and Monitoring and Reporting Plan
proposed project	State Route 65 Capacity and Operational Improvements Project
PSR-PDS	Project Study Report-Project Development Support
RSP	rock slope protection
RUSLE	Revised Universal Soil Loss Equation
RWQCB	Regional Water Quality Control Board
Salinity Plan	Water Quality Control Plan for Salinity
SB	Senate Bill
SBFCA	Sutter Butte Flood Control Agency
SPCC	Spill Prevention, Control, and Countermeasure
SR	State Route
SWMP	Storm Water Management Plan
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TCE	temporary construction easement
TCCR	Transportation Corridor Concept Report
TDS	total dissolved solids
TMDL	total maximum daily load
U.S.	United States
USACE	United States Army Corps of Engineers
VA	value analysis
WDRs	waste discharge requirements
WQAR	Water Quality Assessment Report
WQO	water quality objective

1. INTRODUCTION

1.1 Project Description

1.1.1 Introduction

The California Department of Transportation (Caltrans), in coordination with the Placer County Transportation Planning Agency (PCTPA), Placer County, and the Cities of Roseville, Rocklin, and Lincoln, proposes to construct capacity and operational improvements on State Route (SR) 65 from north of Galleria Boulevard/Stanford Ranch Road to Lincoln Boulevard (6.3 miles, from post miles 6.5 to 12.8; Figure 1). This SR 65 Capacity and Operational Improvements Project (proposed project) crosses approximately six tributaries, which are part of two major waterbodies: Orchard Creek and Pleasant Grove Creek. This proposed project has been assigned the Project Development Processing Category 4A for widening the existing freeway without requiring a revised freeway agreement. The proposed project would address safety concerns and provide additional road capacity that will support approved and planned development in Placer County. Project construction would require a water quality study to investigate project-related impacts on the hydrology and water quality, as well as other associated environmental impacts, of Orchard Creek, Pleasant Grove Creek, and their watersheds.

The proposed project is subject to state and federal environmental review requirements because of use of funds from the Federal Highway Administration (FHWA). Accordingly, project documentation is being prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is acting as state lead agency for this project under CEQA and as federal lead agency under NEPA under its assumption of responsibility pursuant to 23 United States Code 327. CEQA approval will be achieved with an Initial Study/Mitigated Negative Declaration. NEPA approval is expected to be achieved with a Categorical Exclusion.

1.1.2 Background

SR 65 begins at its junction with Interstate 80 (I-80) and is an important interregional route serving both local and regional traffic. SR 65 generally runs north/south and is a major connector for both automobile and truck traffic originating from the I-80 corridor in the Roseville/Rocklin area to the SR 70/SR 99 corridor in the Marysville/Yuba City area. SR 65 is a vital economic link from residential areas to shopping and employment centers in southern Placer County. It is also an important route for transporting aggregate, lumber, and other commodities. SR 65 is characterized by significant growth in the industrial, commercial, and residential sectors. The southern Placer County region is one of the fastest growing areas in California, both in terms of housing and economic development.

SR 65 was constructed as a two-lane expressway in 1971. The Roseville Bypass from I-80 to Blue Oaks Boulevard was constructed in 1985. SR 65 from Blue Oaks Boulevard to Twelve Bridges Drive was widened to a four-lane facility in 1999. In 2009, the Caltrans Corridor System

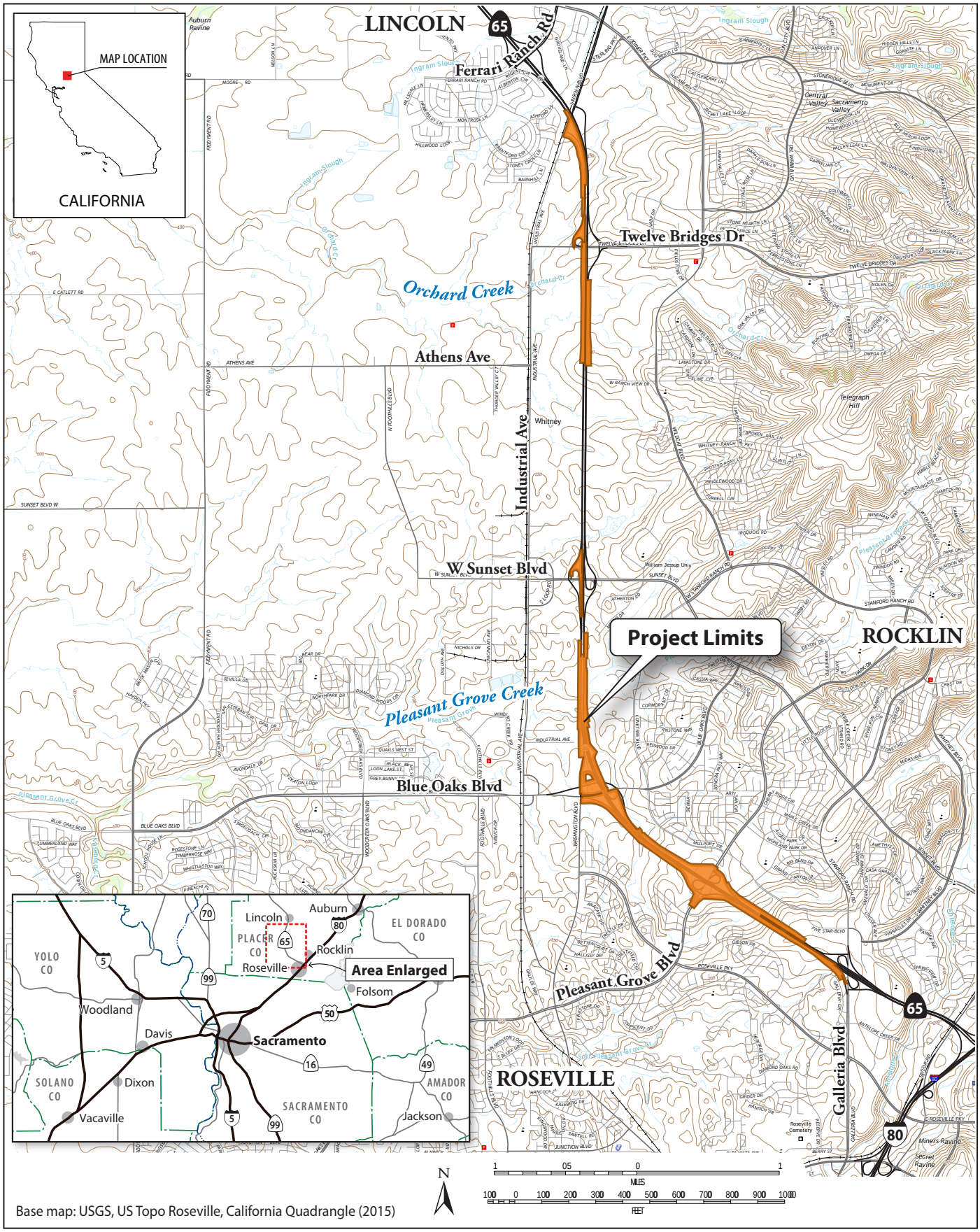

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Figure 1
Project Vicinity
State Route 65 Capacity and Operational Improvements
03-PLA-65-PM 6.2/12.8 (EA-03-1F170/EFIS 0300001103)

Management Plan for SR 65 identified major mobility challenges, including highway and roadway traffic congestion, lack of roadway capacity, and inadequate transit funding. A Supplemental Traffic Report was completed in June 2012 by Caltrans District 3 Office of Freeway Operations. The report indicated that the segment of SR 65 from Galleria Boulevard/Stanford Ranch Road to Lincoln Boulevard was experiencing operational problems caused by high peak-period traffic volumes; vehicle hours of delay, average speeds, travel time, and other traffic performance measures were deteriorating as a result of increasing growth in the surrounding areas. In 2013, a Project Study Report-Project Development Support for Capital Support was approved for adding one vehicle lane in each direction in the median of SR 65 from 0.5 mile north of Galleria Boulevard/Stanford Ranch Road to Lincoln Boulevard.

PCTPA has identified the proposed project as a high-priority regional network project in its 2036 Regional Transportation Plan. This project is included in the South Placer Regional Transportation Authority Regional Traffic Congestion and Air Quality Mitigation Fee Program.

1.1.3 Related Projects

Related projects in the project area that require coordination with the proposed project include the following.

I-80/SR 65 Interchange Improvements Project. This project consists of various modifications to I-80, SR 65, and the interchange at their junction. This project will terminate north of the Galleria Boulevard/Stanford Ranch Road interchange on SR 65, tying into the southern limits of the proposed SR 65 Capacity and Operational Improvements Project. The proposed improvements to the I-80/SR 65 interchange include adding a high-occupancy vehicle (HOV) direct connector from I-80 eastbound to SR 65 northbound and SR 65 southbound to I-80 westbound, replacing the eastbound I-80 to northbound SR 65 loop connector with a flyover connector, widening the East Roseville Viaduct, replacing the Taylor Road overcrossing, and widening southbound SR 65 to westbound I-80, westbound I-80 to northbound SR 65, and southbound SR 65 to eastbound I-80 connectors with associated auxiliary lanes and ramp realignments. The interchange project will be constructed in phases and coordination with SR 65 Capacity and Operational Improvements Project is required.

Whitney Ranch Parkway Interim Phase Project. This project is located in the City of Rocklin and Placer County along SR 65 between Sunset Boulevard and Twelve Bridges Drive. The project will provide a direct connection to Whitney Ranch Parkway from SR 65 to serve the communities of Rocklin and western Placer County. The interim phase will construct the SR 65/Whitney Ranch Parkway interchange and will include a three-lane SR 65 overcrossing, two-lane connection to the Whitney Ranch Parkway/University Avenue intersection, northbound SR 65 on- and off-ramps, and a southbound SR 65 loop on-ramp. The project also would construct additional improvements along SR 65, including an auxiliary lane south of the new interchange to conform to the auxiliary lanes constructed with the SR 65/Sunset Boulevard interchange, and provisions for ramp metering and an HOV preferential lane for each SR 65 on-ramp. This construction contract has been completed and the project is awaiting its Construction General Permit's Notice of Termination.

Placer Parkway Phase I Project. This project is Phase I of the Placer Parkway project. Phase I proposes to extend freeway access at SR 65 by building a new roadway connection west to Foothills Boulevard North. The Phase I project will modify the Whitney Ranch Interchange into an L-9 partial cloverleaf interchange by adding a diagonal southbound off-ramp and on-ramp as well as an eastbound Placer Parkway to northbound SR 65 loop on-ramp. The project will also widen the SR 65 overcrossing from a three-lane structure to a six-lane facility and extend Placer Parkway to the west as a four-lane facility. Ultimately, the Placer Parkway project would construct a new transportation facility connecting SR 65 in the Lincoln/Roseville/Rocklin area to SR 99 in Sutter County.

Northbound SR 65 Carpool Lane. A new lane on SR 65 northbound from the Galleria Boulevard/Stanford Ranch Road interchange to the Blue Oaks Boulevard interchange is planned as a future project. For the purposes of this project, the new lane was assumed as a carpool/HOV lane and would connect to the carpool/HOV lanes proposed in the I-80/SR 65 interchange project.

1.1.4 Purpose and Need

1.1.4.1 Purpose

The primary purpose of the proposed project is to relieve existing mainline congestion by adding additional mainline capacity. Adding additional capacity would help planned and anticipated growth along the corridor and would help achieve the mobility and economic development goals of the PCTPA.

The project will improve traffic operations and safety in this segment of the highway.

1.1.4.2 Need

Recurring morning and evening peak-period demand exceeds the current design capacity along SR 65, creating traffic operations and safety issues. These issues result in high delays and wasted fuel, all of which will be exacerbated by traffic from future population and employment growth.

Projected growth along the SR 65 corridor in Roseville, Lincoln, Rocklin, and South Placer County will result in additional mainline congestion. SR 65 connects major regional routes and must operate efficiently in order to serve commuter traffic, goods movement, and regional traffic in south Placer County.

1.1.5 Project Alternatives

1.1.5.1 No-Build Alternative

Under the No-Build Alternative, SR 65 within the project limits would maintain the existing lane configuration, and no SR 65 mainline widening would be constructed. However, several related

transportation capacity expansion projects are planned in the study area under construction year (2020) and design year (2040) conditions.

1.1.5.2 Build Alternatives

Two build alternatives and a no-build alternative are being considered for this project. The assessment of alternatives is based on 2040 design-year conditions. No decision on a preferred alternative will be made until all alternatives have been fully evaluated.

Both build alternatives described in this section would allow for inside highway widening as future projects along SR 65 from north of the Blue Oaks Boulevard interchange to Lincoln Boulevard. Both alternatives would accommodate the I-80/SR 65 interchange project and consider the carpool/HOV lane restrictions and weaving volumes from the carpool/HOV lanes proposed by the I-80/SR 65 interchange project. Detailed engineering drawings are included in Attachment A.

Carpool Lane Alternative

This alternative adds a 12-foot carpool/HOV lane in the southbound direction of SR 65 in the median from the Blue Oaks Boulevard interchange to north of Galleria Boulevard/Stanford Ranch Road. The carpool/HOV lane would connect to the carpool/HOV lanes proposed as part of the I-80/SR 65 interchange project.

The separate I-80/SR 65 interchange project will add a third lane in each direction of SR 65 from I-80 to Pleasant Grove Boulevard. This SR 65 Capacity and Operational Improvements project alternative would also add one 12-foot general purpose lane through the Pleasant Grove Boulevard Interchange, to create a third lane on SR 65 in both directions from I-80 to Blue Oaks Boulevard. This alternative would also add an auxiliary lane in each direction of SR 65 from the Galleria Boulevard interchange to the Pleasant Grove Boulevard interchange, from the Blue Oaks Boulevard interchange to the Sunset Boulevard interchange, and from the Whitney Ranch Parkway interchange to the Twelve Bridges Drive interchange.

General Purpose Lane Alternative

This alternative would add a 12-foot general purpose lane in the southbound direction of SR 65 from the Blue Oaks Boulevard interchange to the Galleria Boulevard/Stanford Ranch Road off-ramp. The separate I-80/SR 65 interchange project will add a third lane in each direction of SR 65 from I-80 to Pleasant Grove Boulevard. For added capacity on southbound SR 65, as recommended by the value analysis (VA) study, this alternative also includes an additional general purpose lane from the Blue Oaks Boulevard slip on-ramp to the Pleasant Grove Boulevard loop on-ramp. On northbound SR 65, a 12-foot general purpose lane would be added through the Pleasant Grove Boulevard interchange. These improvements would result in a third lane in both directions of SR 65 from I-80 to Blue Oaks Boulevard.

This alternative would also add an auxiliary lane on northbound SR 65 from the Galleria Boulevard interchange to the Pleasant Grove Boulevard interchange; in both directions of SR 65

from the Blue Oaks Boulevard interchange to the Sunset Boulevard interchange; and from Whitney Ranch Parkway interchange to the Twelve Bridges Drive interchange.

Common Elements

The two build alternatives have common design details that include the following components.

Highway Widening

Median widening for additional general purpose or carpool lanes consists of removing existing inside shoulders and paving the median and giving it a standard cross slope. From Galleria Boulevard to Blue Oaks Boulevard, median widening includes removing the existing thrie-beam barrier, paving the entire median, and installing concrete barrier at the center divide. The existing drainage systems, which currently collect runoff within the median and carry it into the existing cross culverts, would be abandoned, removed, or modified.

Paving the median would generate new impervious area for runoff to sheet flow across the travel way to the outside shoulder. On areas with fill material, runoff would be collected by the toe ditch or gutter and carried to the existing channel or waterway. On cut material, runoff would be channelized by the asphalt concrete dike on the edge of the roadway shoulder and discharged to the ditch or toe gutter through an overside drain. At shoulder cut locations, the water spread would be checked to see if drainage inlets are needed to avoid water spread encroaching into the freeway edge of traveled way. The new roadway drainage system would connect the inlets and pipe down the ditch or toe gutter. Most of the existing ditch or toe gutter would remain to collect runoff, except for segments affected by outside widening for auxiliary lanes; those segments would be replaced or reconstructed. To minimize downstream effects, the project would maintain the existing drainage pattern, which ultimately drains toward two waterways—Pleasant Grove Creek and Orchard Creek.

The median widening along southbound SR 65 would provide standard 10-foot inside shoulders. Along northbound SR 65, the inside paving is limited to a hot mix asphalt overlay for roadway cross-slope correction. The inside shoulder on northbound SR 65 would retain its nonstandard width of 5 feet. Justification for the nonstandard inside shoulder width would be documented in the exceptions to Caltrans' mandatory design standards.

Auxiliary lanes would be constructed by widening the existing pavement to the outside, including the replacement of existing outside shoulder with standard cross slope and side slopes of 4:1 or flatter for the fill for most of the corridor, to meet the minimum requirements specified in the Caltrans Highway Design Manual (California Department of Transportation 2015). Segments along the corridor between Stanford Ranch Road and Pleasant Grove Boulevard and between the Whitney Ranch Parkway and Twelve Bridges Drive interchanges would require side slopes of 3:1 or steeper, with a 30-foot clear recovery zone to avoid encroaching beyond existing right-of-way and wetlands or overfilling existing drainage ways. These areas along the corridor would require exceptions to Caltrans advisory design standards.

A tie-back wall would be needed at the Pleasant Grove Boulevard interchange to accommodate the highway and ramp widening. A segment on southbound SR 65 between the Whitney Ranch

Parkway and Twelve Bridges Drive interchanges would require a cut slope of 3:1 to avoid encroaching outside existing right-of-way; slopes at 3:1 or flatter are considered traversable but would need approval from Caltrans Landscape.

Pleasant Grove Creek Bridge Widening

Both the northbound and southbound bridges over Pleasant Grove Creek would be widened by approximately 12 feet each to the outside of the highway and approximately 17 feet each to the inside of the highway. The widened bridge structures would be similar structure types to the existing bridges, which are reinforced concrete slab bridges with piles. Sixteen pier columns (four at each of the four bents), plus four piles per abutment would be installed for each new bridge. New piers would be constructed using driven concrete piles. The pile driving rig would be mobilized and the piles would be driven prior to constructing the temporary falsework necessary to construct the concrete slab bridges. Impact pile driving within the creek bed is anticipated. At each bridge, pile driving would occur within a 1-week period. Sixteen Class 90 piles (40 feet long and 16 inches in diameter) and thirty-two Class 140 piles (40 feet long and 16 inches in diameter) would be installed. If sheet piles are needed to stabilize work areas, they would be installed with a vibratory pile driver.

At each bridge abutment, approximately 3,200 square feet (approximately 400 cubic yards [600 square feet above the ordinary high water mark, and 2,600 square feet below]) of rock slope protection (RSP) would be installed to prevent scour and erosion at the abutments. The RSP would be made up of primarily 23-inch diameter rocks. Large gaps in the RSP would be filled with soil to reduce potential for creating habitat for predators.

In order to remove water from the construction work area prior to bridge widening, a temporary water diversion is proposed using K-rail, sandbags, or other appropriate means. An open channel would be maintained at all times to allow water and fish passage during construction. The temporary water diversion would be consistent with best management practices (BMPs) described in Caltrans' Construction Site BMPs Manual (Caltrans 2003). In the unlikely event that pumping would be needed to dewater the construction site, pumps would be properly screened to prevent fish entrainment, and pumped water would be treated/disposed according to permit requirements.

Widening the bridges would take one construction season each. Construction would occur sequentially over two construction seasons, with the construction methodology described above repeated at each bridge. All in-water work, including installation of materials needed for dewatering, would be limited to the period between June 1 and October 15.

Cross Culvert Extension

Several culverts cross the SR 65 corridor. Most of the cross culverts would not be affected by the project because they are of adequate length. Three culverts are short and would need to be extended to accommodate the proposed auxiliary lanes along the corridor.

Orchard Creek Tributary 2-1 Culvert Extension

The culvert at Orchard Creek Tributary 2-1, located between Whitney Ranch Parkway and Twelve Bridges Drive, is a 7-foot by 5-foot at-grade reinforced concrete box. The box culvert would be extended 6 feet upstream and 6 feet downstream, and would maintain the slope of the existing culvert. The inlet and outlet of the culvert extensions would be at the existing grade of the channel. Construction would be conducted in one season and limited to the dry season when minimal to no water is flowing through the culvert. Excavation around the existing structure would occur first, followed by the casting of the box extension, then backfilling around the extended culvert. If water is present at the time of construction, dewatering or a water diversion would be implemented following Caltrans' Standard Specifications.

Other Cross Culvert Extensions

Two additional culverts would need to be extended to accommodate the proposed auxiliary lanes along the corridor.

- Double 72" Reinforced Concrete Pipe between Galleria Boulevard and Pleasant Grove Boulevard
- Double 10'x5' Reinforced Concrete Box between Blue Oaks Boulevard and Sunset Boulevard

Widening of the inlet and outlet side of the culverts would take one construction season and would be limited to the period between June 1 and October 15. If water is present at the time of construction, dewatering or a temporary water diversion would be implemented following Caltrans *Standard Specifications.*

Ramp Metering

Ramp meter modifications would occur for the slip on-ramps to a 2+1 configuration (2 metered lanes plus 1 carpool preferential lane) and a 1+1 (1 metered lane plus 1 carpool preferential lane) for the loop on-ramps. The southbound Pleasant Grove Boulevard slip and loop on-ramps, Blue Oaks Boulevard slip and loop on-ramps, and Lincoln Boulevard slip on-ramp would be modified to include these ramp metering changes.

Utility Relocation

Overhead electric facilities run parallel along northbound SR 65 outside of State right-of-way. At Pleasant Grove Creek, the overhead line turns east-west and crosses over SR 65. The overhead electric hangs over both the Pleasant Grove Creek bridges that are proposed for widening. The proximity of the overhead line may conflict with bridge foundation activities during construction. The overhead line may therefore need to be temporarily relocated outside of the creek area to accommodate widening the Pleasant Grove Creek bridges. Any relocation of transmission towers or power lines would be conducted consistent with Public Utilities Commission General Order 131-D.

Construction Staging/Laydown Areas and Access

No specific staging/laydown areas have been identified. However, the contractor may utilize areas within the existing median and areas between the main line and interchange on- and off-ramps for staging or laydown.

Temporary construction easements may be required for the contractor to access construction areas. Access to construction areas would be from the interchanges at Pleasant Grove Boulevard, Blue Oaks Boulevard, Sunset Boulevard, Whitney Ranch Parkway, Twelve Bridges Drive, and Lincoln Boulevard. Two lanes in each direction on SR 65 are anticipated to remain open to traffic for the majority of project's construction.

Construction Equipment and Techniques

Equipment that would be used for construction includes graders, excavators, drilling rigs, cranes, pavers, compactors, and various types of construction vehicles. Project design and construction would incorporate the following standard construction measures.

- A preliminary site-specific geotechnical report and initial site assessment will be prepared and will be incorporated into the project's final design. If contaminated soil or groundwater, or suspected contamination, is encountered during construction, work will be halted in the area and the type and extent of the contamination identified. A qualified professional, in consultation with Caltrans, will then develop an appropriate method to remediate the contamination.
- A site-specific storm water pollution prevention plan (SWPPP) will be prepared for construction.
- Fugitive dust emissions during construction will be minimized by frequently applying water from water trucks. Fugitive dust emissions from wind erosion of inactive areas disturbed by construction activities will also be controlled by applying water. Chemical dust suppressants will not be used unless approved for direct application to surface waters.
- The contractor will be required to install temporary BMPs to control any runoff or erosion from the project site, into the surrounding waterways. These temporary BMPs will be installed prior to any construction operations and will be in place for the duration of the contract. Removing these BMPs will be the final operation, along with the project site cleanup.

Proposed Construction Schedule

Project construction is expected to commence in 2018 and conclude in 2020.

1.2 Approach to Water Quality Assessment

The purpose of the Water Quality Assessment Report (WQAR) is to fulfill NEPA and CEQA requirements, and to provide information, to the extent possible, for National Pollution Discharge Elimination System (NPDES) permitting. The document includes a discussion of the

proposed project, the physical setting of the project area, and the regulatory framework with respect to water quality. This WQAR provides data on surface water and groundwater resources within the project area and the water quality of these waters, identifies water quality impairments and beneficial uses, and identifies the potential water quality impacts associated with the proposed project, and recommends avoidance and/or minimization measures for potentially adverse impacts.

The WQAR describes project-induced effects on water quality. For the purpose of this WQAR, an impact is considered adverse if the proposed project would:

- Violate water quality standards or waste discharge requirements (WDRs).
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or offsite.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.
- 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.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Be inundated by seiche or tsunami.

2. REGULATORY SETTING

The following section defines the regulatory environment associated with water quality at the federal, state, and local levels. This section also defines Caltrans' regulatory environment related to water quality.

Several required permits must be obtained prior to the project construction phase. Although not comprehensive, Table 1 describes water quality permits that likely will be required for project construction.

Table 1. Water Quality Permits Required for Project Construction

Agency Type	Agency	Approval/Permit	Status
Federal	U.S. Army Corps of Engineers	Clean Water Act Section 404: Permit for Placement of Fill	To be obtained during final design
Federal	U.S. Fish and Wildlife Service	Endangered Species Act Section 7: Consultation and Incidental Take Statement	To be obtained during final design
State	State Water Resources Control Board	Clean Water Act Section 402: Construction General Permit for Stormwater Discharges	To be obtained prior to construction for 1 or more acres of land disturbance
Regional	Central Valley Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification and Clean Water Act Section 402 coverage under the existing Caltrans National Pollutant Discharge Elimination System Permit (Order No. 2012-0011-DWQ)	To be obtained during final design
Local	Central Valley Flood Protection Board	Encroachment Permit	To be obtained during final design

2.1 Federal Laws and Requirements

2.1.1 Clean Water Act

The primary federal law regulating water quality is the federal Clean Water Act (CWA). 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 unlawful unless the discharge is in compliance with an NPDES permit. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The U.S. Environmental Protection Agency (EPA) has delegated to the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) the enforcement of the CWA in California. The following CWA sections pertain to the proposed project.

2.1.1.1 Section 303 and 304—Impaired Waters and Water Quality Criteria

The State of California adopts water quality standards to protect beneficial uses of state waters as required by CWA Section 303(d) and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). CWA Section 303(d) established the total maximum daily load (TMDL) process to guide the application of state water quality standards (see the discussion of state water quality

standards below). To identify candidate waterbodies for TMDL analysis, a list of water quality–limited segments was generated by the SWRCB. These stream or river segments are impaired by the presence of pollutants, such as sediment, and are more sensitive to disturbance because of this impairment.

Section 304(a)(1) of the CWA requires all states to develop criteria for water quality that accurately reflect the latest scientific knowledge. These criteria are based solely on data and scientific judgments on pollutant concentrations and environmental or human health effects. Section 304(a) also provides guidance to states and tribes in adopting water quality standards. Criteria are developed for the protection of aquatic life as well as for human health.

In addition to the impaired waterbody list required by CWA Section 303(d), CWA Section 305(b) requires states to develop a report assessing statewide surface water quality. Both CWA requirements are being addressed through the development of a Section 303(d)/305(b) Integrated Report, which will address both an update to the Section 303(d) list and a Section 305(b) assessment of statewide water quality. The SWRCB developed a statewide 2012 California Integrated Report based upon the Integrated Reports from each of the nine RWQCBs. The 2012 California Integrated Report was approved by the SWRCB, and the EPA issued its final decision and approval on July 30, 2015.

All Section 303(d)-listed impaired waters with potential to be impacted by the proposed project (and their impairments) are shown in Table 10, and will be evaluated as part of the project, and minimization measures would be implemented to protect waters from further impairment.

2.1.1.2 Section 401—Water Quality Certification

Under CWA Section 401, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a CWA Section 401 Water Quality Certification, which certifies that the proposed project will be in compliance with state water quality standards. The most common federal permit triggering Section 401 Water Quality Certification is a CWA Section 404 permit, issued by the U.S. Army Corps of Engineers (USACE). The Section 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a Section 404 permit. A Water Quality Certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the U.S. Water Quality Certifications are issued by one of the nine geographically separated RWQCBs in California.

The proposed project does involve the placement of fill materials in waters of the U.S. and waters of the state; therefore, a Section 401 Water Quality Certification would be required through the Central Valley RWQCB.

2.1.1.3 Section 402—National Pollutant Discharge Elimination System

The 1972 amendments to the Federal Water Pollution Control Act established the NPDES permit program to control discharges of pollutants from point-source discharges, or discharges that one can point to as a known source of pollutants. NPDES is the primary federal program that regulates point-source and nonpoint-source discharges to waters of the U.S.

The 1987 amendments to the CWA created a new section of the CWA devoted to stormwater permitting (Section 402). The EPA has granted the State of California primacy in administering and enforcing the provisions of the CWA and NPDES within state boundaries. NPDES permits are issued by the SWRCB and the nine geographically separated RWQCBs in California. There are both general and individual NPDES permits. General NPDES permits cover industrial, construction, and municipal stormwater discharges, and some point-source discharges for specific activities. Individual NPDES permits cover point-source discharges such as those from wastewater facilities. Section 402(p) requires permits for discharges of stormwater from industrial/construction and Municipal Separate Storm Sewer Systems (MS4s).

CWA Section 402 General NPDES permits that apply to the proposed project are the Construction General Permit (CGP) and MS4 Permit (Section 2.2, *State Laws and Requirements*). Because the project involves disturbance of more than 1 acre of land, compliance with the CGP would be required. As discussed under the state requirements for the NPDES program, Caltrans holds a General NPDES Permit that covers statewide Caltrans municipal stormwater discharges and would be complied with during construction and operation activities.

2.1.1.4 Section 404—Dredge/Fill Permitting

The discharge of dredged or fill material into waters of the U.S. is subject to permitting specified under Title IV (Permits and Licenses) of this act and specifically under CWA Section 404 (Discharges of Dredge or Fill Material). CWA Section 404 regulates placement of fill materials into the waters of the U.S. Section 404 permits are administered by USACE.

USACE issues two types of Section 404 permits: General and Standard permits. General permits include two types: Regional permits and Nationwide permits. 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 authorize a variety of minor project activities with no more than minimal effects.

The study area contains numerous types of wetlands and other waters that are considered waters of the U.S. and waters of the state. The proposed project would result in placement of fill in these waterbodies. Therefore, the project would comply with the CWA Section 404 Permit before discharging fill into, or excavating within, federally and state-regulated waters and wetlands.

2.1.2 National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The Federal Emergency Management Agency (FEMA) manages the NFIP. FEMA creates Flood Insurance Rate Maps that designate 100-year floodplain zones and delineate flood hazard areas. A 100-year floodplain zone is the area that has a one in one hundred (1%) chance of being flooded in any 1 year based on historical data.

Portions of the proposed project are within a FEMA-designated 100-year floodplain (Federal Emergency Management Agency 1998, 2001).

2.2 State Laws and Requirements

2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Act, established in 1969 under Division 7 (Water Quality) of the California Water Code (CWC), complements the CWA. The Porter-Cologne Act established the SWRCB and divided the state into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies, although much of its daily implementation authority is delegated to the RWQCBs, which are responsible for implementing CWA Sections 401, 402 and 303(d). In general, the SWRCB manages both water rights and statewide regulation of water quality, while the RWQCBs focus exclusively on water quality within their regions.

The Porter-Cologne Act provides for the development and periodic review of Water Quality Control Plans (basin plans) for each region. Basin plans identify beneficial uses of waterbodies and their tributaries and water quality objectives to protect those uses. Basin plans are implemented primarily by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met. Basin plans are updated every 3 years and provide the technical basis for determining WDRs and taking enforcement actions.

Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons the waterbody is considered valuable). Water quality objectives represent the standards necessary to protect and support designated beneficial uses. More information on beneficial uses and water quality objectives that apply to the proposed project is available in Section 3.3.1, *Surface Water Quality Objectives/Standards and Beneficial Uses*.

The proposed project lies within the jurisdiction of the Central Valley Regional Water Quality Control Board (CVWB). The CVWB is responsible for implementing its basin plan. The *Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins* was updated in 2016 (Central Valley Regional Water Quality Control Board 2016). More information is available on the CVWB Basin Plan in Section 2.3, *Regional and Local Requirements.*

2.2.2 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB adjudicates water rights, sets water pollution control policy, 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. The RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdictions using planning, permitting, and enforcement authorities to meet this responsibility.

2.2.2.1 NPDES Municipal Separate Storm Sewer Systems

CWA Section 402 mandates programmatic permits for municipalities to address stormwater discharges, which are regulated under the NPDES MS4 Permit. Phase I MS4 regulations cover municipalities with populations greater than 100,000, certain industrial processes, or construction activities disturbing an area of 5 acres or more. Phase II (Small MS4) regulations require that stormwater management plans be developed by municipalities with populations smaller than 100,000 and construction activities disturbing 1 or more acres of land area.

MS4 permits require that cities and counties develop and implement programs and measures to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. As part of permit compliance, these permit holders have created stormwater management plans for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements may include multiple measures to control pollutants in stormwater discharge. During implementation of specific projects under the program, project applicants will be required to follow the guidance provided in the stormwater management plans as defined by the permit holder in that location.

Caltrans holds a General NPDES Permit that covers statewide Caltrans municipal stormwater discharges. Therefore, the proposed project will primarily comply with the Caltrans NPDES permit rather than the Placer County MS4 Permit. More information on the Caltrans NPDES Permit is provided in Section 2.2.2.2, *Caltrans NPDES MS4 Permit*.

2.2.2.2 Caltrans NPDES MS4 Permit

To streamline the Caltrans NPDES permitting process, the SWRCB issued a state water permit on July 15, 1999, that regulated all discharges from Caltrans MS4s. The new Caltrans stormwater permit was re-issued and became effective July 1, 2013.

The SWRCB has identified Caltrans as an owner/operator of an MS4 pursuant to federal regulations. Caltrans holds a General NPDES permit that covers primarily municipal stormwater discharges (as amended by 2014-0006-EXEC, 2014-0077-DWQ and 2015-0036-EXEC [NPDES No. CAS000003] NPDES Statewide Storm Water Permit WDRs for Caltrans MS4 Permit, effective July 1, 2013). Caltrans' MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit is adopted. The permit regulates the following discharges:

- Stormwater discharges from all Caltrans-owned MS4s;
- Stormwater discharges from Caltrans vehicle maintenance, equipment cleaning operations facilities, and any other non-industrial facilities with activities that have the potential of generating pollutants; and

- Certain categories of non-stormwater discharges. Caltrans shall check with the appropriate RWQCB to determine if a specific non-stormwater discharge requires coverage under a separate NPDES permit.

This permit does not regulate stormwater discharges for industrial facilities. Instead, Caltrans is required to obtain coverage under the Statewide Industrial General Permit for each batch plant and industrial facility, and shall comply with applicable requirements.

This permit does not regulate discharges from Caltrans' construction activities, including dewatering effluent discharges from construction projects. Instead, Caltrans is required to obtain coverage by the CGP and develop a project SWPPP. Caltrans provides a SWPPP template, stormwater guidance documents, and other construction stormwater resources on the Caltrans Stormwater and Water Pollution Control webpage. Any discharges from a site occurring after completion of construction are fully subject to the requirements of this Order.

Some RWQCBs have issued specific requirements for dewatering effluent discharges in their regions. Because the proposed project is within the jurisdiction of the CVWB, a General Waste Discharge Requirement/NPDES Permit for Dewatering and Other Low-Threat Discharges to Surface Waters (Low Threat General Order) would be required for discharges not permitted under the CGP. Caltrans will coordinate with the CVWB to ensure proper compliance with dewatering requirements.

Caltrans' MS4 Permit (Order No. 2012-0011-DWQ, as amended by 2014-0006-EXEC, 2014-0077-DWQ and 2015-0036-EXEC) contains three basic requirements:

a. Caltrans must comply with CGP requirements (see below);

b. Caltrans must implement a year-round program in all parts of the State to effectively control stormwater and non-stormwater discharges; and

c. Caltrans stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs to the Maximum Extent Practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

2.2.3 Caltrans Statewide Storm Water Management Plan

To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP, July 2016) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California as well as associated program guidance documents. The SWMP assigns responsibilities within Caltrans for implementing stormwater 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 Caltrans uses to reduce pollutants in stormwater and non-stormwater discharges. The SWMP also outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs.

All MS4s under Caltrans' jurisdiction are considered one system, and are regulated by the Caltrans NPDES Permit. Caltrans shall include a Municipal Coordination Plan in the SWMP. The plan shall describe the specific steps needed for Caltrans to establish communication, coordination, cooperation, and collaboration with other MS4 stormwater management agencies and their programs, including establishing agreements with municipalities, flood control departments, or districts as necessary or appropriate. Caltrans shall report on the status and progress of interagency coordination activities in the Annual Report.

The proposed project would follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

2.2.3.1 NPDES Construction General Stormwater Permit

The CGP (Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-006-DWQ), adopted on November 16, 2010, became effective on February 14, 2011. The permit regulates stormwater discharges from construction sites that result in a land disturbance of 1 or more acre, or are smaller sites that are part of a larger common plan of development. For all projects subject to the CGP, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program is necessary for projects with a land disturbance of less than 1 acre.

By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre must comply with the provisions of the CGP. Construction activity that results in soil disturbances of less than 1 acre is subject to this CGP if a potential exists for significant water quality impairment resulting from the activity as determined by the RWQCB. Groundwater is an authorized non-stormwater discharge and is generally regulated by the CGP unless a general NPDES permit issued by the Regional Water Quality Control Board governs that specific type of dewatering operation. The CGP allows the discharge free of pollutants to the project site. Pre-discharge testing, monitoring, and reporting will be conducted according to the permit. If pollutants are encountered, appropriate on-site treatment or off-site storage and treatment will be needed per the requirements under a general NPDES permit. Operators of regulated construction sites are required to develop SWPPPs; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the CGP.

The CGP 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 stormwater runoff pH and turbidity monitoring, and for some, pre- and post-construction aquatic biological assessments during specified seasonal windows.

The proposed project would require disturbance of approximately 52.87 acres and 55.51 acres of soil for the Carpool Lane Alternative and the General Purpose Lane Alternative, respectively (Lee pers. comm. 2017); therefore, compliance with the CGP and preparation of an associated SWPPP is required. A preliminary construction site risk level assessment is provided below.

2.2.3.2 Construction General Permit Risk Level Assessment

A construction site risk assessment was performed and the resultant risk level was determined to be **Risk Level 2**. The risk level was determined based on the procedure described in the General Permit and based on two major elements: (1) project sediment risk (the relative amount of sediment that can be discharged, given the project and location details) and (2) receiving water risk (the risk sediment discharges pose to the receiving waters). Project sediment risk is determined by multiplying the R, K, and LS factors from the Revised Universal Soil Loss Equation (RUSLE) to obtain an estimate of project-related bare ground soil loss expressed in tons per acre. Receiving water risk is based on whether a project drains to a sediment-sensitive waterbody. A sediment-sensitive waterbody is either listed on the most recent 303(d) list for waterbodies impaired for sediment; has an EPA-approved TMDL implementation plan for sediment; or has the beneficial uses of COLD, SPAWN, and MIGRATORY. Attachment B provides additional details on how the risk level was determined.

Tables 2 and 3 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors. RUSLE Method 2 was used to determine these values.

Table 2. Summary of Sediment Risk

RUSLE Factor	Value	Method for Establishing Value
R	100	EPA website: https://developer.epa.gov/lew-calculator/.
K	0.28	Weighted average for surface layer of soil map units.
LS	0.91	Field observations and LS Table from Sediment Risk Factor Worksheet in General Permit. Calculation assumes 1% slope (based on NRCS data) and 300 foot slope length.
Total Predicted Sediment Loss (tons/acre)		25.50
Overall Sediment Risk Low Sediment Risk < 15 tons/acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		☐ Low ☒ Medium ☐ High

Table 3. Summary of Receiving Water Risk

Receiving Water Name	Section 303(d)-Listed for Sediment-Related Pollutant[a]	TMDL for Sediment-Related Pollutant[a]	Beneficial Uses of COLD, SPAWN, and MIGRATORY[a]
Pleasant Grove Creek	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
Overall Receiving Water Risk			☐ Low ☒ High

[a] If yes is selected for any option, the Receiving Water Risk is High. Note: The direct receiving waterbody does not have the beneficial uses of COLD, SPAWN, or MIGRATORY, but with the tributary rule applied, the beneficial use of COLD, SPAWN, or MIGRATORY would occur.

2.2.4 Waste Discharge Requirements

All projects resulting in discharges, whether to land or water, are subject to Section 13260 of the CWC. Section 13260 states that persons discharging or proposing to discharge waste that could

affect the quality of waters of the state, other than into a community sewer system, shall file a Report of Waste Discharge to obtain WDRs from the appropriate RWQCB. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and process and wash-down wastewater. WDRs for discharges to surface waters also serve as NPDES permits.

The RWQCB issues WDRs in lieu of a Section 401 Water Quality Certification for activities such as dredging or filling, which impact waters of the State that are not also waters of the United States. WDRs 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.

The SWRCB issued Water Quality Order No. 2004-0004-DWQ, which established statewide general WDRs for projects that involve dredge or fill discharges of (1) less than 0.2 acre and 400 linear feet for fill and excavation discharges, and (2) not more than 50 cubic yards for dredging discharges. Projects that exceed the general WDR thresholds are authorized under a standard WDR, which requires approval by the RWQCB.

2.2.5 Waste Discharge Requirements for Dewatering and Other Low-Threat Discharges to Surface Waters

While small amounts of construction-related dewatering are covered under the CGP, the CVWB has also adopted a General Dewatering Permit. General Waste Discharge Requirements/NPDES Permit for Dewatering and Other Low-Threat Discharges to Surface Waters (Low-Threat General Order) (Order R5-2013-0074).The Low Threat General Order contains waste discharge limitations and prohibitions similar to those in the CGP. To obtain coverage, the applicant must submit a NOI and a Pollution Prevention and Monitoring and Reporting Plan (PPMRP) to the CVWB. The PPMRP must include a description of the discharge location, discharge characteristics, primary pollutants, receiving water, treatment systems, spill prevention plans, and other measures necessary to comply with discharge limits. A representative sampling and analysis program must be prepared as part of the PPMRP and implemented by the permittee, along with recordkeeping and quarterly reporting requirements during dewatering activities. For dewatering activities not covered by the Low-Threat General Order, an individual NPDES permit and WDRs must be obtained from the CVWB.

Low-threat discharges are currently regulated by the CVWB under the regional Low-threat General Order. Discharges covered by this Low-Threat General Order are either 4 months or less in duration or have a daily average discharge flow less than 0.25 million gallons per day. A Notice of Intent (NOI) and Report of Waste Discharge must be submitted to the CVWB to comply with this Low-Threat General Order. Effluent limitations for all discharges are specified for total suspended solids, turbidity, biological oxygen demand, oil and grease, settleable solids, and residual chlorine. There are several other effluent limitations for specific compounds.

In addition, Caltrans has a *Field Guide to Construction Site Dewatering* that provides the Resident Engineer with step-by-step instructions for overseeing dewatering operations on the

construction site (California Department of Transportation 2014). All aspects of dewatering are addressed, from the selection of an appropriate dewatering management option to ensure compliance with NPDES permit requirements for operations, maintenance, and reporting. The Field Guide is available online at http://www.dot.ca.gov/hq/construc/stormwater/field-guide-to-construction-site-dewatering.pdf.

2.2.6 Senate Bill 5

Senate Bill (SB) 5, signed into California state law on October 10, 2007, enacts the Central Valley Flood Protection Act (CVFPA) of 2008. Under SB 5, the California Department of Water Resources (DWR) and the Central Valley Flood Protection Board requires:

- Preparing and adopting a Central Valley Flood Protection Plan (CVFPP) by 2012 (described below).
- Establishing 200-year protection as the minimum urban level of flood protection, effective with respect to specific development projects as of 2015 or 2025.
- Deadlines set for cities and counties in the Central Valley to amend their general plans and their zoning ordinances to conform to the CVFPP within 24 months and 36 months (i.e., approximately 2014 and 2015), respectively, of its adoption.
- Central Valley counties to develop flood emergency plans within 24 months of adoption of the CVFPP.
- DWR to propose amendments to the California Building Standards Code (CBSC) to protect areas with flood depths anticipated to exceed 3 feet for the 200-year flood event; SB 5 requires that CBSC amendments be designed to reduce the risk of flood damage and increase safety.

SB 5 prohibits local governments from entering development agreements or approving entitlements or permits that result in construction of a new residence in a flood zone unless one of the following three conditions are met:

- Flood management facilities provide a level of protection necessary to withstand a 200-year flood event.
- The development agreement or other entitlements include conditions that provide protections necessary to withstand a 200-year flood event.
- The local flood management agency has made adequate progress on construction of a flood protection system that shall result in protections necessary to withstand a 200-year flood event by 2025.

2.2.6.1 Central Valley Flood Protection Plan

The CVFPP was developed under a process implemented by the Central Valley Flood Management Program (CVFMP), which was established in 2008 to guide, manage and implement integrated flood management actions in the Central Valley. The CVFPP, as set forth in CWC Section 9614, was adopted on June 29, 2012. The CVFPP proposes a “systemwide

investment approach" for integrated, sustainable flood management in areas currently protected by facilities of the State Plan of Flood Control. The *2012 Central Valley Flood Protection Plan* fulfills the intent and requirements of the CVFPA of 2008 (SB 5). The plan is required to be updated every 5 years beginning in 2017 (California Department of Water Resources 2011). The 2017 CVFPP is currently undergoing public review and stakeholder participation.

2.3 Regional and Local Requirements

2.3.1 Basin Plans

2.3.1.1 Central Valley Water Board Basin Plan for the Sacramento River and San Joaquin River Basins

The CVWB uses planning, permitting, and enforcement authorities to meet the responsibility of adopting the fourth edition of the *Basin Plan for the Sacramento River and San Joaquin River Basins* (CVWB Basin Plan) (Central Valley Regional Water Quality Control Board 2016) to implement plans, policies, and provisions for water quality management. Beneficial uses are described in the CVWB Basin Plan and are designated for major surface waters and their tributaries, as well as groundwater.

2.3.2 Placer County Requirements

2.3.2.1 Placer County General Plan

The *Placer County General Plan* guides development and use of land that will govern Placer County (Placer County 2013). The General Plan was adopted August 16, 1994 and updated May 21, 2013, and identifies adopted goals, policies, and implementation that govern development in the County. Several policies and implementation programs of the General Plan apply directly and broadly to hydrology and water quality. The following goals within the Natural Resources Element of the County's General Plan are relevant to the proposed project:

WATER RESOURCES - Goal 6.A: To protect and enhance the natural qualities of Placer County's rivers, streams, creeks and groundwater.

WETLAND AND RIPARIAN AREAS - Goal 6.B: To protect wetland communities and related riparian areas throughout Placer County as valuable resources.

FISH AND WILDLIFE HABITAT - Goal 6.C: To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels.

VEGETATION - Goal 6.D: To preserve and protect the valuable vegetation resources of Placer County.

OPEN SPACE FOR THE PRESERVATION OF NATURAL RESOURCES - Goal 6.E: To preserve and enhance open space lands to maintain the natural resources of the County.

The following goal within the Land Use Element of the General Plan is relevant to the proposed project.

VISUAL AND SCENIC RESOURCES - Goal 1.K: To protect the visual and scenic resources of Placer County as important quality-of-life amenities for County residents and a principal asset in the promotion of recreation and tourism.

The following goal within the Public Facilities and Services Element of the General Plan is relevant to the proposed project.

WATER SUPPLY AND DELIVERY - Goal 4.C: To ensure the availability of an adequate and safe water supply and the maintenance of high quality water in waterbodies and aquifers used as sources of domestic supply.

SEWAGE CONVEYANCE, TREATMENT, AND DISPOSAL - Goal 4.D: The County shall require wastewater conveyance and treatment facilities that are sufficient to serve the Placer County General Plan proposed density of residential, commercial, and public/institutional uses in a way which protects the public and environment from adverse water quality or health impacts.

DRAINAGE AND WATER QUALITY - Goal 4.E: To manage rainwater and stormwater at the source in a sustainable manner that least inconveniences the public, reduces potential water-related damage, augments water supply, mitigates storm water pollution, and enhances the environment.

FLOOD PROTECTION - Goal 4.F: To protect the lives and property of the citizens of Placer County from hazards associated with development in floodplains and manage floodplains for their natural resource values.

The following goals within the Health and Safety Element of the General Plan are relevant to the proposed project.

FLOOD HAZARDS - Goal 8.B: To minimize the risk of loss of life, injury, damage to property, and economic and social dislocations resulting from flood hazards.

PUBLIC SAFETY AND EMERGENCY MANAGEMENT FACILITIES - Goal 8.F: To protect public health and safety through safe location of structures necessary for the protection of public safety and/or the provision of emergency services.

Placer County Grading, Erosion, and Sediment Control Ordinance: The Placer County Engineering and Surveying Division issues grading permits for activities, such as the following.

- Fill or excavation greater than 250 cubic yards.
- Cuts or fills exceeding 4 feet in depth.
- Structural retaining walls exceeding 4 feet in total height, as measured from bottom of footing to the top of the wall and/or supporting a surcharge.

- Soil or vegetation disturbances exceeding 10,000 square feet.
- Grading within or adjacent to a drainage course or wetland.
- Grading within a floodplain.

2.3.2.2 Placer County Stormwater Quality Program

The Placer County Stormwater Management Program is a program of the Placer County Public Works Department, and is a NPDES Program Phase II requirement and was required by federal law to be fully implemented by July 1, 2008. Placer County is a designated municipal permittee under the EPA's NPDES, which regulates stormwater and non-stormwater flows into natural waterbodies. The NPDES regulations require permitted areas to implement specific activities and actions to eliminate or control stormwater pollution. Under the Phase II NPDES program Placer County is permitted in the western county area and in the Truckee River Basin.

The goals of the County's Stormwater Program is to reduce pollutants in stormwater runoff, eliminate non-stormwater discharges, lessen the long-term impacts of stormwater discharges from development, business and municipal activities and educate the public about stormwater impacts (Placer County 2014a).

2.3.2.3 Placer County Flood Control and Water Conservation District

The Placer County Flood Control and Water Conservation District collaborates with Placer County and its cities to protect lives and property from the effects of flooding. The District is responsible for implementing regional flood control projects, development and implementation of master plans for selected watersheds in the County, provides technical support and information on flood control for the cities, the County, and the development community, reviews proposed developments projects to ensure they meet District standards and develops hydrologic and hydraulic models for county watersheds (Placer County 2014b).

2.3.3 City General Plans

2.3.3.1 City of Rocklin General Plan

The *City of Rocklin General Plan* guides physical development of the land and expresses goals to meet community needs, while preserving environmental and historical integrity (City of Rocklin 2012). The plan, last updated in October 2012, includes goals and policies specific to hydrology, water quality, flooding, erosion, and grading.

2.3.3.2 City of Lincoln General Plan

The *General Plan 2050* was adopted by the City Council on March 25, 2008 (City of Lincoln 2008). The Plan includes several goals specific to hydrology and water quality, such as stormwater drainage, flooding, erosion control, and grading requirements.

2.3.3.3 City of Roseville General Plan

The *General Plan 2025* was adopted by the Roseville City Council on May 5, 2010. The Plan includes several goals specific to hydrology and water quality, such as flood protection, groundwater recharge and water quality, and grading requirements.

2.3.4 City Stormwater Programs

2.3.4.1 City of Rocklin Stormwater Program

The City of Rocklin's Stormwater Program's goals are to prevent stormwater pollution, protect and enhance water quality in creeks and wetlands, preserve beneficial uses of local waterways and comply with state and federal regulations. Program staff implement permit compliance tasks, track stormwater regulations on behalf of the City of Rocklin, and document local permit compliance efforts in annual reports to the CVWB. The annual reports include information on illegal discharge detection and elimination, street and storm drain cleaning, municipal and creek maintenance, stormwater and creek protection controls for development projects, business inspections, and public outreach, education and participation.

2.3.4.2 City of Lincoln Storm Water Management Program

The City of Lincoln's SWMP outlines a comprehensive set of priorities, activities, and strategies that constitute the City's Minimum Control Measures and BMPs, which are believed to reduce pollutants in storm water to the Maximum Extent Practicable (State Water Resources Control Board n.d.).

The City has coverage under the Phase II Small MS4 General Permit that was adopted by the SWRCB (Order No. 2013-0001 DWQ, effective July 1, 2013). The Permit requires the City to have a stormwater program that controls the discharge of pollutants into the City's storm drainage system and waterways. The City's SWMP is multi-faceted and includes components related to education and outreach, public involvement and participation, illicit discharge detection and elimination, construction, pollution prevention and housekeeping, post Construction and program effectiveness and assessment (City of Lincoln 2016).

2.3.4.3 City of Roseville Stormwater Management Program

In accordance with state and federal law, Roseville's stormwater drainage system is permitted for discharge to local waterways. To comply with this state permit and to protect water quality in local creeks, the City has developed a program to address discharges made to the stormwater drainage system from industrial and commercial businesses. This program includes general outreach as well as compliance inspections at local facilities. Under the provisions of the state permit, most non-stormwater discharges are prohibited from entering the City's stormwater drainage system.

Roseville Municipal Code Title 14.20 specifies these limitations, list exemptions, and provides enforcement options for continued noncompliance. Requirements from the City of Roseville

Stormwater Quality Management Discharge Control Ordinance Amendment apply to certain property sites within the City of Roseville, and many future development projects (City of Roseville n.d.).

3. AFFECTED ENVIRONMENT

3.1 Introduction

Regional hydrology and water quality is affected by several factors, including climate, topography, geology, soils, land uses such as agriculture, surface water and groundwater hydrology, and the types and amounts of pollutants emitted. The following discussion describes general characteristics and regional existing hydrology and water quality conditions within the project vicinity as well as local existing hydrology and water quality conditions within the project area.

3.2 General Setting

3.2.1 Population and Land Use

The proposed project area includes three sections of roadway along SR 65 from Lincoln Boulevard to Galleria Boulevard in the cities of Roseville, Rocklin, and Lincoln in southwestern Placer County. From the south, the project sections include Galleria Boulevard/Stanford Ranch Road to south of West Sunset Boulevard crossing Pleasant Grove Creek and its tributaries, the West Sunset Boulevard interchange, and north of West Ranch View Drive to Lincoln Boulevard crossing Orchard Creek and its tributaries (Figure 1). As reported by the 2015 Census, the population estimate of Placer County is 375,391 (U.S. Census 2015). Land uses in the project area are a mix of industrial, and residential, and commercial development, open grasslands and agricultural open space. Some of the grasslands are grazed by cattle and goats (ICF International 2016a; Mark Thomas & Company, Inc. 2015; Mark Thomas & Company, Inc. 2016).

3.2.2 Topography

The terrain within the project area is flat to gently rolling hills and grassland. Elevations in the area range from 115 feet to 230 feet (35 to 70 meters) (ICF International 2016a).

3.2.3 Hydrology

3.2.3.1 Regional Hydrology

The project area is located in the Lower Sacramento watershed (Hydrologic Unit Code 18020109). The entire Sacramento River Basin covers 27,210 square miles. This includes all watersheds tributary to the Sacramento River that are north of the Cosumnes River watershed, including the closed basin of Goose Lake, the drainage subbasins of Cache and Putah Creeks and the Yolo and Sutter Bypasses.

The Sacramento River drains the northern part of the Central Valley. The principal streams are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa. The remaining inputs (approximately 25% of the flow) come from streams entering from smaller watersheds along the river and from agricultural and storm drain systems. The Sacramento River Watershed Basin supplies more than 80% of the freshwater flows to the Sacramento-San Joaquin Delta (Central Valley Regional Water Quality Control Board 2003a). There are 10 hydrologic sub-regions in the Sacramento River Watershed Basin. Five sub-regions are located in the upper (Redding) watershed, and five sub-regions are located in the lower Sacramento watershed of the Basin (Central Valley Regional Water Quality Control Board 2003b).

3.2.3.2 Local Hydrology

Drainage Patterns

Generally, the topography of the area is gradually sloping grasslands. The existing drainage systems consist of cross culverts, bridge crossings over Pleasant Grove Creek, earthen and concrete- or asphalt-lined ditches, and roadway drainage systems with pipes and inlets. The conditions of existing cross culverts within Caltrans right-of-way limits are unknown; however, culvert inspection for improvement needs will be performed during the Plans, Specifications, and Estimates phase of the project. Throughout the corridor, surface runoff flows across pavement and down to the toe ditch/gutter on both sides of the highway, carried into cross culverts and ultimately discharging to either one of the bridge crossings. Runoff within the median is collected through drop inlets, transported through a series of culverts, and discharged to the cross culverts on both sides of the highway (Mark Thomas & Company, Inc. 2015a). In addition, a variety of concentrated flow conveyance devices are present along the length of the project, including unlined ditches, drainage inlets, culverts, asphalt concrete dikes and overside drains, flared end sections and rock slope protection (RSP) pads. These flow conveyance devices are stabilized to carry runoff without causing erosion (Mark Thomas & Company, Inc. 2014).

Precipitation and Climate

The project is located in California's Central Valley, which has a typical Mediterranean climate with hot, dry summers and cool, moist winters. The mean annual maximum and minimum air temperature is 74.7 degrees Fahrenheit and 45.4 degrees Fahrenheit, respectively. Although precipitation in the watershed varies annually and seasonally, the rainy season generally occurs between October and April. Average annual precipitation in the area is estimated as 23 inches (Western Regional Climate Center 2015). Nearby stations in the central portion to eastern edge of the Sacramento Valley, such as Sacramento Metro and Nicolaus 2, also record average annual rainfall in the 22 to 24 inch range (ICF International 2016a).

Surface Streams

The project crosses approximately six tributaries, and there are four lakes and two potential wetlands within 0.5 mile of the project. The six crossings are part of two major waterbodies: Orchard Creek and Pleasant Grove Creek. Orchard Creek is the receiving waterbody from

watershed areas in the northern portion of the project limits (0.5 miles south of Placer Parkway to Lincoln Boulevard), while Pleasant Grove Creek is the receiving waterbody for the watershed areas in the southern portion of the project limits (Galleria Boulevard to 0.5 miles south of Placer Parkway). The South Branch Pleasant Grove Creek, which serves the area south of Galleria Boulevard, lies approximately 0.6 miles southwest of the project area. Orchard Creek and its tributaries including North Branch Orchard Creek cross SR 65 through several cross culverts. The existing watershed map can be found in Appendix B of the Preliminary Drainage Analysis (Mark Thomas & Company, Inc. 2015a). Orchard Creek is a tributary to Auburn Ravine, the East Side Canal and the Cross Canal, also known as the Natomas Cross Canal (Sutter County), which ultimately discharges to the Sacramento River. Pleasant Grove Creek discharges to the Sacramento River via the Pleasant Grove Canal and the Cross Canal (Mark Thomas & Company, Inc. 2015a).

Other waterbodies adjacent to the project site include Orchard Creek Tributary 2, Orchard Creek Tributary 2-2, Orchard Creek Tributary 3, Pleasant Grove Tributary 1, and Pleasant Grove Tributary 2, all of which ultimately flow to the Sacramento River. The project site is located approximately 0.5 mile west of Antelope Creek, which flows south approximately 1.5 miles before draining into Dry Creek (formerly known as Linda Creek). The head of Dry Creek is at the junction of Antelope Creek and Miners Ravine, and flows southwest to Natomas East Main Drainage Canal 2.3 miles southwest of Rio Linda (U.S. Geological Survey 2015).

Flood Plains

Sections of the project site are located within a FEMA 100-year floodplain or a floodway, as shown in Attachment C. Sections of the project most sensitive to flooding are at tributary crossings such as Orchard Creek Tributary 3 (north of Athens Avenue) and at Pleasant Grove 1 and 2, all of which are within Zone AE. These zones are within the special flood hazard area inundated by a 100-year flood, and base flood elevations have been determined. All tributaries that cross the project and in the immediate vicinity are floodway areas. The northern section of the project is within 300 feet of Zone A, a special flood hazard area inundated by a 100-year flood, but no base flood elevations have been determined. All other areas of the project are in Zone X, other flood areas outside of the 500-year floodplain (Federal Emergency Management Agency 1998, 2001).

Municipal Supply

The Placer County Water Agency (PCWA) Water Systems supply irrigation and treated drinking water in four service zones in central and western Placer County, generally located along the I-80 corridor between Roseville and Alta; and one service zone in the Martis Valley, south of Truckee, in eastern Placer County (Placer County Water Agency 2014). The primary sources of water supply for the PCWA are surface water diversions from the American River, the Yuba River, and the Bear River, although the agency also has access to groundwater resources (Placer County 2007).

3.2.3.3 Groundwater Hydrology

The project is in the North American Subbasin, which is in the eastern central portion of the Sacramento Valley Groundwater Basin. The subbasin covers 351,000 acres (548 square miles), with the Bear River as its northern boundary, the Feather River as its western boundary, and the Sacramento River as its southern boundary. The eastern boundary is a north-south line extending from the Bear River south to Folsom Lake, about 2 miles east of the City of Lincoln. The eastern boundary represents the approximate edge of the alluvial basin, where little or no groundwater flows into or out of the groundwater basin from the rock of the Sierra Nevada. Low rolling uplands are typical in the eastern portion of the subbasin, while the western portion is relatively flat. The general direction of drainage is west-southwest at an average grade of about 5% (California Department of Water Resources 2006).

Groundwater levels in southwestern Placer County and northern Sacramento County have generally decreased, with many wells experiencing declines at a rate of about 1.5 feet per year for the last 40 years or more. Some of the largest decreases have occurred in the area of the former McClellan Air Force Base. Groundwater levels in Sutter and northern Placer Counties generally have remained stable, although some wells in southern Sutter County have experienced declines. Groundwater recharge is provided by natural recharge and applied water recharge (California Department of Water Resources 2006).

3.2.4 Geology/Soils

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey (Natural Resources Conservation Service 2016), the predominant soil types within the project area are Exchequer-Rock outcrop complex (145), Cometa-Fiddyment complex (141), Fiddyment-Kaseberg loams (147), and Exchequer very stony loam (144) and less than 10% each of Alamo-Fiddyment complex (104), San Joaquin sandy loam (181), Inks-Exchequer complex (154), Xerofluvents (193 and 194), Cometa sandy loam (140), Redding and Corning gravelly loams (176), Ramona sandy loam (175), and Kilaga loam (162). A geotechnical report has not been completed for the project area and bore samples have not been collected within the project limits; therefore, more precise geologic information is not known at the time this report was completed.

The soils within the project limits can be generalized as being in hydrological soil group D, soils with the highest runoff potential, very low infiltration rates when thoroughly wetted, and may be subject to erosion by water. Table 4 provides a summary of the soil types and their corresponding hydrologic soil group.

Table 4. Natural Resources Conservation Service Soil Classification

Soil Unit Symbol	Soil Unit Name	Hydrologic Soil Group
104	Alamo – Fiddyment complex, 0–5% slope	D
140	Cometa sandy loam, 1–5% slopes	D
141	Cometa – Fiddyment complex, 1–5% slopes	D
144	Exchequer very stony loam, 2–15% slopes	D
145	Exchequer – Rock Outcrop complex, 2–30% slopes	D
147	Fiddyment – Kaseberg loams, 2–9% slopes	C
154	Inks – Exchequer complex, 2–25% slopes	D
162	Kilaga loam	C
175	Ramona sandy loam, 2–9% slopes	C
176	Redding and Corning gravelly loams, 2–9% slopes	D
181	San Joaquin sandy loam, 1–5% slopes	D
193	Xerofluvents, occasionally flooded	A
194	Xerofluvents, frequently flooded	B

Source: U.S. Department of Agriculture, National Resources Conservation Service 2016

3.2.4.1 Soil Erosion Potential

Erosion by surface water flows is most susceptible where slopes are steep. The soil erodibility factor (Kw) is a relative index of the susceptibility of a bare, cultivated soil to particle detachment and transport by raindrop impact and runoff, but does not reflect the influence of slope on potential erosion rates. Therefore, the erosion hazard may be low in a level area with soils that have a high Kw value. Experimentally measured Kw values vary from 0.02 to 0.69, with the higher end of the range representing soils with greater susceptibility to particle detachment and transport. Clayey and sandy soils have low Kw values because the soil particles are resistant to detachment from raindrop impact (clayey soils) or because of their higher infiltration capacity (sandy soils). Loamy soils have moderate Kw values. Silty soils are the most susceptible to water erosion, with high Kw values.

According to the weighted average Kw value, 0.28, found previously as part of the risk determination for the CGP (Attachment B), the soils in the project area are high in loam and, therefore, have a moderate resistance to erosion. Medium-textured soils, such as a silt loam, have moderate Kw values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Based on Figures in Attachment B, which shows soil map units, the project area is typically comprised of 0 to 5%, 1 to 5%, 2 to 9%, and 2 to 15%, which is relatively flat and, therefore, also represents low to moderate erosion potential. However, some areas (approximately 32% of the project area) comprise 2 to 25% and 2 to 30% slopes, representing a moderate to high erosion potential.

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3.3 Water Quality Objectives/Standards and Beneficial Uses

The CVWB Basin Plan describes beneficial uses for the surface water and groundwater within the project area (Central Valley Regional Water Quality Control Board 2016).

3.3.1 Surface Water Quality Objectives/Standards and Beneficial Uses

Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons the waterbody is considered valuable). The CVWB Basin Plan designates beneficial uses of tributary streams that are not specifically listed in the Basin Plan by reference to the named waters to which they are tributary. This is known as the "tributary rule." Although there are no beneficial uses designated for Orchard Creek and Pleasant Grove Creek, they are a tributary to the Sacramento River. Because the perennial streams ultimately discharge into the Sacramento River (Colusa Basin Drain to Eye ["I"] Street Bridge), designated beneficial uses for the Sacramento River segment are considered to apply to the proposed project. Table 6 lists the existing beneficial uses for the Sacramento River (Colusa Basin Drain to Eye ["I"] Street Bridge) within the project area (Central Valley Regional Water Quality Control Board 2016).

Table 6. Beneficial Uses for Surface Waters within the Project Area

Waterbody	Designated Beneficial Uses
Sacramento River (Colusa Basin Drain to Eye ["I"] Street Bridge)	MUN, AGR[a], REC-1, REC-2, WARM, COLD, MIGR, SPWN, WILD, NAV

KEY:

AGR: Agricultural Supply	WILD: Wildlife Habitat	Supply
AQUA: Aquaculture	WARM: Warm Freshwater Habitat	REC-1: Water Contact Recreation
BIOL: Preservation of Biological Habitats of Special Significance	IND: Industrial Service Supply	REC-2: Non-contact Water Recreation
COLD: Cold Freshwater Habitat	MIGR: Migration of Aquatic Organisms	SHELL: Shellfish Harvesting
COMM: Commercial and Sport Fishing	MUN: Municipal and Domestic Supply	SPWN: Spawning, Reproduction, and/or Early Development
EST: Estuarine Habitat	NAV: Navigation	POW: Hydropower Generation
FRSH: Freshwater Replenishment	RARE: Rare, Threatened, or Endangered Species	PRO: Industrial Process Supply
GWR: Groundwater Recharge		WILD: Wildlife Habitat

Source: Central Valley Regional Water Quality Control Board 2016

[a] Irrigation only

Table 7 lists water quality objectives specified for inland surface waters within the Sacramento-San Joaquin Delta (Central Valley Regional Water Quality Control Board 2016). Water quality objectives can consist of numerical and/or narrative criteria.

Table 7. Water Quality Objectives of Surface Waters within the Sacramento River and the Project Area

Constituent	Objective	Beneficial Use Trigger
Bacteria	200/100 milliliter (ml) (5 or more samples with a mean over 30-day period); nor shall more than 10% of the total number of samples taken during any 30-day period exceed 400/100 ml.	REC-1

Constituent	Objective	Beneficial Use Trigger
Biostimulatory Substances	Water shall not contain biostimulatory substances, which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.	All
Chemical Constituents	Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.	All
	At a minimum, water shall not contain concentrations of chemical constituents in excess of the maximum contaminant limits (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations: • Lead < 0.015 milligram per liter (mg/l) • Arsenic < 0.01 mg/l • Barium < 0.1 mg/l • Copper < 0.01 mg/l • Cyanide < 0.01 mg/l • Iron <0.3 mg/l • Manganese < 0.05 mg/l • Silver < 0.01 mg/l • Zinc < 0.1 mg/l	MUN
Color	Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses.	All
Dissolved Oxygen	For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time: Waters designated WARM 5.0 mg/l Waters designated COLD 7.0 mg/l Waters designated SPWN 7.0 mg/l	All
Floating Material	Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.	All
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.	All
pH	6.5< pH <8.5	All
Pesticides	Chlorpyrifos 0.025 µ g/L ; 1-hour average (acute) 0.015 µ g/L ; 4-day average (chronic) Not to be exceeded more than once in a three year period. Diazinon 0.16 µ g/L ; 1-hour average (acute) 0.10 µ g/L ; 4-day average (chronic) Not to be exceeded more than once in a three year period. • No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. • Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. • Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the EPA or the Executive Officer. • Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see SWRCB Resolution No. 68-16 and Title 40, Code of Federal Regulations, Section 131.12.). • Pesticide concentrations shall not exceed the lowest levels technically and economically achievable.	All

Constituent	Objective	Beneficial Use Trigger
	• Waters shall not contain concentrations of pesticides in excess of the MCLs set forth in California Code of Regulations, Title 22, Division 4, Chapter 15. • Waters shall not contain concentrations of thiobencarb > 1.0 microgram per liter (µg/l).	MUN
Radioactivity	Radionuclides shall not be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.	All
	Waters shall not contain concentrations of radionuclides in excess MCLs specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.	MUN
Salinity	Electrical Conductivity (at 25°C) Shall not exceed 230 micromhos/cm (50 percentile) or 235 micromhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain; or 240 micromhos/cm (50 percentile) or 340 micromhos/cm (90 percentile) at I Street Bridge.	All
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.	All
Settleable Material	Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.	
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	All
Tastes and Odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.	All
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the RWQCB that such alteration in temperature does not adversely affect beneficial uses. The temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City nor above 68°F in the reach from Hamilton City to the I Street Bridge during periods when temperature increases will be detrimental to the fishery.	All
	At no time or place shall the temperature > 5 degrees Fahrenheit above natural receiving water temperature.	COLD or WARM
Toxicity	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.	All
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits: • Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2. • Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU. • Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent. • Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs. • Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.	All

Source: Central Valley Regional Water Quality Control Board 2016.

3.3.2 Groundwater Quality Objectives/standards and Beneficial Uses

Beneficial uses of groundwater are designated in the CVWB Basin Plan. One notable difference between the state and federal programs is that California's basin plans establish standards for groundwater in addition to surface water. According to the DWR Bulletin 118 (2006), the project area is within the North American Subbasin of the Sacramento Valley Groundwater Basin. Below is a list of the existing beneficial uses for all groundwaters within the Sacramento-San Joaquin Delta (Central Valley Regional Water Quality Control Board 2016).

- Municipal and Domestic Supply (MUN)
- Agricultural (AGR)
- Industrial Service Supply (IND)[1]
- Industrial Process Supply (PRO)[2]

3.3.3 Existing Groundwater Quality

Groundwater objectives consist primarily of narrative objectives combined with a limited number of numerical objectives. Table 8 describes objectives that apply to all groundwaters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses. These objectives do not require improvement over naturally occurring background concentrations. These groundwater objectives are established by the state and are not required by the federal CWA.

Table 8. Water Quality Objectives for Groundwater in the Sacramento-San Joaquin River Basin

Constituent	Groundwater Quality Objective	Beneficial Use Trigger
Bacteria	The most probable number of coliform organisms over any 7-day period shall be < 2.2/100 ml.	MUN
Chemical Constituents	All groundwater shall not contain concentrations of chemical constituents in excess of the MCLs specified in the following provisions of Title 22 of the California Code of Regulations and presented in Tables 64431-A and B, 64444-A, and 64449-A and B. At a minimum, water designated for use as domestic or MUN shall not contain lead in excess of 0.015 mg/l. To protect all beneficial uses, the RWQCB may apply limits more stringent than MCLs.	All
Radioactivity	At a minimum, shall not contain concentrations of radionuclides in excess of the MCLs specified in Table 4 (Radioactivity) of Section 64443 of Title 22 California Code of Regulations	All
Taste and Odors	Groundwaters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.	All
Toxicity	Groundwaters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.	All

Source: Central Valley Regional Water Quality Control Board 2016.

[1] Service supply is industrial use that is not dependent on water quality.
[2] Process is industrial use that depends on water quality.

3.4 Existing Water Quality

3.4.1 Regional Water Quality

Because the Central Valley receives relatively little rainfall, the main source of fresh water in the Sacramento River is snowmelt runoff from the mountains. The project lies within the Bear River subwatershed within the larger Sacramento River watershed. The Bear River originates approximately 20 miles west of the Sierra Nevada in northern Placer County within the Tahoe National Forest, and is fed by Spaulding Lake. The watershed is heavily managed for water conveyance for agricultural water supply and hydropower development that serves the western foothills region and beyond (Sacramento River Watershed Program 2015a).

Water quality in the watershed has been severely degraded by historic hydraulic mining and mercury contamination. Management issues in the watershed include growth concerns (land-use transitions from primarily extractive industries and agriculture production to rural and urban development), water quality (mercury from abandoned mines), forest/fuels management, maintaining and improving habitat for fisheries and other aquatic species, improving fuels management and reducing fire risk, improving flood management and reducing flood risk (Sacramento River Watershed Program 2015b). Surface water and groundwater quality is a concern for both fisheries and agricultural supply use. Agricultural drainage or runoff may contribute constituents commonly found in pesticides and fertilizers to Orchard Creek and Pleasant Grove Creek. Known contaminants in the Sacramento River (Knights Landing to the Delta) include mercury, pesticides (i.e., chlordane, DDT, dieldrin), polychlorinated biphenyls (PCBs), and unknown toxicity. Known contaminants in both Pleasant Grove Creek and Pleasant Grove Creek (South Branch) include dissolved oxygen, pyrethroids, and sediment toxicity.

Some rivers and canals in the watershed may have high salinity content. Anthropogenic sources of salinity include drainage from irrigated agricultural lands and managed wetlands, agricultural chemical soil additives, municipal and industrial wastewater discharges, and urban stormwater. Salinity can be measured in a variety of ways, including chloride concentration, total dissolved solids (TDS) concentrations, or electrical conductivity. The beneficial uses most affected by salinity concentrations include municipal, agricultural, and industrial water supply uses (i.e., municipal and domestic supply, agricultural supply, and industrial service supply).

Urban non-point source pollution includes heavy metals, pesticides, bacteria, organics (oil and grease), dirt, and nutrients. Urban runoff from vehicles on bridges can be discharged into streams during construction activities, rain events, vehicle accidents, and through normal wear and tear. Based on the highway stormwater runoff data collected by the FHWA Storm Water Research and Monitoring Program, pollutants expected to be found in runoff from roadways include conventional constituents (e.g., biochemical oxygen demand, calcium carbonate, chemical oxygen demand, TDS, total organic carbon, total suspended solids, and total volatile suspended solids), hydrocarbons, metals, microbial agents, nutrients, volatile and semivolatile organics, pesticides, and herbicides. Pollutants are usually deposited on the roadway as a result of fuel combustion processes, lubrication system losses, tire and brake wear, transportation load losses, paint from infrastructure, and atmospheric fallout. Table 9 lists pollutants commonly associated with the construction, maintenance, and use of roadways.

Table 9. Common Roadway Pollutants and Sources

Constituents	Primary Sources
Particulates	Pavement wear, vehicles, atmosphere, maintenance, snow/ice abrasives, sediment disturbance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application, sediments
Lead	Auto exhaust, tire wear, lubricating oil and grease, bearing wear, atmospheric fallout
Zinc	Tire wear, motor oil, grease
Iron	Auto body rust, steel highway structures, moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicide and insecticide application
Cadmium	Tire wear, insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Bromide	Exhaust
Cyanide	Anticake compound used to keep de-icing salt granular
Sodium, Calcium	De-icing salts, grease
Chloride	De-icing salts
Sulphate	Roadway bed, fuel, de-icing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt leachate
PCBs, Pesticides	Spraying of highway rights-of-way, atmospheric deposition, PCB catalyst in synthetic tires
Pathogenic Bacteria	Soil litter, bird droppings, trucks hauling livestock/stockyard waste
Rubber	Tire wear
Asbestos[a]	Clutch and brake lining wear

Source: Federal Highway Administration 1996.

[a] No mineral asbestos has been identified in runoff; however, some breakdown products of asbestos have been measured.

3.4.2 Groundwater

Groundwater in the North American Subbasin is generally good. Comparison of groundwater quality data with applicable water quality standards and guidelines for drinking and irrigation indicate elevated levels of TDS/specific conductance, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron manganese, and arsenic in some locations within the subbasin. Three sites within the subbasin have significant groundwater contamination issues: the former McClellan Air Force Base, Union Pacific Railroad Rail Yard in Roseville, and the Aerojet Superfund site. Other localized areas of contamination exist throughout the subbasin but are generally smaller in scope and extent of contamination (California Department of Water Resources 2006).

3.4.3 List of Impaired Waters

CWA Section 303(d) requires all states to identify the waters of the state that do not meet the CWA's national goal of "fishable, swimmable" and to develop TMDLs for such waters, with oversight by the EPA. Pleasant Grove Creek and segments of the Sacramento River, including the segment between Knights Landing and the Delta where Orchard Creek and Pleasant Grove Creek discharge, are included in the Section 303(d) list, indicating that this segment does not

meet water quality standards. Table 10 shows Section 303(d)-listed impairments for waterbodies within the project area based on the 2012 California Integrated Report (State Water Resources Control Board 2015):

Table 10. Section 303(d) List for Waterbodies in the Project Area

Reach	Section 303(d)-Listed Impairments	Source	TMDL Completion
Pleasant Grove Creek	Dissolved Oxygen	Unknown	Est. 2021
	Pyrethroids	Urban Runoff/Storm Sewers	Est. 2021
	Sediment Toxicity [a]	Unknown	Est. 2021
Pleasant Grove Creek, South Branch	Dissolved Oxygen	Unknown	Est. 2021
	Pyrethroids	Unknown	Est. 2021
	Sediment Toxicity	Unknown	Est. 2021
Natomas Cross Canal (Sutter County) [b]	Mercury	Unknown	Est. 2021
Sacramento River (Knights Landing to the Delta)	Chlordane	Agriculture	Est. 2021
	DDT	Agriculture	Est. 2021
	Dieldrin	Agriculture	Est. 2022
	Mercury	Source Extraction	Est. 2012
	PCBs	Unknown	Est. 2021
	Unknown Toxicity	Unknown	Est. 2019

[a] This listing for upstream of Fiddyment Road.
[b] Also known as Cross Canal
DDT = Dichlorodiphenyltrichloroethane
PCB = polychlorinated biphenyls
Source: State Water Resources Control Board 2015

3.4.4 Areas of Special Biological Significance

Areas of Special Biological Significance (ASBS) are ocean areas monitored and maintained for water quality by the SWRCB. There are 34 designated ASBS, many of which cover the length of California's coastal waters that support an unusual variety of aquatic life, and often host unique individual species. The proposed project is not located within an ocean area and, therefore, is not in the vicinity of an ASBS, as designated by the SWRCB.

4. ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section describes potential impacts on hydrology and water quality that could result from the proposed project. Construction activities may result in short-term impacts, such as the input of sediment loads and spills into waterbodies. Long-term impacts include the increased potential for polluted runoff into waterbodies. This chapter identifies the impacts of the proposed project to the extent that they are reasonably foreseeable given the general level of available project detail. This section also provides an overview of the proposed drainage system, post-construction BMPs, and any proposed low-impact development (LID) measures.

4.2 Potential Impacts on Water Quality

The following discusses impacts on hydrology and water quality related to biological, physical/chemical, and human use constituents that have the potential to occur during construction and operation of the proposed project. Construction activities would include grading, paving, striping, material stockpiling and storage at staging areas, and installing drainage facilities and roadside signs. The work will require relocating existing utilities, including overhead electric lines over both of the proposed Pleasant Grove Creek bridges. Although most of the cross culverts would not be affected by the proposed project, a few of the culverts would need to be extended to accommodate the proposed auxiliary lanes. Operation-related hydrology and water quality impacts would primarily be related to vehicle use and maintenance activities along the roadway.

Potential sources of water pollution associated with this project include stormwater runoff containing sediment from soil erosion, petroleum and wear products from motor vehicle operation, accidental spills of hazardous materials during construction activities, and accidental spills during normal roadway operation. Contaminants in runoff from the road include sediment, oils and grease, and heavy metals. However, implementing commonly used construction BMPs would minimize potential impacts to the maximum extent practicable. The drainage patterns will be maintained as much as possible. Drainage would be directed to storm drain facilities, including asphalt concrete gutters and earth ditches.

4.2.1 Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment

4.2.1.1 Substrate

Substrate refers to the structure and composition of a river bed. Orchard Creek and Pleasant Grove Creek are perennial drainages, and contain natural substrate that could be affected by the proposed project. Although there are also ephemeral drainages, seasonal, riparian and emergent wetlands, vernal pools, and ditches within the project area, they are isolated and do not provide

adequate connection to the Sacramento or American Rivers or drain into any other surface waterbody.

In-water work can disturb bottom substrate in Orchard Creek, Pleasant Grove Creek and their associated tributaries, which could remobilize sediments as well as contaminants adsorbed to the sediments. Non-soluble contaminants with a tendency to adsorb to sediments (as opposed to soluble contaminants, which have the tendency to be readily diluted in water) can settle and accumulate in the substrate over time. Known non-soluble contaminants in Pleasant Grove Creek and the Sacramento River (Knights Landing to the Delta) (Table 10) include mercury, pesticides (i.e., pyrethroids, chlordane, DDT, dieldrin), PCBs, and other unknown toxicities (State Water Resources Control Board 2015). The resuspension of contaminants found in bottom substrate can remobilize these contaminants and release them into the water column and can degrade water quality. In addition, resuspended particulate material could be transported to other locations in the Sacramento River as a result of flow patterns and currents, thus leading to potential degradation of water quality beyond the study area.

4.2.1.2 Currents, Circulation or Drainage Patterns

The proposed project would modify existing drainage patterns due to the proposed paving in the median and the construction of concrete barrier between the Galleria Boulevard/Stanford Ranch Road interchange and the Blue Oaks Boulevard interchange. The project may also modify the water volume, depth, and flow rate. The project is designed to direct runoff from watershed areas into the existing discharge points. By using this approach, the project minimizes the impact on the hydrology of cross culverts, and drain facilities and drainage patterns will be maintained as much as possible. As discussed in section 3.2.3.2, *Local Hydrology*, Orchard Creek is the receiving waterbody for watersheds in the northern portion and Pleasant Grove Creek is the receiving waterbody for watersheds in the southern portion of the project.

Stormwater would be drained by a combination of new and existing pipes, drainage inlets, and other storm drain facilities. The median paving will redirect runoff from the new impervious surface at the median and sheet flow across pavement. Drainage systems were analyzed using 25-year and 100-year recurrence intervals. The proposed widening will require some of the existing asphalt concrete gutters or earth ditches to be reconstructed. Most toe ditches are V-shaped with 2:1 or flatter side slopes. The need for trapezoidal shaped swales in place of V-shaped will be evaluated for water quality, where applicable.

New impervious surfaces can increase the volume and rate of surface runoff. A total area of 15.89 acres and 17.03 acres of new impervious surfaces would result from the Carpool Lane Alternative and the General Purpose Lane Alternative, respectively. With new impervious surfaces, post-project flows may exceed the pre-project flows and could result in downstream erosion or flooding. The conditions of existing culverts have not been evaluated, and the need for repair or rehabilitation will be determined in the design phase. All cross culverts, roadside drainage facilities including drainage inlets, roadside gutters/ditches, overside drains, and all tributaries to Pleasant Grove Creek and Orchard Creek will be modeled and analyzed during the design phase. To address the additional flows and ensure that the proposed project does not exceed existing flow conditions, the project would include stormwater runoff BMPs to collect and retain or detain the additional flows within the project limits, as required by the Caltrans

NPDES MS4 Permit and SWMP. The Caltrans MS4 Permit requires the consideration of Low Impact Design (LID) as a permanent treatment BMP as well as Provision E.2.d.1, Design Pollution Prevention Best Management Practices, to meet the post-construction treatment requirements. Because the project would create disturbed soil area (including projects designed to meet the post-construction treatment requirements), E.2.d.1 is applicable to the project. If the Project Initiation Documents was approved after July 1, 2013, all of Provision E.2.d.2, Post-Construction Storm Water Treatment Controls, becomes applicable. The Project Study Report-Project Development Support (PSR-PDS) was signed on January 3, 2013; therefore, Provision E.2.d.2 is not applicable to the project. Replaced impervious surfaces such as the creation, addition, and/or replacement of impervious surface on an already developed site shall be considered "new impervious surfaces" for purposes of determining the applicability of post-construction treatment controls. Pollution prevention BMPs in Provision E.2.d include landscape and soil-based BMPs such as compost-amended soils and vegetated strips and swales and conserving natural areas, to the extent feasible, including existing trees, stream buffer areas.

The post construction treatment controls can be achieved per Provisions E.2.d.1., and no alternative compliance is needed. There are 5 proposed biofiltration swales which are capable of treating all the new impervious area created by the project. Post construction storm water treatment controls applicable to the project include design for the biofiltration swales at the toe of embankment to capture and treat stormwater runoff. Detention basins and Austin San Filter are applicable but not feasible because of jurisdictional wetlands and right-of-way constraints. Infiltration basins are not feasible due to the soil type at the project site. There are no proposed improvements outside of the Caltrans right-of-way and the flow pattern of upstream off-site drainage areas flowing through cross culverts would be maintained. Impacts to downstream drainage systems are minimal. Off-site runoff will be studied during the design phase.

4.2.1.3 Suspended Particulates (Turbidity)

Construction of the proposed project would involve roadway construction and widening, bridge widening, creation and use of construction staging areas, operation of heavy construction equipment (e.g., graders, excavators) alongside Orchard Creek and Pleasant Grove Creek, extension of existing culverts, reconstruction of drainage facilities, relocating existing utilities, and other related activities. As currently designed, roadway construction associated with the proposed project would be expected to result in fill material being placed in Pleasant Grove Creek and Orchard Creek. The placement of fill in Pleasant Grove Creek and Orchard Creek may result in temporary increases in turbidity, or turbidity spikes, and sediments could be transported to downstream portions of the creeks outside the project footprint.

Construction activities on land adjacent to waterways could cause erosion of sediments and contribute to short-term increases in turbidity in the aquatic environment. Land-disturbing activities (e.g., excavation and grading) could result in erosion and subsequent soil deposition to the Sacramento River, which would increase turbidity. Construction of the road adjacent to Orchard Creek and Pleasant Grove Creek and their tributaries could result in debris falling into the creeks, which could directly increase turbidity. The approximate areas of disturbed soil necessary for each project alternative are shown in Table 11. As a result of sediment discharge, temporary increases in turbidity may occur in Orchard Creek and Pleasant Grove Creek and potentially downstream in ephemeral drainages, emergent wetlands and vernal pools habitats.

However, sediments likely would settle and the turbidity likely would dissipate before reaching the Sacramento River. Therefore, it is unlikely that the potential temporary increase in sediments in the creeks could violate water quality standards or WDRs related to turbidity, or have the potential to result in physiological, behavioral, and habitat effects on aquatic life.

Table 11. Disturbed Soil Area

Alternative	Disturbed Soil Area (acres)
Carpool Lane Alternative	52.87
General Purpose Lane Alternative	55.51

Source: Lee pers. comm. 2017

Construction of the proposed project is expected to disturb more than 1 acre of land; therefore, a Construction SWPPP would be prepared and implemented as part of compliance with the CGP. Because the proposed project would involve work above and adjacent to Orchard Creek and Pleasant Grove Creek in order to widen SR 65 and extending three cross culverts (two cross culverts located within the Pleasant Grove Creek watershed and one within the Orchard Creek watershed), implementation of erosion and sediment control BMPs is necessary to ensure that water quality impacts would not occur from construction. Water quality BMPs would be implemented during construction to prevent or minimize sediment and suspended solids from entering the creek. In addition, the project design would incorporate post-construction measures and other permanent erosion control elements, such as biofiltration swales and biofiltration strips to treat runoff from the additional impervious area, to ensure that stormwater runoff does not cause soil erosion and to reduce or avoid permanent impacts on water quality.

4.2.1.4 Oil, Grease and Chemical Pollutants

The use of heavy construction equipment or construction-related materials or post-construction roadway operations on the project site can introduce pollutants of concern or toxic chemicals, which have the potential to violate water quality standards or waste discharge requirements. Pollutants of concern are toxic chemicals from heavy construction equipment or construction-related materials (e.g., diesel fuel, cement, paint, asphalt).

A typical construction site contains many chemicals or compounds including gasoline, oils, grease, solvents, lubricants, and other petroleum products. Many petroleum products contain a variety of toxic compounds and impurities and tend to form oily films on the water surface, altering oxygen diffusion rates. Concrete, soap, trash, and sanitary wastes are other common sources of potentially harmful materials on construction sites. Washwater from equipment and tools and other waste dumped or spilled on the construction site can easily lead to introduction of pollutants into surface waters or seepage into groundwater. Also, there is a potential for construction chemicals to be accidentally spilled into watercourses. Because of low precipitation, construction occurring in the dry season is less likely to cause soil and channel erosion or runoff of toxic chemicals into a stream. However, low summer flows are less able to dilute pollutants entering a watercourse.

The construction contractor would be required to regularly inspect and maintain the BMPs, to ensure they are in good working order, and as required in the CGP SWPPP. The contractor would implement appropriate hazardous material management practices, spill prevention, and

other good housekeeping measures to reduce the potential for chemical spills or releases of contaminants, including any non-stormwater discharge to drainage channels. Implementation of these measures would minimize the potential for surface and groundwater contamination.

The primary pollutants from roadway operations are shown in Table 9. Heavy metals, oil, grease, and polycyclic aromatic hydrocarbons are common pollutants in road runoff, and roadside landscaping can introduce pesticides and fertilizers. These and other contaminants are typically washed off roadway surfaces by rainfall and enter storm drains, waterbodies, or infiltrate into shallow groundwater. Urban runoff from vehicles on bridges can be discharged into streams during rain events and through normal usage and aging. Runoff in substantial quantities occurs only during heavy storms that, in turn, cause these pollutants to be greatly diluted. These storms cause some high flows in the drainage systems, which dilute pollutants as they are carried from the source.

Overall, post-construction runoff is not expected to have an adverse effect on water quality in comparison with existing conditions. The proposed project would incorporate structural BMPs such as biofiltration swales and bio-retention areas to treat runoff from the additional impervious area. The method of treatment would be based on the method used to detain additional flows and to convey runoff to its site discharge location. The design requirements for stormwater quality BMPs such as biofiltration swales, and retention basins would be based on current Caltrans methodologies. In addition, the planned drainage pattern will replicate the existing runoff pattern as much as possible and maintain existing sheet-flow drainage patterns. Therefore, the proposed project is not expected to have detrimental effects on the quality of surface and groundwater within the project area during construction or operation.

4.2.1.5 Temperature, Oxygen Depletion and Other Parameters

Changes in temperature, dissolved oxygen levels, or other parameters of a waterbody could violate water quality standards or waste discharge requirements, and cause algal blooms and adversely affect sensitive aquatic life. In addition, low dissolved oxygen levels can be the result of algae blooms. The proposed project would not result in additional direct discharges into Orchard Creek, Pleasant Grove Creek, or the Sacramento River, and the water level would not change enough to be more or less vulnerable to seasonal influences, compared to existing conditions.

Although both the northbound and southbound bridges over Pleasant Grove Creek would be widened, the widened bridge structure types would be similar to the existing bridges. The bridges would not alter underwater light conditions and resulting water temperatures because the widened bridge would be similar in location to the existing bridge and because of the height of the new overcrossing. Therefore, ambient light levels generally would be expected to penetrate into the water, thereby minimizing the effect of shading on aquatic habitats in Pleasant Grove Creek.

Low river flows, or stagnant water, and algal blooms can affect dissolved oxygen levels. Neither of these conditions are expected to occur as a result of the proposed project. Although Pleasant Grove Creek is impaired for dissolved oxygen, Orchard Creek, Pleasant Grove Creek, and the Sacramento River are not impaired for temperature. Water quality parameters including

dissolved oxygen and temperature are not likely to result in levels detrimental to aquatic life as a result of the proposed project. Remobilization of nutrients during construction could release increased nutrients into the water column, causing a bloom. However, drainage would be directed to the storm drain facilities, including asphalt concrete gutters, and the remobilization of these nutrients would be temporary.

Landscaping activities for roadway vegetation could include the use of pesticides, herbicides, and fertilizers. Landscaping runoff discharges via asphalt concrete gutters and earth ditches and is drained by a combination of new and existing pipes, drainage inlets, and other storm drain facilities. As shown in Table 10, Pleasant Grove Creek and the Sacramento River (Knights Landing to the Delta) are impaired for pesticides (pyrethroids, chlordane, DDT, dieldrin). In addition, fertilizers can be a source of nutrients that could cause algal blooms. To ensure that waterways are not exposed, pesticides and fertilizers, if used on riparian or roadside vegetation, would be properly applied according to the regulations of the California Department of Pesticide Regulation.

4.2.1.6 Flood Control Functions

As previously described in Section 3.2.3.2, *Local Hydrology*, sections of the project area are located within a 100-year floodplain. However, only sections of the project crossing tributaries are within the floodway and the majority of the project alignment is within areas outside of the 500-year floodplain. To ensure no ponding or localized flooding within the project area, the project drainage system would be designed with a capacity to carry flows for up to a 50-year storm event. Within the Caltrans right-of-way, the proposed project would be designed to convey a 25-year storm event from the roadway. Hydrologic and hydraulic calculations shall be performed using the criteria presented in the *Highway Design Manual* (California Department of Transportation 2016a).

The modified bridges would be designed according to Hydraulic Design Criteria established in Caltrans' *Local Assistance Procedures Manual* (California Department of Transportation 2016b). The criteria dictate that the facility be capable of conveying the base or 100-year flood and passing the 50-year flood "without causing objectionable backwater, excessive flow velocities or encroaching on through traffic lanes." The same criteria also recommend a minimum freeboard clearance of 2 feet above the 50-year floodwater surface elevation to provide clearance for drift.

4.2.1.7 Storm Wave and Erosion Buffers

The proposed project is not located within a tidally influenced area. Because the proposed project is approximately 100 miles inland from the coast, it is not vulnerable to large storm waves that typically threaten coastline areas. The proposed project would not affect the potential for storm waves to impact upland areas or impact existing erosion buffers (i.e., wetlands).

4.2.1.8 Erosion and Accretion Patterns

Accretion refers to the gradual accumulation of sediments along channel banks via the deposit, by water or wind, of solid material, whether mud, sand, or other sediments due to factors, such as

channel geomorphology and flow obstructions. Because the proposed project is in an area primarily composed of loam and rock complex sediments that is of low to moderate erodibility, and is not in a coastal area that would be affected by waves and large currents, accretion is not expected to occur.

Land disturbance activities, such as grading and excavation during construction, would loosen the soil and could remove the protective cover of vegetation, reducing the natural soil resistance to rainfall impact erosion. Sedimentation occurs when the velocity of water in which soil particles are suspended is slowed sufficiently to allow particles to settle out. Larger particles such as gravel and sand settle out more rapidly than fine particles such as silt and clay. Potential impacts of the proposed project on erosion patterns are also discussed in Section 4.2.1.3, *Suspended Particulates (Turbidity)*. Implementation of erosion and sediment control BMPs during construction would prevent or minimize sediment and suspended solids from entering creeks and nearby stormwater drain facilities. The project design would also include permanent erosion control elements, as required by the Caltrans NPDES MS4 Permit and SWMPs, to ensure that stormwater runoff does not cause soil erosion and would reduce or avoid permanent impacts on water quality.

4.2.1.9 Aquifer Recharge/Groundwater

As previously described, surface runoff flows across pavement and down to the toe ditch/gutter into cross culverts while runoff within the median is collected through drop inlets, transported through a series of culverts, and discharged to the cross culverts on both sides of the highway. The proposed project would result in new impervious surfaces, which could reduce the ability for groundwater recharge within the localized groundwater aquifer system. However, the project would implement biofiltration swales which will be designed to meet treatment criteria and will carry runoff during peak storm events and amend soils which would allow for groundwater recharge. Groundwater monitoring stations along Route 65 indicate that groundwater is present approximately 78-410 feet (Department of Water Resource 2016, Department of Water Resource 2017). Road widening, reconstruction of drainage facilities, and cross culvert extensions would require a maximum excavation depth up to 31.9 feet below ground surface (Mark Thomas & Company, Inc. 2015). Within the North American Subbasin, groundwater recharge is provided by natural recharge and applied water recharge.

Groundwater dewatering would not be necessary for project operation and maintenance activities; however, groundwater dewatering may occur during construction. The proposed project would only minimally affect groundwater resources because the required excavations would occur on a temporary, short-term basis during the construction period. The groundwater from dewatering activities will be disposed of if it cannot be discharged within project limits due to site constraints or contamination per Section 13-4.03G “Dewatering” of Caltrans latest Standard Specifications. When pollutants are expected from dewatering activities, special provisions for the project will be included prohibiting the use of discharged groundwater in other construction related activities including dust control to prevent the discharge from entering the project site or surface water via storm drains. In addition, construction activities will use commercially available water, and no groundwater sources would be used as water supply for construction or operation of the project. Therefore, the project would not affect groundwater

levels or the ability for groundwater recharge within the localized groundwater aquifer area or the overall North American Subbasin.

4.2.1.10 Baseflow

Baseflow is the portion of streamflow that comes from groundwater seepage during a drought or after an extended dry period with little rain to replenish the stream. Orchard Creek and Pleasant Grove Creek are perennial drainages. Groundwater may provide baseflows to the creeks because it is permeable to groundwater flows. As previously described, the proposed project would not affect groundwater levels on a long-term basis, if at all, and would not affect the baseflow levels in Orchard Creek and Pleasant Grove Creek during the dry season.

4.2.2 Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

This section addresses the potential effects of the proposed project on human use characteristics, such as water supply, recreation, fisheries, traffic, energy use, navigation, and safety.

4.2.2.1 Existing and Potential Water Supplies; Water Conservation

The proposed project would not require the use of water supplies and, therefore, would have no impact on the deliveries from Orchard Creek, Pleasant Grove Creek or other aquatic resources within the project area related to municipal and domestic, industrial process and service, and agricultural water supplies.

4.2.2.2 Recreational or Commercial Fisheries

The project area does not contain any aquatic features that would support special-status fish habitat. In addition, the project would be unlikely to affect fisheries within the Sacramento or American Rivers because the confluence with the rivers are approximately 16 miles east and 8.5 miles northwest of the project area respectively, and it would be unlikely for pollutants to travel that far and maintain concentrations that would be detrimental to fish. Therefore, the project would not impact recreational or commercial fisheries and would not affect the beneficial uses of the Sacramento and American Rivers related to non-contact water recreation (i.e., fishing).

4.2.2.3 Other Water-Related Recreation

No boating or water recreation occurs within the project area. Boating and other water recreation activities does not occur in Orchard Creek and Pleasant Grove Creek because these waterbodies are of shallow gradient with stands of wetland vegetation along their borders. Therefore, the proposed project would not affect the ability for water contact recreation.

4.2.2.4 Aesthetics of the Aquatic Ecosystem

The corridor improvements and road widening would slightly change the aesthetics of the project area. However, the change would be localized and would not substantially block the view of the

landscape. Because the proposed project is located in a predominantly urban location, special aesthetic treatments and details likely are not appropriate. The structures would have a generally clean, slender appearance and would have a similar footprint to the existing structures. Should the project proponent identify any specific additional aesthetic features, they would be included in the design. Therefore, the proposed project would have a minimal impact on aesthetics of the aquatic system.

4.2.2.5 Parks, National and Historic Monuments, National Seashores, Wild and Scenic Rivers, Wilderness Areas, etc.

The proposed project alignment is approximately 16 miles east of the Sacramento River and 8.5 miles northwest of the American River

The Sacramento River is not a designated Wild and Scenic River and is not in a national or historic monument, or a wilderness area. The Lower American River (Nimbus Dam to confluence with Sacramento River), located approximately 8.5 miles southeast of the proposed project, is designated as a National Wild and Scenic River. This segment of the river is the most heavily used recreational river in California, providing recreational trails, boating, and supportings a steelhead trout and salmon run. However, the project would not impact this resource because waterbodies adjacent to the project area ultimately flow to the Sacramento River and not to the American River. In addition, the Lower American River (Nimbus Dam to confluence with Sacramento River) has existing water quality impairments including mercury, PCBs, and unknown toxicity. Therefore, the proposed project will not impact resources associated with designations of national or historic monument, or a wilderness area.

4.2.2.6 Traffic/Transportation Patterns

Currently, the proposed segment of SR 65 is experiencing operational problems caused by high peak-period traffic volumes, highway and roadway traffic congestion, lack of roadway capacity, and deteriorating average speeds, travel time, and other traffic performance measures as a result of increasing growth in the surrounding areas. The proposed project would relieve existing mainline congestion by adding to mainline capacity, address planned and anticipated growth along the corridor, and improve traffic operations and safety in this segment of the highway.

The Carpool Lane Alternative would add a 12-foot carpool/HOV lane on southbound SR 65 in the median from north of Galleria Boulevard/Stanford Ranch Road interchange to the Blue Oaks Boulevard interchange, a 12-foot general purpose lane and an auxiliary lane in each direction of SR 65. The General Purpose Lane alternative would add a 12-foot general purpose lane on SR 65 southbound from north of the Galleria Boulevard/Stanford Ranch Road interchange to the Blue Oaks Boulevard interchange, and another lane northbound from the Galleria Boulevard interchange to the Pleasant Grove Boulevard interchange. Access between the Galleria Boulevard/Stanford Ranch Road interchange and Lincoln Boulevard would be maintained during construction of the corridor improvements. Following completion of the improvements, safety for vehicular traffic would be improved and additional capacity for planned development in Placer County would be provided.

4.2.2.7 Energy Consumption of Generation

The Folsom Powerplant is located approximately 8 miles east of the proposed project at Folsom dam. The powerplant is part of the Reservoir Flood Control Operation, used to augment early flood control releases. The remaining energy is marketed to various customers in northern California and provides power for the pumping plant, which supplies the local domestic water supply. The Nimbus Dam, approximately 10 miles southeast of the proposed project, forms Lake Natoma to reregulate the releases for power made through the Folsom Powerplant. Nimbus Powerplant is a run-of-the-river plant and provides station service backup for the Folsom Powerplant (U.S. Department of the Interior 2009).

The proposed project does not require a high consumption of energy to construct and operate; therefore, the proposed project would not impact energy consumption and generation capabilities.

4.2.2.8 Navigation

Orchard Creek and Pleasant Grove Creek are not considered to be a navigable waterways of the United States. Therefore, there is no beneficial use in Orchard Creek or Pleasant Grove Creek related to navigation.

4.2.2.9 Safety

The proposed project will improve the safety of people traveling between the Galleria Boulevard/Stanford Ranch Road interchange and Lincoln Boulevard during peak travel periods. As discussed in Section 1.1.4.2, *Need*, the existing corridor presents operational and capacity concerns. The highway is currently experiencing operational problems caused by high peak-period traffic volumes, lack of roadway capacity, and deteriorating average speeds, travel times, and other traffic performance measures as a result of increasing growth in the surrounding areas. Anticipated population growth and development in this area of Placer County is anticipated to increase traffic levels, which will further degrade the operations and safety along this segment of SR 65. Increased traffic may result in lengthened wait times at nearby intersections and increased idling vehicles and associated pollutants such as volatile organic compounds and hydrocarbons, posing a potential degradation of water quality within the project area. The proposed project will greatly reduce these risks, potentially improve safety for all users by improving the corridor and increasing capacity.

4.2.3 Short-Term Impacts during Construction

4.2.3.1 Physical/Chemical Characteristics of the Aquatic Environment

Short-term or temporary construction impacts on water quality have the potential to occur during grading, demolition, and other construction activities related to the proposed project. Potential short-term impacts during construction on the aquatic environment include temporary increases in sediments, oil, grease, and chemical pollutants generated during construction. Construction activities would comply with a variety of restrictions and agency requirements, such as permits

from the SWRCB, CVWB, USACE, and CDFW. Implementation of an SWPPP and the performance standards of Caltrans and Placer County grading, erosion, and sediment control ordinances would minimize the potential for construction-related surface water pollution and would ensure that water quality in Orchard Creek and Pleasant Grove Creek would not be compromised by erosion and sedimentation during construction. Short-term impacts on physical/chemical characteristics of the aquatic environment during construction are described further in Section 4.2.1, *Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment*.

4.2.3.2 Biological Characteristics of the Aquatic Environment

The project NES (ICF International 2016b) provides information regarding short-term impacts of the proposed project on biological characteristics of the aquatic environment. Employing avoidance and minimization measures, also described in the project NES, would further avoid or minimize the potential for construction-related effects on biological resources within the project area.

4.2.3.3 Human Use Characteristics of the Aquatic Environment

As described in Section 4.2.3, *Anticipated Changes to the Human Use Characteristics of the Aquatic Environmen*t, the proposed project would not affect the human uses, including deliveries and other designated beneficial uses of the Sacramento River, Orchard Creek, Pleasant Grove Creek and its tributaries adjacent to the project, in the short term during construction of corridor improvements.

4.2.4 Long-Term Impacts during Operation and Maintenance

4.2.4.1 Physical/Chemical Characteristics of the Aquatic Environment

Following completion of the proposed project, a potential exists for long-term water quality impacts to result from operation and maintenance activities, such as highway, bridge, and culvert maintenance and inspections. Long-term impacts include alterations in drainage patterns on overcrossings, roadways, and polluted surface runoff. Stormwater runoff may contain sediment from soil erosion, oils and grease generated from motor vehicles, and heavy metals.

The proposed project would comply with the Statewide Caltrans NPDES Permit and SWMP, and the Placer County Stormwater Quality Program, and would ensure that stormwater pollution during operation and maintenance of the project would be minimal by implementing post-construction BMPs. Standard facilities used to handle stormwater on site would be an array of structural elements or facilities that would serve to manage, direct, and convey the stormwater. Potential permanent treatment BMPs include biofiltration strips and biofiltration swales. Proposed widening on both sides of SR 65 will require some of the asphalt concrete gutters or ditches to be reconstructed. Most of toe ditches are V-shaped with 2:1 or flatter side slopes. The need of trapezoidal-shaped swales in place of V-shaped will be evaluated for water quality where applicable (Mark Thomas & Company, Inc. 2015a).

Existing drainage from the highway consist of cross culverts, earthen and concrete or asphalt lined ditches, and roadway drainage systems with pipes and inlets. After corridor improvements stormwater would be drained by a combination of new and existing pipes, drainage inlets, and other storm drain facilities. The median paving will redirect runoff from the new impervious surface at the median and sheet flow across pavement. The project is required to consider treatment BMPs because it involves new construction and the creation of more than one acre of impervious area. Biofiltration swales are the preferred permanent treatment BMPs for this project. The biofiltration swales will be designed to meet treatment criteria under water quality flow and to carry runoff during peak event. Long-term impacts on physical/chemical characteristics of the aquatic environment are described further in Section 4.2.1, *Anticipated Changes to the Physical/Chemical Characteristics of the Aquatic Environment*.

4.2.4.2 Biological Characteristics of the Aquatic Environment

The project NES (ICF International 2016b) provides information regarding long-term impacts of the project on biological communities of the aquatic environment. Employing avoidance and minimization measures, also described in the project NES, would further avoid or minimize the potential for construction-related effects on biological resources within the project area.

4.2.4.3 Human Use Characteristics of the Aquatic Environment

As described in Section 4.2.3, *Anticipated Changes to Human Use Characteristics of the Aquatic Environment*, operation and maintenance of the proposed project would not affect the human uses, including designated beneficial uses, of Orchard Creek, Pleasant Grove Creek or the Sacramento River in the long term.

4.3 Impact Assessment Methodology

Potential impacts resulting from implementing the proposed project were analyzed by comparing existing conditions, as described in the Chapter 3, *Affected Environment*, to conditions during construction and operation and maintenance of the proposed project. The qualitative analysis assesses the direct and indirect, short- and long-term impacts related to surface hydrology, flood hazards, groundwater recharge, and surface and groundwater quality as described below.

- **Surface Water Hydrology:** The surface water hydrology impact analysis considered potential changes in the physical characteristics of waterbodies, impervious surfaces, and drainage patterns in the project area as a result of project implementation. Temporary changes in drainage patterns may occur during construction. However, the project would be designed so that post-project flows would be equal to pre-project flows and changes to existing drainage patterns would be minimized to the extent feasible.

  Flood Hazards: The impact analysis for flood risk was conducted using FEMA NFIP maps to determine whether the project area overlaps with existing designated 100-year floodplains. Sections of the project site are located within a FEMA 100-year floodplain, with sections at tributary crossings most sensitive to flooding. Other areas of the project are in Zone X, other flood areas outside of the 500-year floodplain.

- **Groundwater Recharge:** Impacts on groundwater recharge were assessed by comparing existing sources of recharge versus recharge capabilities following project implementation. Recharge is determined by the ability of water to infiltrate into the soil. The proposed project would result in new impervious surfaces, which could reduce the ability for groundwater recharge. However, the project would implement biofiltration swales which will be designed to meet treatment criteria and will carry runoff during peak storm events and amend soils which would allow for groundwater recharge.
- **Surface and Groundwater Quality:** Impacts of the proposed project on surface water and groundwater quality were analyzed using information on existing water quality conditions (i.e., Section 303[d]-listed waterbodies), and potential existing sources of water contaminants generated by overcrossing construction, and operation and maintenance activities. Also considered were the potential for water quality objectives to be exceeded, beneficial uses to be compromised, and further degradation of impaired waters as a result of the proposed project. Potential sources of water pollution include stormwater runoff containing sediment from soil erosion, petroleum, and accidental spills of hazardous materials during construction and operation. Water quality BMPs would be implemented during construction to prevent or minimize sediment and suspended solids impacting waterbodies. In addition, the project design would incorporate post-construction measures and other permanent erosion control elements, such as biofiltration swales and biofiltration strips to treat runoff, to ensure that stormwater runoff does not cause soil erosion and to reduce or avoid permanent impacts on surface and groundwater quality.

4.4 Alternative-Specific Impact Analysis

Two proposed alternatives are under consideration for this project, both of which allow for inside highway widening as future projects along SR 65 from north of the Blue Oaks Boulevard interchange to Lincoln Boulevard are considered. The Carpool Lane Alternative adds a 12-foot carpool/HOV lane on southbound SR 65 in the median. The General Purpose Lane alternative would add a 12-foot general purpose lane in the southbound direction of SR 65. The structure demolition and roadway modification, construction storage and staging elements, and stormwater drainage management plan are similar for both build alternatives. These elements are considered to be the most pertinent when analyzing project impacts on hydrology and water quality. Therefore, build alternatives are considered together in this analysis and compared with the No-Build Alternative.

4.4.1 No-Build Alternative

Under the No-Build Alternative, SR 65 within the project limits would maintain the existing lane configuration and no SR 65 mainline widening would be constructed. The corridor would not be improved and anticipated growth and development within this area of Placer County is expected to increase traffic, which will degrade operations and safety along SR 65 between the Galleria Boulevard/Stanford Ranch Road interchange and Lincoln Boulevard. Because this alternative does not alter existing conditions, no associated impacts on water quality would occur. However, this alternative does not meet the purpose and need of the proposed project.

4.4.2 Build Alternatives

The project proposes to improve the SR 65 corridor, and includes road and bridge widening and extending cross culvert structures. The following analysis addresses potential impacts from the proposed project with alternatives for roadway design, as described in Section 1.1.5, *Project Alternatives*. Two corridor project design alternatives are under consideration for the SR 65 capacity and corridor improvements in Placer County, both of which address different designs for the alignment. Although each build alternative presents differences in area of land disturbance, new impervious area, and proposed drainage plan, the overall structure demolition and roadway and bridge modifications, construction storage and staging elements, and the goals of stormwater drainage management plans are similar to both build alternatives. In most cases, alternatives would have the same impact on hydrology and water quality resources and, therefore, are not discussed separately.

The project would be adding approximately 15.89 acres or 17.03 acres of new impervious surfaces, for the Carpool Lane Alternative and General Purpose Lane Alternative, respectively. Despite differences in resulting new runoff volume and rates due to new impervious area, the project would be designed so that post-project flows would be equal to pre-project flows and changes to existing drainage patterns would be minimized to the extent feasible. Increases in stormwater flow volumes will be mitigated by directing flow to drainage ditches and biofiltration swales, which decreases volume of discharge by promoting infiltration and also allows for pollutant removal. The existing drainage pattern will remain after construction. To minimize the increase of velocity where flows are anticipated and being discharged at various culverts locations, flared end sections, rock lined channel and paved channel will be used (Mark Thomas & Company, Inc. 2014).

The area of existing and new impervious area and the disturbed soil area for the Carpool Lane Alternative and the General Purpose Lane Alternative are shown in Table 13. Caltrans BMPs would be implemented to prevent or minimize sediment and other pollutants from entering the creeks, drainages, seasonal pools, and nearby storm drains during construction. For example, straw wattles could be placed around storm drains and areas of land disturbance to prevent from sediment discharge, and spill prevention measures could be implemented to prevent materials from being spilled into nearby waterways. The project would incorporate BMPs such as biofiltration swales and biofiltration strips to treat runoff from the additional impervious area, as required by the Caltrans MS4 Permit and SWMP. The design requirements for stormwater quality biofiltration swales and strips would be based upon the current Caltrans methodologies.

Table 13. Impervious and Disturbed Soil Area for Each Alternative

Description	Carpool Alternative	General Purpose Alternative
	Area (Acres)	Area (Acres)
Impervious Area – Existing Condition	80.29	80.29
New Impervious Area – with Project	15.89	17.03
Total Impervious Area – with Project	96.18	97.32
Disturbed Soil Area	52.87	55.51

Source: pers. comm. 2017

4.5 Cumulative Impacts

This cumulative analysis examines the effects of the proposed project in combination with other current projects, probable future projects, and projected future growth along the 6.6-mile segment of SR 65. The geographic context for the analysis of cumulative impacts associated with surface hydrology and water quality is the Lower Sacramento watershed, and for groundwater hydrology, is the North American Subbasin of the Sacramento Valley Groundwater Basin. Cumulative impacts within the immediate project area include impacts within Pleasant Grove Creek, Orchard Creek, Pleasant Grove Creek (South Branch), and downstream in ephemeral drainages, emergent wetlands and vernal pools habitats, while groundwater impacts would occur in the localized groundwater aquifer system. The context for cumulative hydrology and water quality impacts is geographic and is a function of whether impacts could affect surface water features/watersheds, municipal storm drainage systems of Placer County, or groundwater, each of which has its own physical boundary. This analysis accounts for anticipated cumulative growth within the potentially affected geographic area as represented by full implementation of the County General Plan. Current and future planned development is identified in the Sunset Industrial Area Plan (Placer County 2016). The Sunset Industrial Area Plan was updated in 2016 and provides a framework to implement the County's long-term vision for the Plan Area and to maximize the economic opportunities within the region that will guide the development of the area. The Sunset Industrial Area Plan is more specific to the Plan area than the County-wide plan. Additional projects to be coordinated with the proposed project include the I-80/SR 65 Interchange Improvements Project, Whitney Ranch Parkway Interim Phase Project (to be completed in 2016), and the Placer Parkway Phase I Project. Planned development associated with population growth may have impacts on water quality in the project area due to increases in traffic, recreation, bridge use, and other factors. The City of Lincoln General Plan, City of Rocklin General Plan, and City of Roseville General Plan also identify current and future planned development in the project area.

4.5.1 Contribution to Significant Cumulative Water Quality Impacts

Development of the proposed project combined with the effects of other past and future development within the potentially affected geographic area could degrade stormwater quality through an increase in impervious surface area and increase in contaminated runoff, which could ultimately violate water quality standards, affect beneficial uses, and/or further impair Section 303(d)-listed waters including Pleasant Grove Creek and Pleasant Grove Creek (South Branch), downstream aquatic habitats such as ephemeral drainages, emergent wetlands and vernal pools habitats and within the Lower Sacramento watershed and the North American Subbasin of the Sacramento Valley Groundwater Basin. Water quality of stormwater runoff varies with surrounding land uses, topography, and amount of impervious surface area, as well as the intensity (energy) and frequency of irrigation or rainfall. During construction, runoff may contain sediments and other construction materials and wastes (e.g., concrete debris) resulting from activities, such as site clearing and grubbing, demolition and removal of existing structures and pavement, cut-and-fill activities, grading and excavation, paving, building construction, tree removal, and landscaping. During operation, runoff may contain oil, grease, and metals generated from motor vehicles and accumulated in the streets and driveways, as well as pesticides, herbicides, particulate matter, nutrients, animal waste, litter, and other oxygen-

demanding substances from landscaped areas. The highest pollutant concentrations are generally in stormwater runoff generated at the beginning of the wet season and during the "first-flush" where approximately 80% of total accumulated pollutants are washed off surfaces with the first 0.5 inch of rainfall, with street surfaces as the primary source of pollutants in urban areas.

Construction of the proposed project would result in surface disturbance through grading, trenching, and compaction associated with typical development activities. Existing vegetation would be removed, thereby increasing the potential for erosion. Consistent with municipal stormwater programs for Placer County and Caltrans, project-specific SWPPPs would include implementation of construction BMPs. In addition, other necessary site-specific permits (i.e., CGP, CWA Section 401 Water Quality Certification, Low-Threat General Order, CWA Section 404 Permit) would be obtained for the project, and associated measures would be implemented to sufficiently reduce potential surface water quality impacts during construction, preventing cumulative impacts. Therefore, the proposed project would not contribute to a cumulative water quality impact during construction.

During project operation, the proposed project could contribute to the degradation of water quality and a cumulative impact if the type and concentration of pollutants in stormwater runoff increased. New development projects would increase impervious surface area, which would result in increased stormwater runoff. Projects would be consistent with municipal stormwater programs for Placer County and Caltrans, and, therefore, would include post-construction design measures, such as LID and vegetative areas to allow for infiltration and water quality treatment. The proposed project does not represent a significant departure from the existing land use. Stormwater runoff would be directed to the proposed stormwater collection systems. Therefore, the proposed project would not contribute to a cumulative water quality impact during operations.

Therefore, cumulative impacts, and the project's contribution to cumulative impacts, on water quality would not be cumulatively considerable. The incremental effects of individual projects would not be significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

4.5.2 Contribution to Significant Groundwater or Stormwater Drainage Capacity Impacts

4.5.2.1 Groundwater

Groundwater recharge in the North American Subbasin of the Sacramento Valley Groundwater Basin, where cumulative projects are located, occurs via natural recharge and applied water recharge.

Many cumulative projects would be redevelopment projects in urbanized areas where recharge does not occur. Cumulative development in highly urbanized areas would not be expected to substantially increase the amount of impervious surfaces because this development would mostly be in already urbanized areas, where groundwater recharge from percolating rainfall potential would not be adversely affected and indirect lowering of the local groundwater table is not likely

to occur. However, population growth and development is anticipated outside of urbanized areas. Increases in these types of land uses throughout the North American Subbasin increase the demands on the groundwater supply. Development outside of areas of prior impervious surfaces including agricultural areas, percolation of excess irrigation water, and seepage losses from canals and ditches would affect groundwater recharge and may be cumulatively considerable.

It is possible that dewatering would occur concurrently for various construction projects in the area. This dewatering could cause localized shifts in groundwater patterns that could cause areas of degraded groundwater quality to migrate. However, the dewatering protocol established by the County would apply to the proposed project and other development where dewatering is needed. County and state staff would review all permit applications for dewatering, which would allow the County to determine the volumes and frequencies of discharges to be allowed from each project to ensure water quality violations do not occur and to ensure that local groundwater levels do not shift substantially.

Therefore, cumulative impacts, and the proposed project's contribution to cumulative impacts, on groundwater supply and quality would not be cumulatively considerable.

4.5.2.2 Storm Drainage Capacity

Cumulative development could increase the rate and volume of stormwater runoff due to the overall increase in impervious surfaces. Increases in the rate or volume of stormwater runoff can cause localized flooding if the storm drain capacity is exceeded, or if flows exceed channel capacities and are conveyed to overbank areas where flood storage may not be available. Proposed projects within Placer County are required to comply with the Stormwater Program to maintain sufficient drainage system capacity to convey 100-year peak flows. For the most part, the cumulative projects would occur in areas that are already highly developed with impervious surfaces, so changes in flows that could increase localized flood risk would not be expected to be substantial.

All cumulative projects would be required to include design features to reduce flows to pre-project conditions, according to relevant MS4 Permit requirements, such as the Caltrans MS4 Permit, Statewide Phase II MS4 Permit, Placer County MS4 permit requirements, and other stormwater requirements (i.e., specified in Sunset Industrial Area Plan Update, General Plans, and City ordinances). The proposed project would be required to design a stormwater drainage system in compliance with these requirements. Thus, cumulative impacts likely would be less than significant and the project's contribution to cumulative impacts and on storm drainage capacity would not be cumulatively considerable.

5. AVOIDANCE AND MINIMIZATION MEASURES

The proposed project will implement construction BMPs based on guidance from several resources including the *Caltrans Construction Site Best Management Practices Reference Manual* (California Department of Transportation 2011). Implementation of water quality measures (management measures and BMPs) are required to address project-related water quality impacts during construction, operation, and maintenance of the freeway project. Key management measures include the following.

- Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss.
- Minimize the potential for erosion via limiting land disturbances such as clearing and grading and cut/fill.
- Preserve any existing terrain providing desirable drainage courses or effective filtration.
- Limit disturbance of natural drainage features and vegetation.
- Prepare and implement an approved SWPPP.
- Ensure proper storage and disposal of potential hazardous material.
- Incorporate pollution prevention into operation and maintenance procedures to reduce pollutant loadings to surface runoff.

5.1 Proposed Hydrology and Water Quality Measures

The measures listed in the following sections will be implemented to avoid or minimize potential hydrology and water quality impacts of the proposed project.

5.2 Water Quality Protection Measures

The following is a summary of general water quality protection measures that would be implemented during construction and operation of the proposed project.

5.2.1 Construction

Potential water quality impacts from construction activities would be avoided or minimized because all construction activities within Orchard Creek and Pleasant Grove Creek would comply with a variety of permits and requirements from agencies, including the SWRCB, CVWB, Placer County, City of Lincoln, City of Rocklin, and City of Roseville.

Because the proposed project involves disturbance of more than 1 acre of land, compliance with the CGP would be required by the SWRCB. The proposed project will implement construction BMPs based on guidance from several resources including the *Caltrans Construction Site Best Management Practices References Manual* (California Department of Transportation 2011).

The project proponent and the construction contractor will comply with all construction site BMPs specified in the SWPPP and any other permit conditions to minimize introduction of construction-related contaminants and mobilization of sediment in Orchard Creek, Pleasant Grove Creek, vernal pools, seasonal wetlands, drainages and ditches in and adjacent to the project area. Broadly, these BMPs will address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-stormwater management, and waste management practices. The BMPs will be based on the best conventional and best available technology.

The BMPs will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable and are subject to review and approval by the project proponent. As part of CGP compliance, the project SWPPP will require the construction contractor to implement, monitor, and maintain appropriate BMPs. The project proponent will perform routine inspections of the construction area to verify the BMPs are properly implemented and maintained. The project proponent will notify contractors immediately if a noncompliance issue arises and requires compliance.

The BMPs will include those presented below. The categories provided are based on Construction Site BMP Fact Sheets provided by Caltrans (http://www.dot.ca.gov/hq/construc/stormwater/factsheets.htm).

5.2.1.1 Scheduling

Project construction is expected to commence in 2018 and conclude in 2020. All in-water water and earthwork or foundation activities involving wetlands will occur in the dry season (between June 1 and October 15).

5.2.1.2 Vehicle & Equipment Fueling and Maintenance

Equipment used in and around drainages, creeks, and wetlands will be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance will be performed at least 300 feet from all drainages and wetlands. Any necessary equipment washing will be conducted where the water cannot flow into drainages or wetlands.

5.2.1.3 Spill Prevention

Potential release or spillage of petroleum products such as diesel fuel, hydraulic fluid, and lubrication greases, from a vehicle or piece of equipment during maintenance or fueling could affect water quality if these petroleum products infiltrate into soil or are washed into nearby storm drains or directly into Orchard Creek, Pleasant Grove Creek or other waters. However, because the volume of petroleum released during an incidental spill on a construction site is typically small (less than 25 gallons) and can be cleaned up immediately, impacts associated with petroleum spills during the construction phase are considered minor. The project proponent will comply with applicable stormwater ordinances, stormwater management plans, the project Spill Prevention, Control, and Countermeasure (SPCC) Plan, and BMPs to prevent or minimize the potential release of contaminants into surface waters and groundwater. Implementation of standard construction procedures and precautions for working with petroleum and construction chemicals will further ensure that the impacts related to chemical handling during project

construction will be minor. The proposed project will include development and implementation of a hazardous material SPCC Plan before construction begins. The plan will include strict on-site handling rules to keep construction and maintenance materials from entering the creeks, wetlands, and vernal pools including procedures related to refueling, operating, storing and staging construction equipment and preventing and responding to spills. The plan also will identify all parties responsible for monitoring the spill response. During construction, any spills will be cleaned up immediately according to the SPCC Plan. The project proponent will review and approve the contractors' potential hazardous material SPCC Plan before commencing construction.

5.2.1.4 Hazardous and Concrete Waste Management

The following types of materials will be prohibited from being rinsed or washed into the streets, shoulder areas, or gutters: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; and heavily chlorinated water.

5.2.1.5 Material Delivery and Storage

Proper storage and disposal of potential hazardous material will be ensured. Any surplus concrete rubble, asphalt, or other rubble from construction will be transported to and disposed in a local landfill.

5.2.1.6 Erosion and Sediment Control

An Erosion and Sediment Control Plan will be prepared and implemented for the proposed project. The potential for erosion and sedimentation will be managed using effective construction and engineering BMPs. These practices include stabilizing the soil surface, reducing erosive energy of surface flow, filtering runoff, and capturing sediment-laden water. The project proponent will require its construction contractors to implement BMPs included in the SWPPP. The following is a brief list of example erosion and sediment control measures that may be implemented to reduce potential project water quality impacts and comply with the CGP:

- Silt Fence: Temporary erosion control measures, such as sandbagged silt fences, will be applied throughout construction of the proposed project and will be removed after the working area is stabilized or as directed by the engineer. Soil exposure will be minimized through use of temporary BMPs, groundcover, and stabilization measures.
- Wind Erosion Control: Exposed dust-producing surfaces will be sprinkled daily, if necessary, until wet; this measure will be controlled to avoid producing runoff. Paved roads will be swept daily following construction activities.
- Hydroseeding: An appropriate seed mix of native species will be planted on disturbed areas upon completion of construction.
- Soil Binders: Cover or apply non-toxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.

- Stockpile Management: Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. Material stockpiles will be located in non-traffic areas only. Side slopes will not be steeper than 2:1 (horizontal to vertical ratio). All stockpile areas will be surrounded by a filter fabric fence and interceptor dike.
- Avoid depositing or placing earth or organic material where it may be directly carried into the channel.

5.2.1.7 Dewatering Operations

Although groundwater dewatering is not expected to occur as part of the proposed project, it is possible that groundwater would be encountered during construction activities. Before discharging any dewatered effluent to surface water, the project proponent or contractors will obtain a Low-Threat General Order from the CVWB. As part of the permit, the permittee will design and implement measures as necessary so that the discharge limits identified in the relevant permit are met. Should dewatered effluent be discharged into Pleasant Grove Creek, Orchard Creek, or nearby storm drains, the Low-Threat General Order would require proper disposal of the water. As a performance standard, these measures will be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable. Implemented measures may include the retention of dewatering effluent until particulate matter has settled before it is discharged, use of infiltration areas, and other BMPs. Final selection of water quality control measures will be subject to approval by the CVWB.

In addition, Caltrans has a *Field Guide to Construction Site Dewatering* that provides the Resident Engineer with step-by-step instructions for overseeing dewatering operations on the construction site (California Department of Transportation 2014). All aspects of dewatering are addressed, from the selection of an appropriate dewatering management option to ensuring compliance with Caltrans NPDES permit requirements for operations, maintenance, and reporting. Detailed information about sediment removal methods and technologies is provided in Appendix B of the Field Guide.

5.2.1.8 Water Quality Monitoring

Rain-event monitoring of turbidity, pH, specific conductance, and temperatures in Orchard Creek and Pleasant Grove Creek will be measured during construction, if necessary, as required by the CGP. As required by the CVWB, exceedances of water quality standards specified in the CVWB Basin Plan will be avoided.

Implementation of the SWPPP, Caltrans BMPs, and stormwater BMPs will minimize the potential for construction-related surface water pollution and ensure that water quality will not be compromised by erosion and sedimentation during construction. The project proponent will also obtain a Section 401 Water Quality Certification from the CVWB, which may contain additional BMPs and water quality measures to ensure the protection of water quality.

5.2.2 Operation

The new road design culverts will incorporate permanent erosion control elements, such as permanent vegetation, to ensure that stormwater runoff does not cause soil erosion. Implementation of the project-specific, long-term avoidance and minimization measures and design BMPs will also reduce or avoid impacts on water quality.

The proposed project will adhere to the Caltrans NPDES Permit requirements and ensure that stormwater pollution during operation and maintenance of the project will be minimal by implementing design measures recommended in Caltrans guidance documents, and post-construction BMPs. Standard facilities used to handle stormwater on site will include an array of structural elements or facilities that will serve to manage, direct, and convey the stormwater. These will include biofiltration swales and biofiltration strips at feasible locations that will be determined during the design phase.

5.2.2.1 Groundwater Protection Measures

The proposed project will not substantially affect groundwater resources because, if excavations are required; they would only intersect the shallow water table temporarily with only localized and inconsequential effects to the regional groundwater system. While small amounts of construction-related dewatering are covered under the CGP, the proposed project may also need to comply with the CVWB's Low-Threat General Order. In addition, Caltrans has a *Field Guide to Construction Site Dewatering* that provides the Resident Engineer with step-by-step instructions for overseeing dewatering operations on the construction site. All aspects of dewatering are addressed, from the selection of an appropriate dewatering management option to ensuring compliance with Caltrans NPDES permit requirements for operations, maintenance, and reporting.

5.2.2.2 Drainage Control Measures

The road widening would involve the addition of impervious surface area compared to the existing structures once construction is completed. Potential new surface flows from the project would be designed to be similar to pre-project flows. Increases in stormwater flow volumes will be mitigated by directing flow to drainage ditches and biofiltration swales. To minimize the increase of velocity where flows are anticipated, flared end sections, rock lined channel and paved channel will be used (Mark Thomas & Company, Inc. 2014). Although the project would modify existing drainage patterns, the project is designed to direct runoff from watershed areas into the same, existing discharge points. Stormwater would be drained by a combination of new and existing pipes, drainage inlets, and other storm drain facilities. The median paving will redirect runoff from the new impervious surface at the median and sheet flow across pavement.

As discussed in Section 4.2.1.2, *Currents, Circulation, or Drainage Patterns,* project drainage has been considered in the design, and will include biofiltration swales and strips as well as reconstructed asphalt concrete gutters and earth ditches. The proposed project will be designed in accordance with the objectives of Caltrans NPDES Permit requirements and related stormwater requirements to reduce runoff and the volume of entrained sediment. In addition, the potential increase in impervious area would not cause on- or off-site flooding.

6. REFERENCES

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6.2 Personal Communications

Lee, Andy. Project engineer at Mark Thomas. Sacramento, CA. March 16, 2017—Email to Claire Bromund at ICF, and Zach Siviglia and Matt Brogan at Mark Thomas, conveying updated impervious and disturbed soil area for each project alternative.

6.3 Preparer(s) Qualifications

Katrina Sukola, a Water Quality Specialist with ICF International with 12 years of professional experience, specializes in hydrological and water quality impact analysis, developing and implementing water quality monitoring efforts, and assisting clients in water quality regulatory compliance for projects. Katrina's prior work experience includes working with nonprofit organizations, where she managed the Mystic Monitoring Network, a water quality monitoring program and developed watershed management data for cities, the U.S. Environmental Protection Agency and other state regulatory agencies.

Katrina received an M.S. in (Aquatic) Chemistry from the University of Manitoba in 2003; and a B.A. in Environmental Chemistry from the University of Waterloo in 2001.

Attachment A
Project Drawings

Carpool Lane Alternative

CARPOOL LANE ALTERNATIVE

03–PLA–65 PM 6.2/12.8

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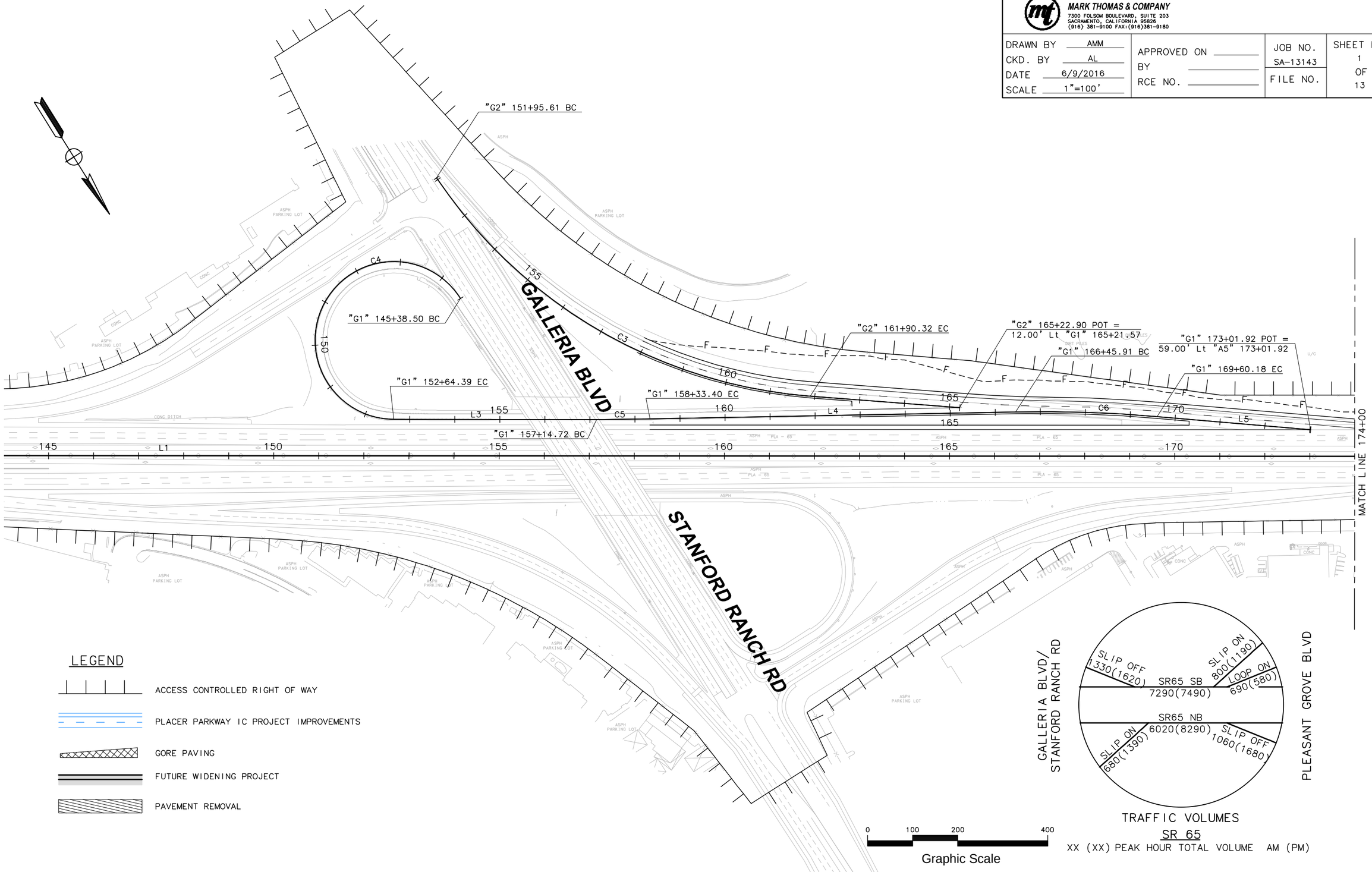
DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 1 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



LEGEND

- ACCESS CONTROLLED RIGHT OF WAY
- PLACER PARKWAY IC PROJECT IMPROVEMENTS
- GORE PAVING
- FUTURE WIDENING PROJECT
- PAVEMENT REMOVAL

TRAFFIC VOLUMES
SR 65
XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)

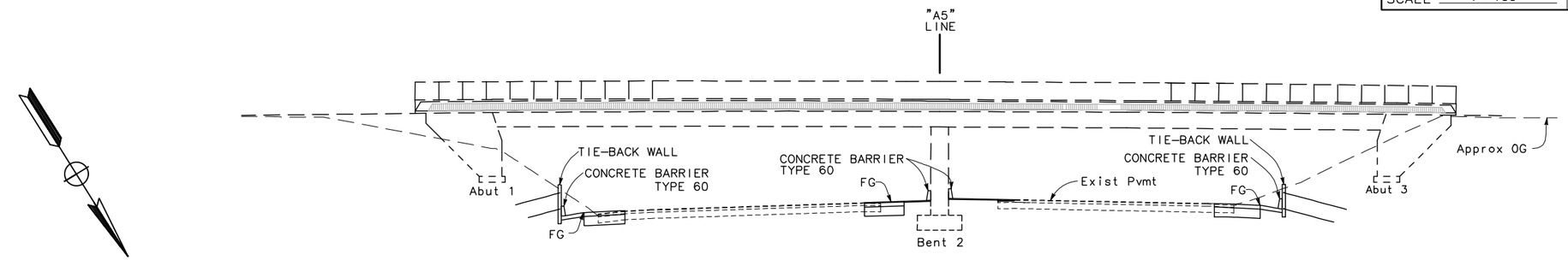
0 100 200 400
Graphic Scale

CARPOOL LANE ALTERNATIVE

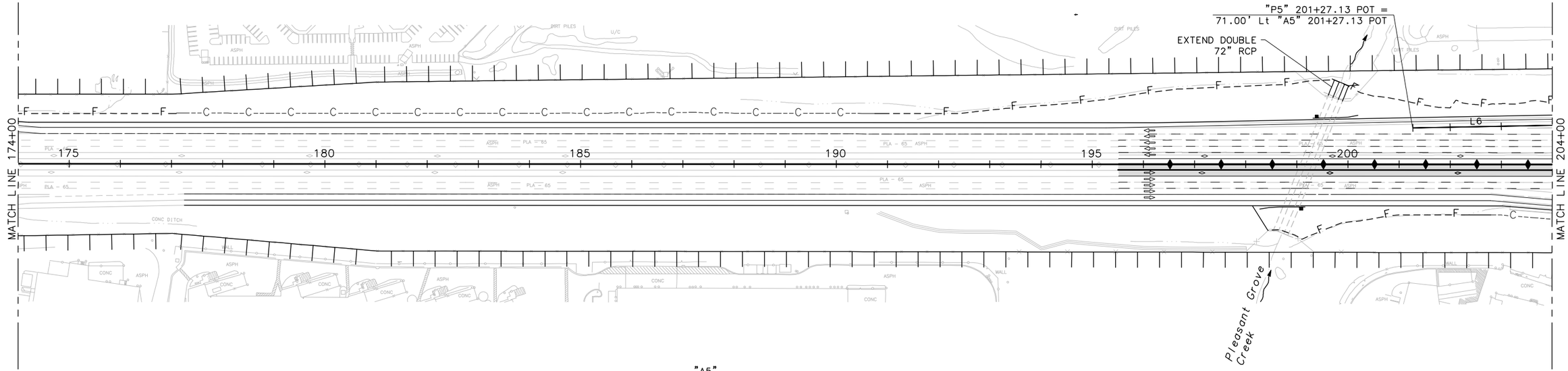
03–PLA–65 PM 6.2/12.8

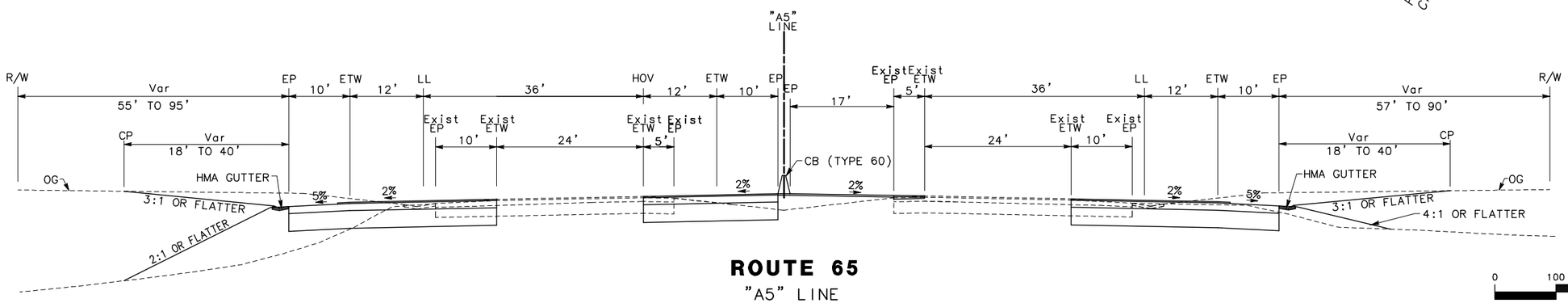
MARK THOMAS & COMPANY
7300 FOLSOM BOULEVARD, SUITE 203
SACRAMENTO, CALIFORNIA 95826
(916) 381–9100 FAX:(916)381–9180

DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 2 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



PLEASANT GROVE OVERCROSSING





ROUTE 65

"A5" LINE

BETWEEN GALERIA BLVD TO PLEASANT GROVE BLVD

0 100 200 400

Graphic Scale

CARPOOL LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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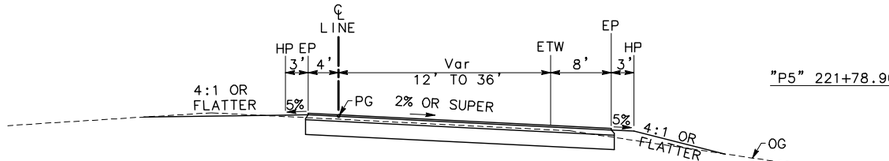
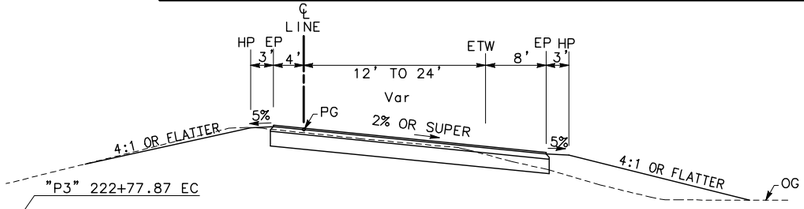
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 3 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



SOUTHBOUND SLIP ON-RAMP

"B4" & "P5" LINE

(LOOKING IN DIRECTION OF TRAVEL)



SOUTHBOUND SLIP OFF-RAMP

"P3" LINE

(LOOKING IN DIRECTION OF TRAVEL)

LOOP ON-RAMP

"P2","P4", "B1" & "B3" LINE

(LOOKING IN DIRECTION OF TRAVEL)

0 100 200 400

Graphic Scale

TRAFFIC VOLUMES

SR 65

XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)

CARPOOL LANE ALTERNATIVE

03–PLA–65 PM 6.2/12.8

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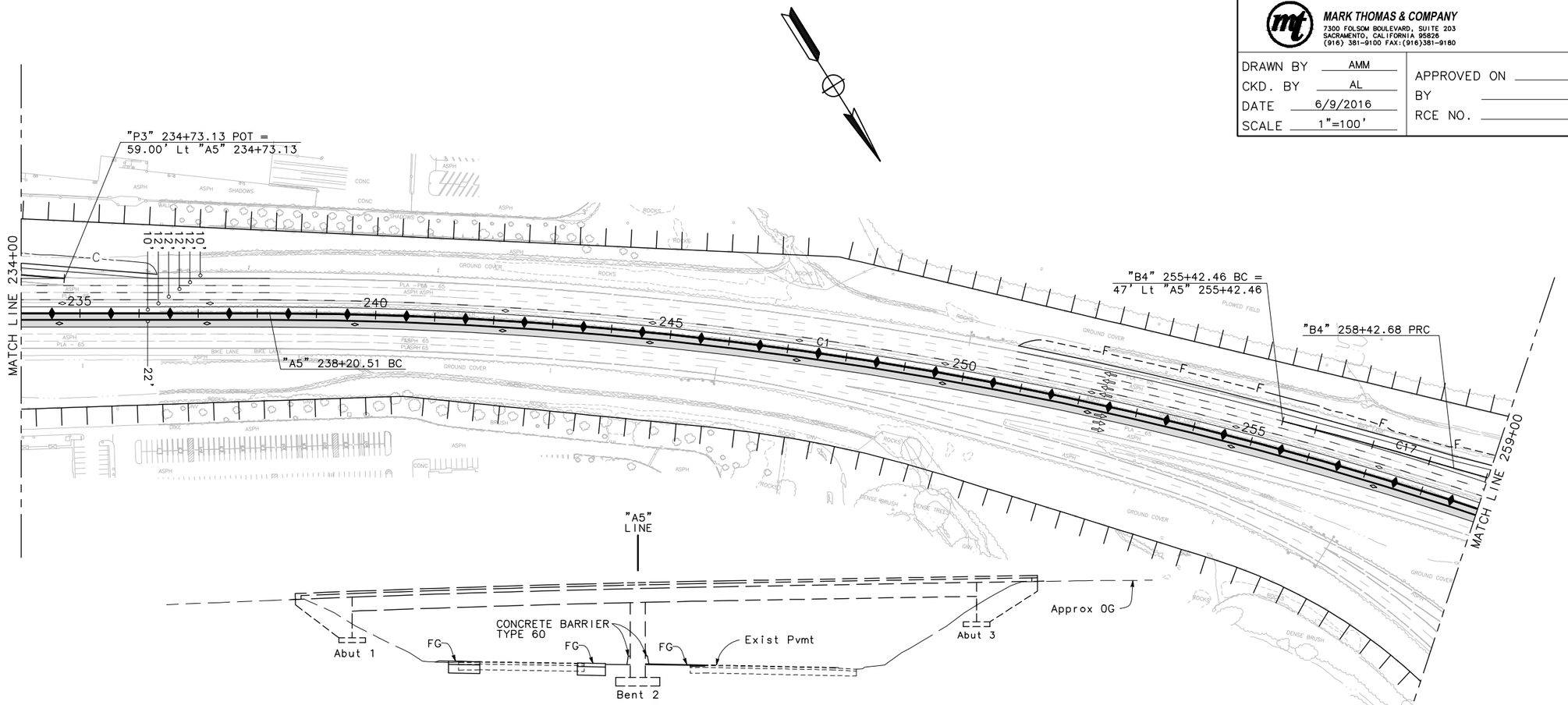
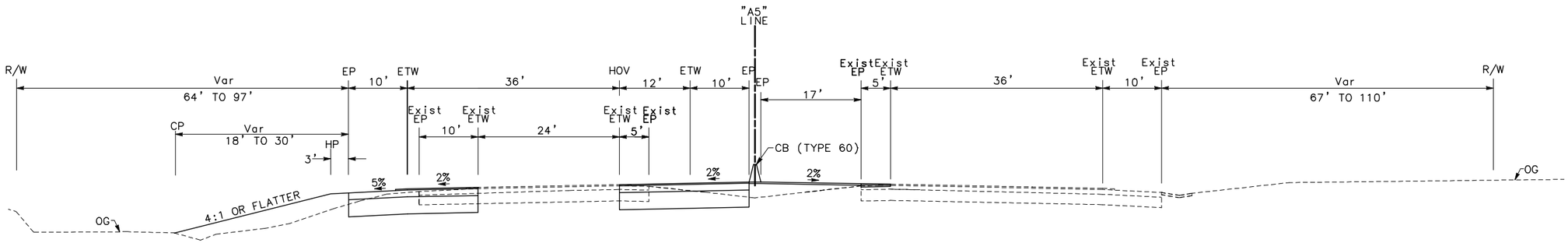
DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 4 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



BLUE OAKS OVERCROSSING



ROUTE 65

"A5" LINE

BETWEEN PLEASANT GROVE BLVD TO BLUE OAKS BLVD

0 100 200 400

Graphic Scale

CARPOOL LANE ALTERNATIVE

03–PLA–65 PM 6.2/12.8

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DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 5 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			

"B4" 276+74.67 POT =
22.69' Rt "BO" 87+89.85

"B4" 276+05.10 EC

"BO" 88+77.63 POT =
"B3" 291+43.85 POT

"BO" 90+09.10 BC

"B3" 284+08.84 EC

"B4" 260+09.78 EC

GORE PAVING

"B4" 262+14.34 BC

"BO" 94+55.55 EC

"B3" 271+46.72 BC =
47.00' Lt "A5" 271+46.72

"B3" 274+46.82 PRC

"B3" 276+13.92 EC

GORE PAVING

"A5" 269+85.34 POC =
"BO" 97+68.13 POT

"B1" 267+28.07 PCC

"B3" 278+08.23 BC

250' TAPER

MATCH LINE 259+00

MATCH LINE 288+00

"B1" 269+86.65 EC

"B2" 259+27.03 POT =
24.65' Rt "BO" 99+21.37

"B2" 260+64.49 BC

"BO" 101+26.73 BC

"B1" 262+80.86 BC

"B2" 262+80.86 EC =
12.00' Rt "B1" 262+80.86

"A5–1" 83+52.96 POT =
23.00' RT "A5" 283+52.96 POC

"BO" 102+02.47 POC =
"B1" 261+00.60 POT

"BO" 106+42.21 EC

"A5"
LINE

CONCRETE BARRIER
TYPE 60

FG

Abut 1

Bent 2

Abut 3

Exist Pvmt

Approx OG

BLUE OAKS OFF-RAMP OVERCROSSING

0 100 200 400

Graphic Scale

CARPOOL LANE ALTERNATIVE

03–PLA–65 PM 6.2/12.8

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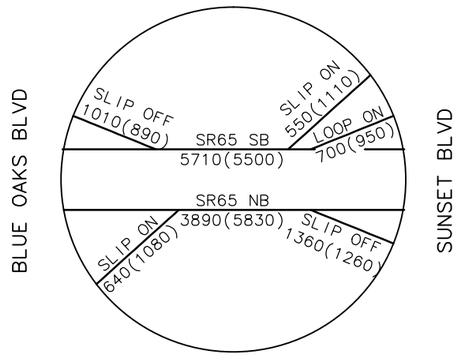
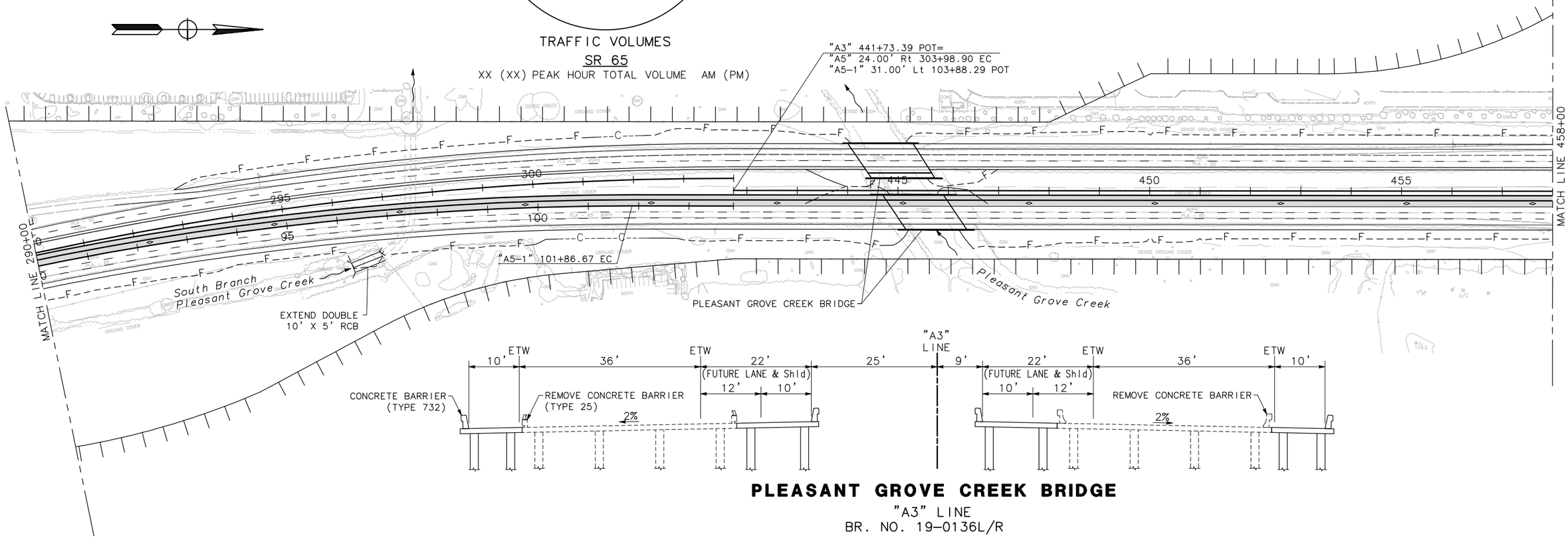
DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 6 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



TRAFFIC VOLUMES
SR 65
XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)



PLEASANT GROVE CREEK BRIDGE

"A3" LINE
BR. NO. 19–0136L/R

0 100 200 400
Graphic Scale

CARPOOL LANE ALTERNATIVE

03–PLA–65 PM 6.2/12.8

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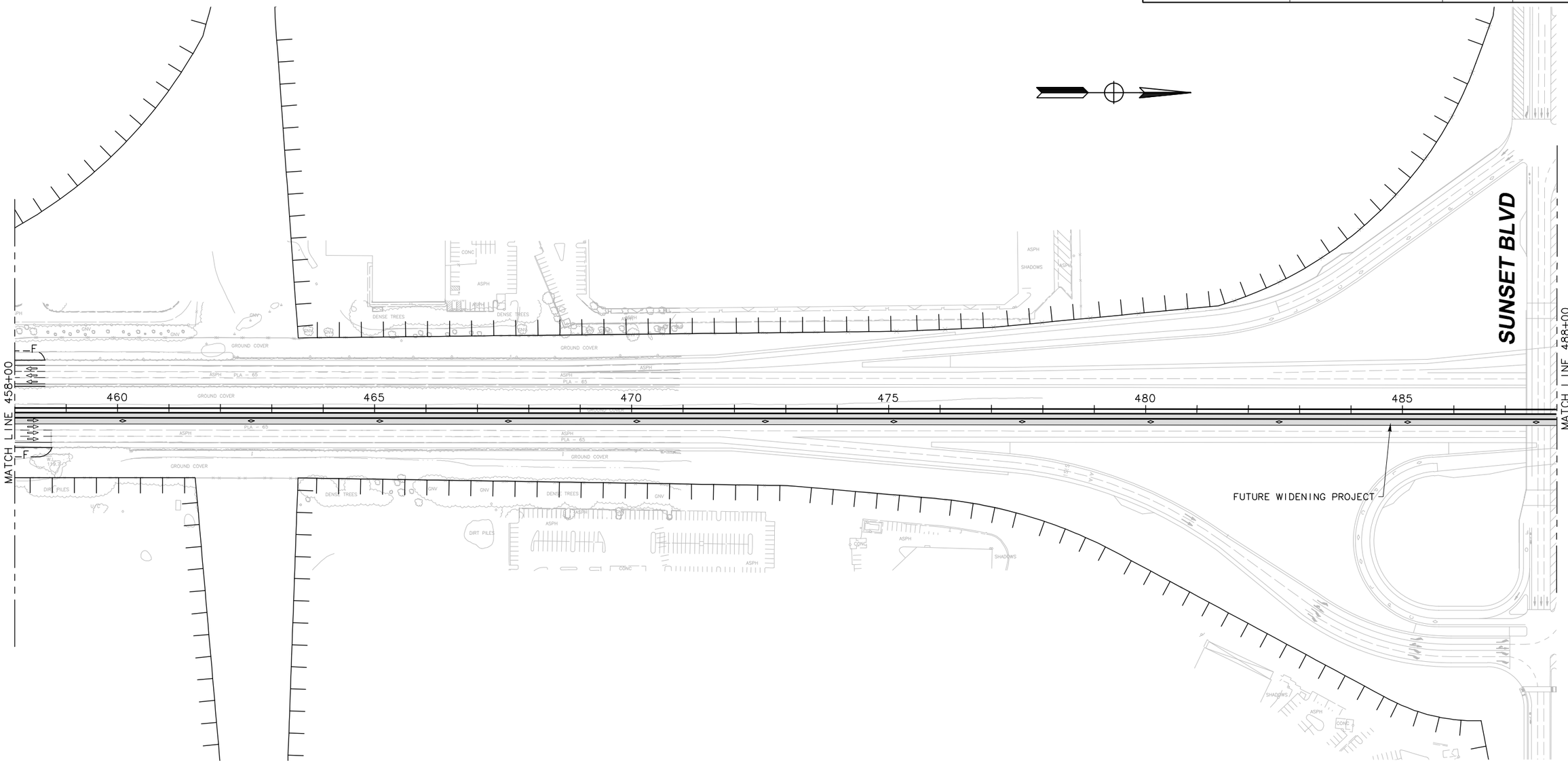
DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 7 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



0 100 200 400

Graphic Scale

CARPOOL LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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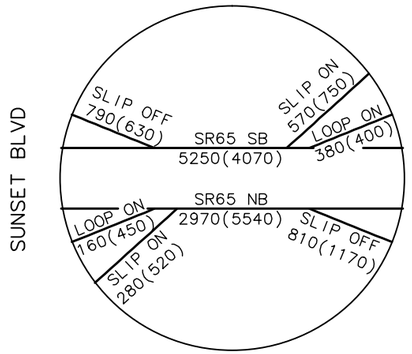
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 8 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



TRAFFIC VOLUMES

SR 65

XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)

0 100 200 400

Graphic Scale

CARPOOL LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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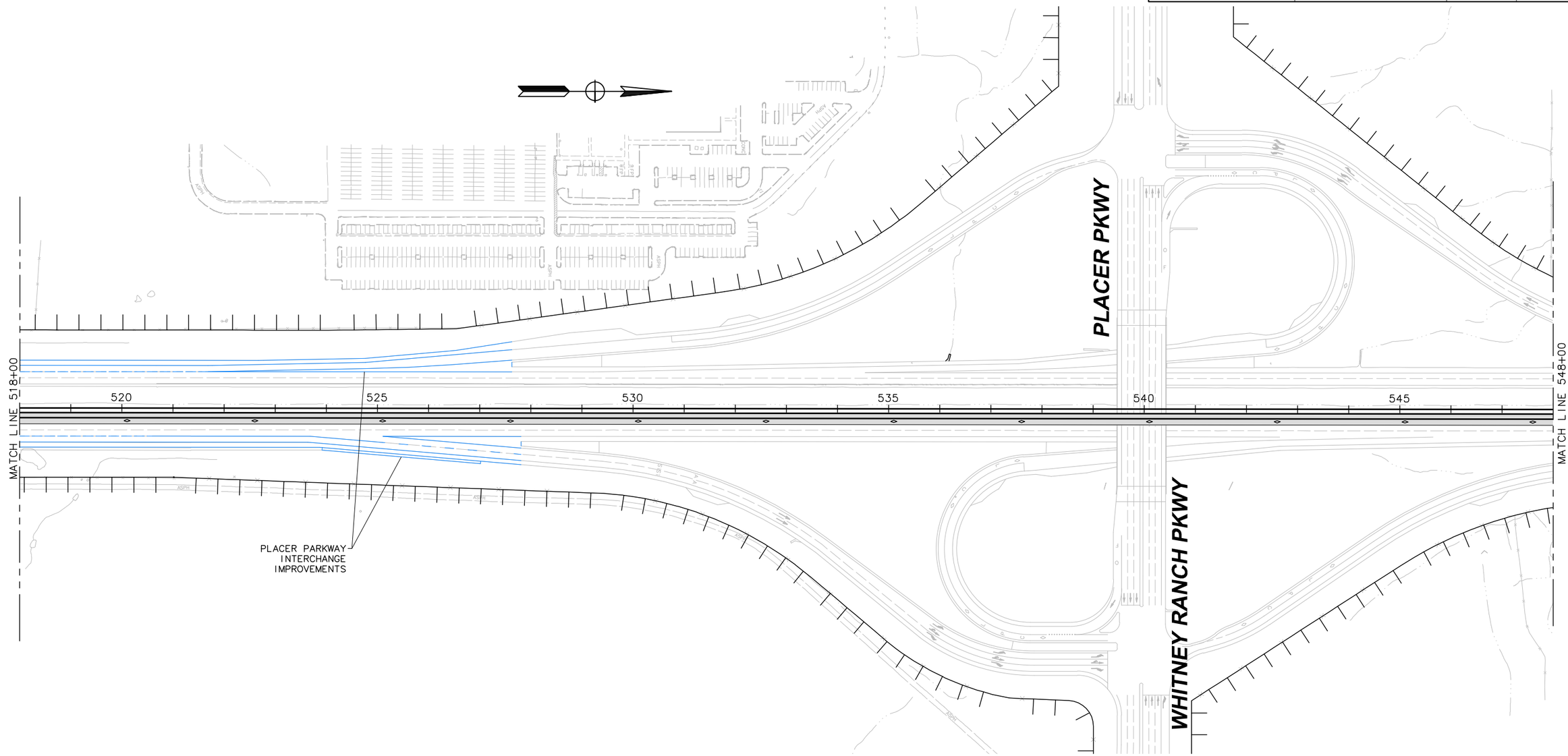
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 9 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



CARPOOL LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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SACRAMENTO, CALIFORNIA 95826
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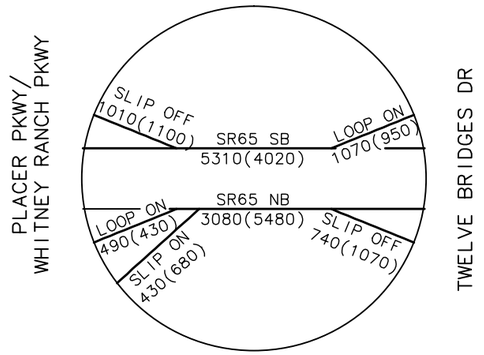
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 10 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



TRAFFIC VOLUMES
SR 65
XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)

0 100 200 400
Graphic Scale

CARPOOL LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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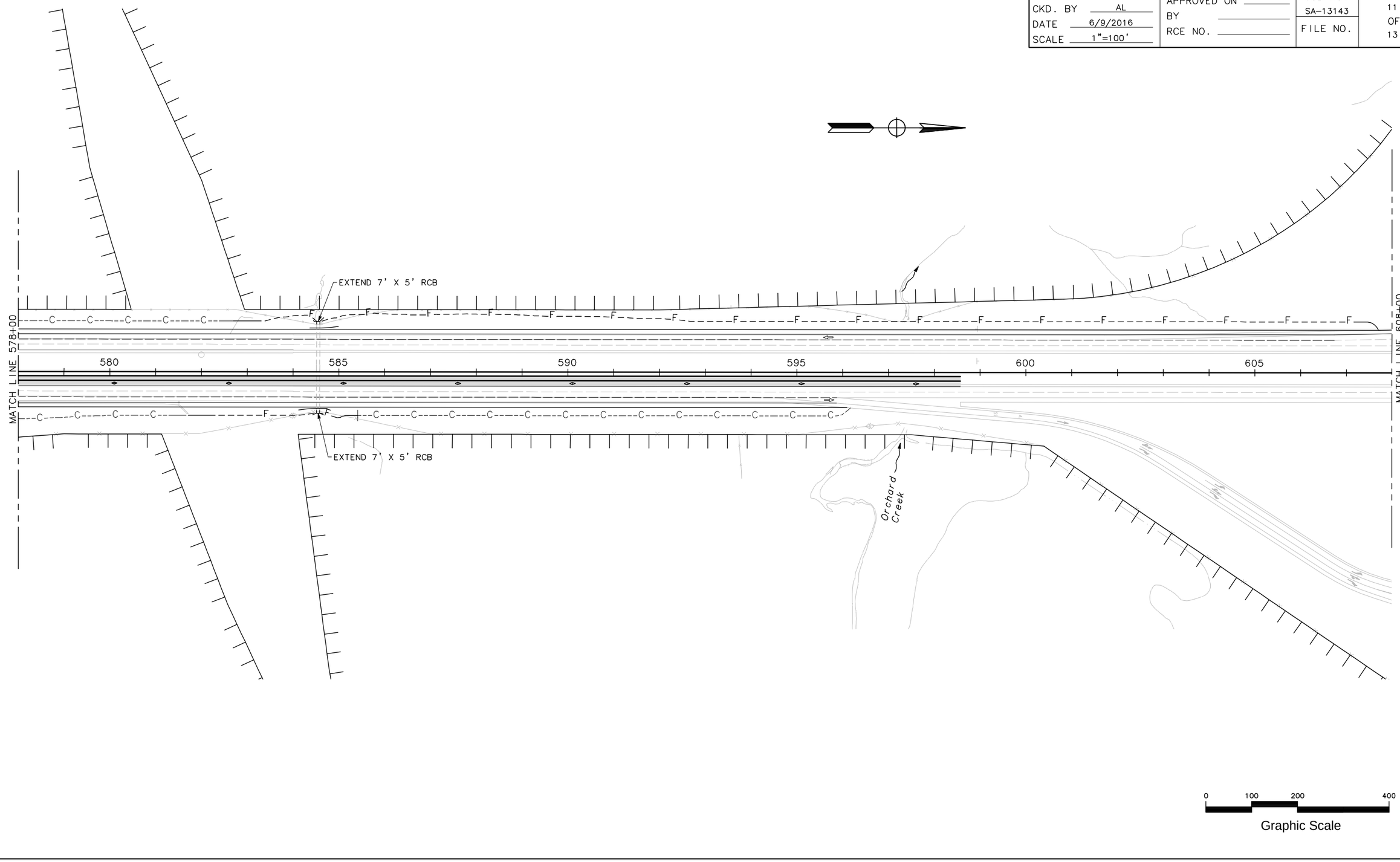
(916) 381-9100 FAX:(916)381-9180

DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 11 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



CARPOOL LANE ALTERNATIVE

03–PLA–65 PM 6.2/12.8

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SACRAMENTO, CALIFORNIA 95826
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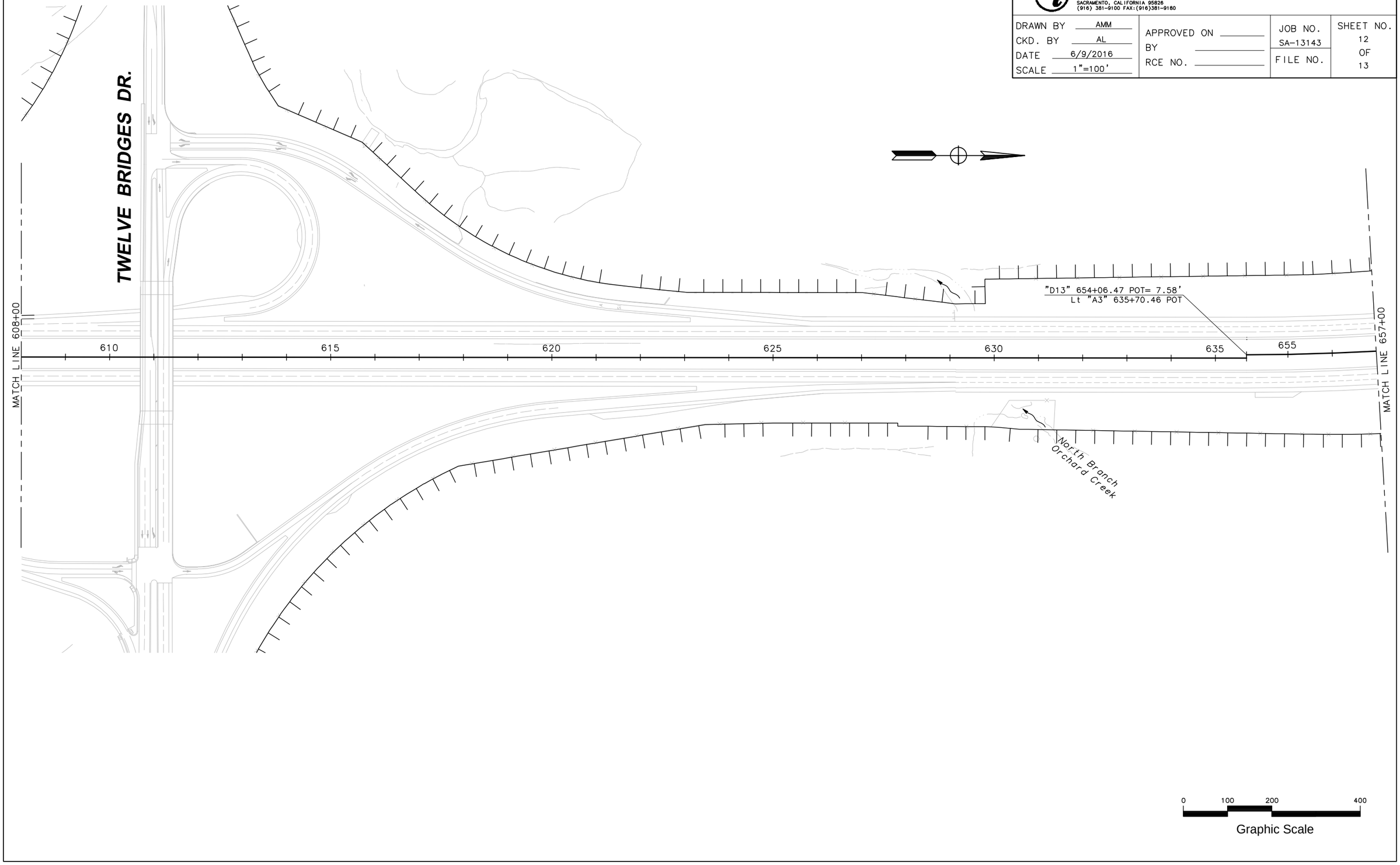
DRAWN BY AMM	APPROVED ON	JOB NO. SA–13143	SHEET NO. 12 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



CARPOOL LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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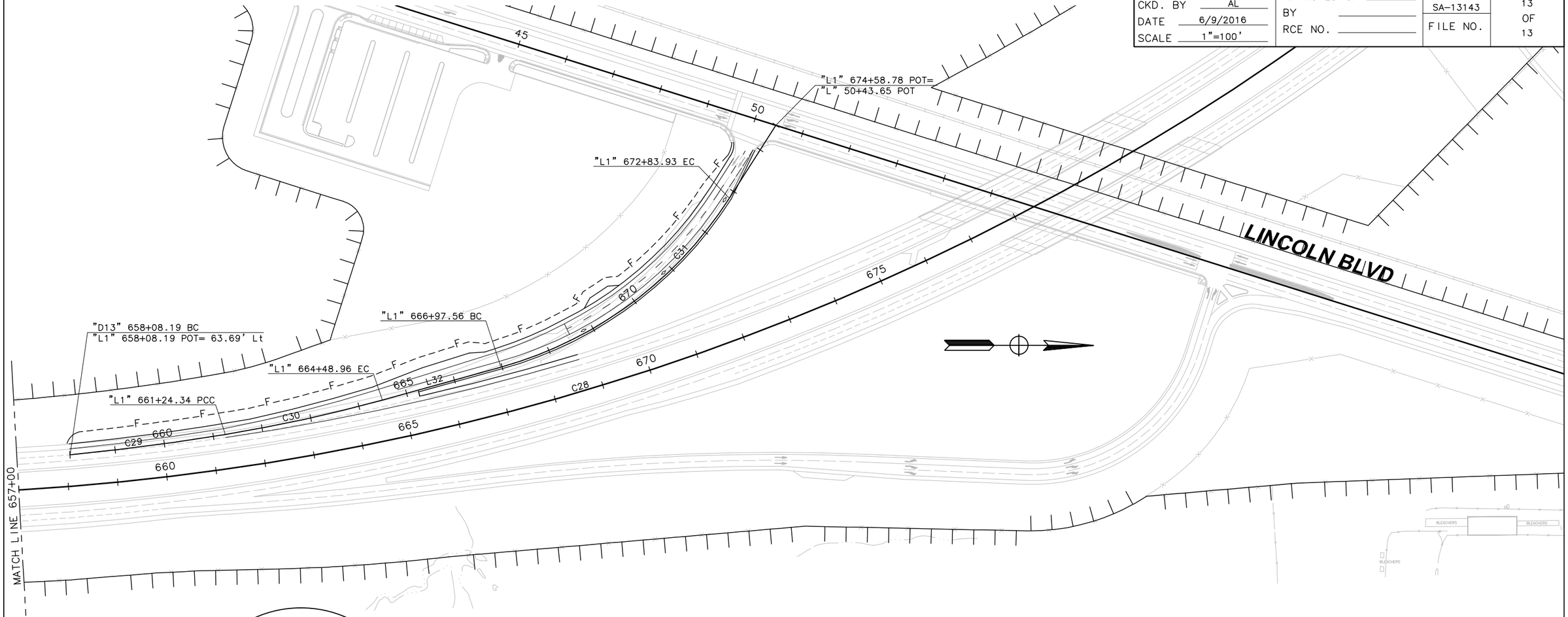
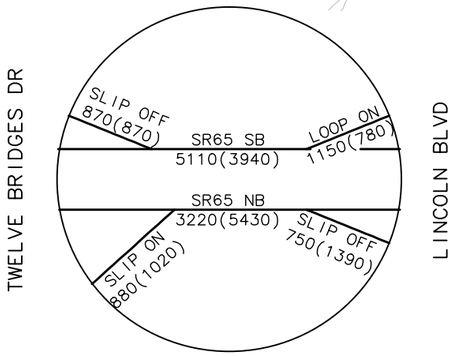
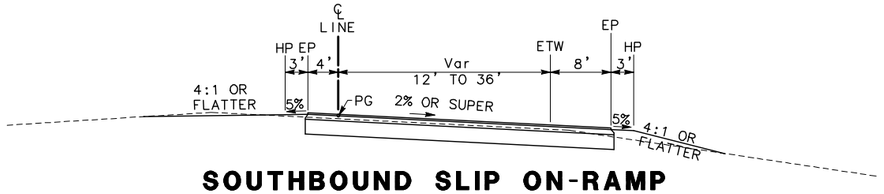
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 13
CKD. BY AL	BY		OF
DATE 6/9/2016	RCE NO.	FILE NO.	13
SCALE 1"=100'			





TRAFFIC VOLUMES
SR 65
XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)



SOUTHBOUND SLIP ON-RAMP
"L1" LINE
(LOOKING IN DIRECTION OF TRAVEL)

0 100 200 400
Graphic Scale

General Purpose Lane Alternative

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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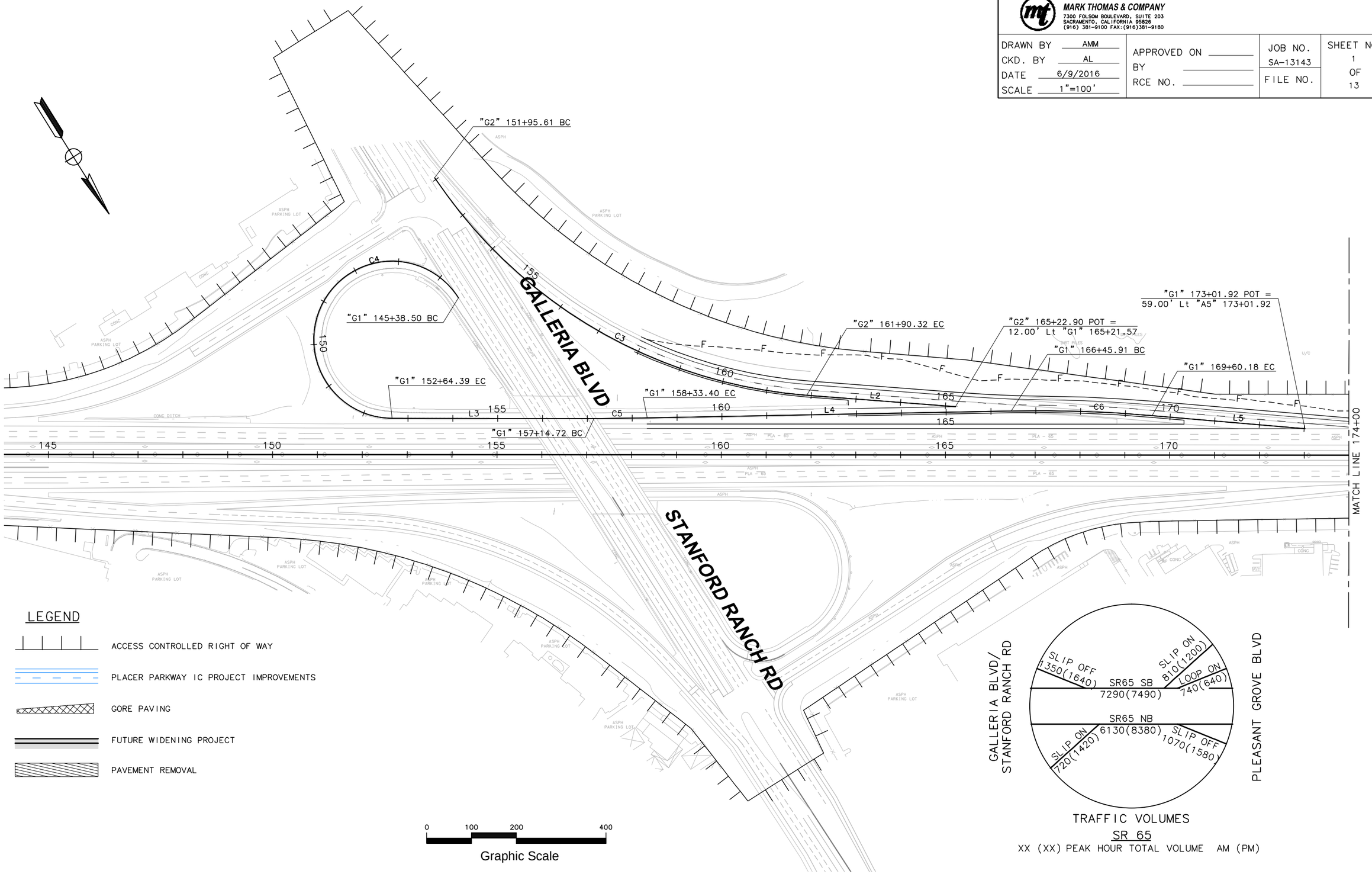
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 1 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



LEGEND

- ACCESS CONTROLLED RIGHT OF WAY
- PLACER PARKWAY IC PROJECT IMPROVEMENTS
- GORE PAVING
- FUTURE WIDENING PROJECT
- PAVEMENT REMOVAL

0 100 200 400

Graphic Scale

TRAFFIC VOLUMES

SR 65

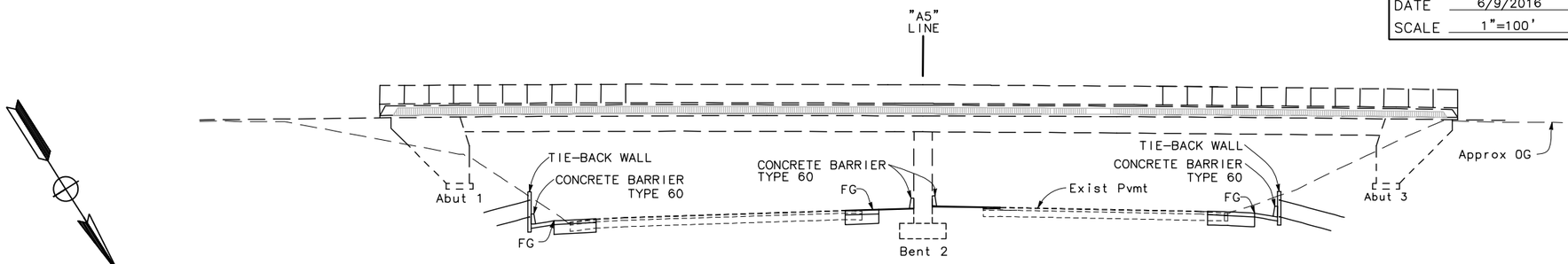
XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)

GENERAL PURPOSE LANE ALTERNATIVE

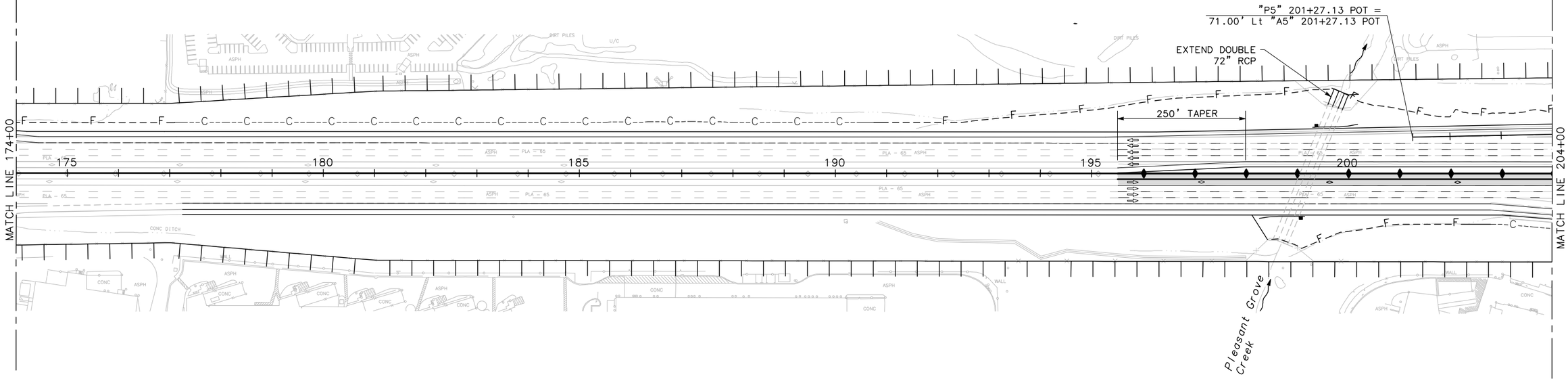
03-PLA-65 PM 6.2/12.8

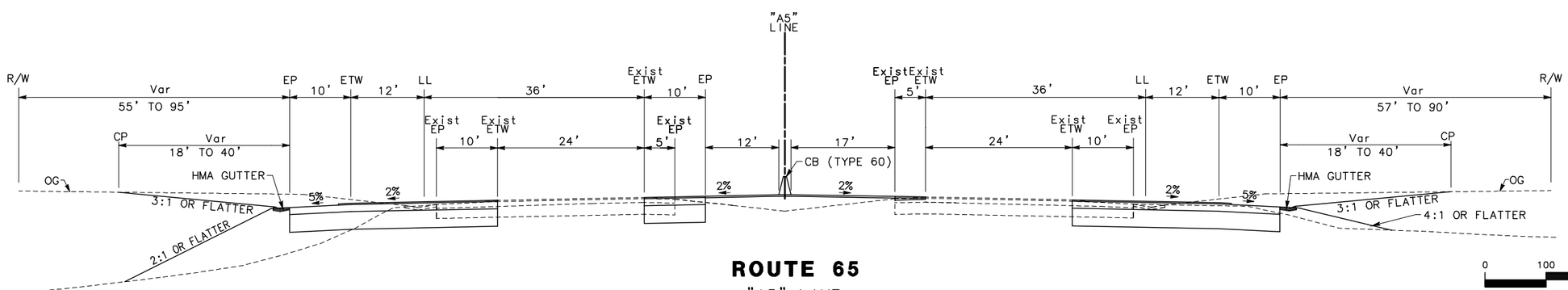
MARK THOMAS & COMPANY
7300 FOLSOM BOULEVARD, SUITE 203
SACRAMENTO, CALIFORNIA 95826
(916) 381-9100 FAX:(916)381-9180

DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 2 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



PLEASANT GROVE OVERCROSSING





ROUTE 65

"A5" LINE

BETWEEN GALLERIA BLVD TO PLEASANT GROVE BLVD

0 100 200 400

Graphic Scale

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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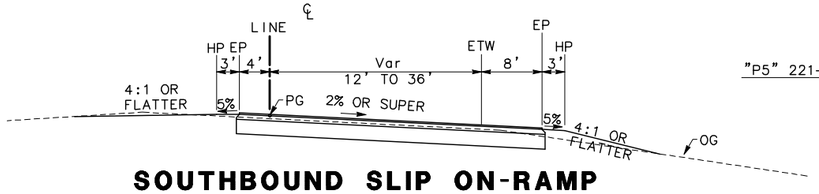
(916) 381-9100 FAX:(916)381-9180

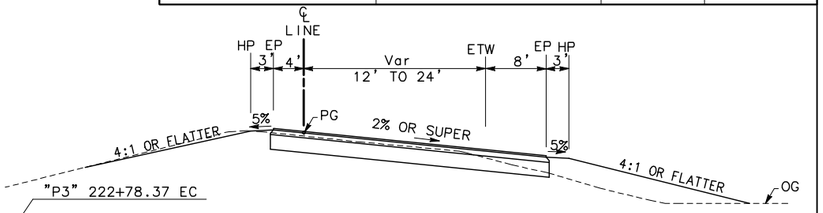
DRAWN BY	AMM	APPROVED ON		JOB NO.	SHEET NO.
CKD. BY	AL	BY		SA-13143	3
DATE	6/9/2016	RCE NO.		FILE NO.	OF
SCALE	1"=100'				13



SOUTHBOUND SLIP ON-RAMP

"B4" & "P5" LINE

(LOOKING IN DIRECTION OF TRAVEL)



SOUTHBOUND SLIP OFF-RAMP

"P3" LINE

(LOOKING IN DIRECTION OF TRAVEL)

LOOP ON-RAMP

"P2","P4", "B1" & "B3" LINE

(LOOKING IN DIRECTION OF TRAFFIC)

TRAFFIC VOLUMES

SR 65

PEAK HOUR (TOTAL VOLUME AM (PM)

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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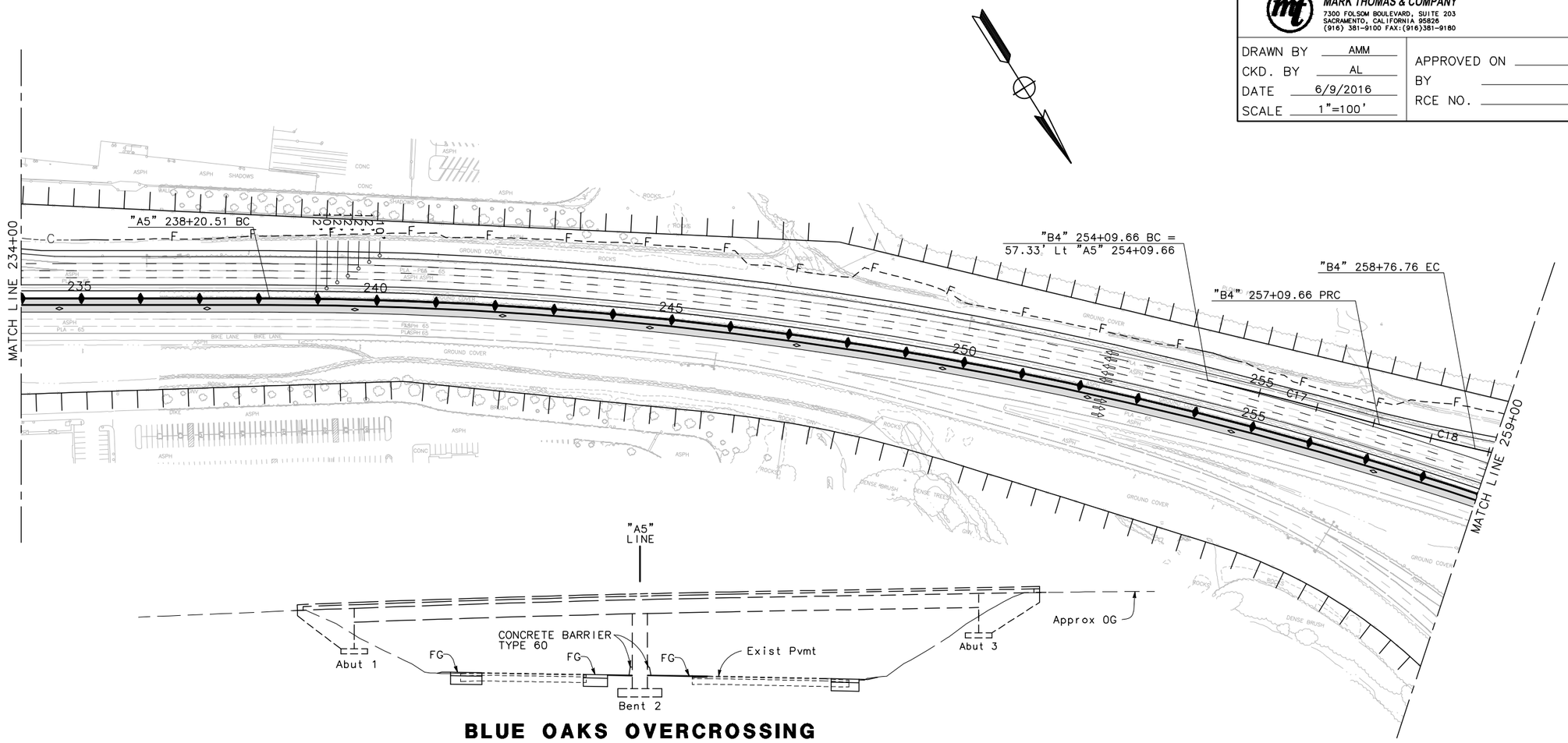
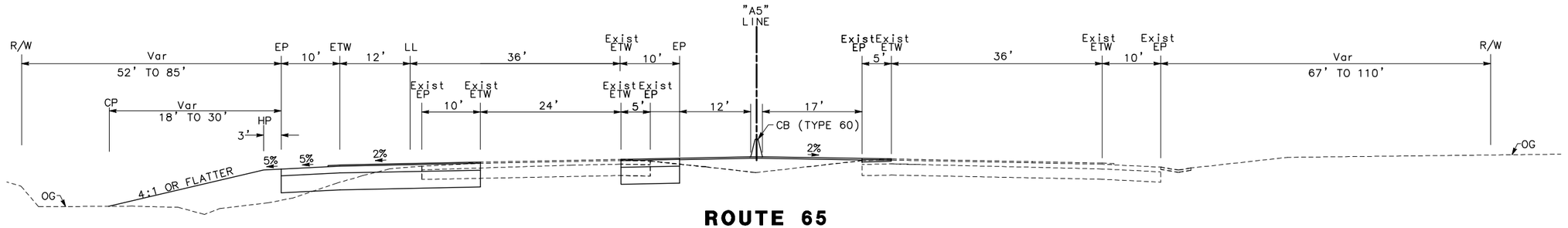
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 4 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



BLUE OAKS OVERCROSSING



ROUTE 65

"A5" LINE

BETWEEN PLEASANT GROVE BLVD TO BLUE OAKS BLVD

0 100 200 400

Graphic Scale

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 5 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			

"B4" 276+70.75 POT =
22.69' Rt "BO" 87+89.85

"B4" 275+76.06 EC

"BO" 88+77.63 POT =
"B3" 291+43.85 POT

"BO" 90+09.10 BC

"B3" 284+08.84 EC

"BO" 94+55.55 EC

"B4" 263+28.90 BC

GORE PAVING

"A5" 269+85.34 POC =
"BO" 97+68.13 POT

"B2" 259+27.03 POT =
24.65' Rt "BO" 99+21.37

"B1" 267+28.07 PCC

"B3" 271+46.72 BC =
47.00' Lt "A5" 271+46.72

"B3" 278+08.23 BC

"B3" 276+13.92 EC

"B3" 274+46.82 PRC

GORE PAVING

250' TAPER

BLUE OAKS BLVD

MATCH LINE 259+00

MATCH LINE 288+00

"B1" 269+86.65 EC

"B1" 272+86.63 POT =
47.00' Rt "A5" 272+86.63

"A5-1" 83+52.96 POT =
23.00' RT "A5" 283+52.96 POC

"B2" 260+64.49 BC

"BO" 101+26.73 BC

"B2" 262+80.86 EC =
12.00' Rt "B1" 262+80.86

"B1" 262+80.86 BC

"BO" 102+02.47 POC =
"B1" 261+00.60 POT

"BO" 106+42.21 EC

0 100 200 400
Graphic Scale

"A5" LINE

CONCRETE BARRIER TYPE 60

FG

Exist Pvmt

Approx OG

Abut 1

Abut 3

Bent 2

BLUE OAKS OFF-RAMP OVERCROSSING

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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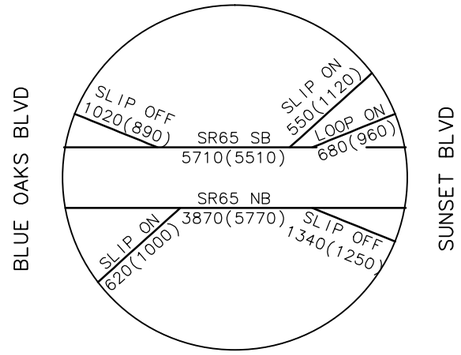
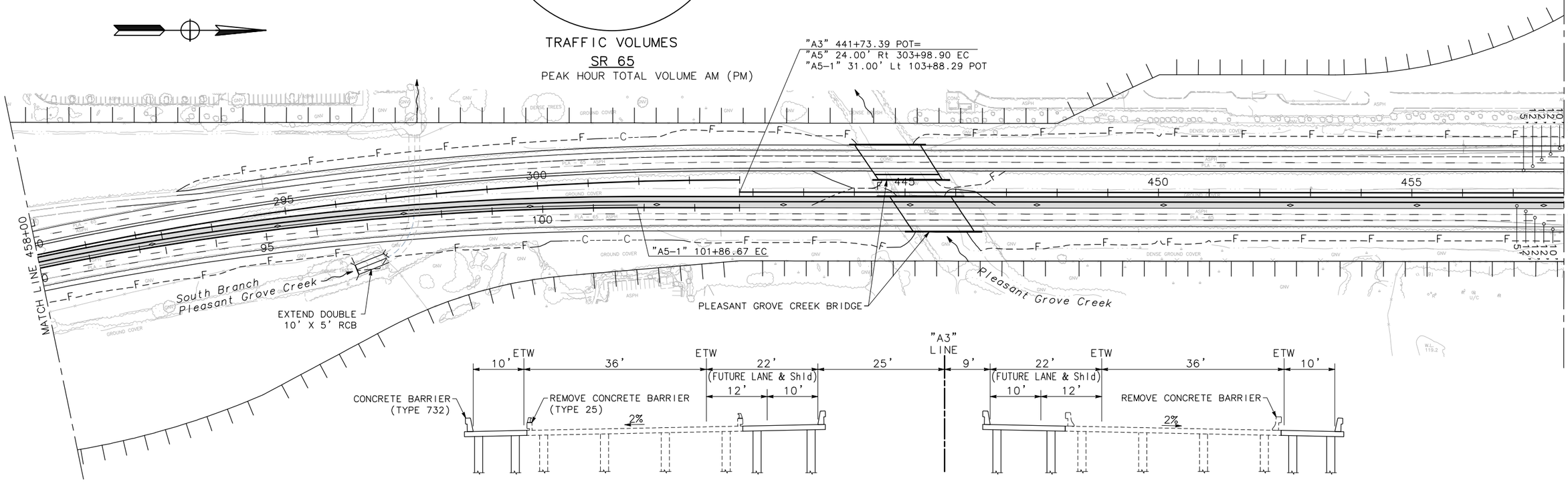
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 6 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



TRAFFIC VOLUMES
SR 65
PEAK HOUR TOTAL VOLUME AM (PM)



PLEASANT GROVE CREEK BRIDGE

"A3" LINE
BR. NO. 19-0136L/R

0 100 200 400
Graphic Scale

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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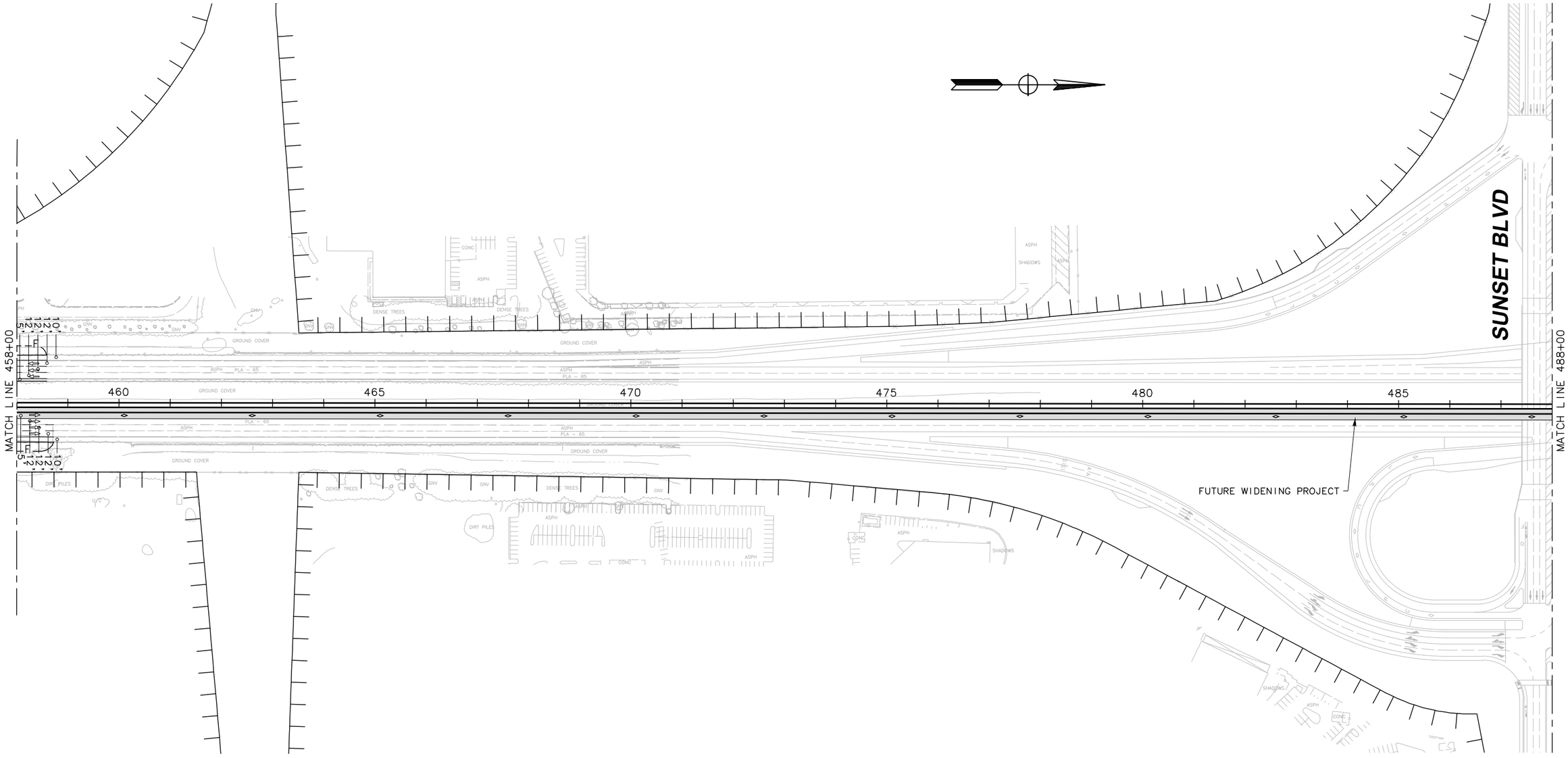
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



0 100 200 400

Graphic Scale

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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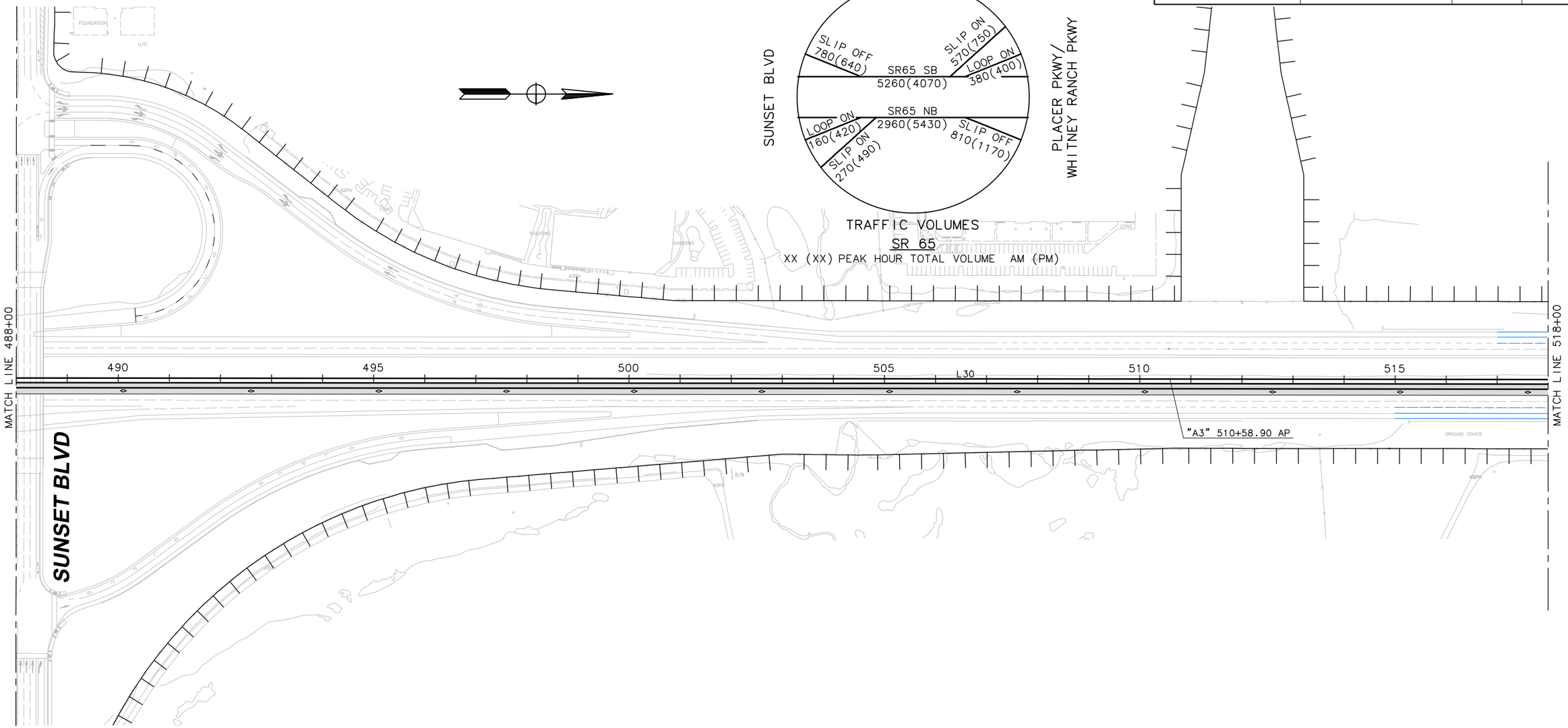
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 8 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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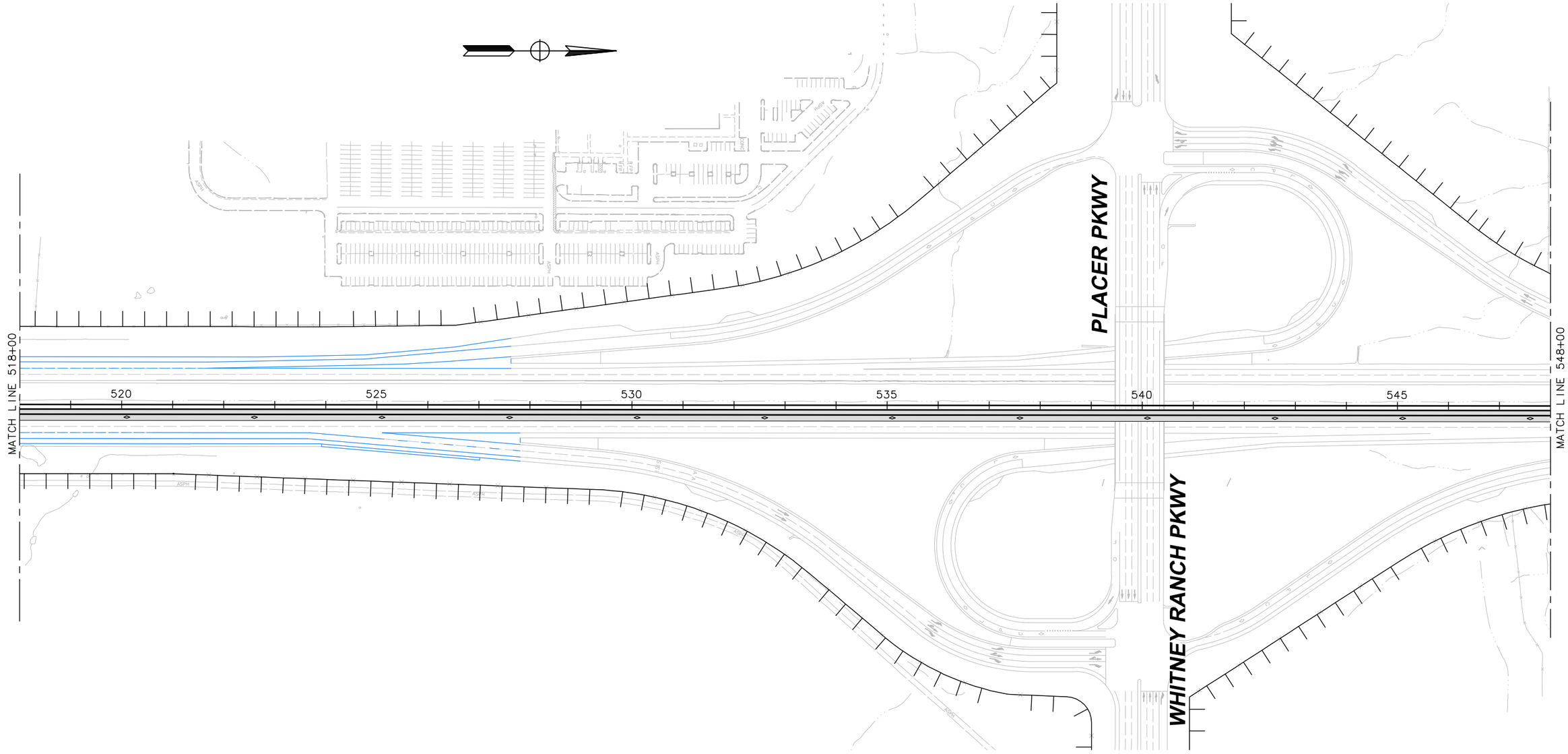
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 9 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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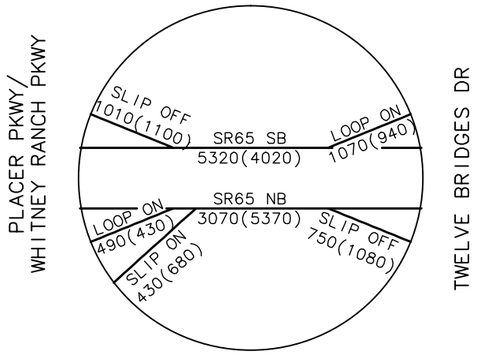
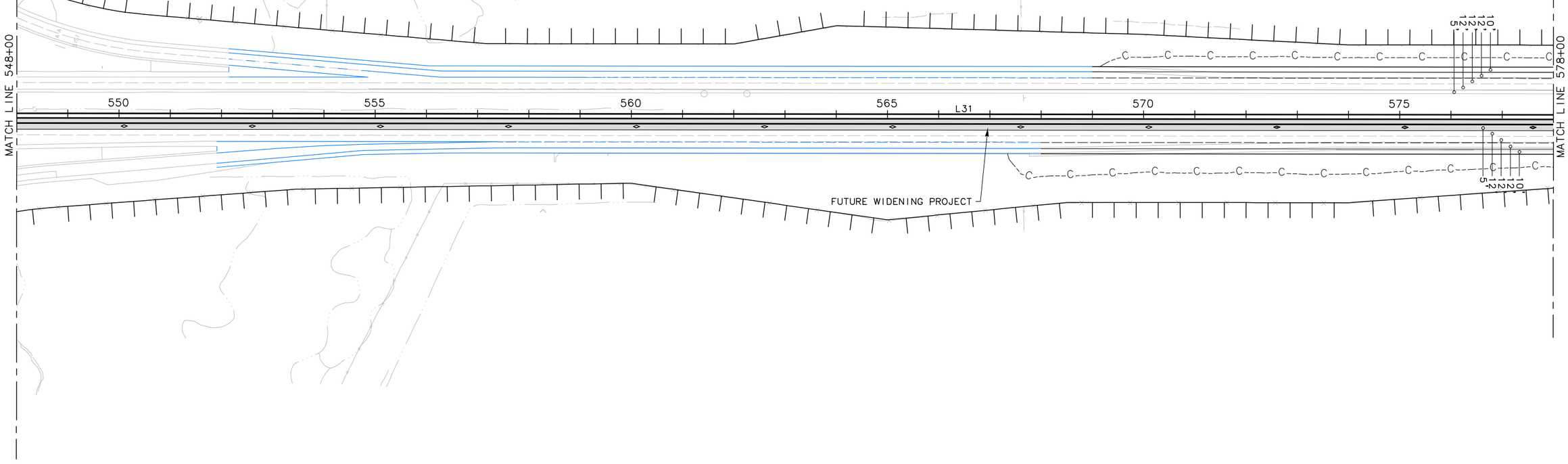
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 10 OF 13
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			

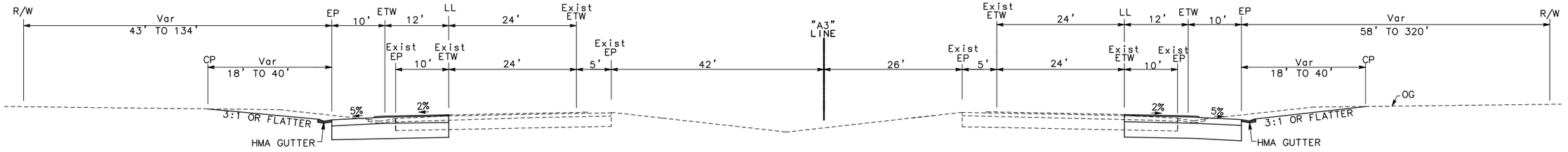


TRAFFIC VOLUMES

SR 65

XX (XX) PEAK HOUR TOTAL VOLUME AM (PM)





ROUTE 65

"A3" LINE

BETWEEN BLUE OAKS BLVD TO LINCOLN BLVD

0 100 200 400

Graphic Scale

GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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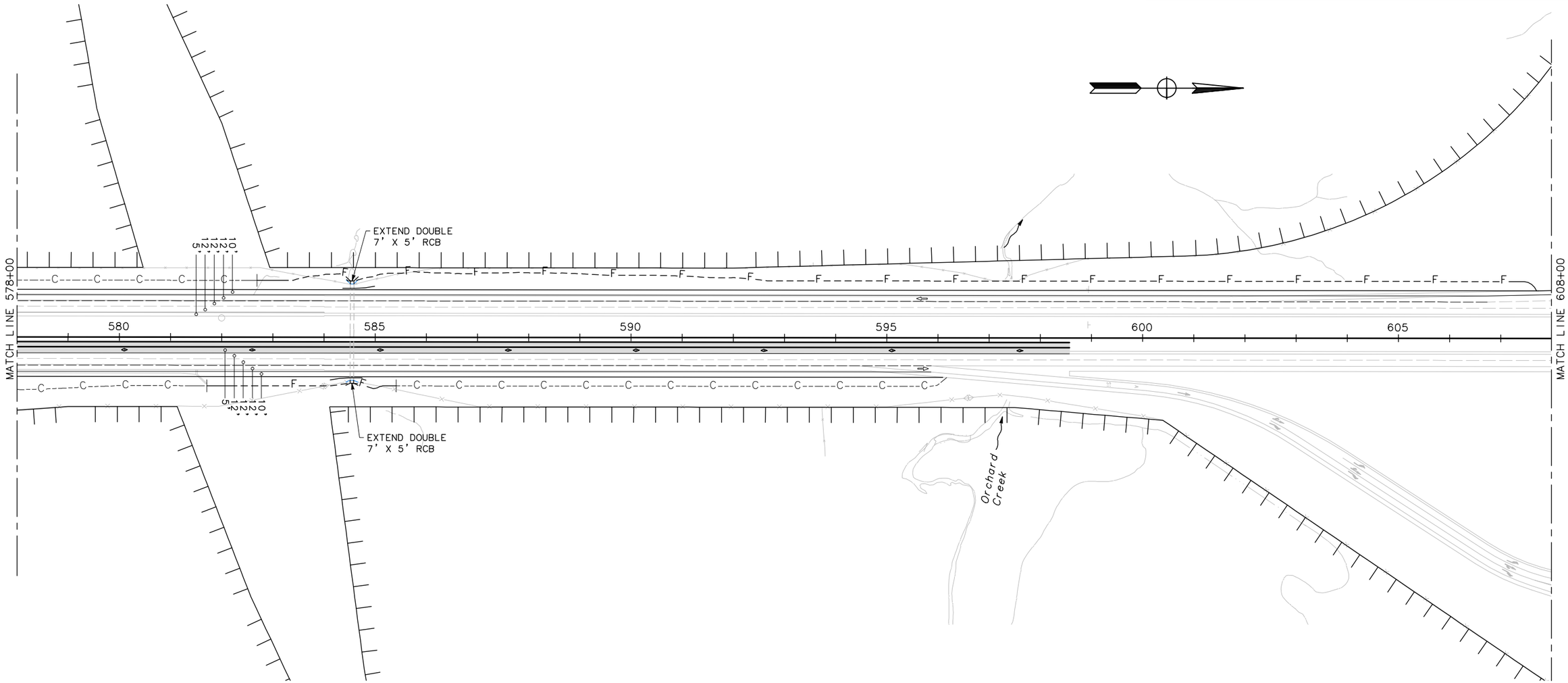
CKD. BY AL	BY	FILE NO.	
DATE 6/9/2016	RCE NO.		
SCALE 1"=100'			



GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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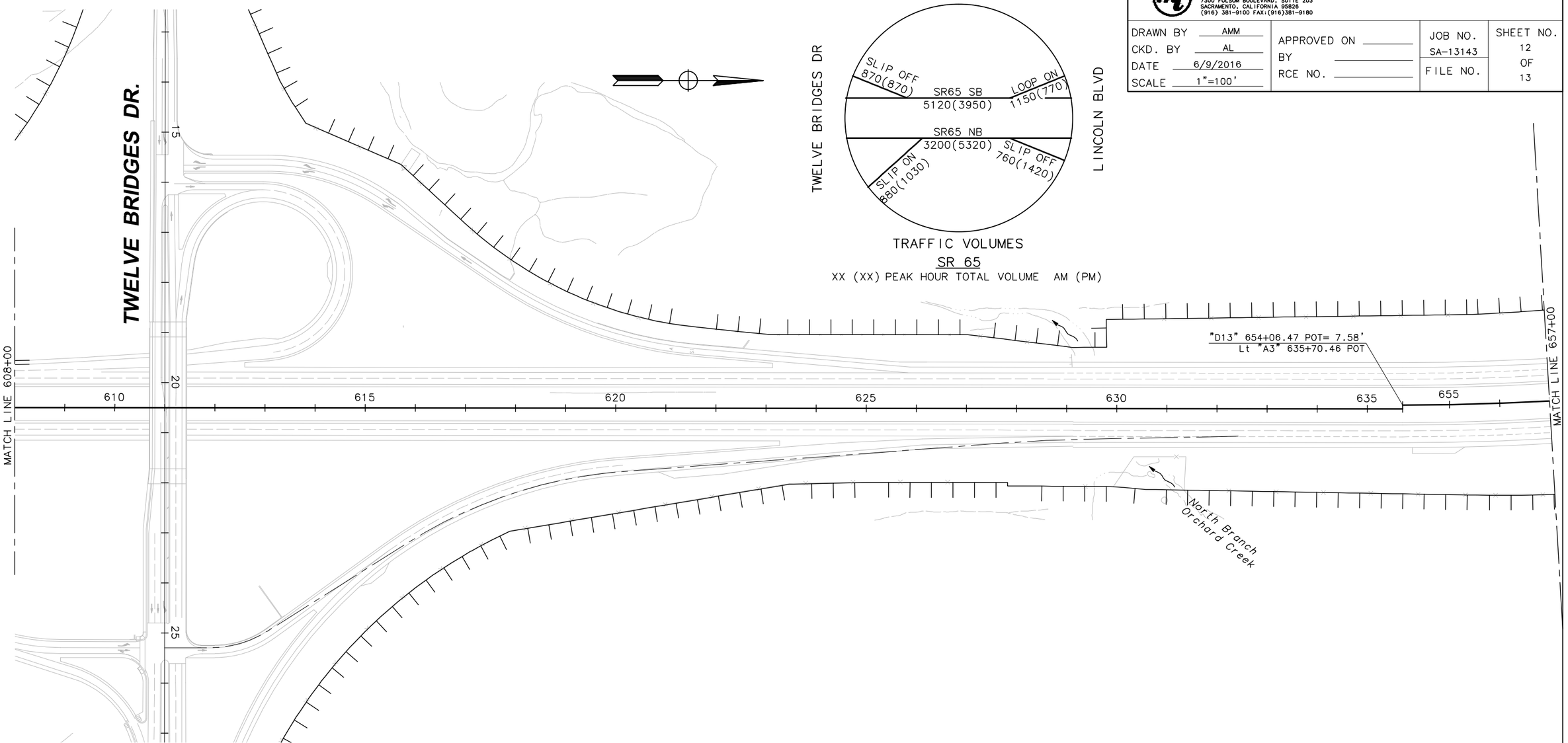
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 12 OF 13
CKD. BY AL	BY		
DATE 6/9/2016	RCE NO.	FILE NO.	
SCALE 1"=100'			



GENERAL PURPOSE LANE ALTERNATIVE

03-PLA-65 PM 6.2/12.8

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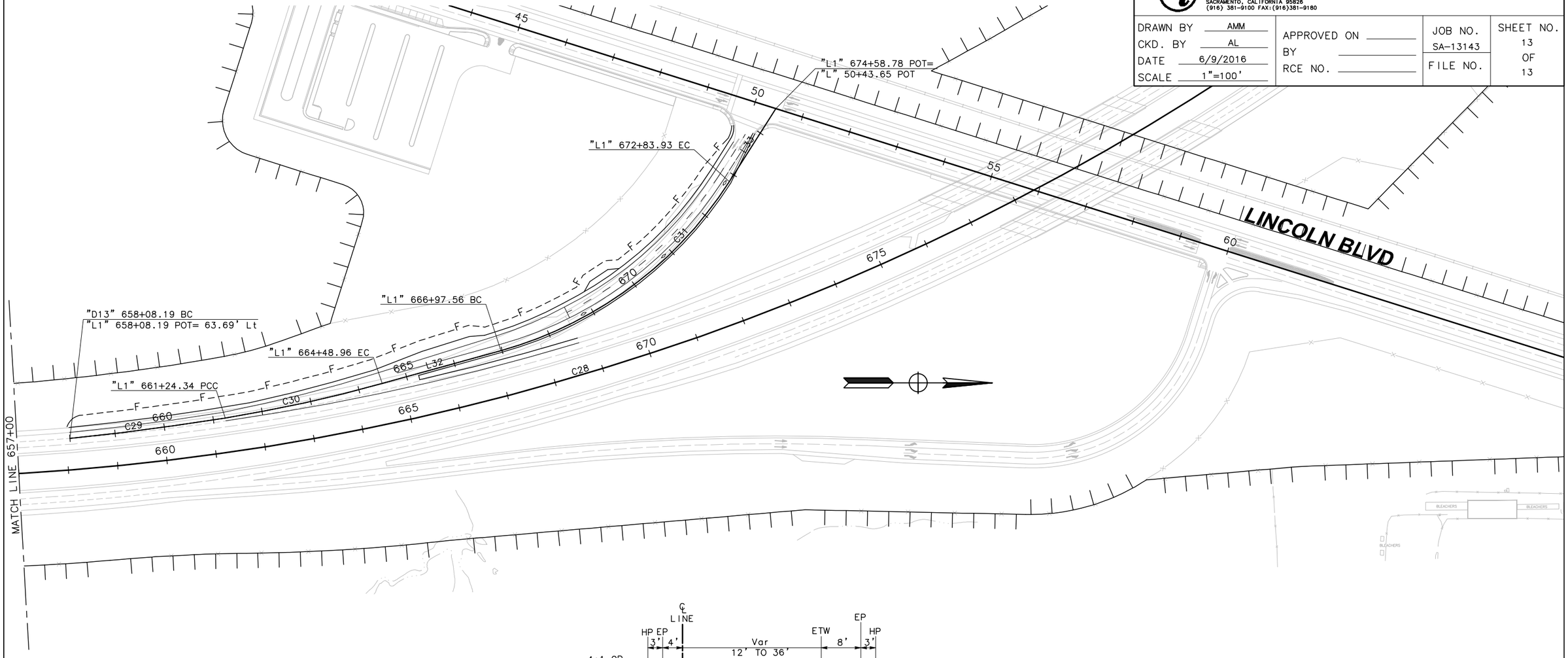
DRAWN BY AMM	APPROVED ON	JOB NO. SA-13143	SHEET NO. 13
CKD. BY AL	BY		OF
DATE 6/9/2016	RCE NO.	FILE NO.	13
SCALE 1"=100'			



SOUTHBOUND SLIP ON-RAMP

"L1" LINE

(LOOKING IN DIRECTION OF TRAVEL)

0 100 200 400

Graphic Scale

Attachment B
Construction General Permit SWPPP Risk Level Assessment

Attachment B

Construction General Permit
SWPPP Risk Level Assessment

- Summary of Risk Level Determination
- Risk Determination Worksheet (State Water Resources Control Board)
- Isoerodent Map of California (State Water Resources Control Board)
- Web Soil Survey (USDA Natural Resources Conservation Service)

Summary of Risk Level Determination

B. CONSTRUCTION GENERAL PERMIT SWPPP RISK LEVEL ASSESSMENT

The General NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order 2012-0006-DWQ) (Construction General Permit) regulates stormwater discharges for construction activities CWA Section 402. Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the Construction General Permit. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). 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 pre- and post-construction aquatic biological assessments during specified seasonal windows.

B.1 Summary

The SR 65 Capacity and Operational Improvements Project (proposed project) would require disturbance of approximately 52.41 acres and 55.05 acres of soil for the Carpool Lane Alternative and the General Purpose Lane Alternative, respectively, and therefore a Stormwater Pollution Prevention Plan (SWPPP) is required for the proposed project. More information on SWPPP requirements is provided in Section 2.1.1.3, *Section 402—National Pollutant Discharge Elimination System*. A construction site risk assessment has been performed for the Project SWPPP and the resultant risk level is **Risk Level 2**. The risk level was determined based on the procedure described in the General Permit and based on two major elements – (1) project sediment risk (the relative amount of sediment that can be discharged, given the project and location details) and (2) receiving water risk (the risk sediment discharges pose to the receiving waters). Project Sediment Risk is determined by multiplying the R, K, and LS factors from the Revised Universal Soil Loss Equation (RUSLE) to obtain an estimate of project-related bare ground soil loss expressed in tons/acre. Receiving water risk is based on whether a project drains to a sediment-sensitive water body. A sediment-sensitive water body is either on the most recent 303d list for water bodies impaired for sediment; has a USEPA-approved Total Maximum Daily Load implementation plan for sediment; or has the beneficial uses of COLD, SPAWN, and MIGRATORY.

Tables B.1 and B.2 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors. RUSLE Method 2 was used to determine these values.

Table B.1. Summary of Sediment Risk

RUSLE Factor	Value	Method for Establishing Value
R	100	EPA website: http://www3.epa.gov/npdes/pubs/fact3-1.pdf
K	0.28	Weighted average for surface layer of soil map units
LS	0.91	Field observations and LS Table from Sediment Risk Factor Worksheet in General Permit. Calculation assumes 1% slope (based on NRCS data) and 300 foot slope length.
Total Predicted Sediment Loss (tons/acre)		25.50
Overall Sediment Risk Low Sediment Risk < 15 tons/ acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		☐ Low ☒ Medium ☐ High

Table B.2. Summary of Receiving Water Risk

Receiving Water Name	303(d) Listed for Sediment Related Pollutant(1)	TMDL for Sediment Related Pollutant(1)	Beneficial Uses of COLD, SPAWN, and MIGRATORY(1)
Pleasant Grove Creek	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No
Overall Receiving Water Risk			☐ Low ☒ High

(1) If yes is selected for any option the Receiving Water Risk is High. Note: The direct receiving waterbody does not have the beneficial uses of COLD, SPAWN, or MIGRATORY, but with the tributary rule applied, the beneficial use of COLD, SPAWN, or MIGRATORY would occur.

B.2 Project Sediment Risk

B.2.1 The R-Factor

The R factor is computed by using the following parameters:

Estimated construction start date: 2018

Estimated construction end date (date of final stabilization): 2020

The Project expected to occur sequentially over 24 months.

Erosivity Index (EI) distribution zone (Figure 1 of the Construction General Permit Risk Assessment R-Factor Calculation Notification): 21

EI Value (Table 1, the Erosivity Index (EI) Table of the Construction General Permit Risk Assessment R-Factor Calculation Notification): 100% X 2 years = 200% (if project lasts for one year, EI value is 100%)

Isoerodent Value for Project Area (Isoerodent Map for California in the Construction General Permit Risk Assessment R-Factor Calculation Notification): 50

R Factor = (200%)*(50) = 100

B.2.2 The K-Factor

The Kf represents: 1) susceptibility of soil or surface material to erosion; 2) transportability of the sediment; and 3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition.

The K factor is computed by using the following parameters:

K-values were provided per soil unit type via a Natural Resources Conservation District (NRCS) Web Soil Survey. A weighted average was derived from the K-values based on the proportionate areas per soil unit type within the total area of influence (AOI) (958.8 acres). The weighted average was determined to be 0.28, which is characterized as a medium K value within the range (medium values range from about 0.25 to 0.4) of sandy-loam soils and with particles that have a moderate susceptibility to detachment. Table B.3 shows a summary of all the map units with the project area of influence from which the K-value was calculated.

Table B.3. Determination of K-Value for Project Area of Influence

Map Unit Symbol[1]	Name[1]	K-Value[1]	Weighted K-Values	Acres in AOI[1]
104	Alamo-Fiddyment complex, 0 to 5 percent slopes	0.24	20.664	86.1
140	Cometa sandy loam, 1 to 5 percent slopes	0.32	2.816	8.8
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	0.49	89.572	182.8
144	Exchequer very stony loam, 2 to 15 percent slopes	0.15	15.825	105.5
145	Exchequer-Rock outcrop complex, 2 to 30 percent slopes	0.15	39.555	263.7
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	0.37	44.437	120.1
154	Inks-Exchequer complex, 2 to 25 percent slopes	0.2	8.86	44.3
162	Kilaga loam	0.37	0.037	0.1
175	Ramona sandy loam, 2 to 9 percent slopes	0.32	0.064	0.2
176	Redding and Corning gravelly loams, 2 to 9 percent slopes	0.24	0.792	3.3
181	San Joaquin sandy loam, 1 to 5 percent slopes	0.32	26.848	83.9
193	Xerofluvents, occasionally flooded	0.32	9.376	29.3
194	Xerofluvents, frequently flooded	0.32	9.824	30.7
TOTAL				**958.8**
Weighted Average			**0.28**	

[1] Source: Natural Resources Conservation District (NRCS). 2016. Web Soil Survey. Available: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Accessed: April 22, 2016.

B.2.3 The LS-Factor

The LS Factor was determined based on the following factors:

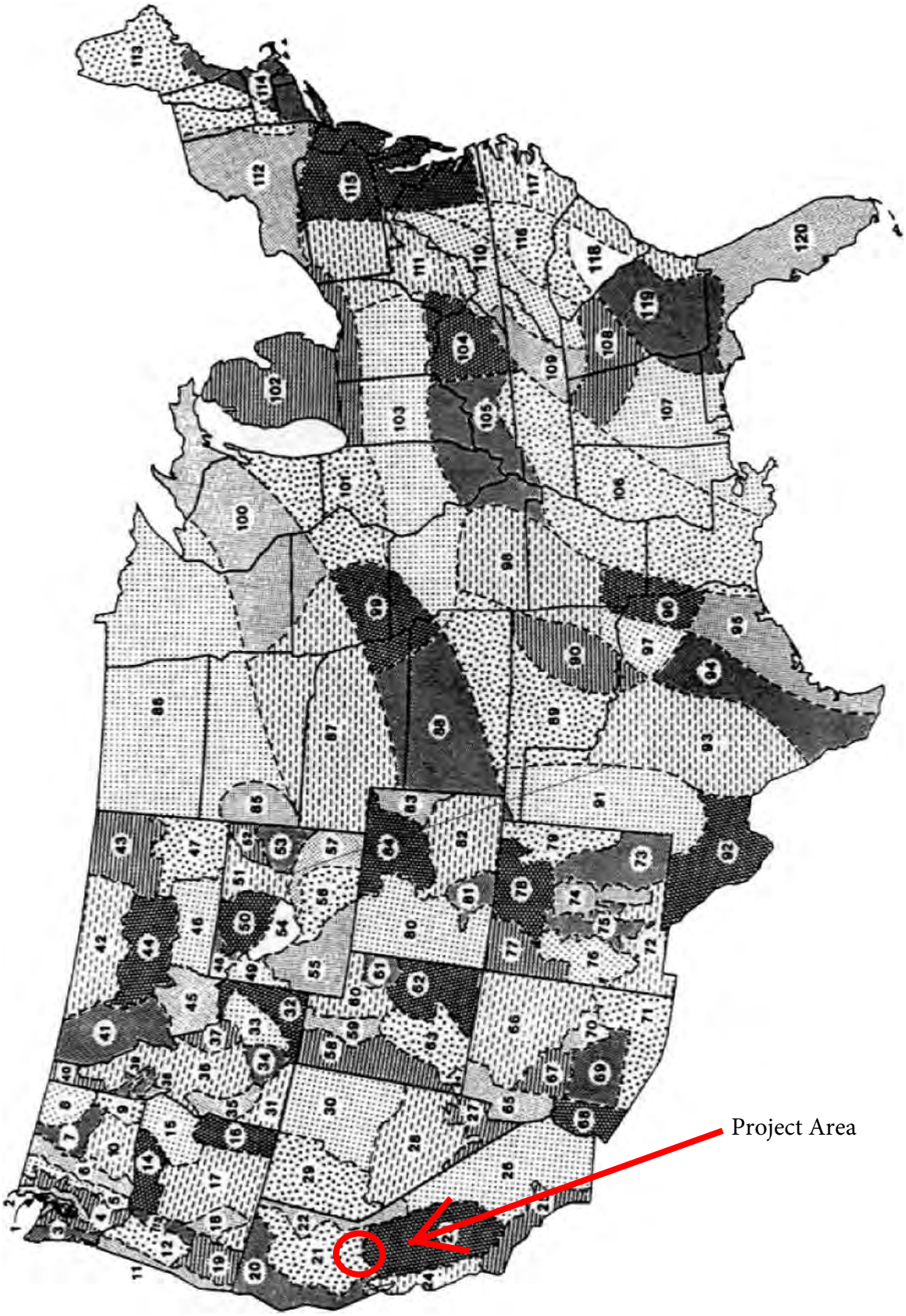
Based on the NRCS soil unit map (see attached), slopes within the Project area are 0-5%, 1-5%,

2-9%, 2-15%, 2-25%, and 2-30%. Therefore a weighted slope of 8% slope was determined. Because a topographical map was not available to determine the length of slope, and the topography is near level (with topographical highs and lows depending on soil type), a weighted slope length based on soil type was used to determine a slope length of 75 feet. The average slope percentage and slope length was used with the LS Factors for Construction Sites Table to determine the LS Factor of 0.91.

B.3 Receiving Water Risk

The only water bodies that crosses the Project alignment are Orchard Creek and Pleasant Grove Creek, which do not have beneficial uses. The creeks ultimately discharges into the Sacramento River (Colusa Basin Drain to Eye ["I"] Street Bridge). The Receiving water risk was determined to be “high” based on the fact that Orchard Creek and Pleasant Grove Creek ultimately flows into the Sacramento River, which has designated beneficial uses of COLD, SPAWN and MIGRATORY, which is included in the criteria for receiving water risk determination. Pleasant Grove Creek has a known impairment for sediment toxicity (upstream of Fiddyment Road only). However, the segment of the Sacramento River that Orchard Creek and Pleasant Grove Creek discharges into, the Sacramento River (Colusa Basin Drain to Eye ["I"] Street Bridge), is not impaired for sediment.

Figure 1. Erosivity Index Zone Map



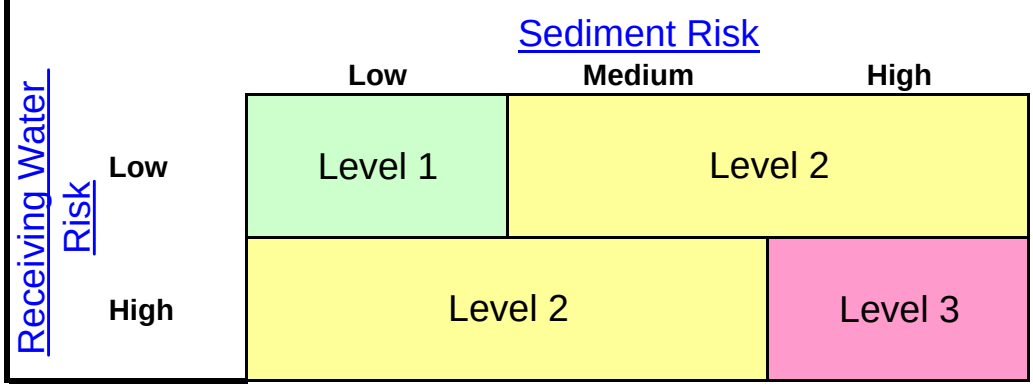
Risk Determination Worksheet
(State Water Resources Control Board)

	A	B	C	D	E	F	G
1	Version 8/17/2011						
2		**Risk Determination Worksheet**					
3							
4		**Step 1**	Determine Sediment Risk via one of the options listed:				
5			1. GIS Map Method - EPA Rainfall Erosivity Calculator & GIS map				
6			2. Individual Method - EPA Rainfall Erosivity Calculator & Individual Data				
7		**Step 2**	Determine Receiving Water Risk via one of the options listed:				
8			1. GIS map of Sediment Sensitive Watersheds provided				
9			2. Site Specific Analysis (support documentation required)				
10		**Step 3**	Determine Combined Risk Level				
11							

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	https://developer.epa.gov/lew-calculator		
5	**R Factor Value**		100
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.28
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		0.91
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		25.49955152
16	**Site Sediment Risk Factor**		**Medium**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

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

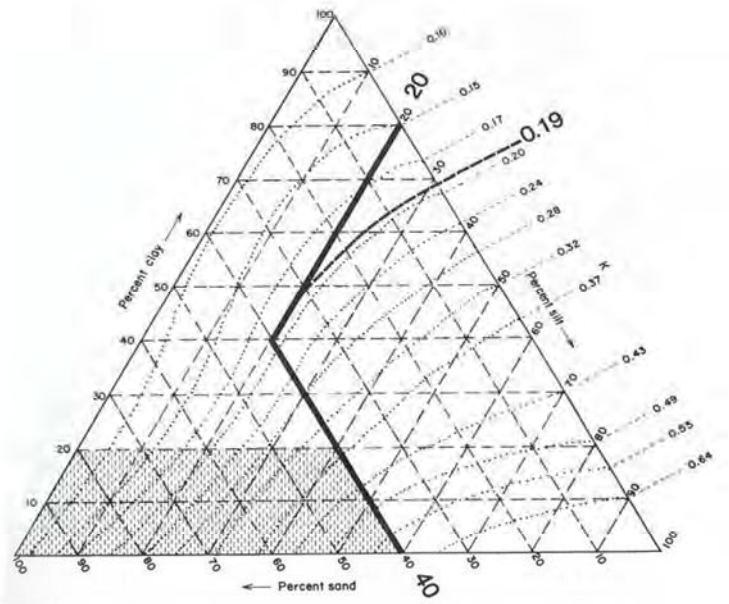
Combined Risk Level Matrix



Project Sediment Risk:	**Medium**
Project RW Risk:	**High**
Project Combined Risk:	**Level 2**

Soil Erodibility Factor (K)

The K factor can be determined by using the nomograph method, which requires that a particle size analysis (ASTM D-422) be done to determine the percentages of sand, very fine sand, silt and clay. Use the figure below to determine appropriate K value.



Erickson triangular nomograph used to estimate soil erodibility (K) factor.
The figure above is the USDA nomograph used to determine the K factor for a soil, based on its texture (% silt plus very fine sand, % sand, % organic matter, soil structure, and permeability). *Nomograph from Erickson 1977 as referenced in Goldman et. al., 1986.*

Sheet Flow Length (ft)	Average Watershed Slope (%)																		
	0.2	**0.5**	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**8.0**	**10.0**	**12.0**	**14.0**	**16.0**	**20.0**	**25.0**	**30.0**	**40.0**	**50.0**	**60.0**
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41	0.45	0.48	0.53	0.58	0.63
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56	0.64	0.72	0.85	0.97	1.07
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67	0.80	0.91	1.13	1.31	1.47
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76	0.93	1.08	1.37	1.62	1.84
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84	1.04	1.24	1.59	1.91	2.19
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24	1.56	1.86	2.41	2.91	3.36
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10	2.67	3.22	4.24	5.16	5.97
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86	3.67	4.44	5.89	7.20	8.37
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57	4.59	5.58	7.44	9.13	10.63
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85	6.30	7.70	10.35	12.75	14.89
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04	7.88	9.67	13.07	16.16	18.92
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16	9.38	11.55	15.67	19.42	22.78
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23	10.81	13.35	18.17	22.57	26.51
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24	13.53	16.77	22.95	28.60	33.67
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94	18.57	23.14	31.89	39.95	47.18
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35	23.24	29.07	40.29	50.63	59.93
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57	27.66	34.71	48.29	60.84	72.15

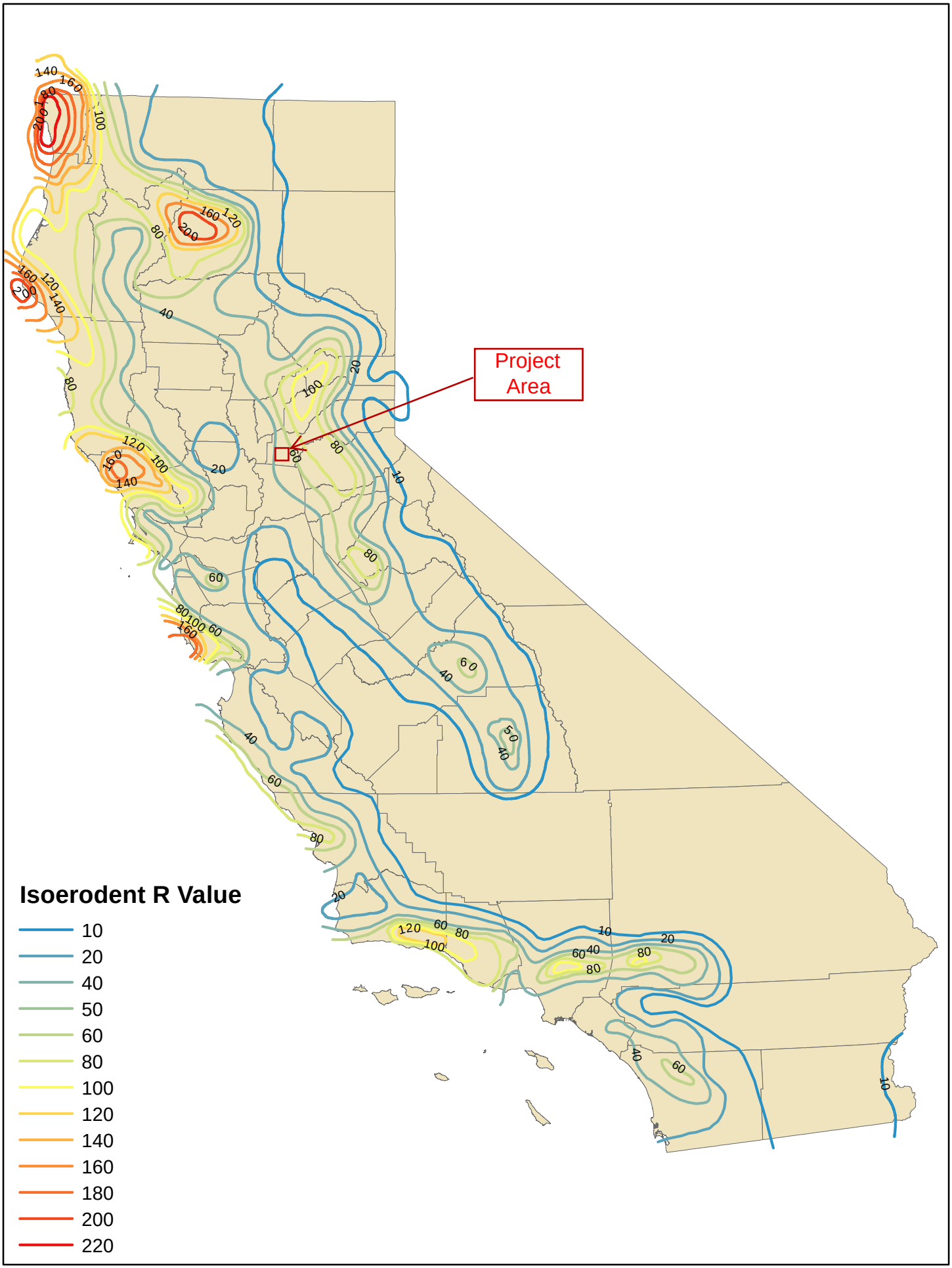
LS Factors for Construction Sites. *Table from Renard et. al., 1997.*

		Slope Mid-point	Weighted Slope	Slope length	Weighted Slope	Acres in AOI	Percent of AOI	
Average slope	0-5	2.5	215.25	100	8610	86.1	9.0%	Alamo-Fiddyment complex, 0 to 5 percent slopes
	1-5	3	26.4	100	880	8.8	0.90%	Cometa sandy loam, 1 to 5 percent slopes
Undulating	1-5	3	548.4	50	9140	182.8	19.1%	Cometa-Fiddyment complex, 1 to 5 percent slopes
broad/long	2-15	8.5	896.75	50	5275	105.5	11.0%	Exchequer very stony loam, 2 to 15 percent slopes
broad/long	2-30	16	4219.2	50	13185	263.7	27.50%	Exchequer-Rock outcrop complex, 2 to 30 percent slopes
Undulating	2-9	5.5	660.55	50	6005	120.1	12.5%	Fiddyment-Kaseberg loams, 2 to 9 percent slopes
variable b/\	2-25	13.5	598.05	150	6645	44.3	4.6%	Inks-Exchequer complex, 2 to 25 percent slopes
			0		0	0.1	0.0%	Kilaga loam
Undulating	2-9	5.5	1.1	50	10	0.2	0.0%	Ramona sandy loam, 2 to 9 percent slopes
	2-9	5.5	18.15	50	165	3.3	0.30%	Redding and Corning gravelly loams, 2 to 9 percent slopes
Vernal poo	1-5	3	251.7	50	4195	83.9	8.7%	San Joaquin sandy loam, 1 to 5 percent slopes
0-2				400	11720	29.3	3.1%	Xerofluvents, occasionally flooded
0-2				400	12280	30.7	3.2%	Xerofluvents, frequently flooded
	Average	6.6		100.0				
	Total					958.8		
	Weighted Average		**7.8**		**81**			

Map Unit Symbol	Name	K-value	Weighted K-	Acres in AOI	Percent of AOI
104	Alamo-Fiddyment complex, 0 to 5 percent slopes	0.24	20.664	86.1	9.0%
140	Cometa sandy loam, 1 to 5 percent slopes	0.32	2.816	8.8	0.90%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	0.49	89.572	182.8	19.1%
144	Exchequer very stony loam, 2 to 15 percent slopes	0.15	15.825	105.5	11.0%
145	Exchequer-Rock outcrop complex, 2 to 30 percent slopes	0.15	39.555	263.7	27.50%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	0.37	44.437	120.1	12.5%
154	Inks-Exchequer complex, 2 to 25 percent slopes	0.2	8.86	44.3	4.6%
162	Kilaga loam	0.37	0.037	0.1	0.0%
175	Ramona sandy loam, 2 to 9 percent slopes	0.32	0.064	0.2	0.0%
176	Redding and Corning gravelly loams, 2 to 9 percent slop	0.24	0.792	3.3	0.30%
181	San Joaquin sandy loam, 1 to 5 percent slopes	0.32	26.848	83.9	8.7%
193	Xerofluvents, occasionally flooded	0.32	9.376	29.3	3.1%
194	Xerofluvents, frequently flooded	0.32	9.824	30.7	3.2%
Weighted Average		0	0		
TOTAL				958.8	100%
Weighted Average			0.28		

0.28	958.8

Isoerodent Map of California
(State Water Resources Control Board)


Project Area
Isoerodent R Value
10
20
40
50
60
80
100
120
140
160
180
200
220

Web Soil Survey
(USDA Natural Resources Conservation Service)

K Factor, Whole Soil—Placer County, California, Western Part
(SR 65 Improvement Project)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Lines
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Points
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Placer County, California, Western Part
Survey Area Data: Version 7, Sep 17, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 2, 2012—Oct 24, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Placer County, California, Western Part (CA620)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
104	Alamo-Fiddyment complex, 0 to 5 percent slopes	.24	86.1	9.0%
140	Cometa sandy loam, 1 to 5 percent slopes	.32	8.8	0.9%
141	Cometa-Fiddyment complex, 1 to 5 percent slopes	.49	182.8	19.1%
144	Exchequer very stony loam, 2 to 15 percent slopes	.15	105.5	11.0%
145	Exchequer-Rock outcrop complex, 2 to 30 percent slopes	.15	263.7	27.5%
147	Fiddyment-Kaseberg loams, 2 to 9 percent slopes	.37	120.1	12.5%
154	Inks-Exchequer complex, 2 to 25 percent slopes	.20	44.3	4.6%
162	Kilaga loam	.37	0.1	0.0%
175	Ramona sandy loam, 2 to 9 percent slopes	.32	0.2	0.0%
176	Redding and Corning gravelly loams, 2 to 9 percent slopes	.24	3.3	0.3%
181	San Joaquin sandy loam, 1 to 5 percent slopes	.32	83.9	8.7%
193	Xerofluvents, occasionally flooded	.32	29.3	3.1%
194	Xerofluvents, frequently flooded	.32	30.7	3.2%
Totals for Area of Interest			**958.9**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options

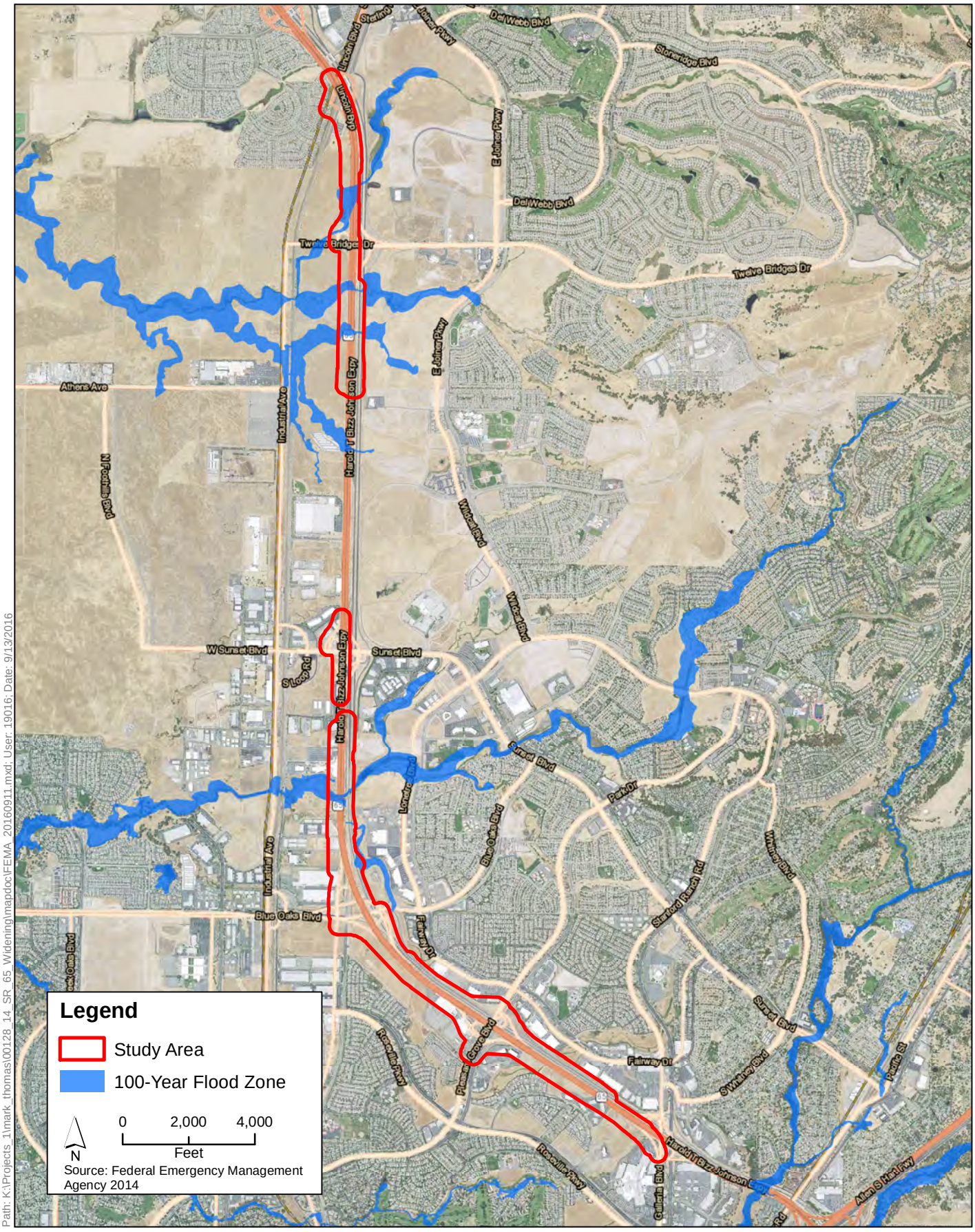
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Attachment C
FEMA Flood Zones



Path: K:\Projects_1\mark_thomas\00128_14_SR_65_Widening\mapdoc\FEMA_20160911.mxd; User: 19016; Date: 9/13/2016

Attachment B
FEMA Flood Zones within the Project Vicinity