State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Making Conservation
a California Way of Life

To: **BAHAR HEYDARI**
DISTRICT 12
ENVIRONMENTAL ANALYSIS

Date: December 20, 2019

File: 12-0N890_
1214000130
12-ORA-133
PM 8.5/ M9.3

From: **HECTOR SALAS**
WATER QUALITY SPECIALIST
NPDES/ STORM WATER UNIT
ENVIRONMENTAL ANALYSIS / DISTRICT 12

Digitally signed by Hector Salas
Date: 2019.12.20 14:22:51 -08'00'

Subject: **Water Quality Technical Memorandum (WQ Tech Memo) to Add Auxiliary Lane from I-5/ SR 133 Connector to Southbound SR 133/ I-405 Connector**

Approach to the Water Quality Technical Memorandum

The purpose of the Water Quality Technical Memorandum (WQ Tech Memo) is to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), and to provide information, to the extent possible, for National Pollution Discharge Elimination System (NPDES) permitting. The WQ Tech Memo includes a discussion of the proposed project, the physical setting of the project area, and the regulatory framework with respect to water quality; it also provides data on surface water resources within the project area and the water quality of these waters, describes water quality impairments and beneficial uses, and identifies potential water quality impacts/benefits associated with the proposed project, and recommends avoidance and/or minimization measures for potential impacts.

Project Description

The project proposes to improve operations and safety of this facility by constructing a new auxiliary lane on SB route 133 from the SB I-5 connector to the NB I-405 connector. This proposed auxiliary lane will become the second lane on the NB I-405 connector. This alternative also proposes to extend the number three lane on SB route 133 approximately 300 feet south of San Diego Creek to match the existing roadway pavement. The project proposes the following improvements:

1. Construct additional asphalt concrete pavement to provide a twelve-foot auxiliary lane from the SB I-5 connector to NB I-405 connector and twelve-foot lane from the gore area to 300 feet south of San Diego Creek.
2. Construct additional asphalt concrete pavement to provide a second twelve-foot lane on the SB Rte 133/NB I-405 connector.
3. Realign the Barranca Parkway (Pkwy) loop on-ramp and reconstruct the ramp entrance. Convert High Occupancy Vehicle (HOV) lane to General Purpose (GP) lane, install a connector ramp meter system, reconstruct loop detectors, and modify the Midwest Guardrail system (MGS) along the on-ramp left shoulder if needed.
4. Reconstruct maintenance vehicle pullouts.
5. Construct tie back walls at Barranca Pkwy Overcrossing (OC) and Alton Pkwy OC.
6. Construct approximately 500 feet long retaining wall from the end of San Diego Creek off-ramp bridge (55-0290F) towards North.
7. Construct approximately 210 feet long retaining wall from the beginning of San Diego Creek off-ramp bridge (55-0290F) towards North.
8. Construct approximately 471 feet long retaining wall along the off-ramp from SB SR-133 to I-405.
9. Replace approximately 520 ft of the existing Reinforced Concrete Channel (RCC) with a Reinforced Concrete Box (RCB) between Barranca Pkwy and Alton Pkwy.
10. Relocate and modify two existing overhead signs to accommodate pavement widening.
11. Remove and replace light poles along shoulder of SB Rte 133 and Barranca Pkwy on-ramp.
12. Install ramp metering system at SB Rte 133/NB I-405 connector.
13. Remove and replace signing as needed.
14. Construct approximately 500 feet long of MGS between wall #29 and the tie back wall at Alton Pkwy OC.
15. Remove existing metal beam guard railing and end treatments at the gore area of SB Rte 133 and SB Rte 133/NB I-405 connector.
16. Construct approximately 1200 square feet of additional bridge pavement, construct bridge rail with 20:1 taper and install REACT 350 to shield the end of bridge railings beyond the gore area of SB 133 and SB 133/NB I-405 connector.

17. Relocate 3 drainage inlets along right shoulder of SB 133 and 2 drainage inlets along right shoulder of SB 133/NB I-405 connector.
18. Refresh all striping and markers.
19. San Diego Creek Left Bridge (55-0290L) will be widened to cover the gore area. Bridge Super-Structure will be constructed to accommodate the new lane configuration.
20. San Diego Creek off-ramp bridge (55-0290F) will be widened by 14.5 feet. New Sub-Structure and Super-Structure will be constructed to accommodate the new lane configuration.
21. Approach and departure slabs, paving notch and joint seals will be added at the left bridge (55-0290L) and the off-ramp bridge (55-0290F).
22. Existing Barriers, Type 25 at the Left Bridge (55-0290L) and the Off-Ramp Bridge (55-0290F) will be replaced with Concrete Barrier Type 836.
23. Rock Slope Protection (RSP) will be replaced 6 feet below the Top of Pile Cap between the Piers/Abutment footings and flush with the footings and adjacent ground. The RSP used should be ½ ton (24 inches in diameter) installed in a pre-excavated 6-foot hole and extend 5 feet from each side of the pier wall and extend 40 feet upstream from the face of the right bridge and 10 feet from the downstream face of the New Widening of the Off-Ramp Bridge (55-0290F).
24. Slurry will be placed underneath the existing piers/abutments pile caps to fill the voids due to erosion prior to the excavation for RSP placement. The approximate area of the existing piers where slurry will be place is 0.15 acres (6540 SQFT).
25. Temporary construction easement (TCEs) are needed for constructing Reinforced Concrete Box (RCB), bridge widening, and rock slope protection.
26. Clearing and grubbing
27. Highway planting
28. Replace damaged landscape irrigation in kind where needed between Irvine Boulevard Over-Crossing to Barranca Parkway on-ramp.

Surface Water Features

The proposed project is located within Santa Ana Regional Water Quality Control Board and ultimately discharges to San Diego Creek, Reach 2. Based on the Final *2016 Integrated Report (CWA Section 303(d) List /305(b) Report)* approved by the SWRCB and the US EPA, San Diego Creek at the project location is on the 2016 Clean Water Act 303(d) list of Water Quality Limited Segments Requiring TMDLs for unknown sources of Benthic Community Effects, Indicator Bacteria, Nutrients, Sediment/ Siltation and Toxicity. In addition, the downstream receiving waters are within the San Diego Creek Metals, Cadmium and Organochlorine Total *Maximum Daily Load (TMDL) as identified in Attachment IV of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ as amended in Order WQ 2014-0077-DWQ)*.

The Santa Ana RWQCB Basin Plan has designated the following beneficial uses for the San Diego Creek (Reach 2):

Intermittent Beneficial Use:

- **Groundwater Recharge (GWR):** waters are used for natural or artificial recharge of groundwater for purposes that include, but are not limited to, future extraction, maintain water quality or halting saltwater intrusion into freshwater aquifers.

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

- **Non-Contact Water Recreation (REC-2)**: waters are used for recreation activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life studying, hunting, sightseeing and aesthetic enjoyment in conjunction with the above activities.

- **Warm Freshwater Habitat (WARM)**: waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.

- **Wildlife Habitat (WILD)**: waters support the habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

Groundwater Features

The proposed project is within the Coastal Plain of Orange County Groundwater Basin. The Department of Water Resources has designated this area as Basin 8-1 that underlies the lower Santa Ana River Watershed, and a portion of the San Diego Creek Watershed. The Santa Ana RWQCB Basin Plan has designated beneficial uses for ground waters of the Lower Santa Ana River Basin. The existing beneficial uses for ground water in the Lower Santa Ana River/ Irvine Sub-basin are:

- **Municipal and Domestic Supply (MUN):** waters are used for community, military, municipal or individual water supply systems. These uses may include but are not limited to drinking water supply.

- **Agriculture Supply (AGR):** waters are used for farming, horticulture or ranching. These uses include but are not limited to irrigation, stock watering, and support of vegetation for range grazing.

- **Industrial Service Supply (IND):** waters are used for industrial activities that do not depend primarily on water quality. These uses may include but are not limited to mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection and oil well depressurization.

- **Industrial Process Supply (PROC):** waters are used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.

Regulatory Settings

This project must conform to all applicable water quality regulations and/or permit requirements of the State Water Resources Control Board (SWRCB) and any applicable local Regional Water Quality Control Board(s) (RWQCB)

requirements including, but not limited to, the *Caltrans Statewide NPDES Permit* (Order No. 2012-0011-DWQ, NPDES No. CAS000003), the *Statewide NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities* (Order No. 2009-0009-DWQ, NPDES No. CAS000002), and the Caltrans Storm Water Management Plan (SWMP), and any subsequent revisions and/or additional requirements at the time of construction.

Environmental Evaluation

Short Term Impacts during Construction

Under the build alternative, the proposed project will construct an auxiliary lane on SB route 133 from the SB I-5 connector to the NB I-405 connector. This proposed auxiliary lane will become the second lane on the NB I-405 connector. This alternative also proposes to extend the number three lane on SB route 133 approximately 300 feet south of San Diego Creek to match the existing roadway pavement. The proposed work includes constructing retaining walls to accommodate the widening of the roadway as well as widening the bridge over San Diego Creek that includes scour mitigation (Rock Slope Protection/ Rip Rap) to protect the bridge foundation from creek flows.

Potential temporary impacts to water quality anticipated during construction include possible sediment transport caused by disturbed soil areas created by construction activities such as clearing, grubbing and excavation and grading to construct the auxiliary lanes, retaining walls and bridge construction. The project can also have temporary water quality impacts from concrete demolition waste, trash from workers and construction waste, petroleum products from construction equipment and/or vehicles, sanitary wastes from portable toilets and any other chemicals used for construction such as coolants used for equipment and/or concrete curing compounds. The construction for the bridge widening will require construction equipment to access San Diego Creek and extend the bridge foundations to accommodate the widening of the bridge. The bridge construction may require stream diversions to allow construction when flows are present in the creek. In addition, if the construction of pier foundations for the bridge construction encounter groundwater, discharges will be subject to the RWQCB Waste Discharge Requirements for groundwater discharges to surface waters.

The project will create a Disturbed Soil Area of 6.0 acres and subject to the State Water Resources Control Board (SWRCB) NPDES Construction General Permit

(CGP). To comply with the CGP, the project will be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) and determine a Risk Level based on potential erosion and transport to receiving waters. The SWPPP will identify temporary Best Management Practices (BMPs) to address the potential temporary impacts to water quality. The BMPs identified in the project SWPPP will include measures such as temporary soil stabilization measures, linear sediment barriers (i.e. silt fence, gravel bag berms, fiber rolls), and construction site waste management (i.e. concrete washout, construction materials storage, litter/ waste management/ stream diversions). In addition, with the project working in San Diego Creek, a 401 Water Quality Certification (401 Certification) from the Santa Ana Regional Water Quality Control Board will be required prior to construction. Any discharges of groundwater to surface waters during construction will be subject to the General *Waste Discharge Permit for Discharges to Surface Waters of Groundwater Resulting from Groundwater Dewatering Operations and/or Groundwater Cleanup Activities at Sites Within the San Diego Creek/ Newport Bay Watershed Polluted by Petroleum Hydrocarbons, Solvents, Metals, and/ or Salts. (Order No. R8-2007-0042, NPDES No. CAG918002)* and any subsequent updates to the permit at the time of construction.

Long Term Impacts during Operation

The proposed project will construct an auxiliary lane on SB route 133 from the SB I-5 connector to the NB I-405 connector. This proposed auxiliary lane will become the second lane on the NB I-405 connector. The construction will include grading, construction of retaining walls, modifying the drainage system, and widening the roadway to construct the auxiliary lane. The increase of new impervious surface is approximately 2.54 acres that is comprised of a new impervious surface of 1.0 acres and 1.54 acres of replaced impervious surface. With the construction of an auxiliary lane, there is the possibility that the pollutants typically generated during the operation of a transportation facility will increase with the operating traffic traveling on a new lane. These pollutants may include sediment/ turbidity, nutrients, trash and debris, bacteria and viruses, oxygen demanding substances, organic compounds, oil and grease, pesticides and metals. Per the Caltrans NPDES permit, post-construction storm water treatment control requirements are required for projects that create 1.0 acre or more of new impervious surface. With the new impervious surface estimated to be 2.54 acres, this project is required to implement Caltrans approved post construction treatment controls. In addition

to treating the roadway runoff, the project will stabilize with permanent vegetation all DSA's created by the minor grading and/ or excavation.

Project Features/ Standard Measures

The following project features/ standardized measures implemented by the project will minimize any temporary or permanent water quality impacts created by the project:

PF-WQ-1 The project will comply with the provisions of the National *Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the State of California, Department of Transportation, Order No. 2012-0011-DWQ, NPDES No. CAS00003* and the and any subsequent permits in effect at the time of construction

PF-WQ-2 The project will comply with the provisions of the NPDES *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit)* Order No. 2009-0009-DWQ, NPDES No. CAS000002and the and any subsequent permits in effect at the time of construction

PF-WQ-3 The project will comply with the Construction General Permit by preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) to address all construction-related activities, equipment, and materials that have the potential impact water quality for the appropriate Risk Level. The SWPPP will identify the sources of pollutants that may affect the quality of storm water and include BMPs to control the pollutants, such as sediment control, catch basin inlet protection, construction materials management and non-storm water BMPs. All work must conform to the Construction Site BMP requirements specified in the latest edition of

the *Storm Water Quality Handbooks: Construction Site Best Management Practices Manual* to control and minimize the impacts of construction and construction related activities, material and pollutants on the watershed. These include, but are not limited to temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-storm water BMPs

PF-WQ-4 Design Pollution Prevention Best Management Practices (BMPs) will be implemented such as preservation of existing vegetation, slope/ surface protection systems (permanent soil stabilization), concentrated flow conveyance systems such as ditches, berms, dikes and swales, overside drains, flared end sections, and outlet protection/ velocity dissipation devices.

PF-WQ-5 Caltrans approved treatment Best Management Practices (BMPs) will be implemented consistent with the requirements of *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for the State of California, Department of Transportation, Order No. 2012-0011-DWQ, NPDES No. CAS00003* and any subsequent permits in effect at the time of construction.

PF-WQ-6 Any discharges of groundwater to surface waters during construction will be subject to the General Waste Discharge Permit for Discharges to Surface Waters of Groundwater Resulting from Groundwater Dewatering Operations and/or Groundwater Cleanup Activities at Sites Within the San Diego Creek/ Newport Bay Watershed Polluted by Petroleum Hydrocarbons, Solvents, Metals, and/ or Salts (Order No. R8-2007-0042, NPDES NO. CAG918002) and any subsequent updates to the permit at the time of construction.

Avoidance, Minimization and/or Mitigation Measures

The project will incorporate project features and standardized measures that include temporary and permanent BMPs. With the implementation of these project features no adverse impacts to water quality would occur, no avoidance, minimization, and/or mitigation measures are required.

INDEX OF PLANS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	133	8.3/M9.3		

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

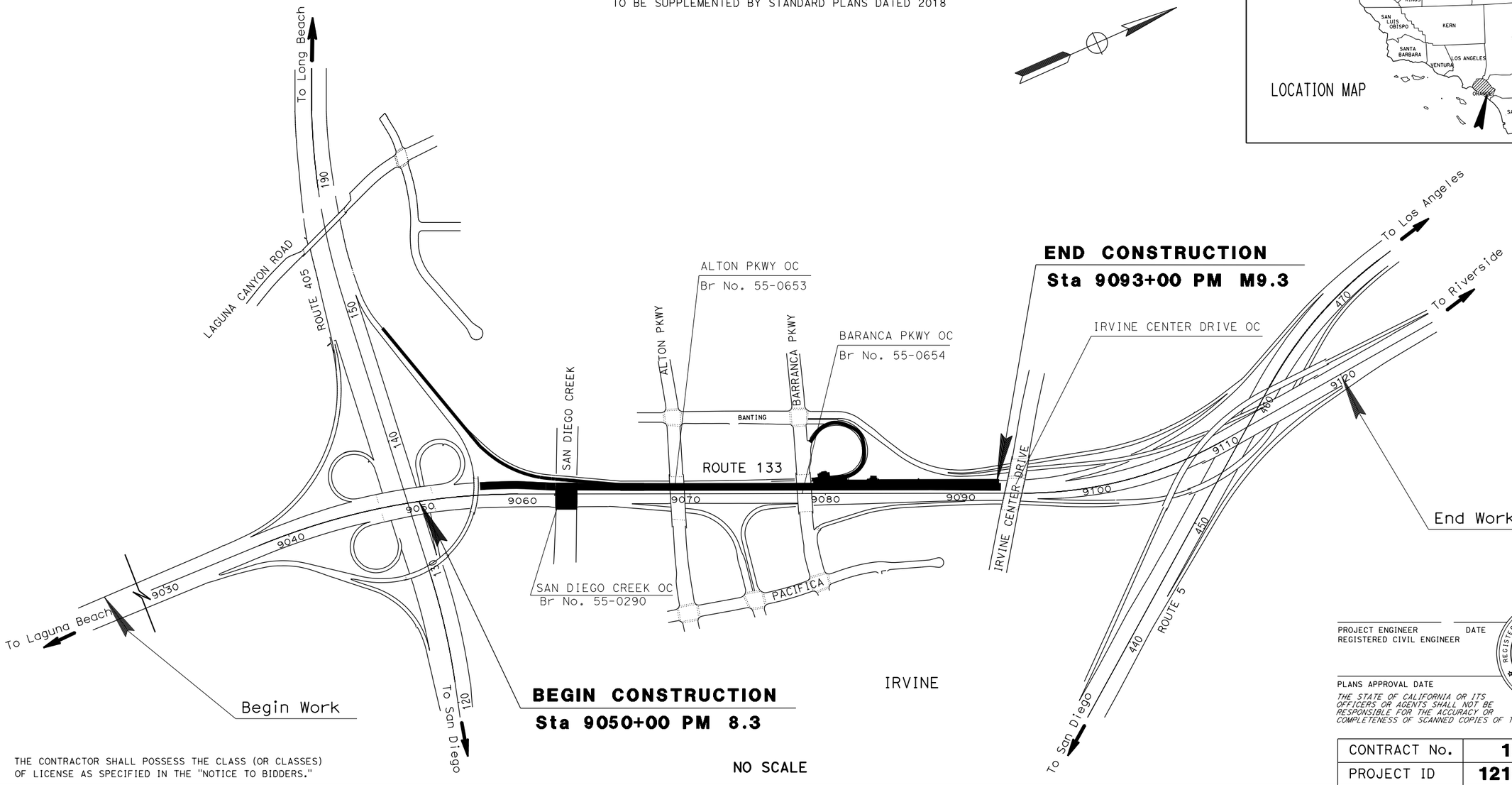
PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN ORANGE COUNTY
IN IRVINE
FROM ROUTE 133/405 SEPARATION
TO IRVINE CENTER DRIVE OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2018

LOCATION MAP



BEGIN CONSTRUCTION
Sta 9050+00 PM 8.3

END CONSTRUCTION
Sta 9093+00 PM M9.3

IRVINE

NO SCALE

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

PROJECT MANAGER: BARBARA MCGAHERY
DESIGN MANAGER: DAVID LAM

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

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

PLANS APPROVAL DATE

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

CONTRACT No.	12-0N8904
PROJECT ID	1214000130

LAST REVISION 09-25-19
DATE PLOTTED => 16-OCT-2019
TIME PLOTTED => 15:50

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NOTE:

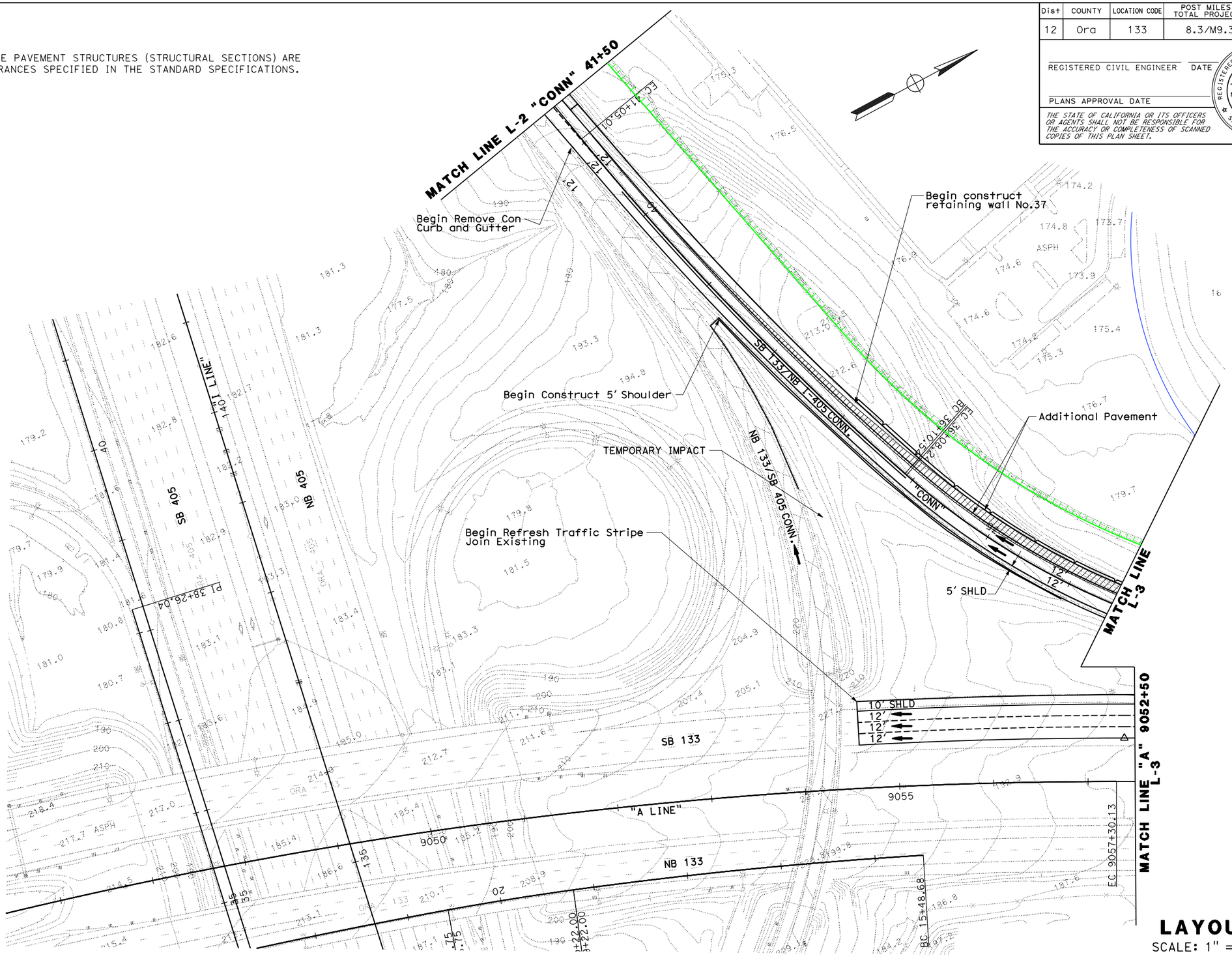
DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	133	8.3/M9.3	1	x

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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



LAYOUT

SCALE: 1" = 50'

L-1

LAST REVISION: DATE PLOTTED => 08-OCT-2019; TIME PLOTTED => 10:16; 09-25-19

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans®

DESIGN

FUNCTIONAL SUPERVISOR: DAVID LAM

CALCULATED-DESIGNED BY: NEGAR KARBALAEE

CHECKED BY: SHAWN FAZLOLLAH ZIAIE

REVISED BY

DATE REVISED

NOTE:

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

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	133	8.3/M9.3	1	x

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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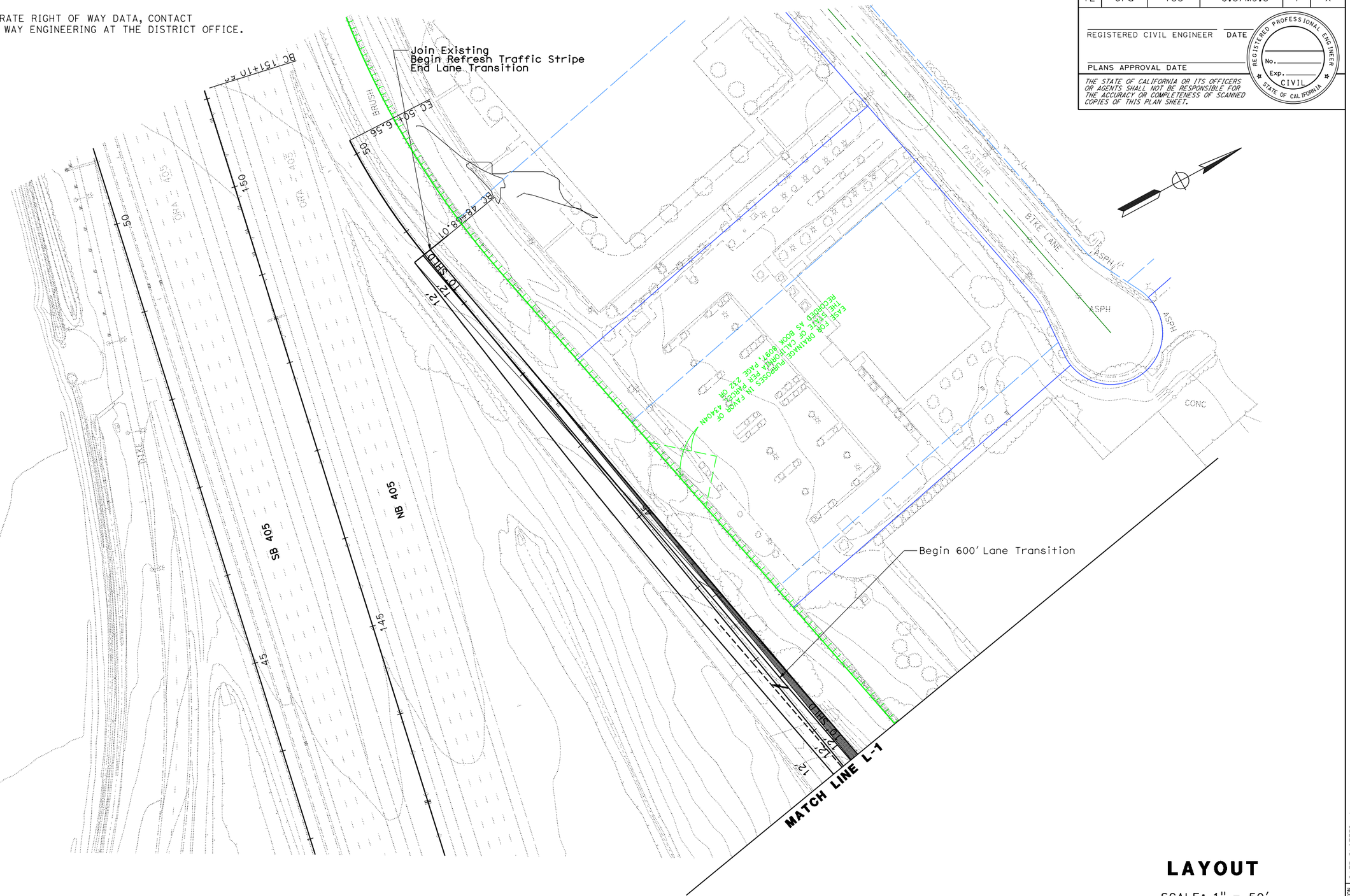

LAYOUT

SCALE: 1" = 50'

L-2

	CALCULATED-DESIGNED BY	REVISED BY
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CHECKED BY	DATE REVISED
Caltrans® DESIGN	NEGAR KARBALAEE SHAWN FAZLOLLAH ZIAIE	
FUNCTIONAL SUPERVISOR	DAVID LAM	

LAST REVISION 09-25-19

DATE PLOTTED => 08-OCT-2019
TIME PLOTTED => 10:14

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DGN FILE => 1214000130ea002.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2994

PROJECT NUMBER & PHASE 12140001301

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	133	8.3/M9.3	1	x

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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REVISED BY	DATE REVISED
NEGAR KARBALAEE	SHAWN FAZLOLLAH ZIAIE
CALCULATED-DESIGNED BY	CHECKED BY
FUNCTIONAL SUPERVISOR	DAVID LAM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

TCE 21,520 SQFT

TEMPORARY IMPACT

End Construct Retaining Wall No.37

Bridge widening

Additional Pavement

Begin construct retaining wall No. 29

EASE FOR DRAINAGE PURPOSES IN FAVOR OF THE STATE OF CALIFORNIA PER PARCEL 102053 RECORDED AS INST. NO. 20018332798 OR

MATCH LINE L-1

PARKING RAMP

Construct Tie back Wall at Alton Pkwy OC

Additional Pavement

End construct retaining wall No. 29
Construct Terminal End Treatment

Bridge Railing 20:1 Taper

"CONN"

REACT 350

Remove Crash Cushion and MBGR

10' SHLD

"A LINE"

61d44'33.368"

LAGUNA FREEWAY

STATE ROUTE 133

ALTON PKWY

MATCH LINE "A" 9052+50 L-1

MATCH LINE L-4

R/W

San Diego Creek

SAN DIEGO CREEK

TCE 2,762 SQFT

LAYOUT

SCALE: 1" = 50'

L-3

LAST REVISION 09-25-19
DATE PLOTTED => 16-OCT-2019
TIME PLOTTED => 07:33

BORDER LAST REVISED 7/2/2010

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2994

PROJECT NUMBER & PHASE 12140001301

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12	Ora	133	8.3/M9.3	1	x

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Construct tie back wall at Barranca Pkwy OC

End MGS

Install MGS

Construct Maintenance Vehicle Pullout

Additional Pavement

TCE 8,445 SQFT

Begin realign Barranca on-ramp

Construct Maintenance Vehicle Pullout

10' SHLD
12'
12'
12'
12'

MATCH LINE L-3

MATCH LINE L-5

LAYOUT

SCALE: 1" = 50'

L-4

CALCULATED-DESIGNED BY	REVISED BY	DATE REVISED
CHECKED BY	NEGAR KARBALAEE	
	SHAWN FAZLOLLAH ZIAIE	

FUNCTIONAL SUPERVISOR: DAVID LAM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

LAST REVISION 09-25-19 | DATE PLOTTED => 16-OCT-2019 | TIME PLOTTED => 07:43

BORDER LAST REVISED 7/2/2010

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2994

PROJECT NUMBER & PHASE 12140001301

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	Ora	133	8.3/M9.3	1	x

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PLANS APPROVAL DATE

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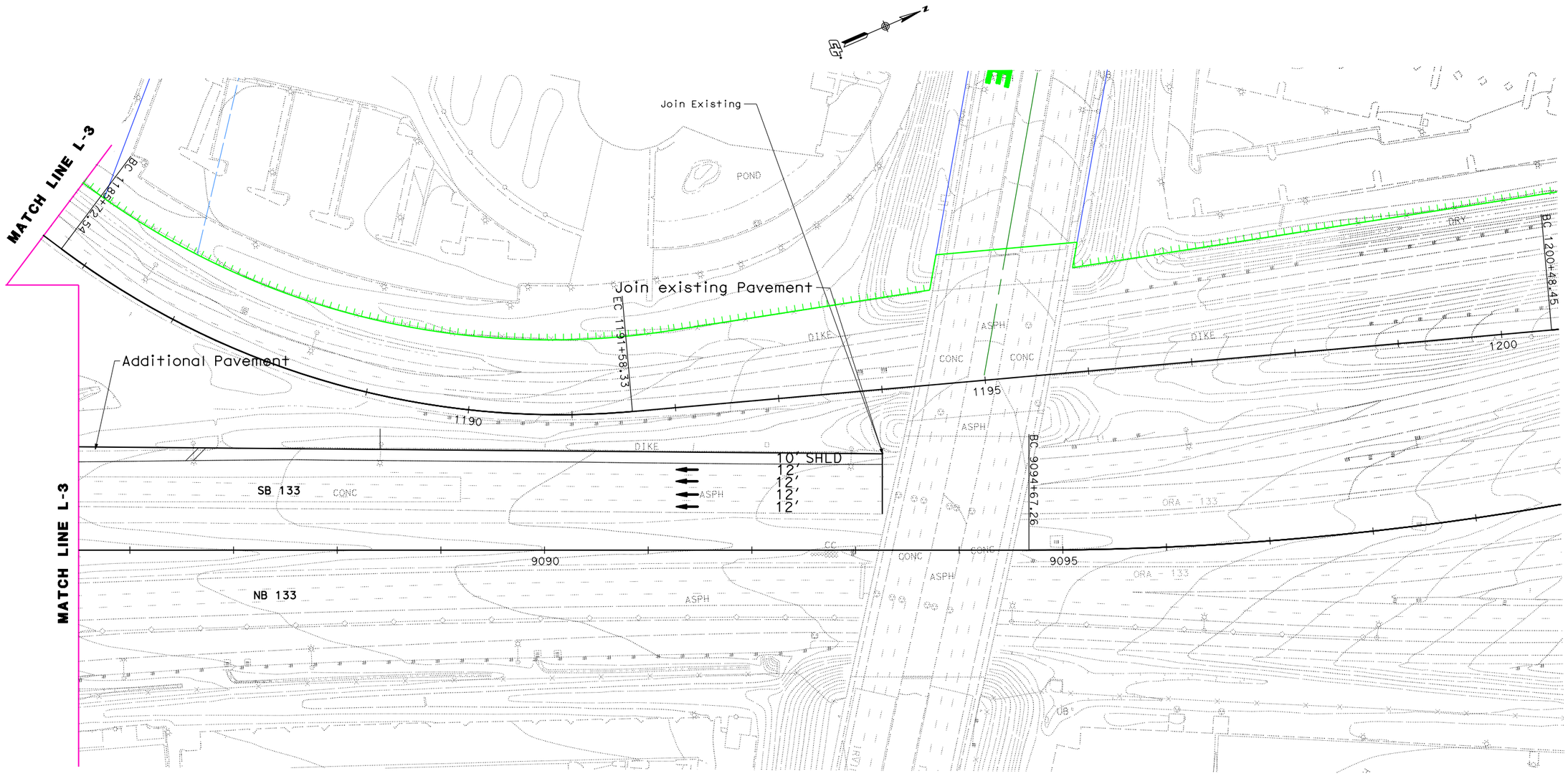

LAYOUT

SCALE: 1" = 50'

L-5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CALCULATED-DESIGNED BY	NEGAR KARBALAEE	REVISED BY	
Caltrans® DESIGN	CHECKED BY	SHAWN FAZLOLLAH ZIAIE	DATE REVISED	
	FUNCTIONAL SUPERVISOR	DAVID LAM		

LAST REVISION 09-25-19 | DATE PLOTTED => 15-OCT-2019 | TIME PLOTTED => 13:48

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