EXHIBIT 2-A

Quality Manual Template

This exhibit is posted as a standalone file.

EXHIBIT 3-A

Public Information Plan

This exhibit is provided as an electronic file.

District 6 Office of Public Information Communication Plan

STAKEHOLDER AND MEDIA OUTREACH ACTION PLAN

OVERVIEW

This report outlines and monitors the status of the outreach elements Caltrans plans to implement to inform stakeholder agencies and the public on transportation project related activities. The scope of this report is the outline of communication activities that will inform local agencies and stakeholders about transportation project related activities/events. This report will be periodically updated.

STAKEHOLDERS

Legislative/Congressional

- Congressman/Congresswoman
- Senator
- Assemblyman/Assemblyman

Local Agencies

- Director of Public Works
- Chair, County Board of Supervisors
- County Board of Supervisors
- Director of Public Works
- City Council
- Executive Director, City/County Association of Governments
- California Highway Patrol
- Sheriff's Department

Caltrans Project Team

The following members of the Project Development Team will take the lead in accomplishing this action plan:

- Project Manager
- Project Development/Design Engineer
- External/Public Affairs
- Construction
- Maintenance
- Environmental Planning
- Other Caltrans Services

SECTION ONE
COMMUNITY OUTREACH

1.1 Community, Local Agency (ies) and Legislative Outreach Meetings

Caltrans will be informing local agencies and legislative offices regarding the project scope and construction activities through a series of conference calls, meetings and visits.

Community/Local Agency Contact	Date
● Local Agencies and Legislative Offices – Phone Meeting	
● County Offices, California Highway Patrol, offices for member of Senate and Assembly	
● Local City Council Meetings	
● Local Community Council/Board Meetings	
● Phone Calls to Local Agencies & Legislative Offices	
● Local Agencies and Legislative Offices	
● Realtor Groups	
● Community/Small Business Meetings	
● Construction Site visits from Local Dignitaries	
● Mayor's Office site visit	
● Local Agencies & Legislative Offices – road opening date	
● Road opening – ribbon cutting ceremony	

SECTION TWO
MEDIA OUTREACH

2.1 Media Outreach Events

Caltrans will be informing the media prior to, during and after all major elements of the project.

Community/Local Agency Contact	Date
● Media Day at Construction Site prior to construction activity	
● Media day at Construction Site – heavy construction activity	
● Media Day at Construction Site – work 50% complete	
● Road open announcement	
● Ribbon Cutting Ceremony road open news coverage	

2.2 Press Releases

Caltrans will send both general and specific press releases concerning the project construction impacts.

- Alternating Route closures
- Extended Closures
- Caltrans Construction Status/Progress
- Construction Activity/Commuter Alerts
- Construction Completion/Road Opening date
- Ribbon Cutting Ceremony Information

SECTION THREE
PUBLIC OUTREACH

Caltrans will be informing the public through a broad outreach campaign.

3.1 Commuter/Construction Bulletins

Caltrans will communicate project information, road closures, detours, and construction schedules electronically and via fax to all local media outlets and community interest groups.

- Daily Updates
- Detour Maps
- Project Contact Information
- Informational Videos
- Photos
- Community Meetings
- Resource Links
- FAQ's

3.2 Traffic Management Center (TMC) Coordination

Caltrans will inform TMC staff responsible for the Travel Information and Changeable Message Sign system on the construction related activities and lane closures.

3.3 Fact Sheets, Mailers and Flyers

Caltrans will develop an informational fact sheet for distribution through the mail and at public locations near the construction project location. The document will include dates and times of work along with maps and graphics that will highlight the potential impacts.

3.4 Changeable Message Signs (CMS)/ETC.

Caltrans will use its electronic changeable message signs network to help guide motorists during lane closures (when applicable).

3.3 Business Support

In collaboration with local Chambers of Commerce, small business groups and various local television and radio stations this office will be promoting safety through construction zones.

EXHIBIT 4-A

Initial Study with Negative Declaration

This exhibit is posted as a standalone file

EXHIBIT 4-B

Project Environmental Document - Categorical Exclusion

This exhibit is provided as an electronic file.

CATEGORICAL EXEMPTION/ CATEGORICAL EXCLUSION DETERMINATION FORM

06-FRE-180	R58.4/R60.4	06-0C110	
Dist.-Co.-Rte. (or Local Agency)	P.M/P.M.	E.A. (State project)	Federal-Aid Project No. (Local project)/ Proj. No.

PROJECT DESCRIPTION:

(Briefly describe project, purpose, location, limits, right-of-way requirements, and activities involved.)

The California Department of Transportation (Caltrans), as CEQA lead Agency, proposes to build new braided ramps on State Route 180 between State Routes 41 and 168 in the City of Fresno (PM R58.4/R60.4). The project will construct new braided branch connections between State Routes 41, 180, and 168 to improve traffic operations, reduce congestion, and enhance traffic safety within freeway-to-freeway interchanges. Along the new branch connections, two new separate structures will be constructed and the existing First Street undercrossing will be widened. Also, the Cedar Avenue on-ramp to westbound State Route 180 will be widened to two lanes in order to accommodate a ramp-metering system. Ramp-metering will also be installed on westbound State Route 180 to the southbound State Route 41 branch connection. The existing drainage system within the project limits will be modified. All work is within the existing state right-of-way.

CEQA COMPLIANCE *(for State Projects only)*

Based on an examination of this proposal, supporting information, and the following statements (See 14 CCR 15300 et seq.):

- If this project falls within exempt class 3, 4, 5, 6 or 11, it does not impact an environmental resource of hazardous or critical concern where designated, precisely mapped and officially adopted pursuant to law.
- There will not be a significant cumulative effect by this project and successive projects of the same type in the same place, over time.
- There is not a reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances.
- This project does not damage a scenic resource within an officially designated state scenic highway.
- This project is not located on a site included on any list compiled pursuant to Govt. Code § 65962.5 ("Cortese List").
- This project does not cause a substantial adverse change in the significance of a historical resource.

CALTRANS CEQA DETERMINATION (Check one)

☐ **Exempt by Statute.** (PRC 21080[b]; 14 CCR 15260 et seq.)

Based on an examination of this proposal, supporting information, and the above statements, the project is:

☐ **Categorically Exempt. Class ____.** (PRC 21084; 14 CCR 15300 et seq.)

☐ **Categorically Exempt. General Rule exemption.** [This project does not fall within an exempt class, but it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment (CCR 15061[b][3])

Print Name: Environmental Branch Chief	Print Name: Project Manager/DLA Engineer
Signature Date	Signature Date

NEPA COMPLIANCE

In accordance with 23 CFR 771.117, and based on an examination of this proposal and supporting information, the State has determined that this project:

- does not individually or cumulatively have a significant impact on the environment as defined by NEPA and is excluded from the requirements to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS), and
- has considered unusual circumstances pursuant to 23 CFR 771.117(b) (http://www.fhwa.dot.gov/hep/23cfr771.htm - sec.771.117).

In non-attainment or maintenance areas for Federal air quality standards, the project is either exempt from all conformity requirements, or conformity analysis has been completed pursuant to 42 USC 7506(c) and 40 CFR 93.

CALTRANS NEPA DETERMINATION (Check one)

☒ **Section 6004:** The State has been assigned, and hereby certifies that it has carried out, the responsibility to make this determination pursuant to Chapter 3 of Title 23, United States Code, Section 326 and a Memorandum of Understanding (MOU) dated June 7, 2010, executed between the FHWA and the State. The State has determined that the project is a Categorical Exclusion under:

- ☐ **23 CFR 771.117(c): activity (c)(___)**
- ☒ **23 CFR 771.117(d): activity (d)(_2_)**
- ☐ **Activity ___ listed in the MOU between FHWA and the State**

☐ **Section 6005:** Based on an examination of this proposal and supporting information, the State has determined that the project is a CE under Section 6005 of 23 U.S.C. 327.

G. William "Trais" Norris, III	Neil Bretz
Print Name: Environmental Branch Chief	Print Name: Project Manager/DLA Engineer
Signature Date 8/24/10	Signature Date 8/25/10

Revised June 7, 2010

Utilities and Emergency Services

During construction, a Traffic Management Plan will be developed to accommodate local traffic patterns and reduce delay, congestion, and accidents. Temporary lanes will be constructed in the median to shift the existing mainline lanes to provide room for the construction of the two bridges. Traffic would be reduced to a minimum of one lane in each direction during night work and two lanes in each direction during day work. Alternative ramps will be designated while the existing ramps are closed. The Traffic Management Plan would include, but is not limited to:

- Release of information through brochures and mailers, press releases, and advertisements managed by the Public Information Office.
- Use of fixed and portable changeable message signs.
- Incident management though COZEEP (Construction Zone Enhancement Enforcement Program) and the Transportation Management Center.
- Night work and project phasing.

Visual/Aesthetics

Where feasible, existing mature vegetation will be conserved or replaced. Additional highway planting would be addressed in a separate highway planting project that will follow this project. Per Caltrans policy, warranted highway planting is required on existing freeways when the area is impacted by major modification to the highway and where adjacent properties are developed at the time of the roadway construction contract acceptance. The warranted highway planning will help lessen visual impacts associated with the project. Planting will be included to reduce the visual scale and soften the appearance of the new structures. In addition, architectural treatments, such as color and/or textures will be applied to vertical surfaces. These architectural treatments would correlate with other structures along State Route 180. The aesthetic treatments will be coordinated through the Landscape Architecture unit and the Bridge Aesthetics unit in Headquarters throughout the various phases of the project.

Hydrology and Floodplain

In order to maintain storage capacity, two side ditches will be constructed to help the impacted Caltrans basins. One side ditch will be needed on the northern side and one on the southern side near the Fresno Metropolitan Flood Control District basin.

Air Quality

The project will be subject to the San Joaquin Valley Air Pollution Control District Rule 9510 (Indirect Source Review Rule). This rule applies to construction equipment emissions for transportation projects that exceed 2.0 tons of either PM10 and/or Nitrogen Oxide air pollutants. Mitigation options include using a construction fleet that is "cleaner than the California state average" and/or in the form of fees paid to the District. The contractor will be responsible for the Indirect Source Review Air Impact Analysis and any applicable fees.

Short Term Construction Impacts

Construction activity may generate a temporary increase in mobile source air toxics emissions. The use of diesel retrofit technologies outlined in the Congestion Mitigation and Air Quality Improvement Program provisions (technologies that are designed to lessen a number of mobile source air toxics) would help lower short-term mobile source air toxics.

Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time. Operational agreements that reduce or redirect work or shift times to avoid community exposures would have positive benefits when sites are near vulnerable populations. The use of technological adjustments to equipment, such as off-road dump trucks and bulldozers, would also be appropriate strategies. These technological fixes could include particulate matter traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions. The use of clean fuels, such as ultra-low sulfur diesel, also would be a very cost-beneficial strategy. The Environmental Protection Agency has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction.

During construction, the project would generate air pollutants. The exhaust from construction equipment contains hydrocarbons, oxides of nitrogen, carbon monoxide, suspended particulate matter, and odors. However, the largest percentage of pollutants will be windblown dust generated during excavation, grading, hauling, and various other activities. The impacts of these activities would vary each day as construction progresses. Dust and odors at some residences very close to the right-of-way could cause occasional annoyance and complaints. The project will be subject to a Dust Control Permit from the San Joaquin Unified

Air Pollution Control District. Caltrans Standard Specifications pertaining to dust control and dust palliative requirement is a required part of all construction contracts and should effectively reduce and control emission impacts during construction. The provisions of Caltrans Standard Specifications, Section 7-1.01F "Air Pollution Control" and Section 10 "Dust Control" require the contractor to comply with the San Joaquin Valley Air Pollution Control District rules, ordinances, and regulations.

Noise and Vibration

For purposes of the National Environmental Policy Act, soundwalls must be considered because receptors have been identified as approaching or exceeding the noise abatement criterion (67 dBA) by the design year of 2035.

Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of four soundwalls.

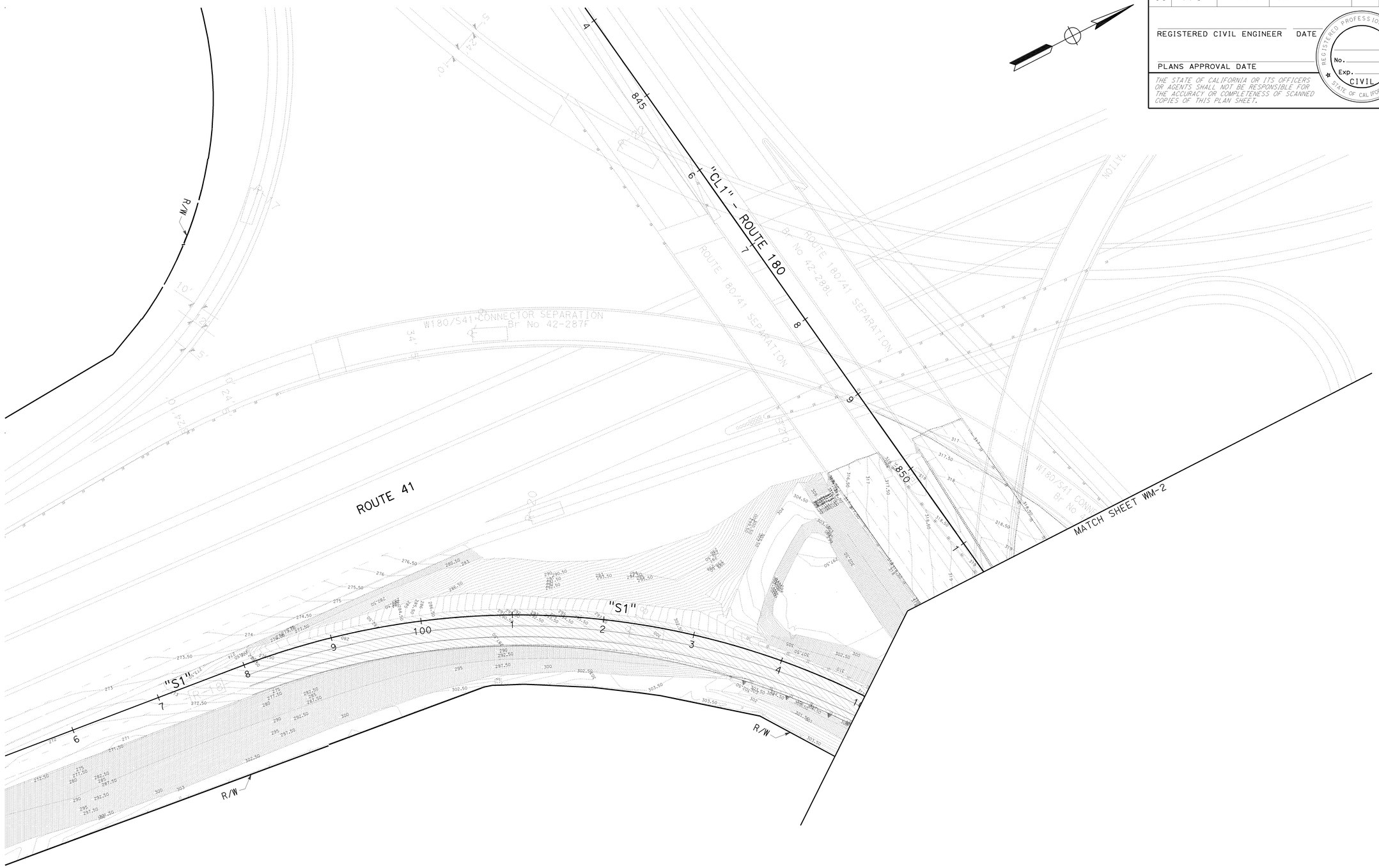
- The first soundwall would be built along the shoulder on the northern section of State Route 180 between Fisher and Fifth Streets. The soundwall will be 1,179 feet long with a height of 14 feet.
- The second soundwall will be built along the edge of shoulder on the southern section of State Route 180. This soundwall will connect to Soundwall 3 and be 14 feet from Bond Street to Fifth Street and then drop to 12 feet from Fifth Street to Millbrook Street. The length of this soundwall will be 1,145 feet.
- The third soundwall will be built along the edge of shoulder on the southern section of State Route 180. The soundwall will be 14 feet high and 1,221 feet long between First Street and Bond Street.
- The fourth soundwall will be two overlapping soundwalls, one constructed on the edge of shoulder and the other 15 feet from the state right-of-way. The soundwall on the shoulder will be 12 feet high and 831 feet long and will extend from Eighth Street to Ninth Street. The soundwall located 15 feet from the state right-of-way will be 10 feet high and 1,254 feet long and will extend from Ninth Street to Cedar Avenue.

EXHIBIT 7-A

Right Of Way Work Plan

This exhibit is provided as an electronic file.

NOTE: This plan accurate for R/W information only.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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R/W WORK MAP
WM-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®
DESIGN

FUNCTIONAL SUPERVISOR: THANH NGUYEN
CALCULATED-DESIGNED BY: HECTOR TRUJILLO
CHECKED BY: STEVE M LEE
REVISED BY
DATE REVISED

LAST REVISION 01-05-11
DATE PLOTTED => 05-JAN-2011
TIME PLOTTED => 15:59

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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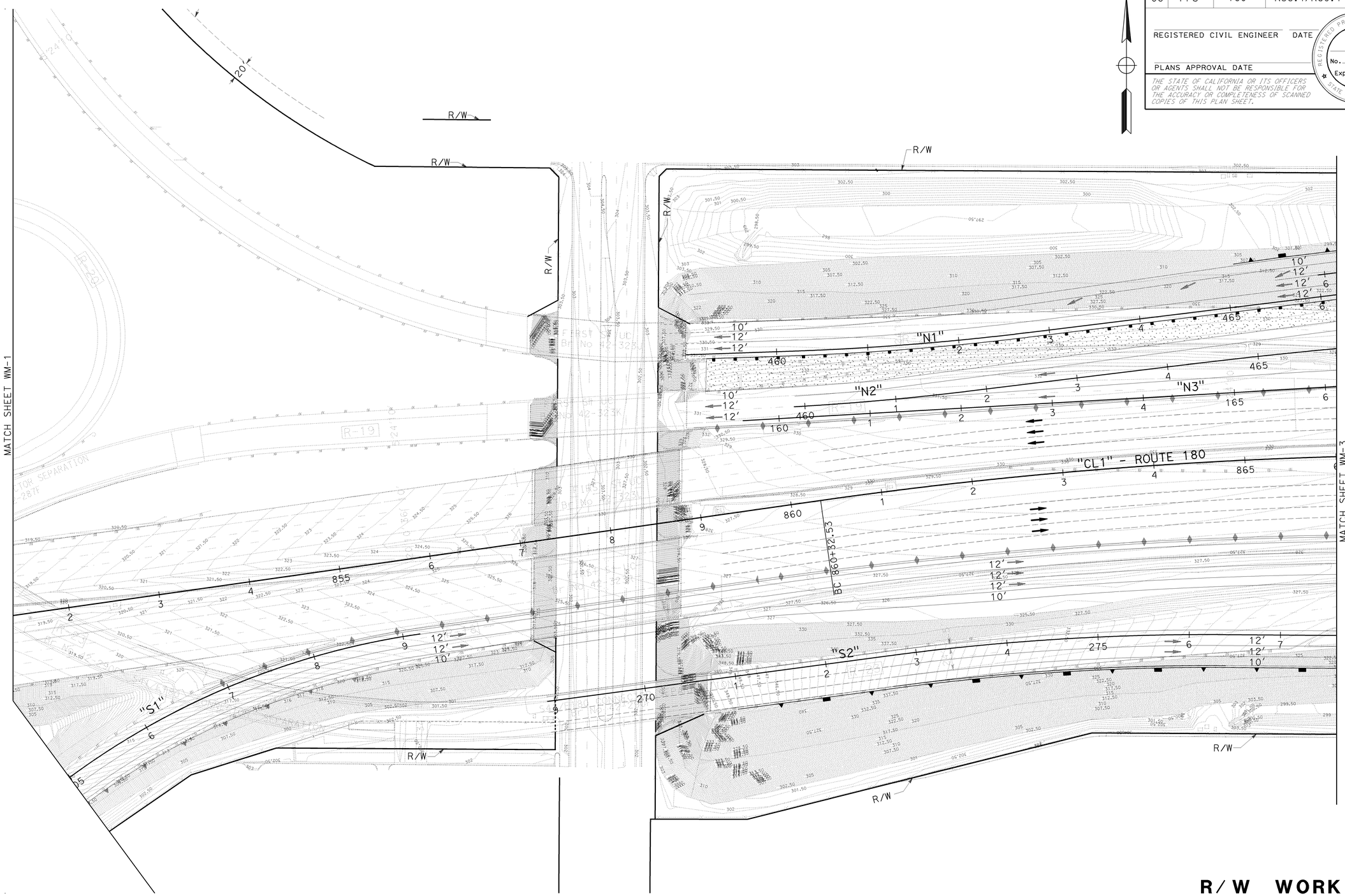

R/W WORK MAP
WM-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

FUNCTIONAL SUPERVISOR: THANH NGUYEN
CALCULATED-DESIGNED BY: HECTOR TRUJILLO
CHECKED BY: STEVE M LEE
REVISED BY
DATE REVISED

LAST REVISION 01-05-11 | DATE PLOTTED => 05-JAN-2011 | TIME PLOTTED => 16:00

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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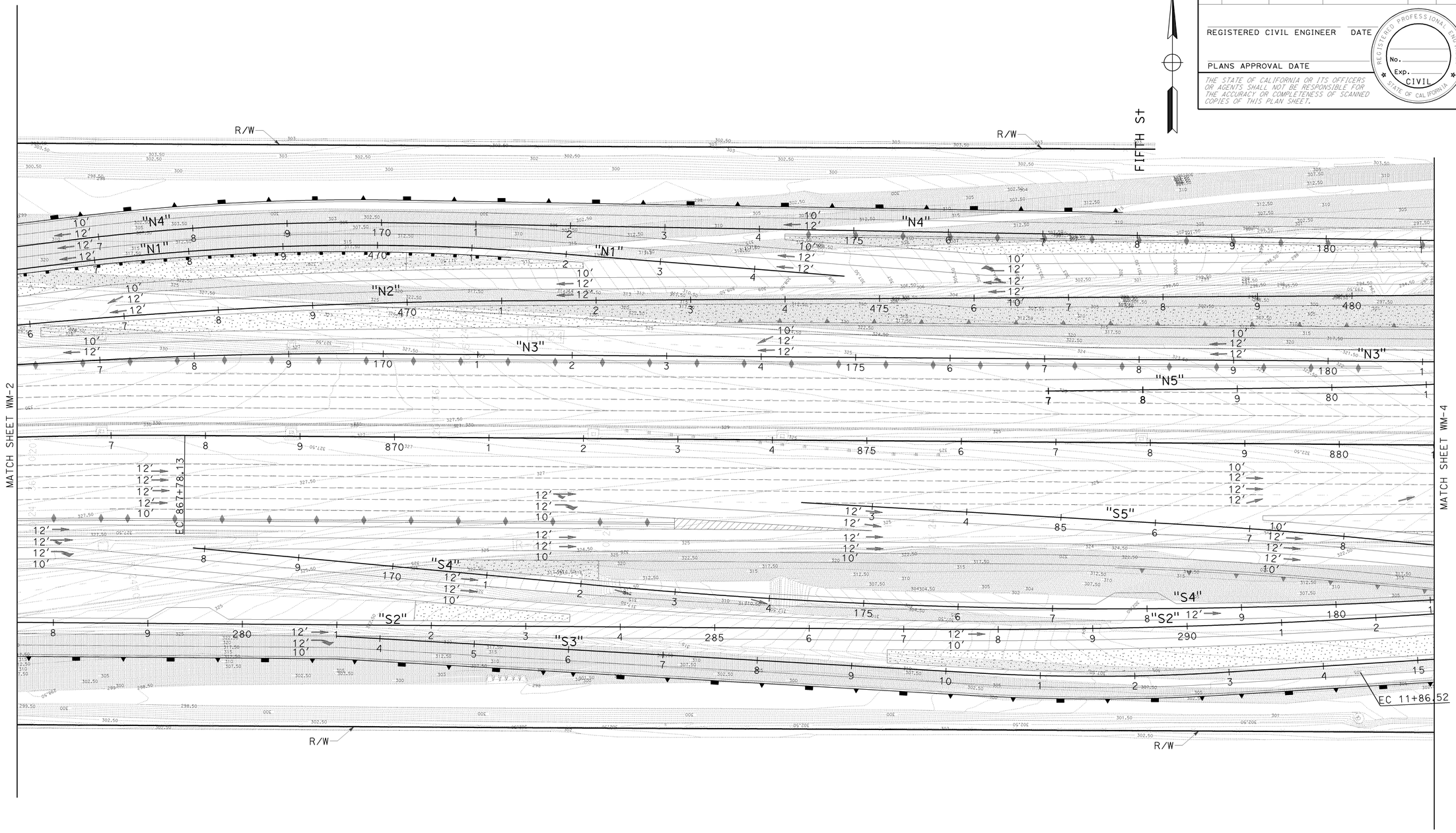

R/W WORK MAP
WM-3

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY	HECTOR TRUJILLO
CHECKED BY	STEVE M LEE

FUNCTIONAL SUPERVISOR: THANH NGUYEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans® DESIGN

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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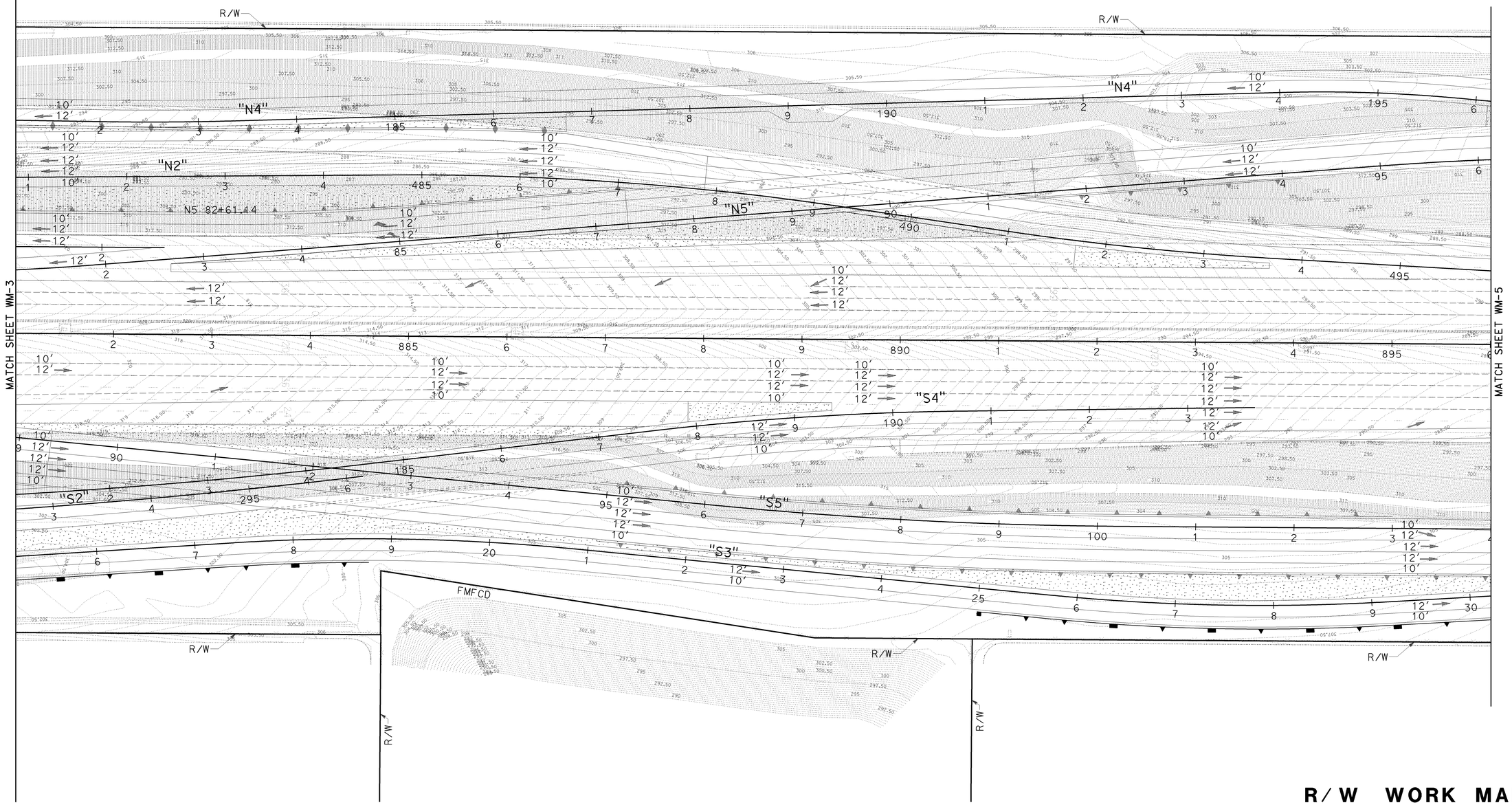

R/W WORK MAP
WM-4

REVISED BY	DATE REVISED

HECTOR TRUJILLO — CALCULATED-DESIGNED BY

STEVE M LEE — CHECKED BY

THANH NGUYEN — FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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LAST REVISION 01-05-11

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TIME PLOTTED => 16:00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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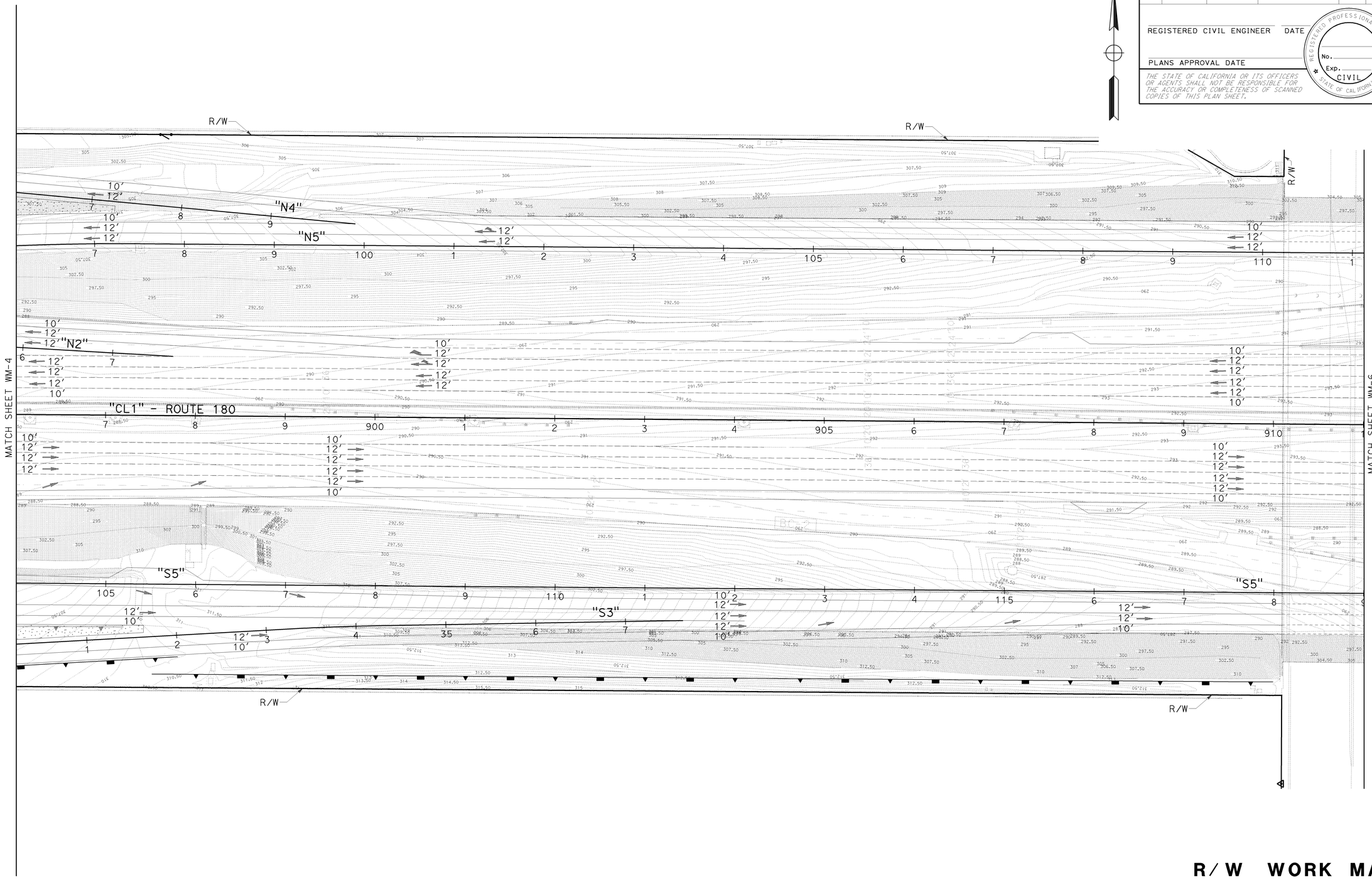

R/W WORK MAP
WM-5

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: HECTOR TRUJILLO
CHECKED BY: STEVE M LEE
FUNCTIONAL SUPERVISOR: THANH NGUYEN

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DATE PLOTTED => 05-JAN-2011
TIME PLOTTED => 16:00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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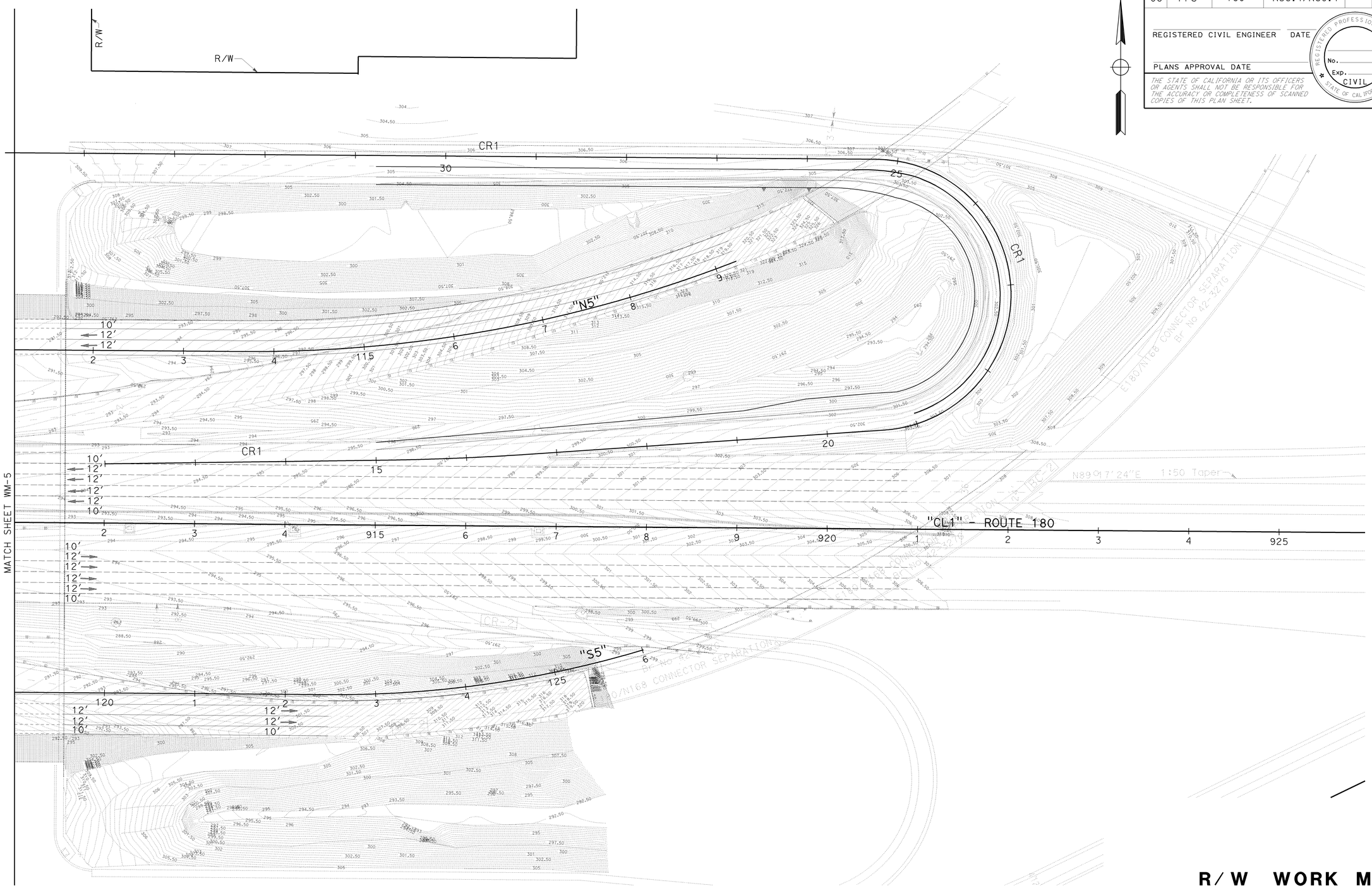

R/W WORK MAP
WM-6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
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FUNCTIONAL SUPERVISOR: THANH NGUYEN

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DATE REVISED

LAST REVISION 01-05-11
DATE PLOTTED => 05-JAN-2011
TIME PLOTTED => 16:01

BORDER LAST REVISED 7/2/2010

USERNAME => s113818
DGN FILE => 60C110WM006.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 1459

PROJECT NUMBER & PHASE 06000009341

EXHIBIT 8-A

Vicinity Map and Boring Locations

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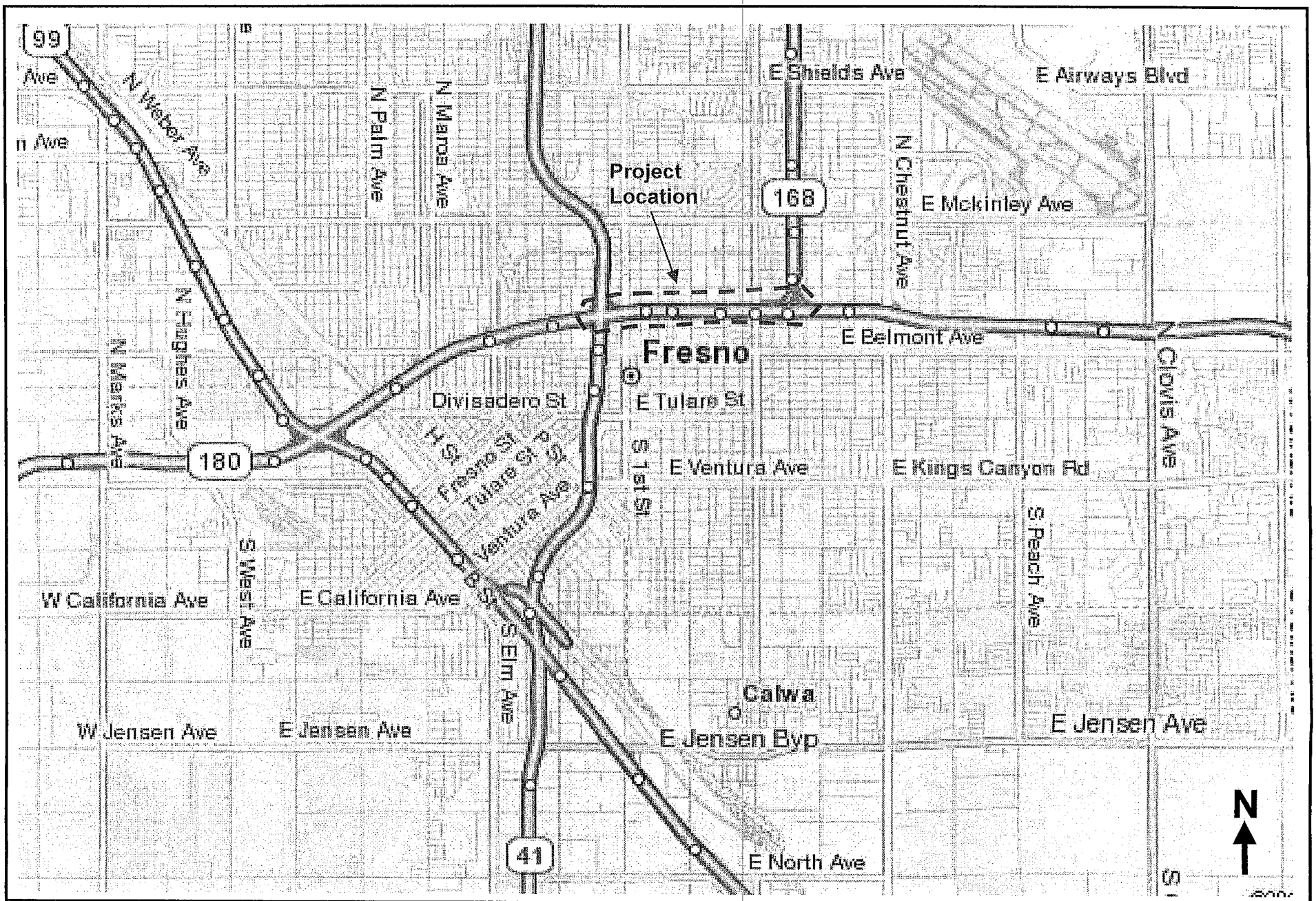
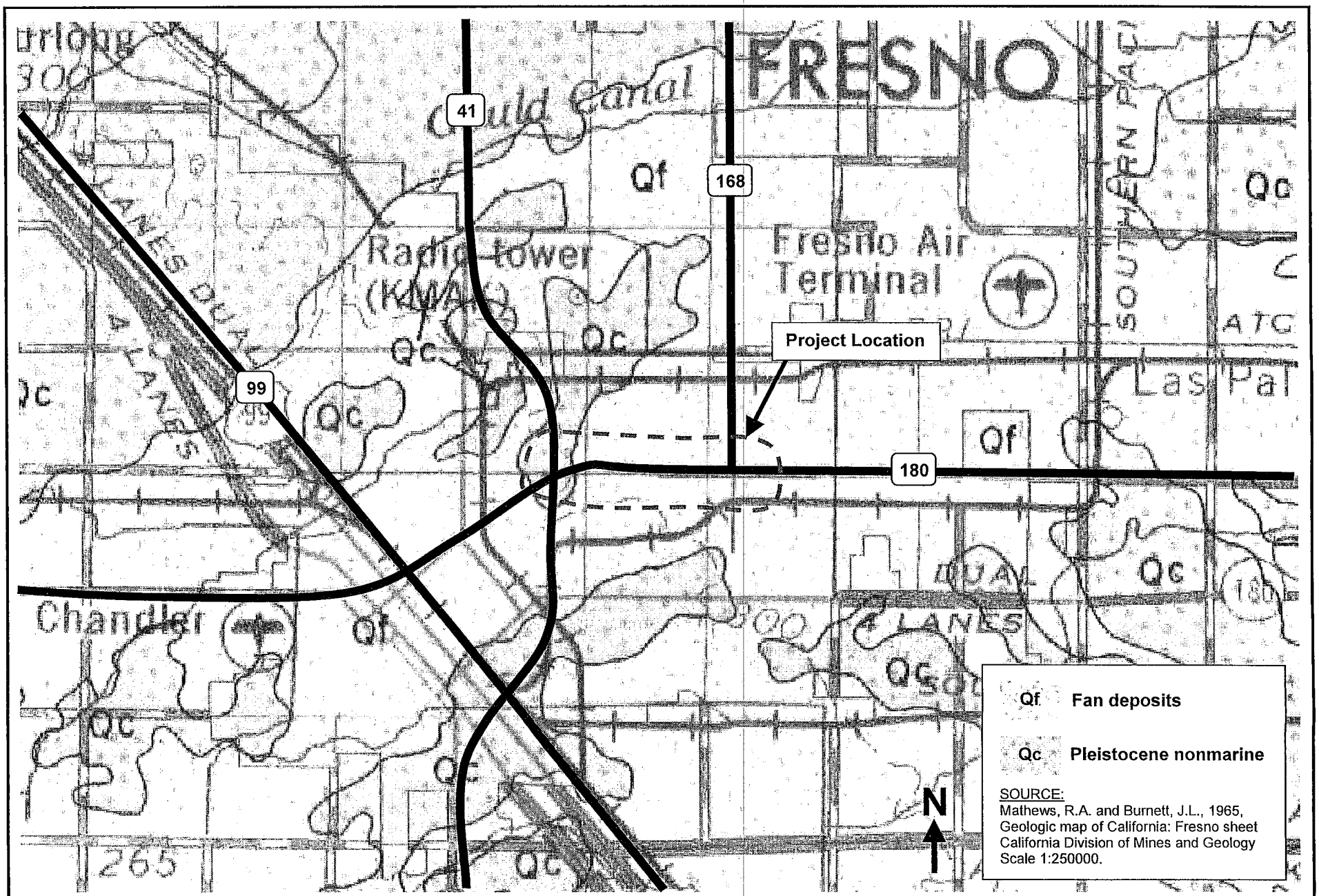


Caltrans Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 06-0C1100 September 2010	VICINITY MAP 06-FRE-180 PM 58.4 / 60.4 DPGR	Plate No. 1



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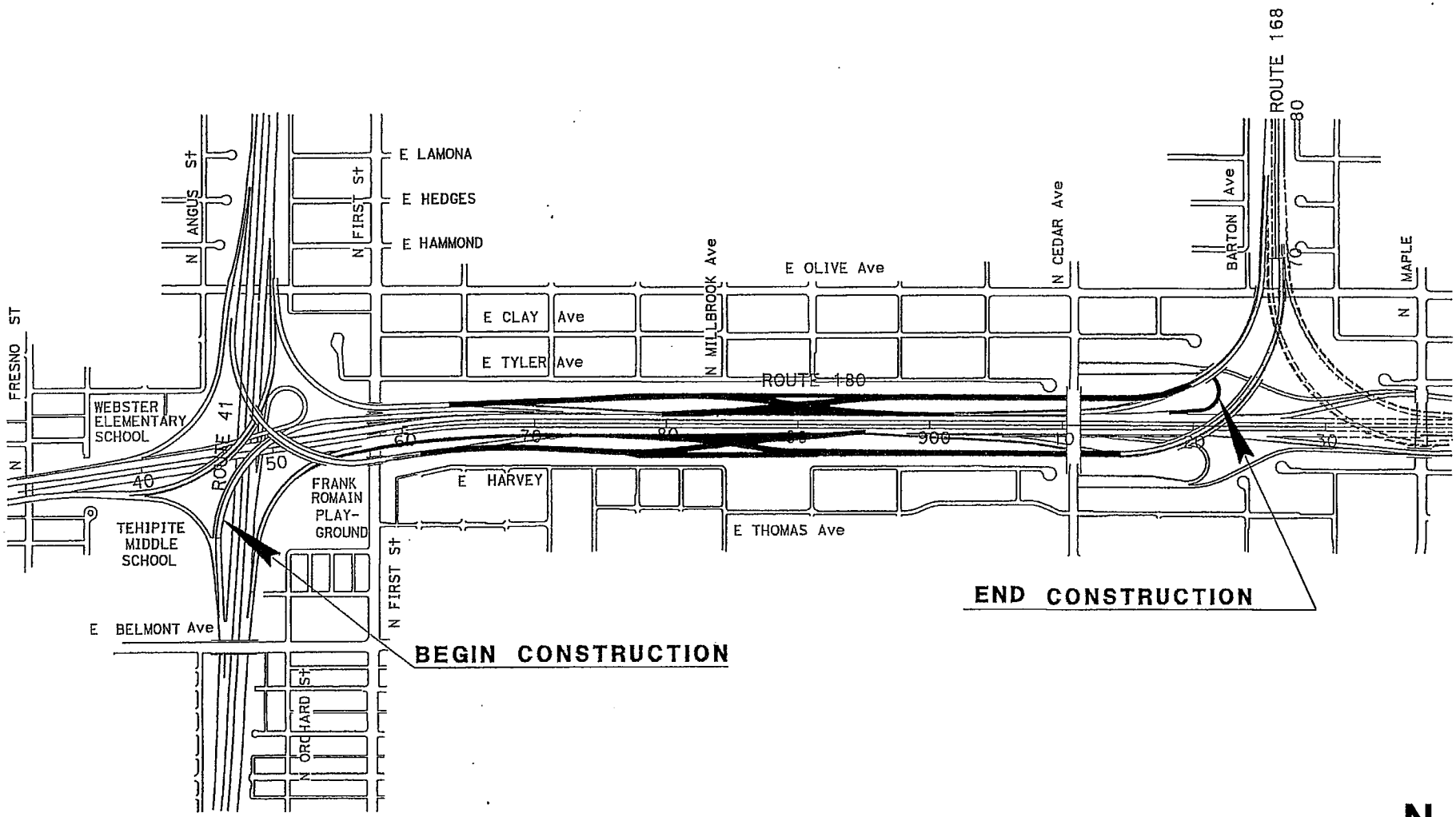
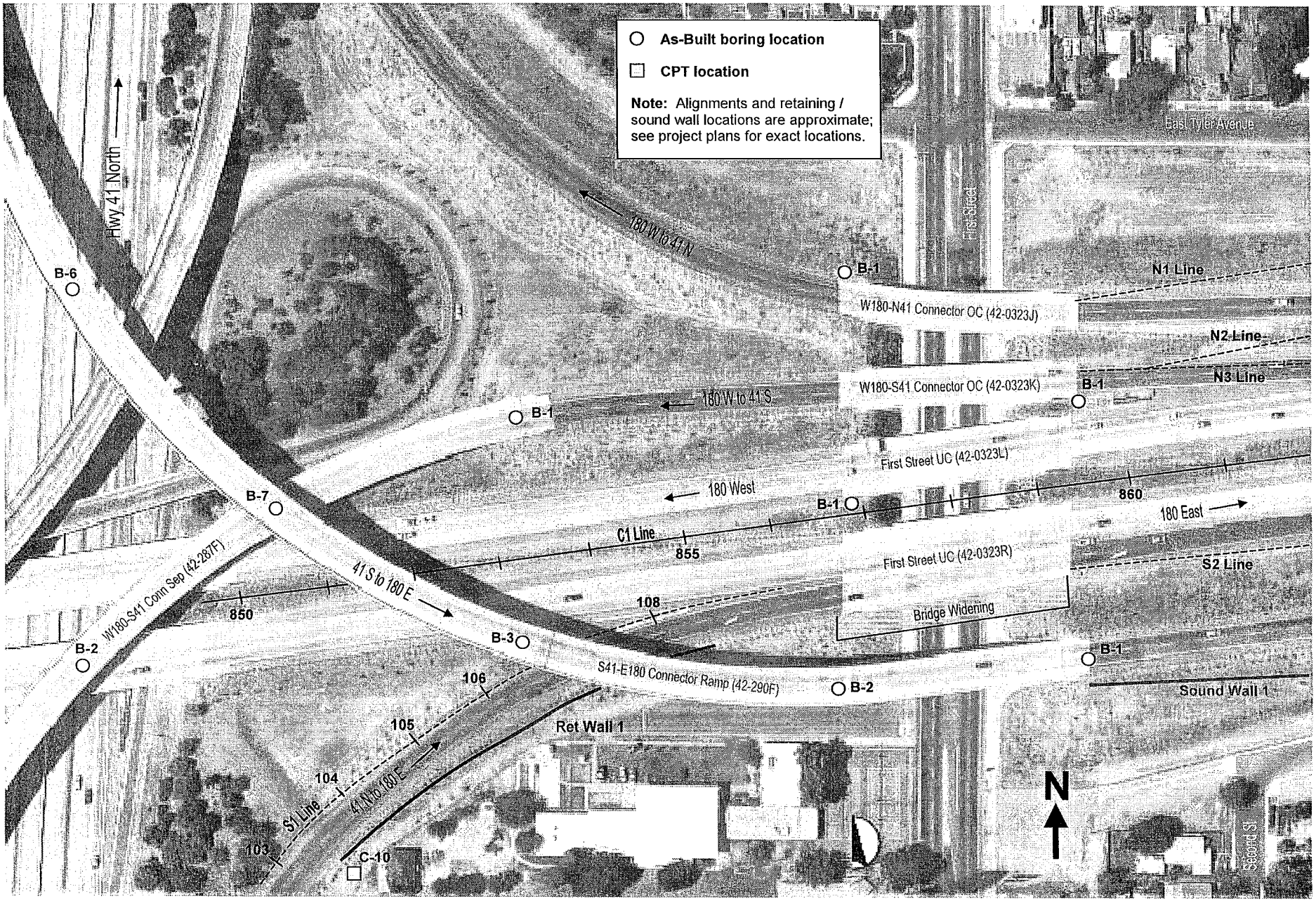
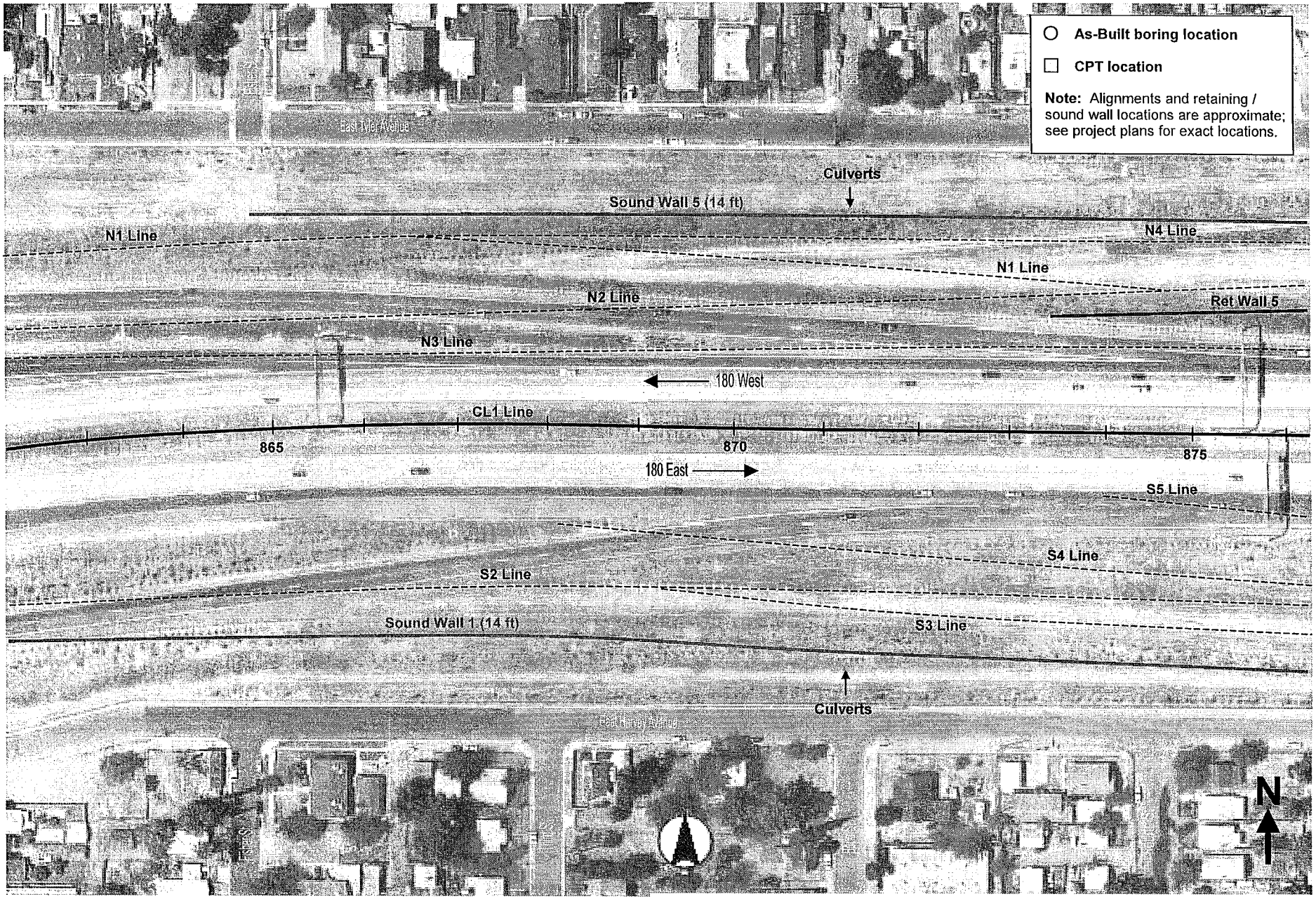


Caltrans	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 06-0C1100 September 2010	PROJECT LAYOUT 06-FRE-180 PM 58.4 / 60.4 DPGR	Plate No. 3



Caltrans Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 06-0C1100 September 2010	SITE PLAN – AS-BUILT BORING / CPT LOCATION MAP 06-FRE-180 PM 58.4 / 60.4 DPGR	Plate No. 4



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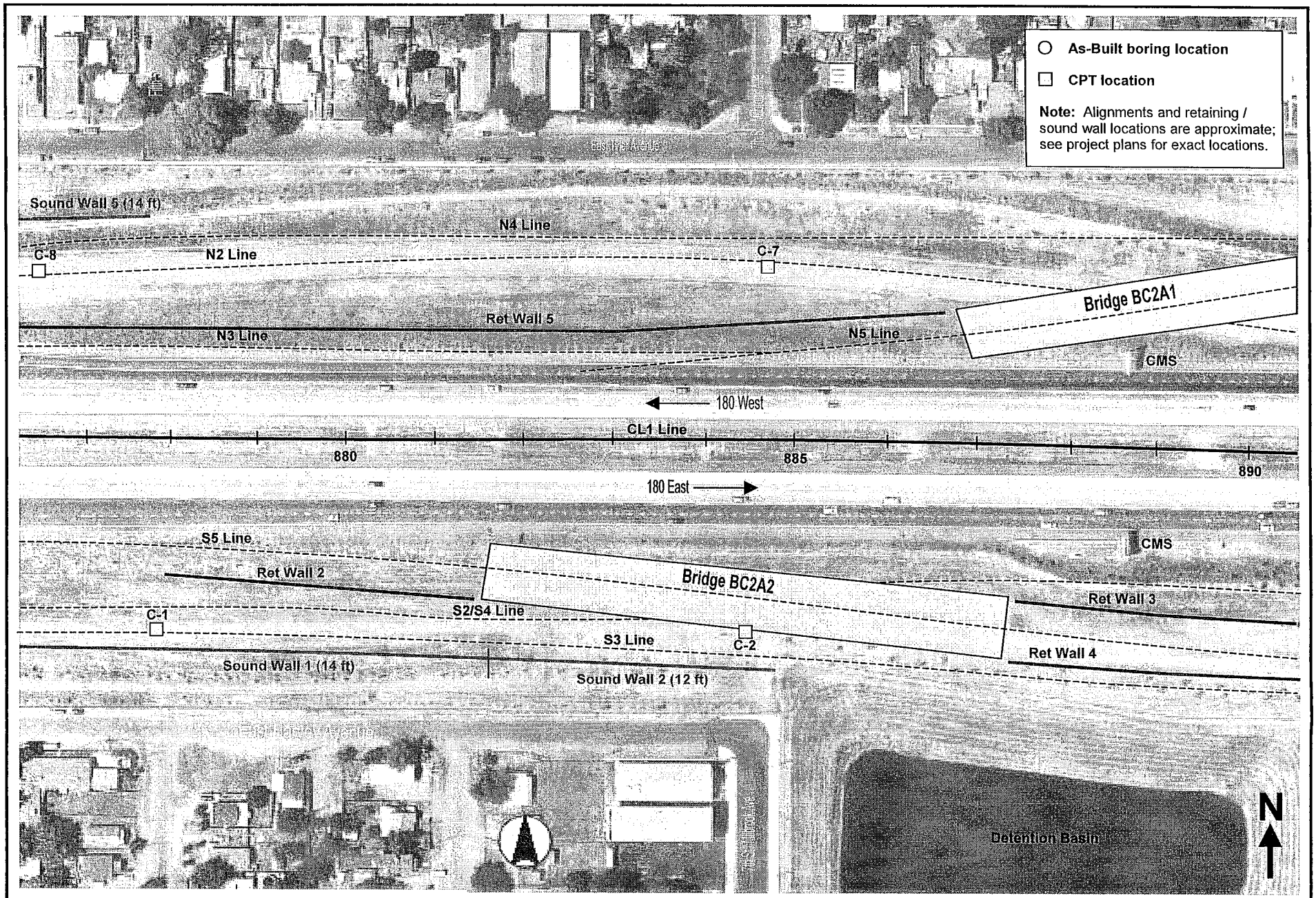
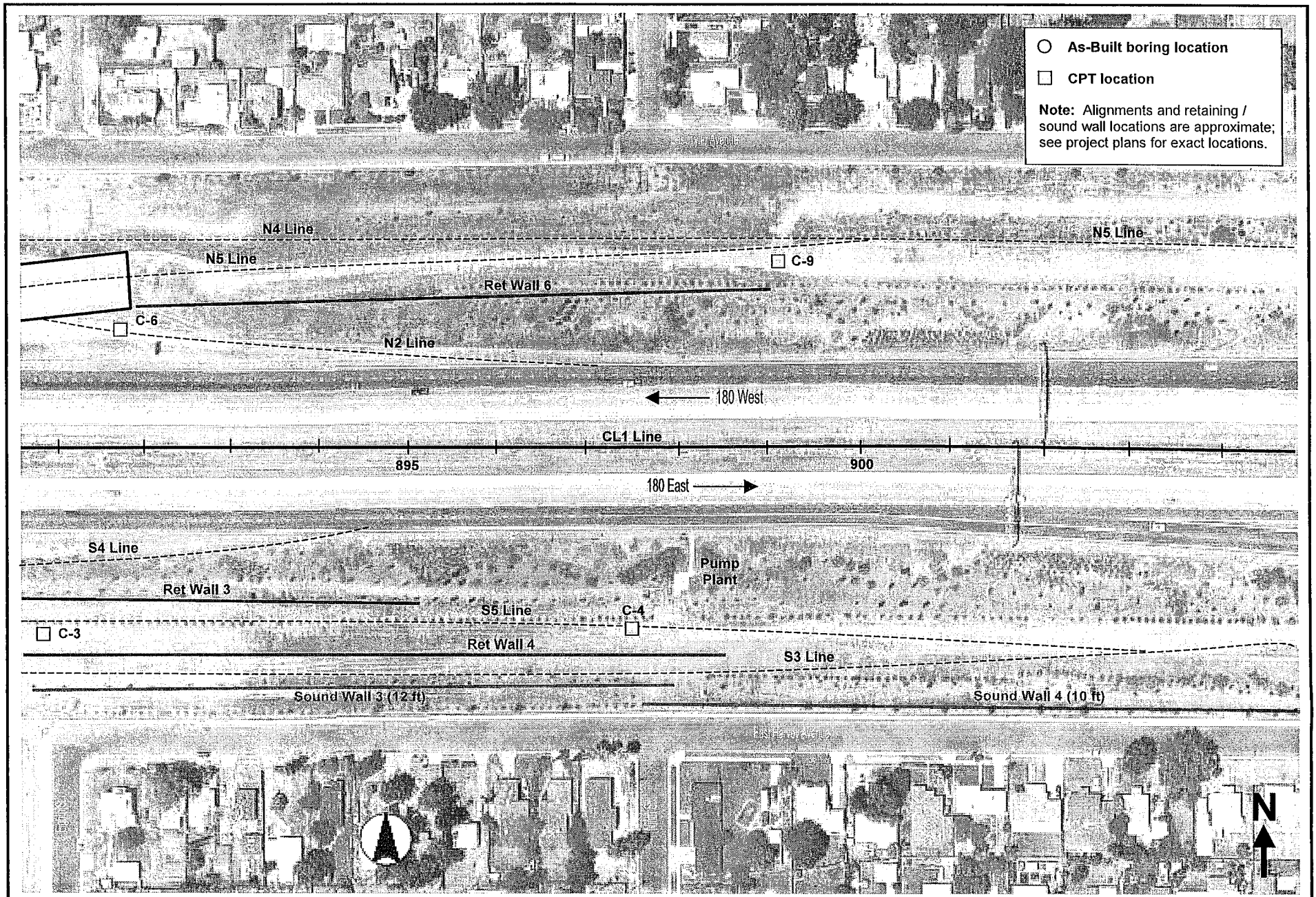


Caltrans Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 06-0C1100 September 2010	SITE PLAN – AS-BUILT BORING / CPT LOCATION MAP 06-FRE-180 PM 58.4 / 60.4 DPGR	Plate No. 6



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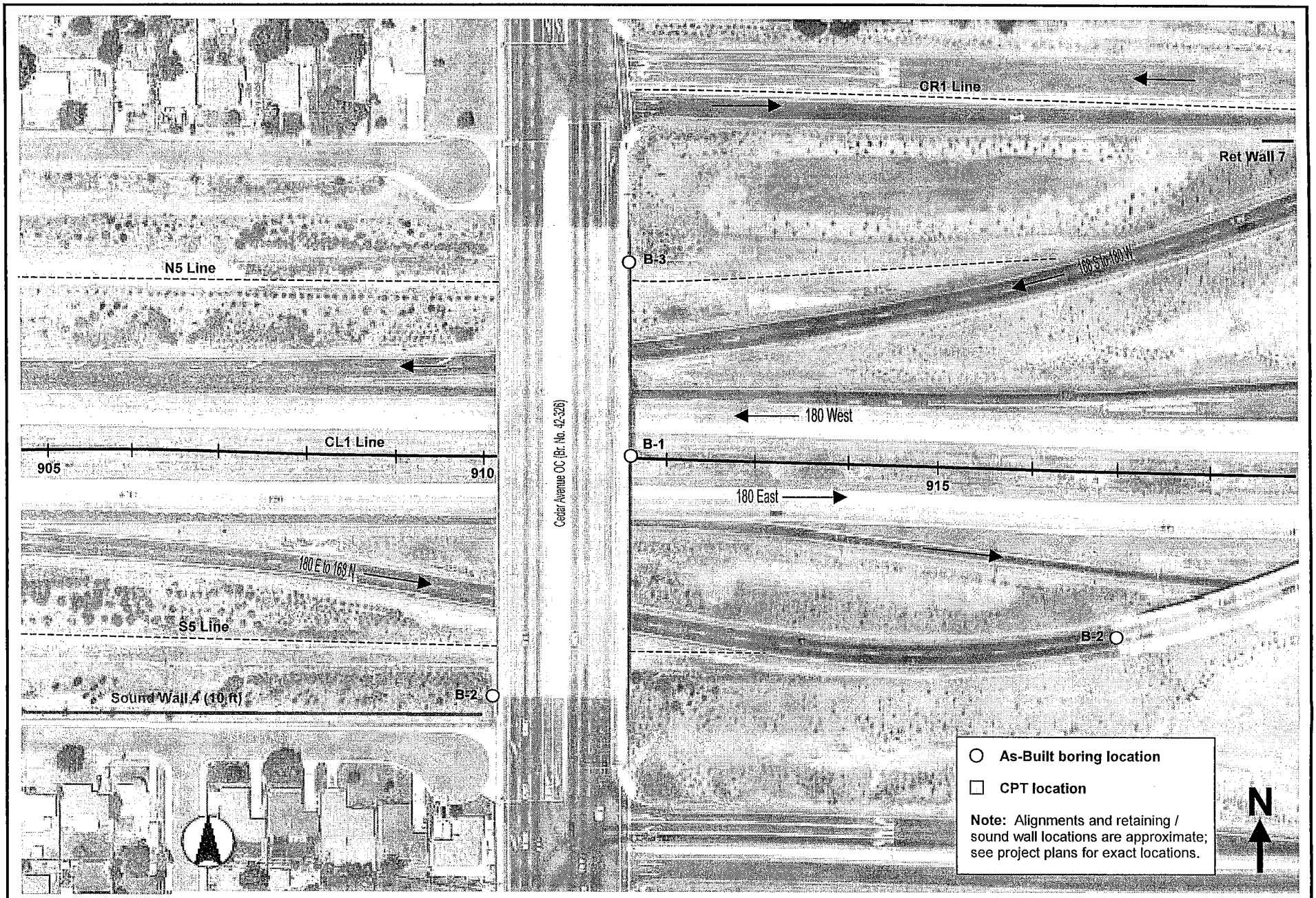

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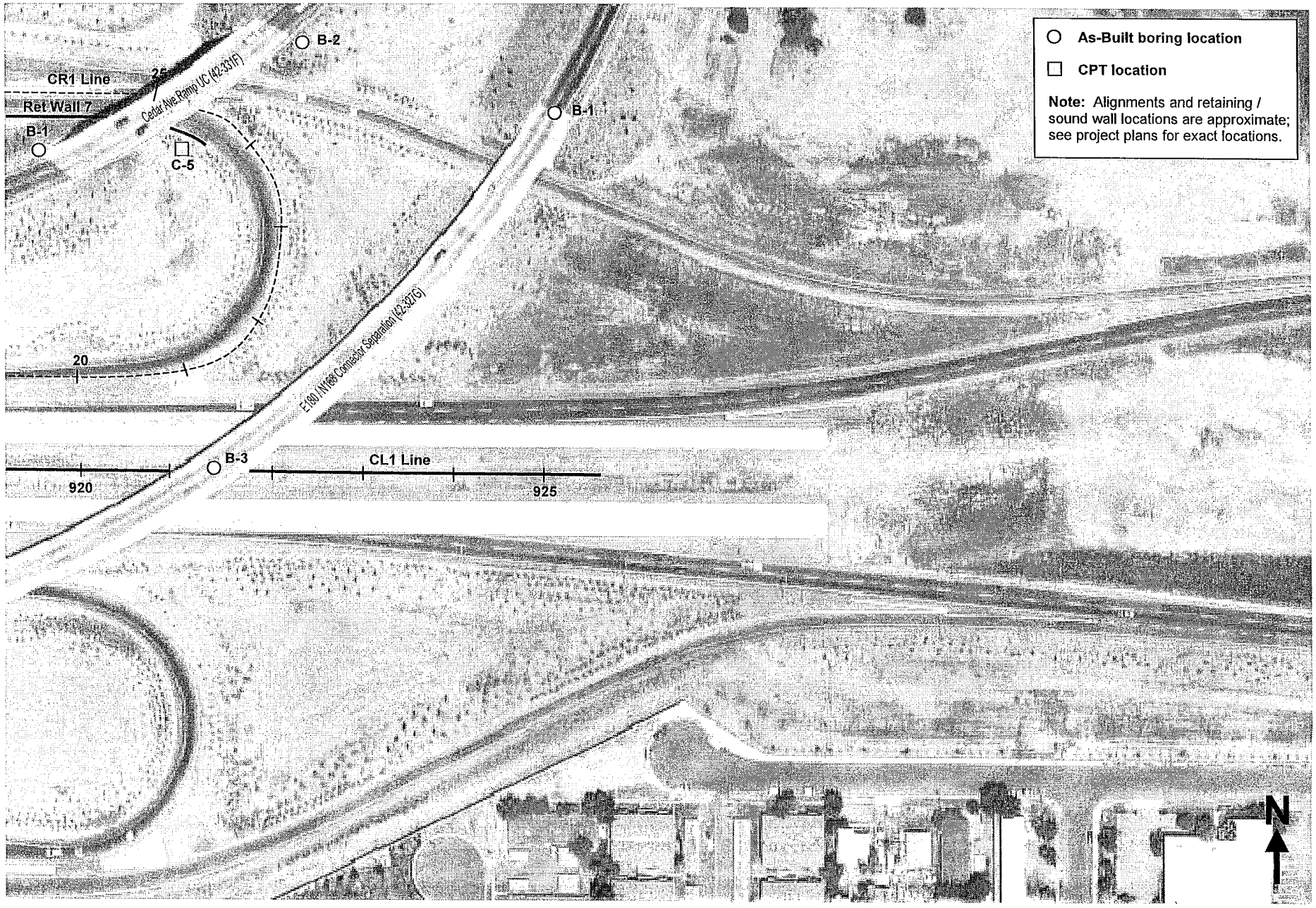


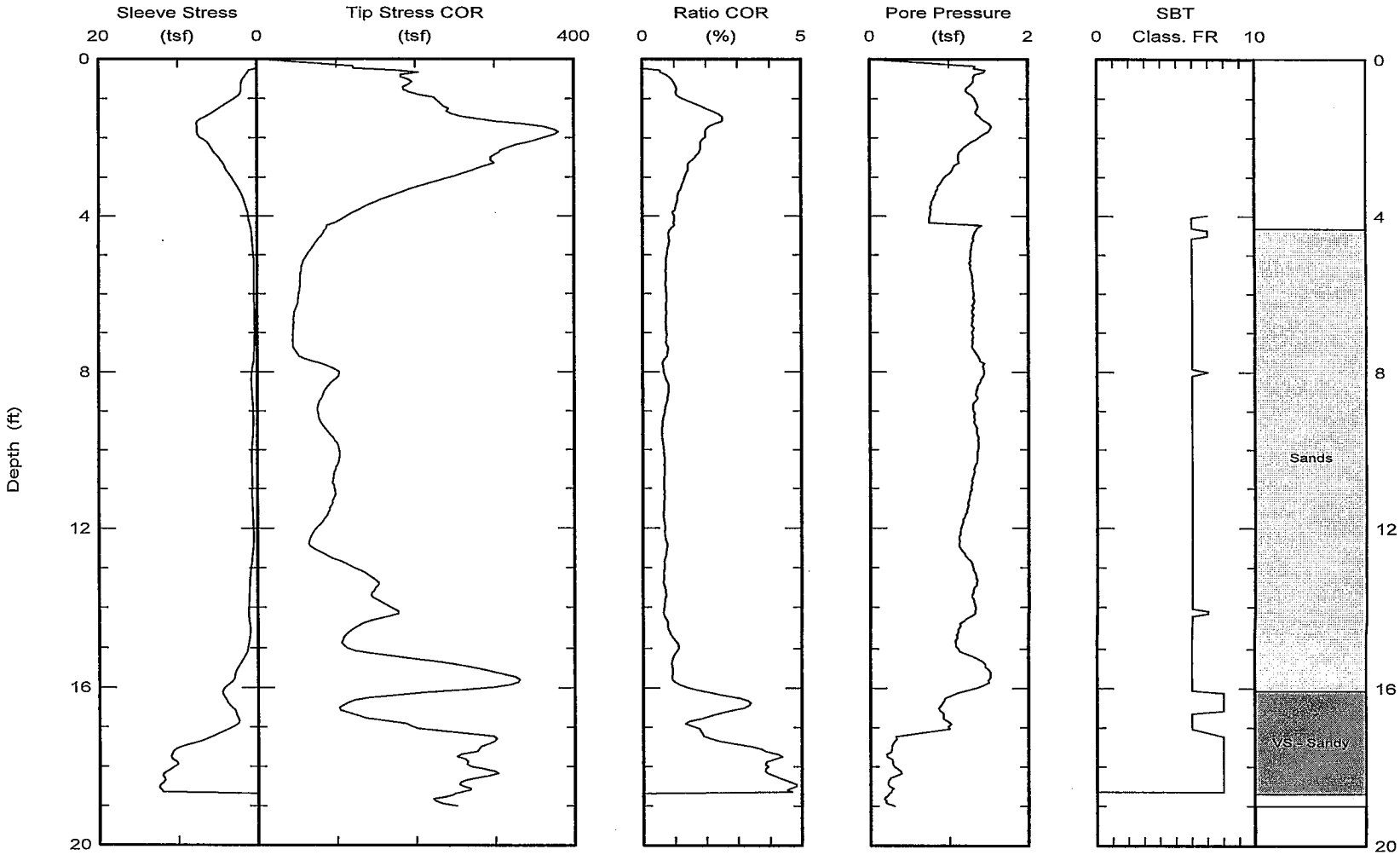
Caltrans	Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 06-0C1100 September 2010	SITE PLAN – AS-BUILT BORING / CPT LOCATION MAP 06-FRE-180 PM 58.4 / 60.4 DPGR	Plate No. 9

EXHIBIT 8-B

Modified Dynamic Cone Penetrometer

This exhibit is provided as an electronic file.

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 03/Aug/2010 Test ID: 03G01-C1 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	

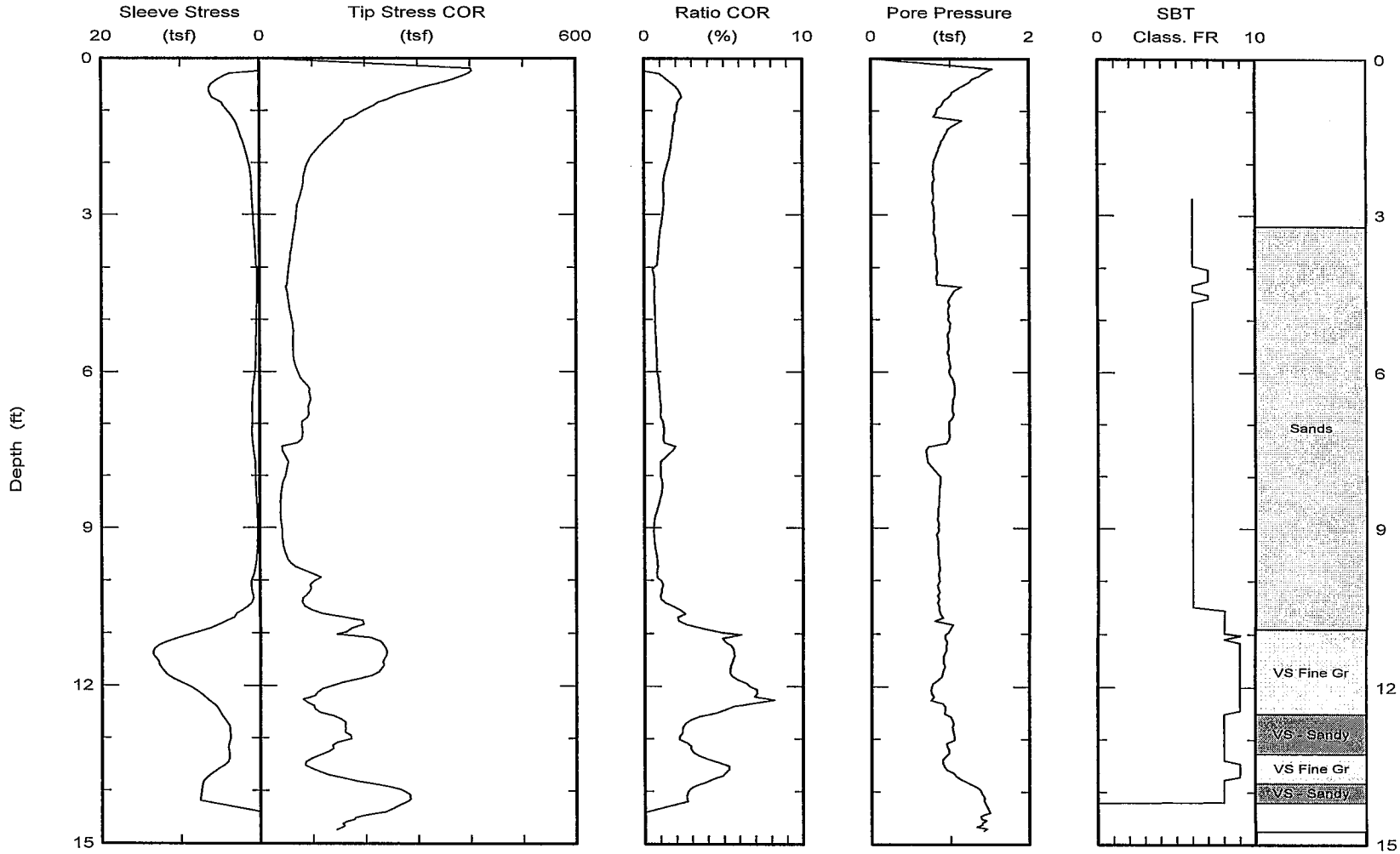


Maximum depth: 19.00 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 03G01-C1
File: CPT03G1001C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 03/Aug/2010 Test ID: 03G02-C2 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	

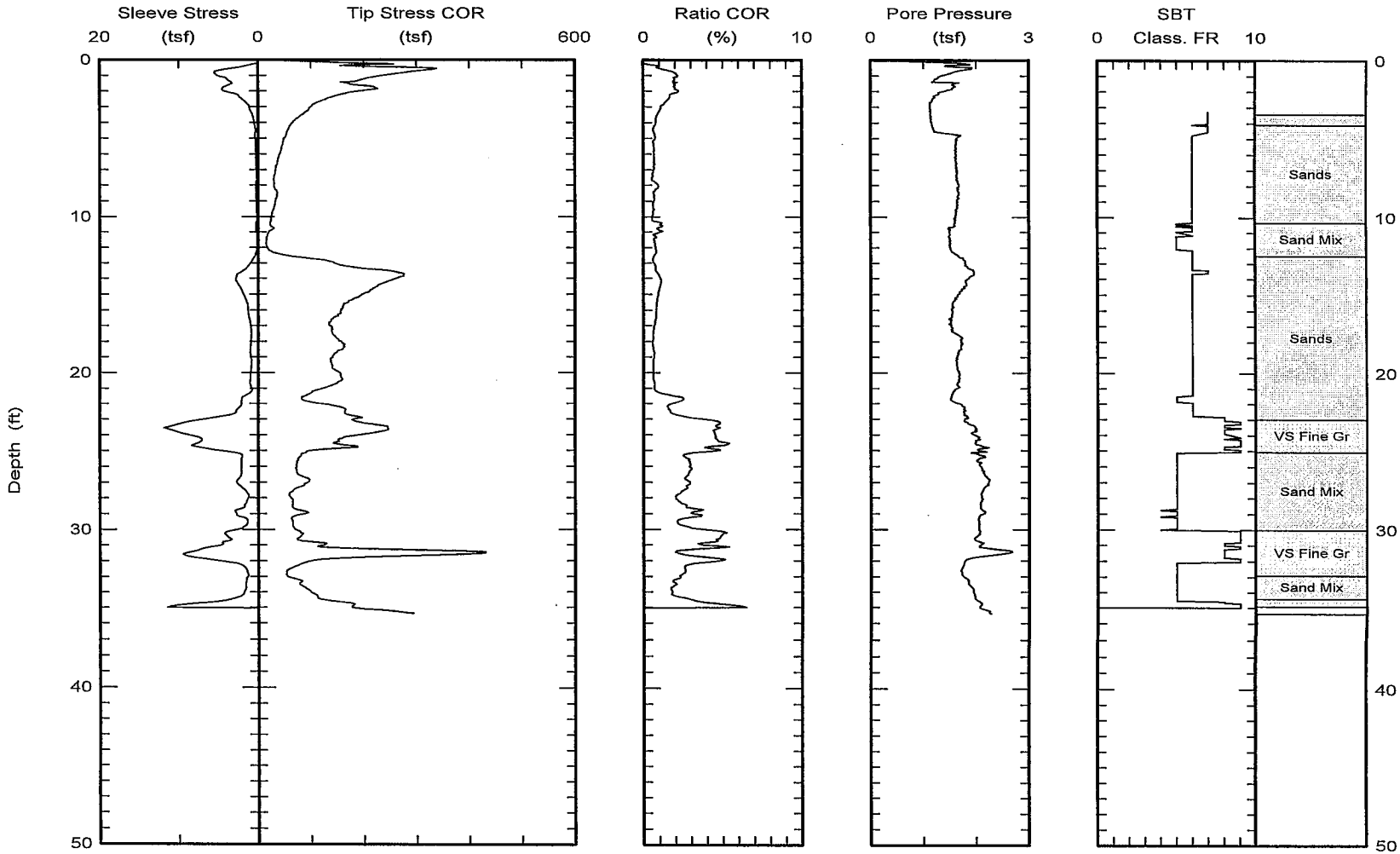


Maximum depth: 14.74 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 03G02-C2
File: CPT03G1002C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 03/Aug/2010 Test ID: 03G04-C3 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	

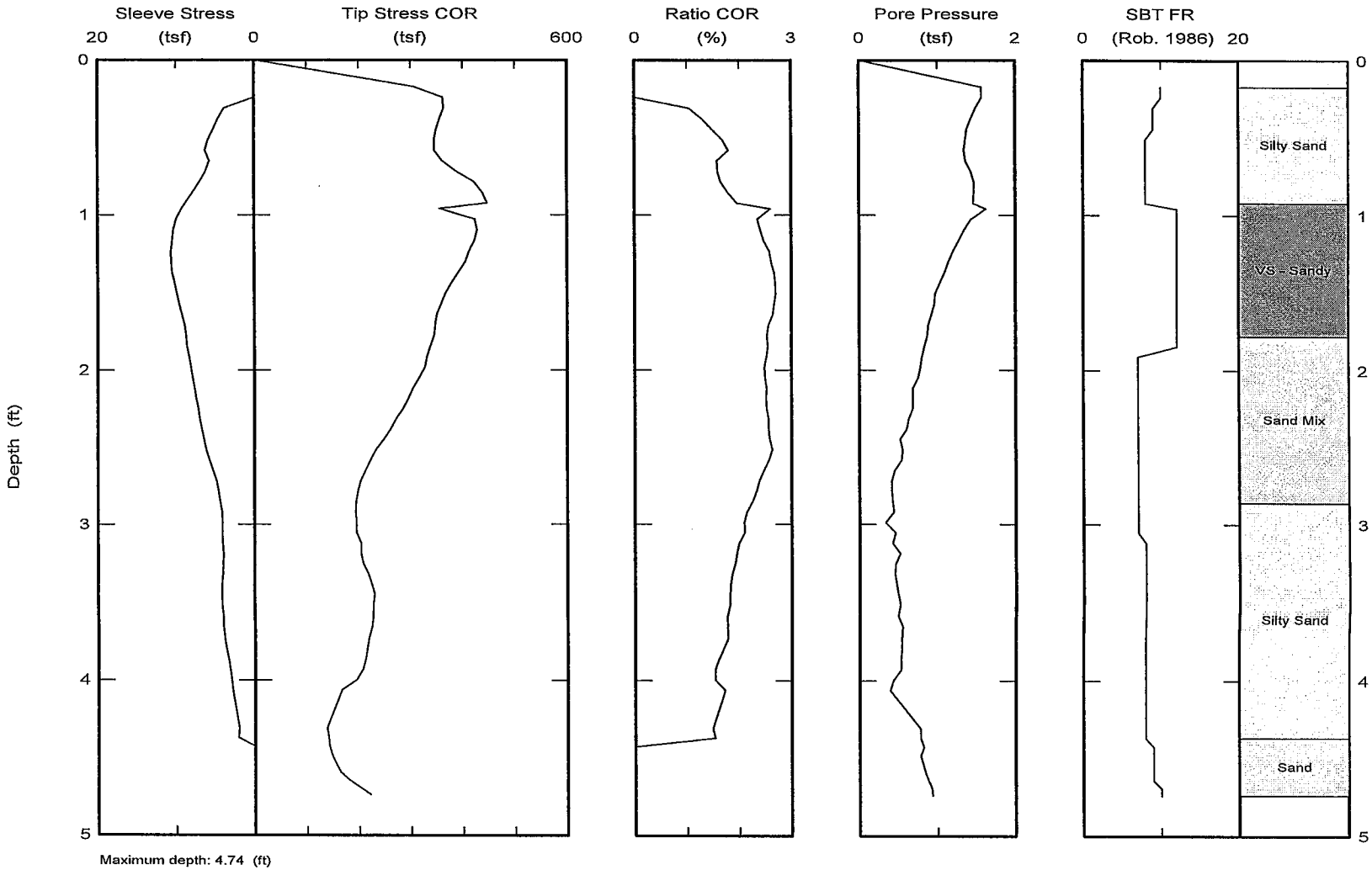


Maximum depth: 35.39 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 03G04-C3
File: CPT03G1004C.ecp

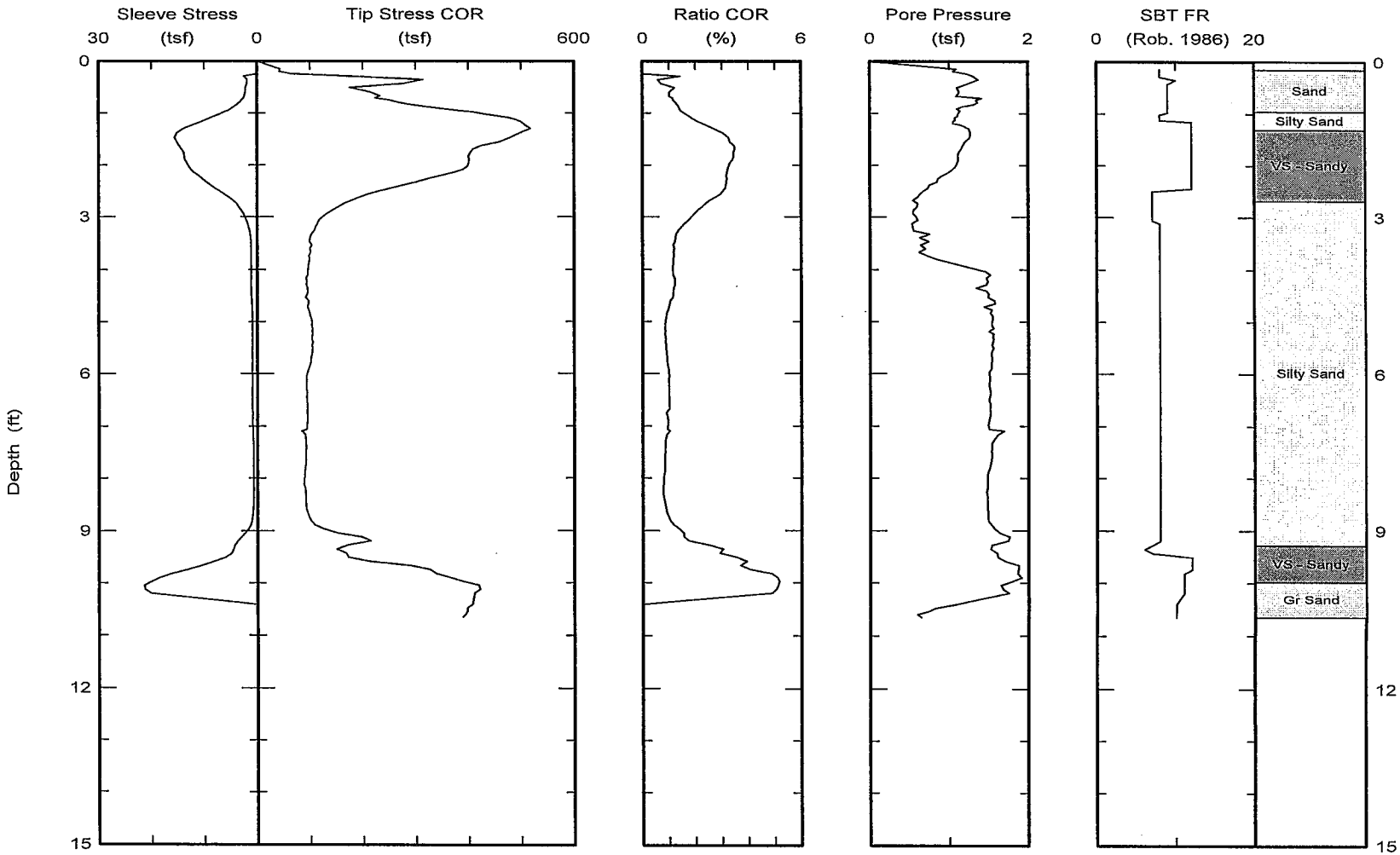
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 03/Aug/2010 Test ID: 03G05-C4 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 4.74 (ft)

Test ID: 03G05-C4
File: CPT03G1005C.ecp

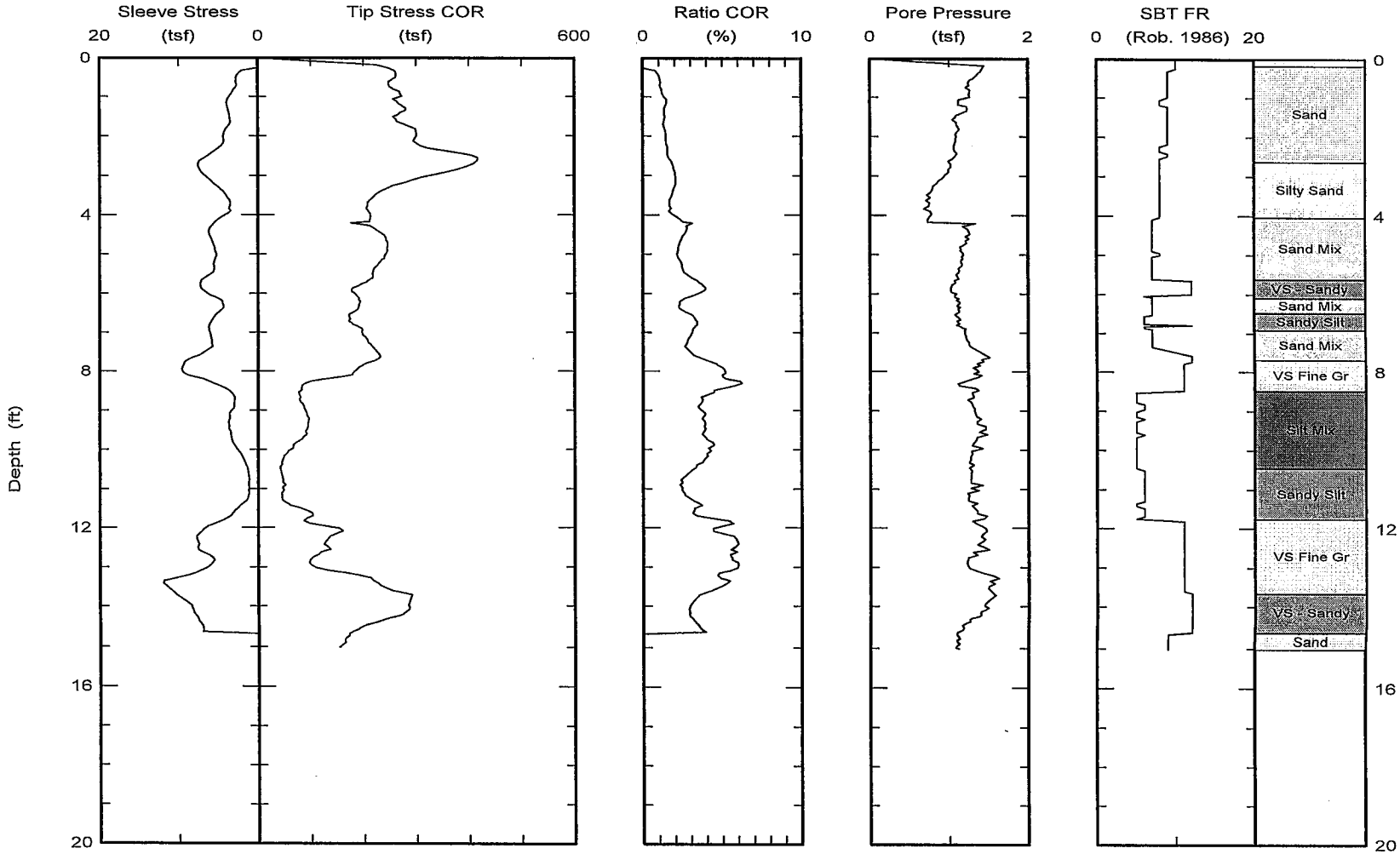
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 04/Aug/2010 Test ID: 04G06-C5 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 10.67 (ft)

Test ID: 04G06-C8
File: CPT04G1006C.ecp

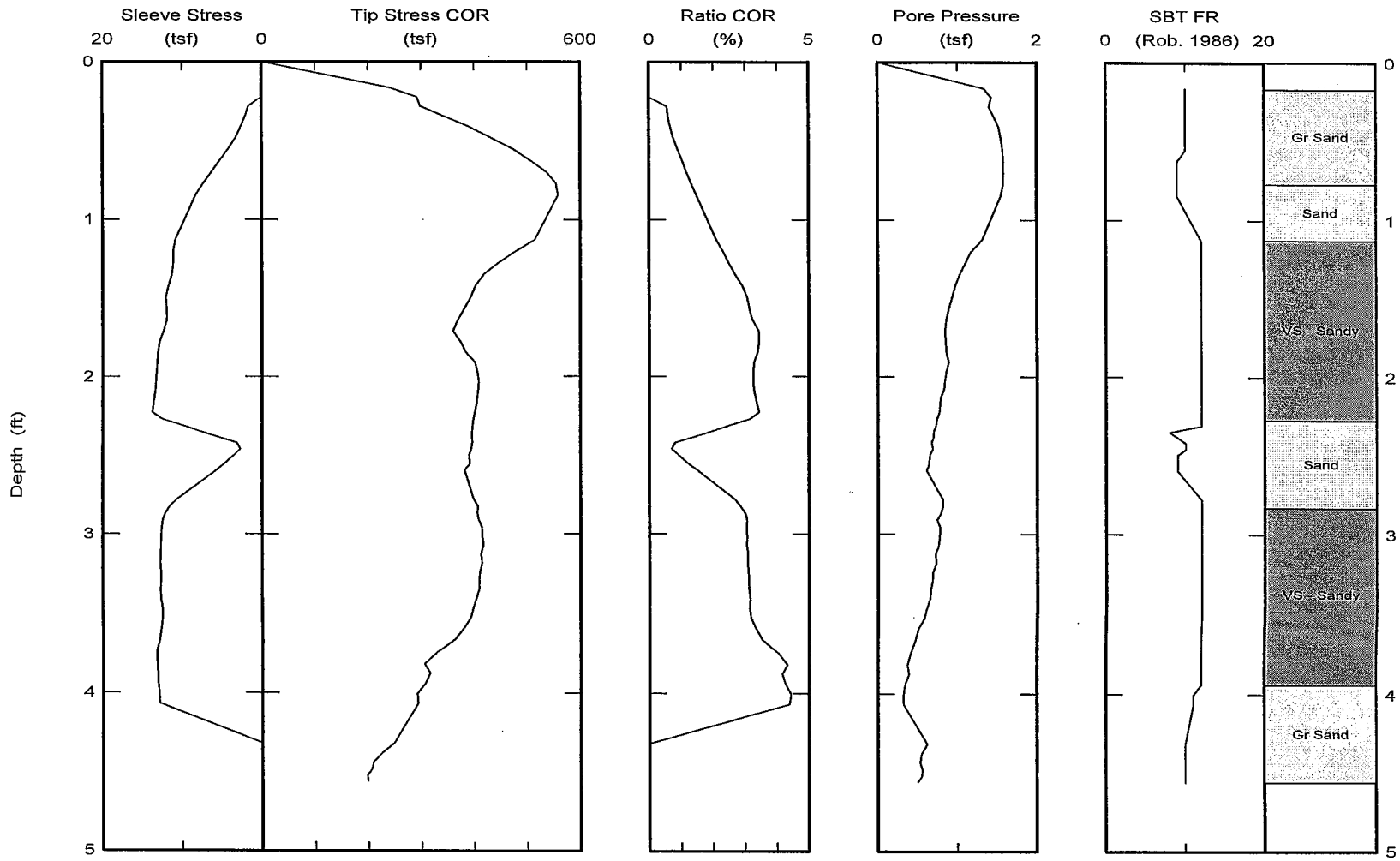
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 04/Aug/2010 Test ID: 04G03-C6 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 15.02 (ft)

Test ID: 04G03-C6
File: CPT04G1003C.ecp

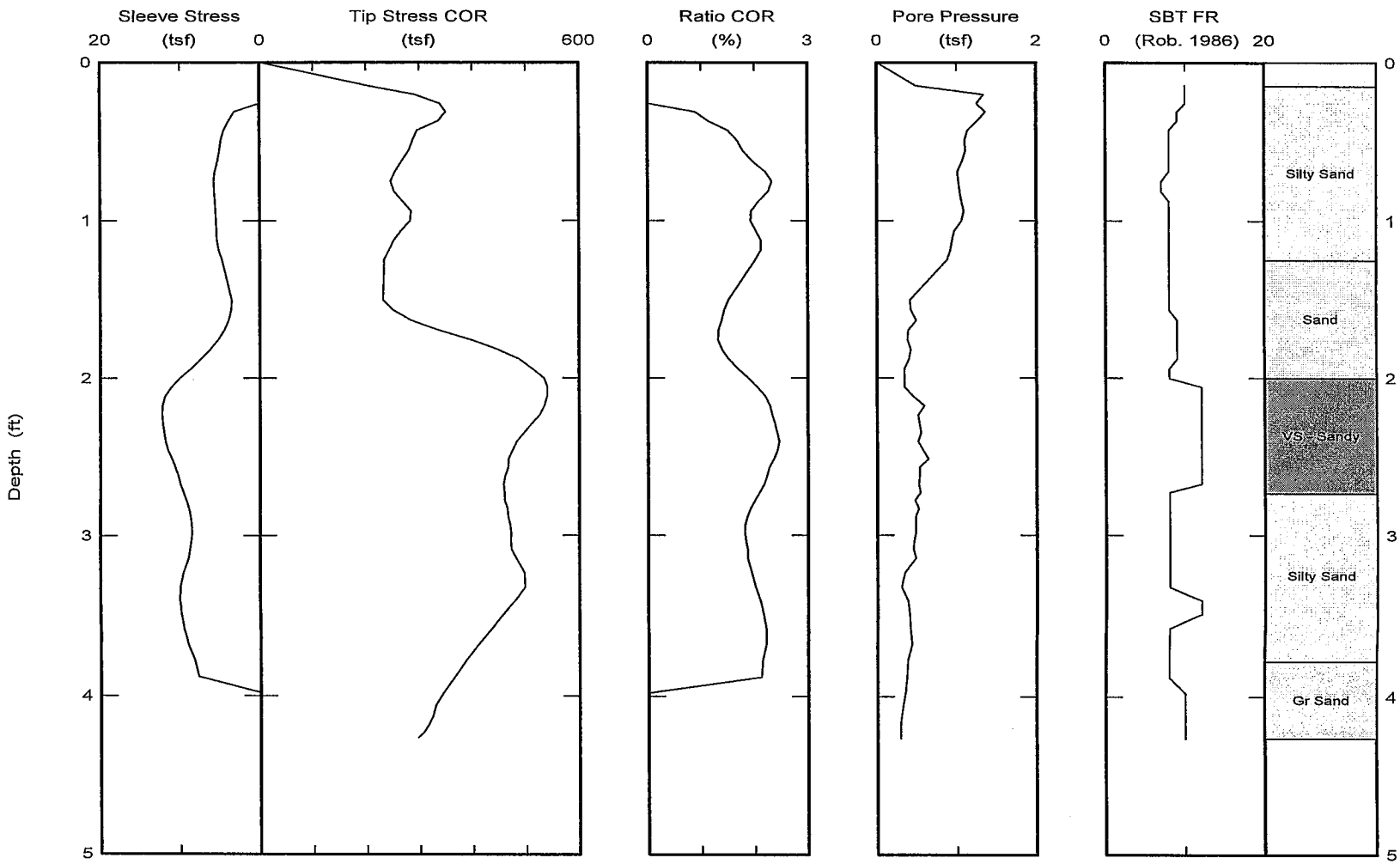
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 04/Aug/2010 Test ID: 04G04-C7 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 4.56 (ft)

Test ID: 04G04-C7
File: CPT04G1004C.ecp

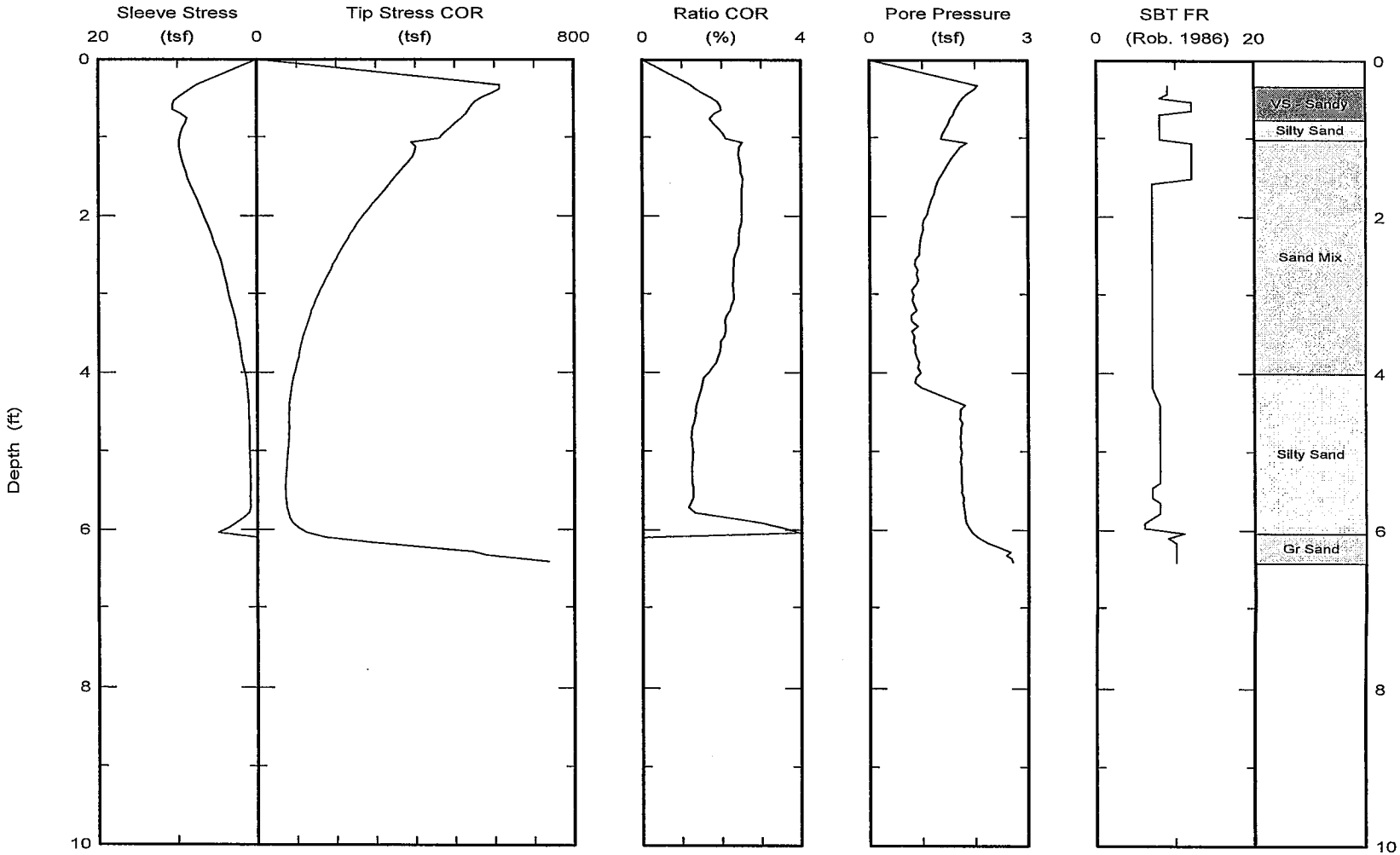
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 04/Aug/2010 Test ID: 04G05-C8 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 4.26 (ft)

Test ID: 04G05-C8
File: CPT04G1005C.ecp

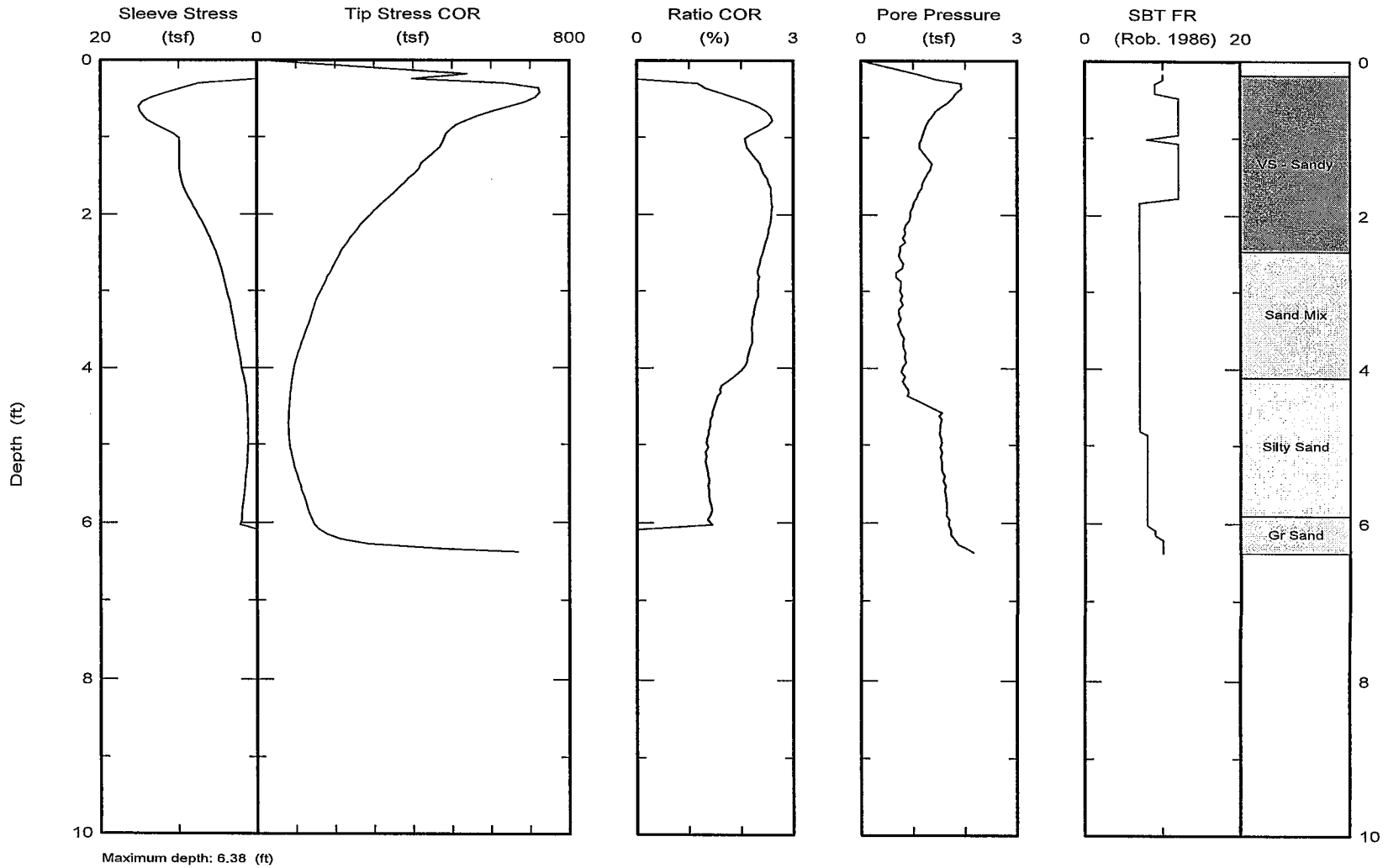
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 04/Aug/2010 Test ID: 04G01-C9 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 6.42 (ft)

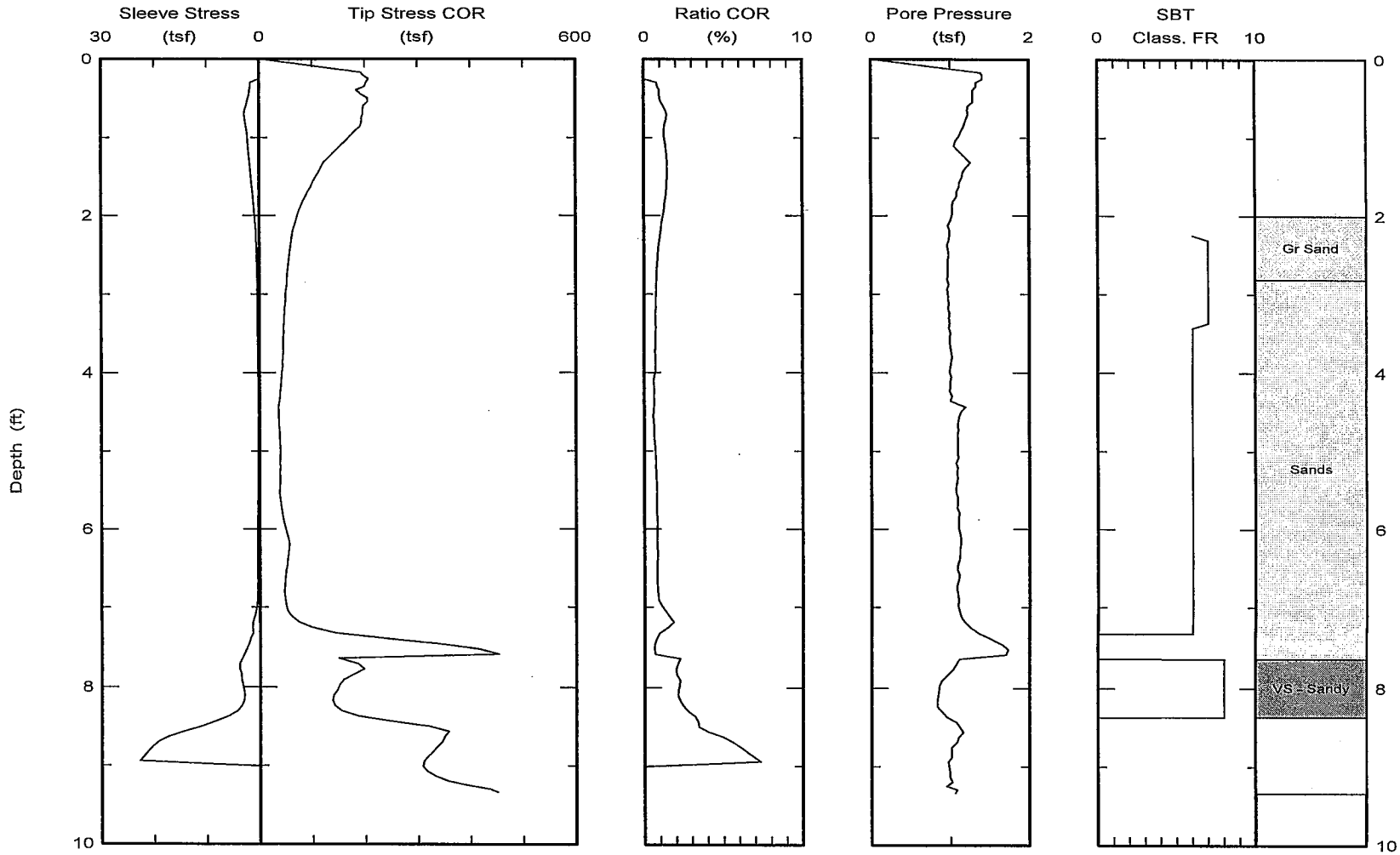
Test ID: 04G01-C9
File: CPT04G1001C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 04/Aug/2010 Test ID: 04G02-C9B Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Test ID: 04G02-C9B
File: CPT04G1002C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Lat: Lon: Elevation:	Date: 03/Aug/2010 Test ID: 03G03-C10 Project: 06-0C1100
	Customer: BEN BARNES Job Site: FRESNO180BRAIDEDRAMPS	



Maximum depth: 9.34 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 03G03-C10
File: CPT03G1003C.ecp

EXHIBIT 11-A

Fact Sheet Exceptions to Advisory Design Standards – Embankment Slopes

This exhibit is provided as an electronic file.

06-Fre-180 (PM R58.4/R60.4)
06-1459-0C1100
Program Code 201.310
$47,000,000
August 2010

Fact Sheet Exceptions to
ADVISORY Design Standards

Prepared by:

Steve M. Lee, P.E.

REGISTERED PROFESSIONAL ENGINEER
STEVE M. LEE
No. C62613
Exp. 6/30/12
CIVIL
STATE OF CALIFORNIA

Submitted by: Thanh Nguyen, Design Engineer — Date 8/6/10 — (559) 243-3813 Telephone

Concurrence by: Neil Bretz, Project Manager — Date 8/6/10 — (559) 243-3465 Telephone

Approved by: Rory Quince, Chief, Office of Design I, Central Region Project Development — Date 8/18/10 — (559) 243-3860 Telephone

1. PROPOSED PROJECT

A. Project Description

It is proposed to improve traffic operation on Route 180 between Route 41 and Route 168 in Fresno County by constructing a braided ramps system. This stretch of freeway has experienced substantial traffic congestion during peak hour periods, in the morning, in the westbound Route 180 direction and in the afternoon, in the eastbound direction. Traffic merging and weaving movements between the three freeways are very heavy and occur within short weaving distances. (Attachment A, "Project Location Map").

B. Existing Highway

Within the project limits the freeway traverses residential, commercial, and heavy industrial land uses. East of Route 41, industrial activities are prevalent south of McKinley Avenue and around the Floradora Avenue rail branch line. Residential developments are located to both the north and the south of the corridor. To the east of Route 168 is the Fresno-Yosemite International Airport that serves as a major growth and economic engine for the region.

Within the limits of this braided ramp project, Route 180 has three lanes with two auxiliary lanes in each direction between the Chestnut Avenue C-D on-ramp and the eastbound Route 180 exit to Route 41. The roadway consists of 12-foot portland cement concrete (PCC) through lanes and 12-foot asphalt concrete (AC) auxiliary lanes, 10-foot AC inside shoulders, and 10 foot AC outside shoulders. The median is 60 feet wide, with 40' unpaved, and divided by a Type 60 concrete median barrier installed in 2005.

Along Route 180 within the project limits, the current design speed is 70 mph and the posted speed limit is 65 mph. All existing signs, stripes, and pavement markers are in good condition. The latest available pavement skid test results indicate no pavement friction problems on the pavement.

C. Safety Improvements

The proposed braided ramp system would eliminate major weaving movements within the freeway system, reduce traffic congestion, improve traffic operation, and consequently would lower traffic-weaving-related and rear-end collision accidents.

D. Total Project Cost

The July 2010 estimated capital cost for the project is as follows:

Construction	$ 49,000,000
R/W & Utilities	0
Total	$ 49,000,000

2. FEATURES REQUIRING AN EXCEPTION

ADVISORY NON-STANDARD FEATURE #1:

Embankments slopes between 2:1 and 4:1 are proposed along alignments N1, N2, N3, and N4 (north side of Route 180) and S1, S2, S3, and S5 (south side of Route 180), as shown on Attachment B (Typical Cross Sections) and C (Layout Drawings).

Standard for Which Exception Is Requested:

Caltrans Highway Design Manual (HDM) Index 304.1 (a), "Side Slope Standards, Safety", of the Highway Design Manual states: "For new construction, widening, or where slopes are otherwise being modified, embankment slopes should be 4:1 or flatter".

Reasons for Requesting Exception:

This nonstandard feature is proposed to avoid impacts to the city and its residents and also avoid excessive costs. The project is located within an urbanized area of Fresno. The proposed new connector ramps are adjacent to the existing frontage roads, Tyler Avenue on the north side and Harvey Avenue on the south side. To obtain standard embankment slopes of 4:1or flatter it would impact those frontage roads, which in turn require acquiring about 40 existing houses and apartments. A drainage basin owned by Fresno Metropolitan Flood Control District along the south side of Route 180 would also be impacted.

Added Cost to Make Standard:

Roadway	$1,000,000
Right of way & Utilities	$25,000,000
Total	$26,000,000

3. TRAFFIC DATA

Design Designation (Route 180)
2017 ADT 157,000
2037 DHV 13,200
D=56%
T=4%
V=70 mph (Route 180) and 50 mph for branch connections

4. ACCIDENT ANALYSIS

This is a new proposed branch connection; therefore, there is no accident history for the ramp.

5. INCREMENTAL IMPROVEMENTS

There are no practical alternatives that are intermediate in scope and cost between this proposal and the full standard solution.

6. FUTURE CONSTRUCTION

No future construction is planned.

7. PROJECT REVIEWS, CONCURRENCE

This advisory design exception fact sheet was reviewed and concurred by Central Region Landscape Design on August 12, 2010 and District Maintenance on August 16, 2010 and was discussed with Geometric Reviewer Mike Janzen on August 18, 2010.

8. ATTACHMENTS

A. Project Location Map
B. Typical Cross Sections
C. Layouts

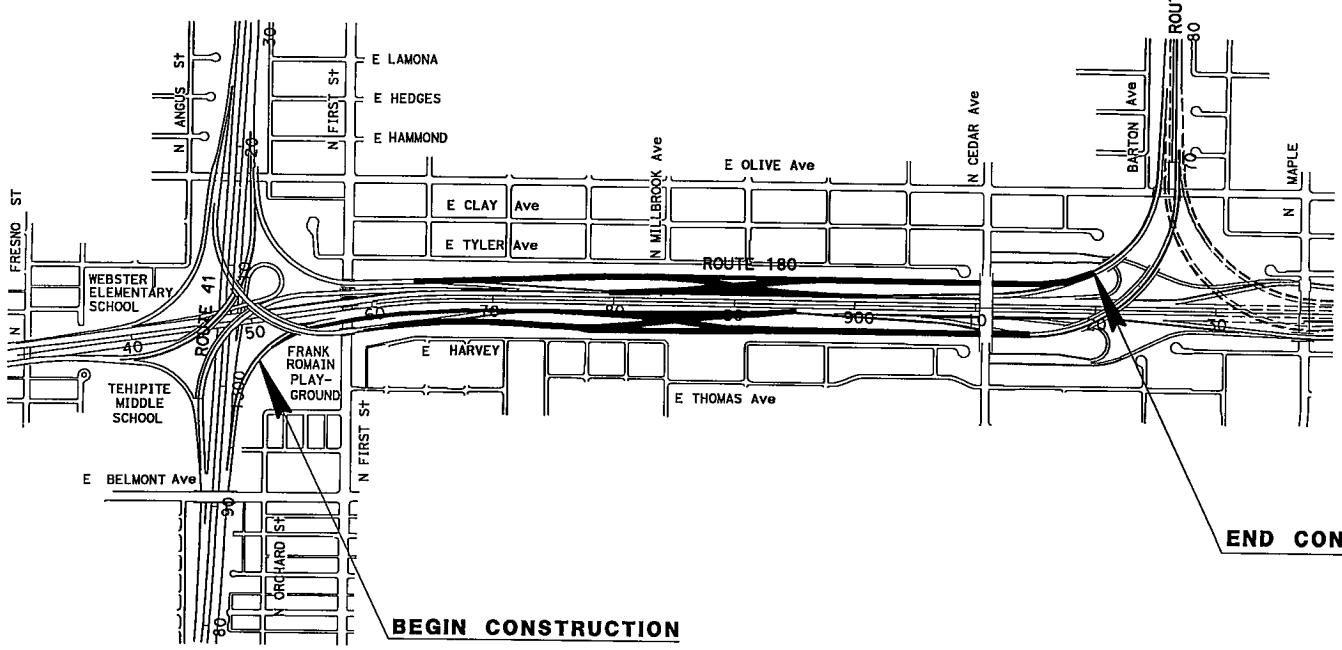
INDEX OF PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	58.8/60.4		

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



PROJECT MANAGER: NIEL BRETZ

DESIGN ENGINEER: THANH NGUYEN

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

PROJECT ENGINEER REGISTERED CIVIL ENGINEER — DATE

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.

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

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CONTRACT No. CU 06245 EA 0C110K

ATTACHMENT A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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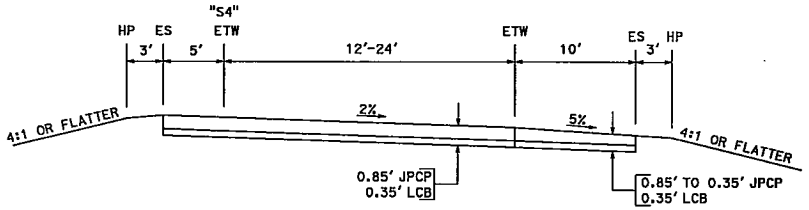
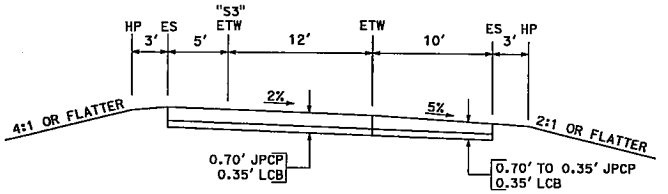


"S4" RAMP
STA 167+87.68 TO STA 193+68.52



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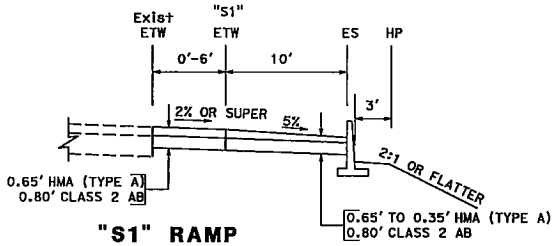

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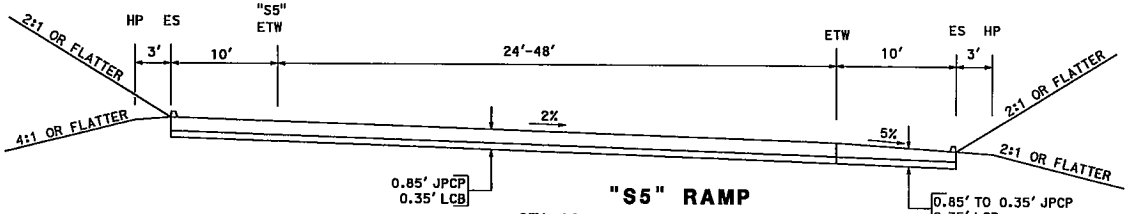

"S5" RAMP
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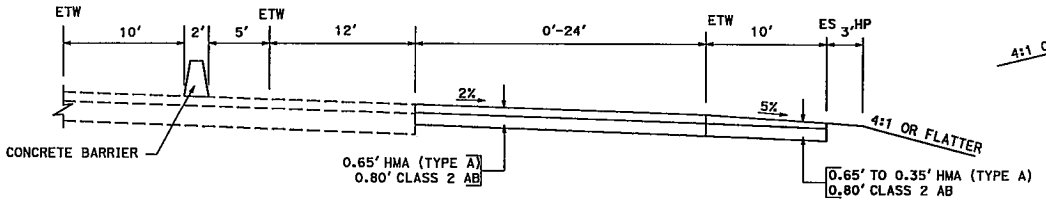
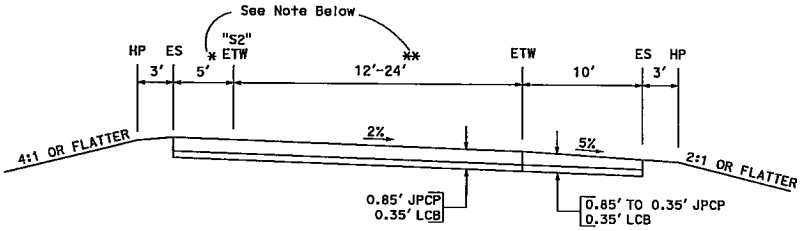


ROUTE 180 (Rt)
STA 855+77+42 TO STA 856+54.08
STA 859+08.88 TO STA 879+27.67



"S2" RAMP
STA 272+69.93 TO STA 296+16.85

NOTE:
* 10' ULTIMATE
** 30' ULTIMATE

TYPICAL CROSS SECTION (SOUTH SIDE)

NO SCALE

X-2

REVISED BY	DATE REVISED
H. T.	05/10

CALCULATED-DESIGNED BY	CHECKED BY
STEVE W LEE	STEVE W LEE

FUNCTIONAL SUPERVISOR: THANH NGUYEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans 08-DESIGN

DATE PLOTTED => 05-AUG-2010
TIME PLOTTED => 15:46
05-25-10

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DGN FILE => 60C110ca002.dgn

CU 06245

EA 0C1101

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	180	R58.4/R60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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NOTES:

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
3. FOR CONCRETE BARRIER AND RETAINING WALL LOCATIONS, SEE LAYOUT SHEETS.
4. SEE BRIDGE PLANS FOR BRIDGE DETAILS.
5. FOR LOCATION AND TYPE OF HMA DIKE, SEE LAYOUT SHEETS.

DESIGN DESIGNATION

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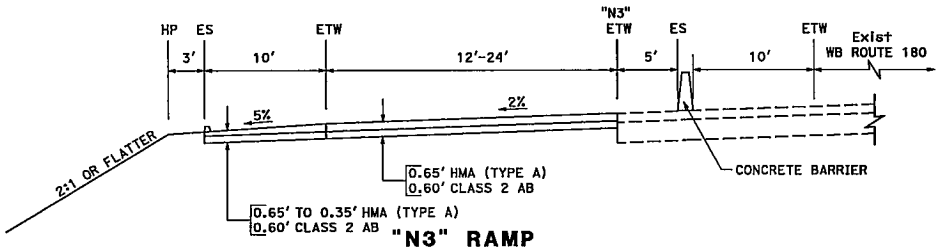
2037 ADT	157,000
D	50%
% TRUCKS	3%
TI	12.5



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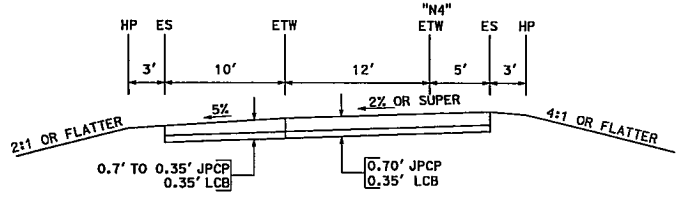

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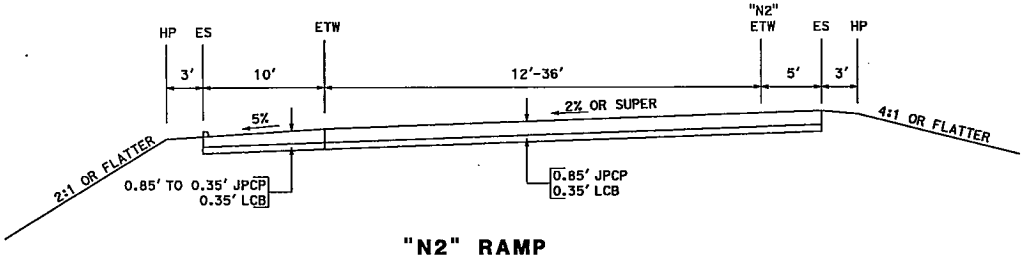

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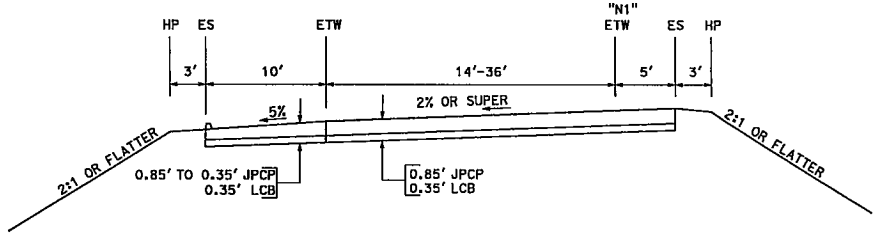

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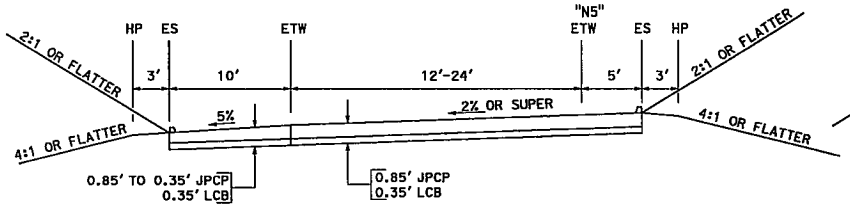

"N5" RAMP
STA 76+97.09 TO STA 119+23.99

TYPICAL CROSS SECTION (NORTH SIDE)

NO SCALE

X-1

REVISED BY	DATE REVISED
H. T.	05/10

CALCULATED-DESIGNED BY	CHECKED BY
STEVE W LEE	STEVE W LEE

FUNCTIONAL SUPERVISOR: THANH NGUYEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans 06-DESIGN

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ATTACHMENT B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	FRE	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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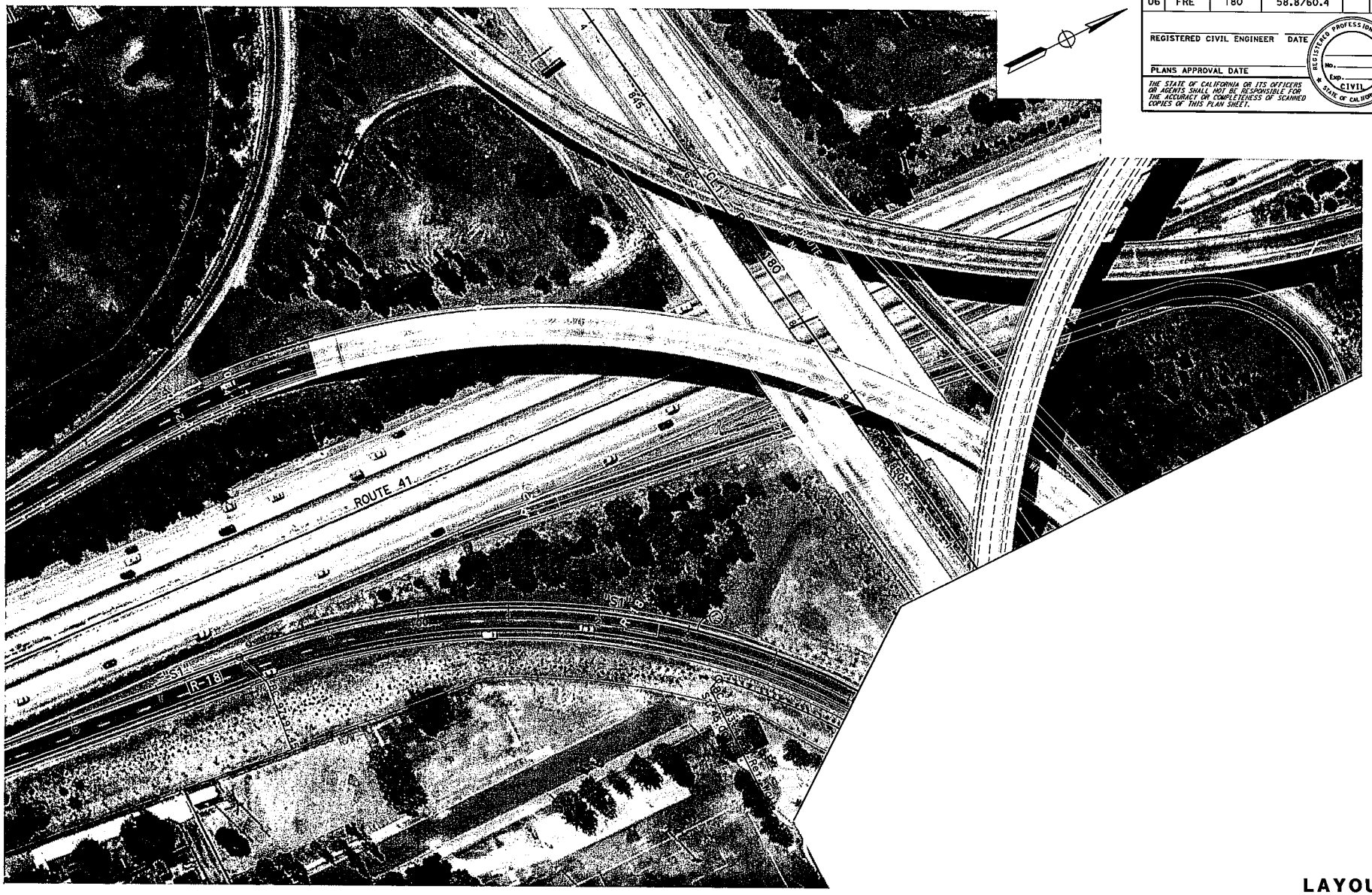
REGISTERED PROFESSIONAL ENGINEER
No.
Exp.
CIVIL
STATE OF CALIFORNIA



LAYOUT
L- 1

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Caltrans DESIGN	THANH NGUYEN	CHECKED BY		DATE REVISED	

LAST REVISION 05-17-10 DATE PLOTTED => 05-AUG-2010 TIME PLOTTED => 15:09

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ATTACHMENT C

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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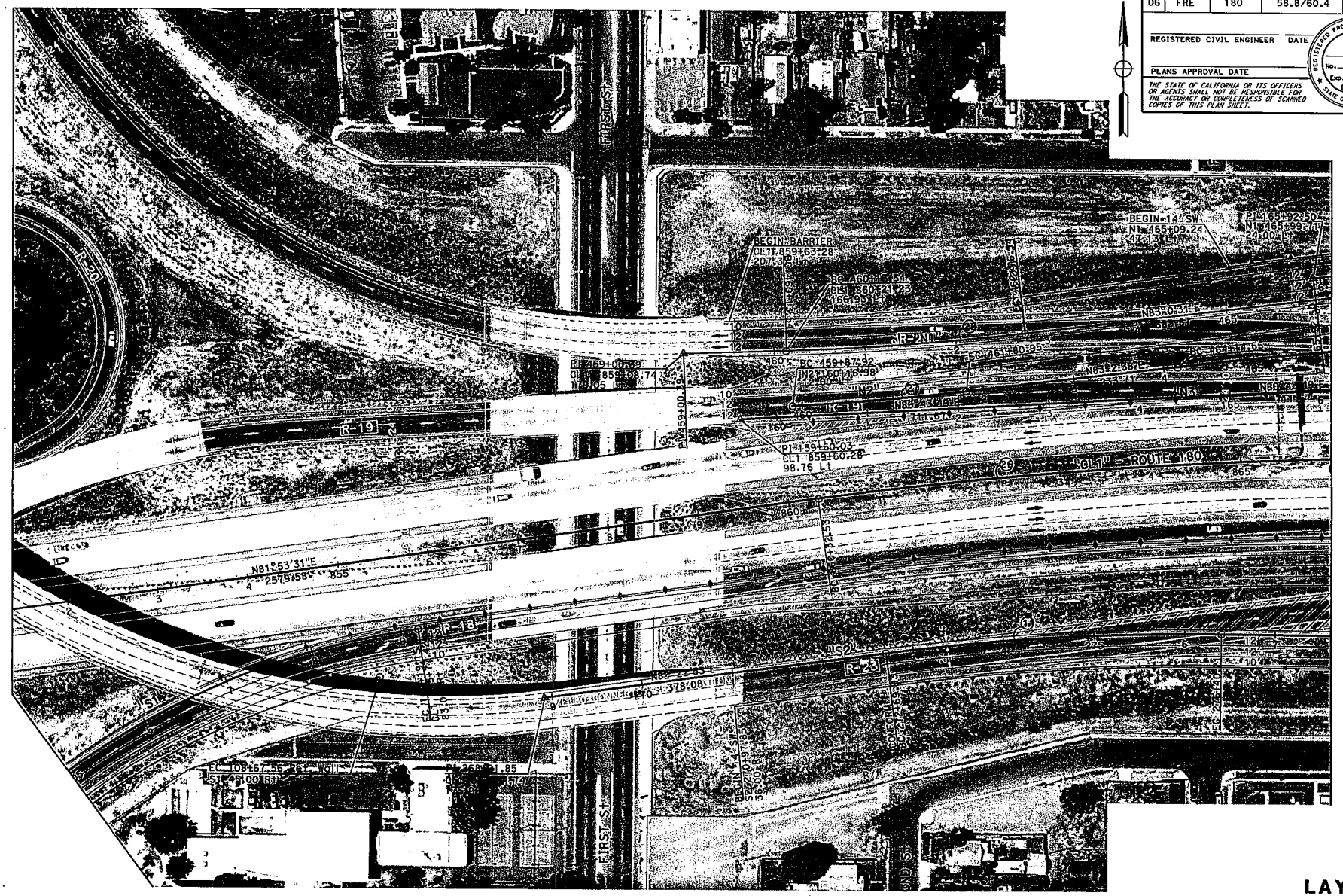

LAYOUT L-2

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Caltrans DESIGN	THANH NGUYEN	CHECKED BY		DATE REVISED	

LAST REVISION 05-17-10 | DATE PLOTTED => 05-AUG-2010 TIME PLOTTED => 16:12

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => s118496 DGN FILE => 60C1100ea002.dgn | CU 06245 | EA 0C1100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	FRE	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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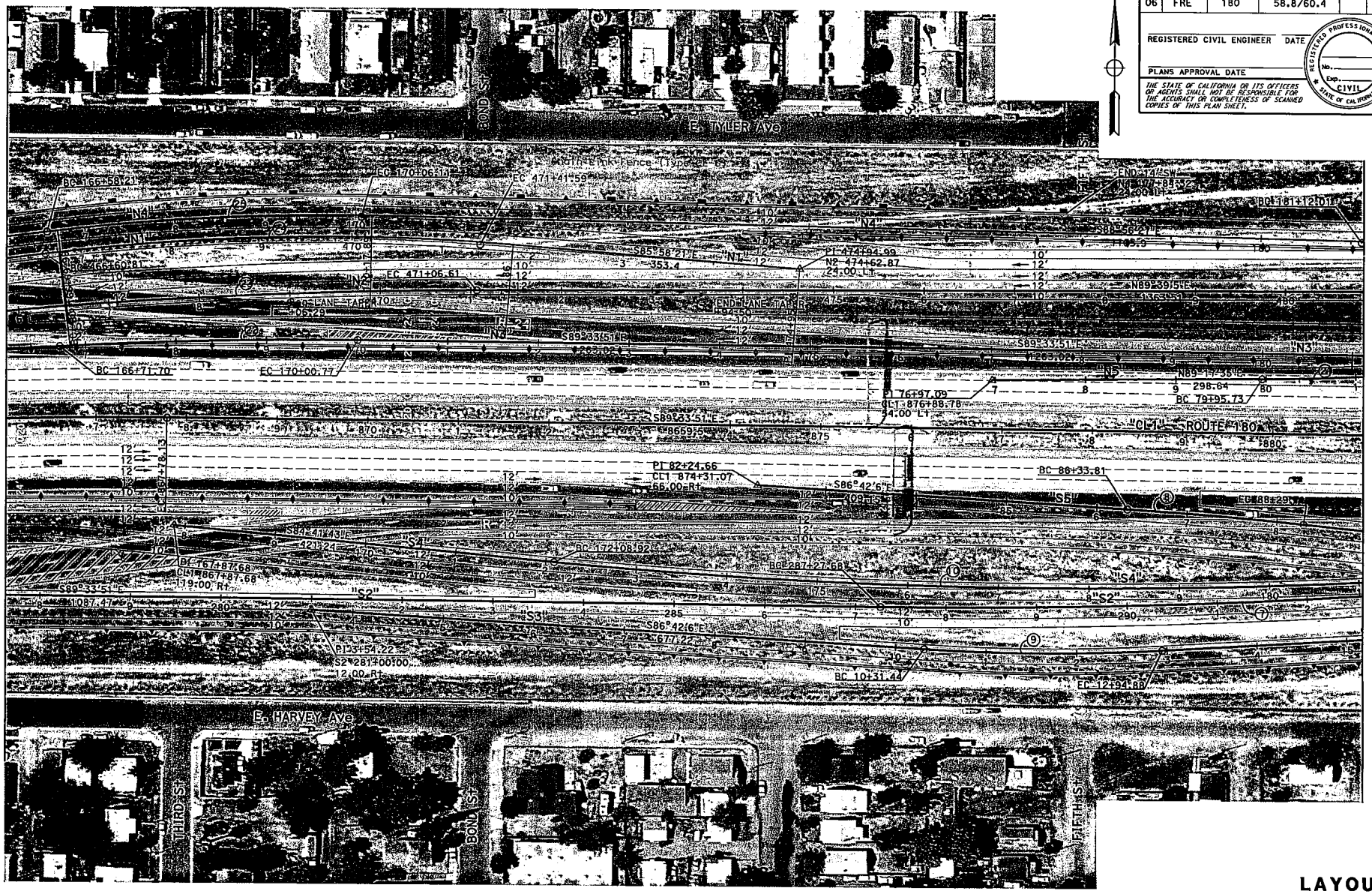

LAYOUT L- 3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	HECTOR TRUJILLO	REVISED BY	4/10
Caltrans DESIGN	THANH NGUYEN	CHECKED BY		DATE REVISED	

LAST REVISED DATE PLOTTED => 05-AUG-2010 TIME PLOTTED => 15:58

05-17-10

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => s118496 DGN FILE => 60C110ea003.dgn | CU 06245 | EA 0C1100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	FRE	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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LAYOUT L-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	HECTOR TRUJILLO	REVISED BY	4/10
Caltrans DESIGN	THANH NGUYEN	CHECKED BY		DATE REVISED	

LAST REVISION 05-17-10 | DATE PLOTTED => 05-AUG-2010 | TIME PLOTTED => 16:15

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => s118496 | DGN FILE => 60C110ea004.dgn | CU 06245 | EA 0C1100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	FRE	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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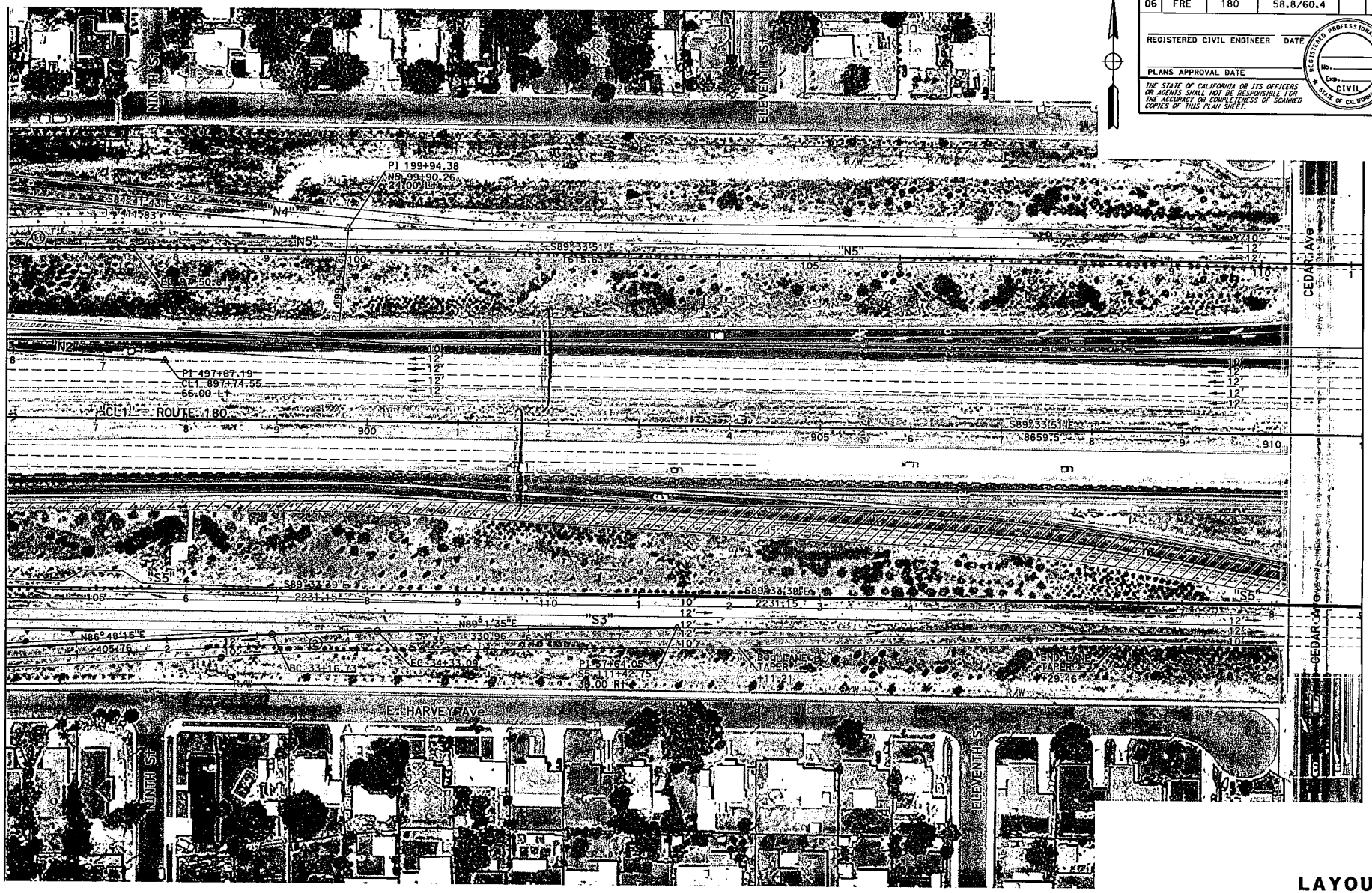

LAYOUT L- 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	HECTOR TRUJILLO	REVISED BY	4/10
Caltrans DESIGN	THANH NGUYEN	CHECKED BY		DATE REVISED	

LAST REVISION DATE PLOTTED => 05-AUG-2010
05-17-10 TIME PLOTTED => 16:16

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => s118496 DGN FILE => 60C110ea005.dgn | CU 06245 | EA 0C1100

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	FRE	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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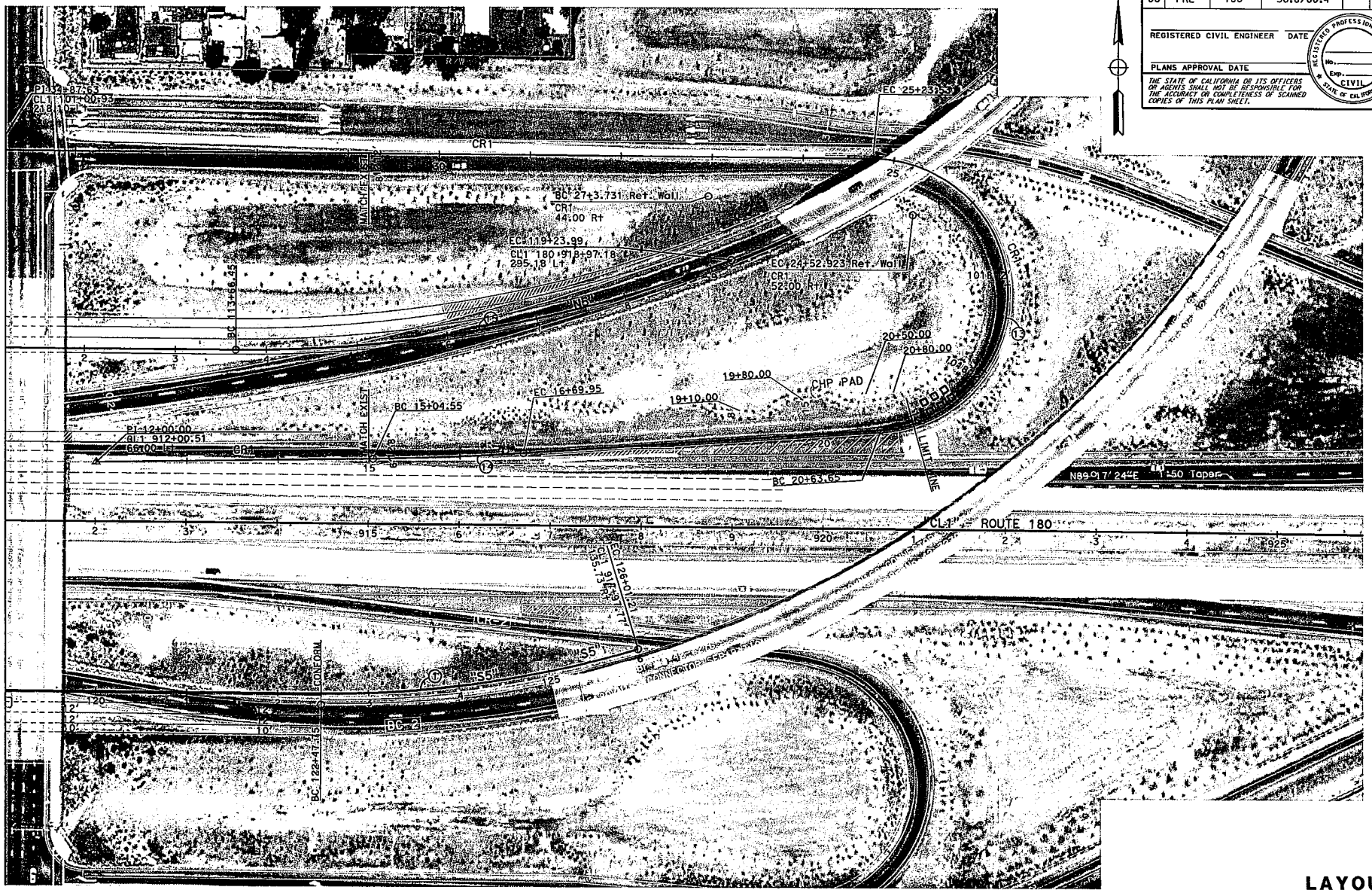


LAYOUT L- 6

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DESIGN

FUNCTIONAL SUPERVISOR: THANH NGUYEN

CALCULATED-DESIGNED BY: HECTOR TRUJILLO

CHECKED BY

REVISED BY: 4/10

DATE REVISED

LAST REVISION 05-17-10 | DATE PLOTTED => 05-AUG-2010 | TIME PLOTTED => 16:17

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s118496
DGN FILE => 60C110ea006.dgn

CU 06245

EA 0C1100

EXHIBIT 11-B

Fact Sheet Exceptions to Advisory Design Standards – Single Lane Ramp

This exhibit is provided as an electronic file.

06-Fre-180 (PM R58.8/R60.4)
06-245-0C110K
Program Code 075.600
$64,000,000
June 2009

Fact Sheet Exceptions to
ADVISORY Design Standards

Prepared and Submitted by:

REGISTERED PROFESSIONAL ENGINEER
STEVE M. LEE
No. C62613
Exp. 6/30/10
CIVIL
STATE OF CALIFORNIA

Steve M. Lee, P.E.

Concurrence by: Neil Bretz — Date 6/8/09 — (559) 243-3465 Telephone
Project Manager

Approved by: Rory Quince — Date 6/10/09 — (559) 243-3860 Telephone
Chief, Office of Design I
Central Region Project Development

1. PROPOSED PROJECT

A. Project Description

It is proposed to improve traffic operation on Route 180 between Route 41 and Route 168 in Fresno County by constructing a braided ramp system. This stretch of freeway has experienced substantial traffic congestion during peak hour periods, in the morning, in the westbound Route 180 direction and in the afternoon, in the eastbound direction. Traffic merging and weaving movements between the three freeways are very heavy and occur within short weaving distances. (Attachment A).

B. Existing Highway

Within the project limits the freeway traverses residential, commercial, and heavy industrial land uses. East of Route 41, industrial activities are prevalent south of McKinley Avenue and around the Floradora Avenue rail branch line. Residential developments are located to both the north and the south of the corridor. To the east of Route 168 is the Fresno-Yosemite International Airport that serves as a major growth and economic engine for the region.

Within the limits of this braided ramp project, Route 180 has three lanes with two auxiliary lanes in each direction between the Chestnut Avenue C-D on-ramp and the eastbound Route 180 exit to Route 41. The roadway consists of 12-foot portland cement concrete (PCC) through lanes and 12-foot asphalt concrete (AC) auxiliary lanes, 10-foot AC inside shoulders, and 10 foot AC outside shoulders. The median is 60 feet wide, with 40' unpaved, and divided by a Type 60 concrete median barrier installed in 2005.

Along Route 180 within the project limits, the current design speed is 70 mph and the posted speed limit is 65 mph. All existing signs, stripes, and pavement markers are in good condition. The latest available pavement skid test results indicate no pavement friction problems on the pavement.

C. Safety Improvements

The proposed braided ramp system would eliminate major weaving movements within the freeway system, reduce traffic congestion, improve traffic operation, and consequently would lower traffic-weaving-related and rear-end collision accidents.

D. Total Project Cost

The May 2009 estimated capital cost for the project is as follows:

Construction	$ 64,000,000
R/W & Utilities	0
Total	$ 64,000,000

2. FEATURES REQUIRING AN EXCEPTION

Advisory Nonstandard Feature:

1. On the north side of Route 180, Branch Connector BC1A3, which carries movements for traffic from WB Route 168 to NB Route 41, approximately 2,400 feet long, does not have a passing lane as required for ramps exceeding 1,000 feet in length (Attachment B).

2. On the south side of Route 180, Branch Connectors R18A2, which provides for traffic movements from SB Route 41 to EB Route 168, approximately 1,300 feet long, does not have a passing lane as required for ramps exceeding 1,000 feet in length (Attachment B).

Standard for Which Exception Is Requested:

Index 504.3(5), "Ramps, Single-Lane Ramps", of the Highway Design Manual (HDM) states: "If the length of a single lane ramp exceeds 1,000 feet, an additional lane should be provided on the ramp to permit passing maneuvers".

Reasons for Requesting Exception:

1. The added cost to meet standards is nominal. However, limited benefits would be realized with an additional lane for passing maneuvers. The project design year (2040) volumes are fairly low, approximately 500 vehicles per hour. The proposed ramp grade is not steep, approximately less than 3%, which should allow cars and trucks to accelerate at a rate acceptable to following vehicles. Also, adding passing lanes would required additional right of way on the south side of the project, since they would impact the existing FMFCD basin, and the basin as well as drainage appurtenances to the basin would need to be reconstructed.

Added Cost to Make Standard:

Roadway	$ 400,000
Drainage basin	100,000
Right of Way	100,000
Total	$ 600,000

3. TRAFFIC DATA

Design Designation (Route 180)
2020 ADT 137,000
2040 ADT 186,000
2040 DHV 18,600
D=56%
T=3%
V=70 mph (Route 180) and 50 mph for ramps

4. ACCIDENT ANALYSIS

This is a new proposed branch connection; therefore, there is no accident history for the ramp.

5. INCREMENTAL IMPROVEMENTS

There are no practical alternatives that are intermediate in scope and cost between this proposal and the full standard solution.

6. FUTURE CONSTRUCTION

No future construction is planned.

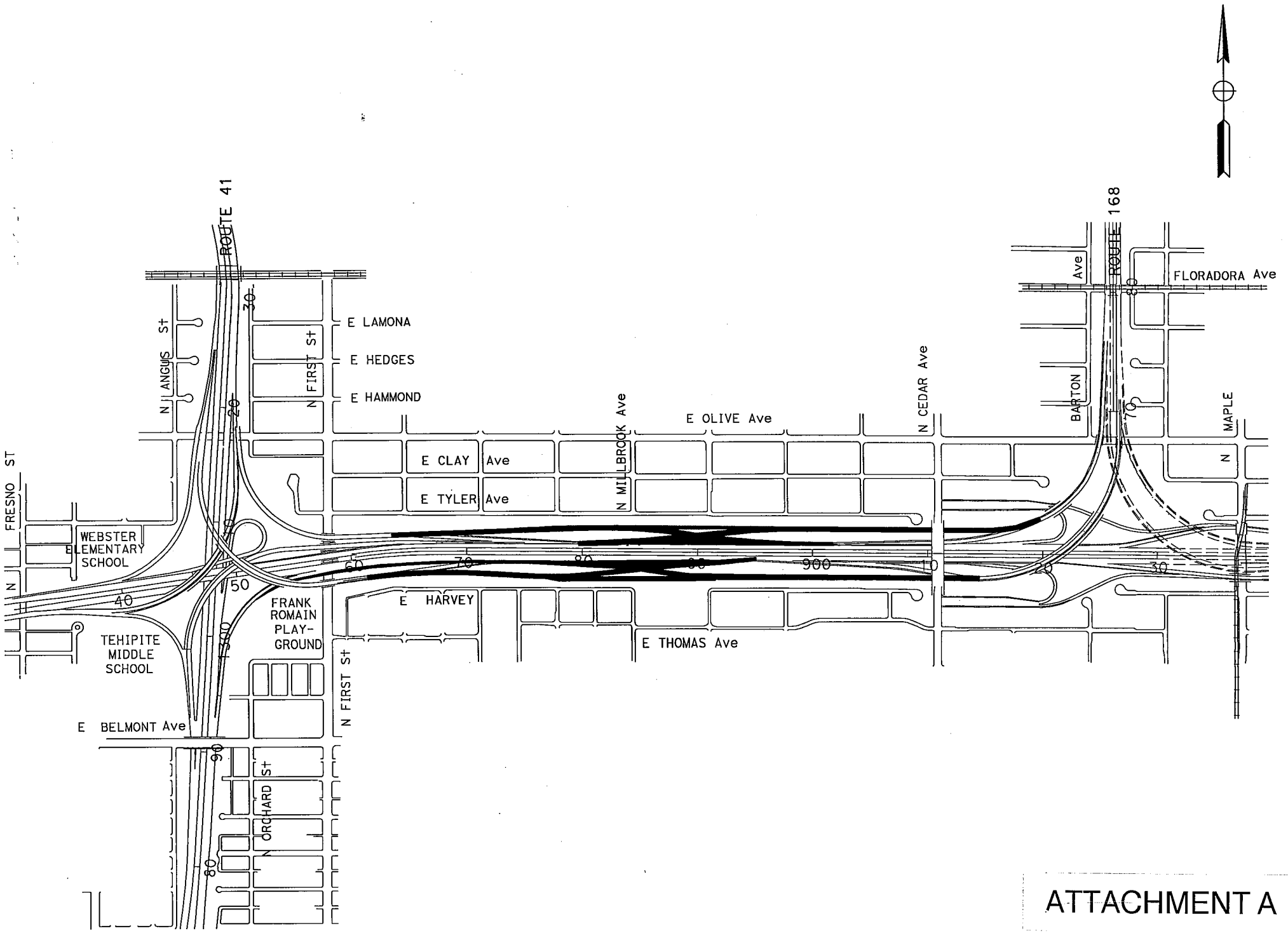
7. PROJECT REVIEWS, CONCURRENCE

This project has been received and discussed with Mike Janzen, Geometric Reviewer.

John Liu, Deputy District Director for Traffic Operations, along with the District Safety Review Committee, concurred with not providing passing lanes on these branch connectors.

8. ATTACHMENTS

A. Project Location Map
B. Preliminary Geometric Drawing



ATTACHMENT A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
6	Fre	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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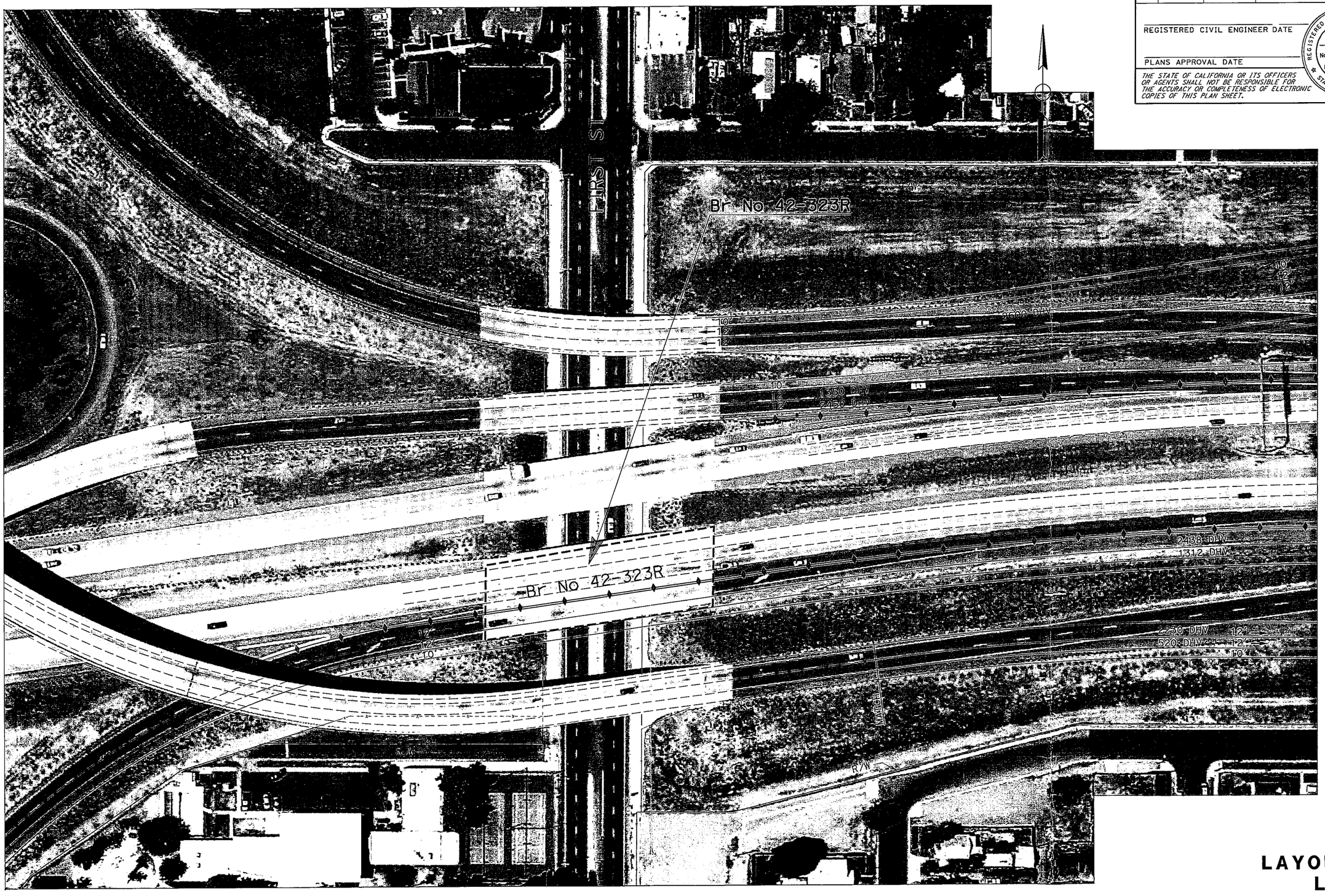

LAYOUT L-1

ATTACHMENT B

REVISED BY	
DATE REVISED	

CALCULATED-DESIGNED BY

CHECKED BY

SUPERVISING ENGINEER

THANH NGUYEN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

REVISION DATE PLOTTED => 08-JUN-2009
02-01-09 TIME PLOTTED => 12:22

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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DGN FILE => LAYOUT001.dgn

CU 06245

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
6	Fre	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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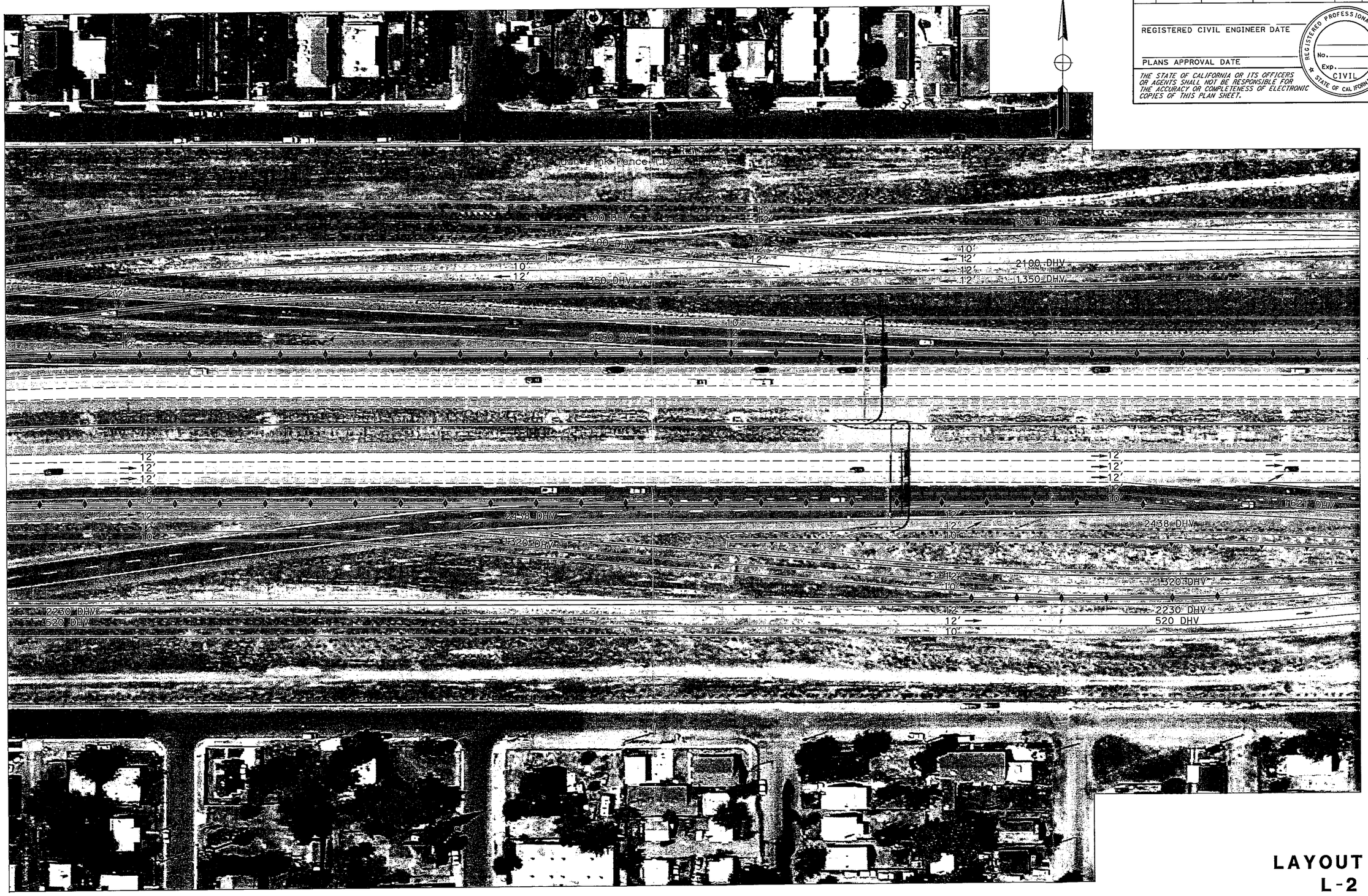

LAYOUT L-2

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY	
CHECKED BY	

SUPERVISING ENGINEER **THANH NGUYEN**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 02-01-09

DATE PLOTTED => 08-JUN-2009
TIME PLOTTED => 12:22

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s127769
DGN FILE => LAYOUT002.dgn

CU 06245

EA 0C110K

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
6	Fre	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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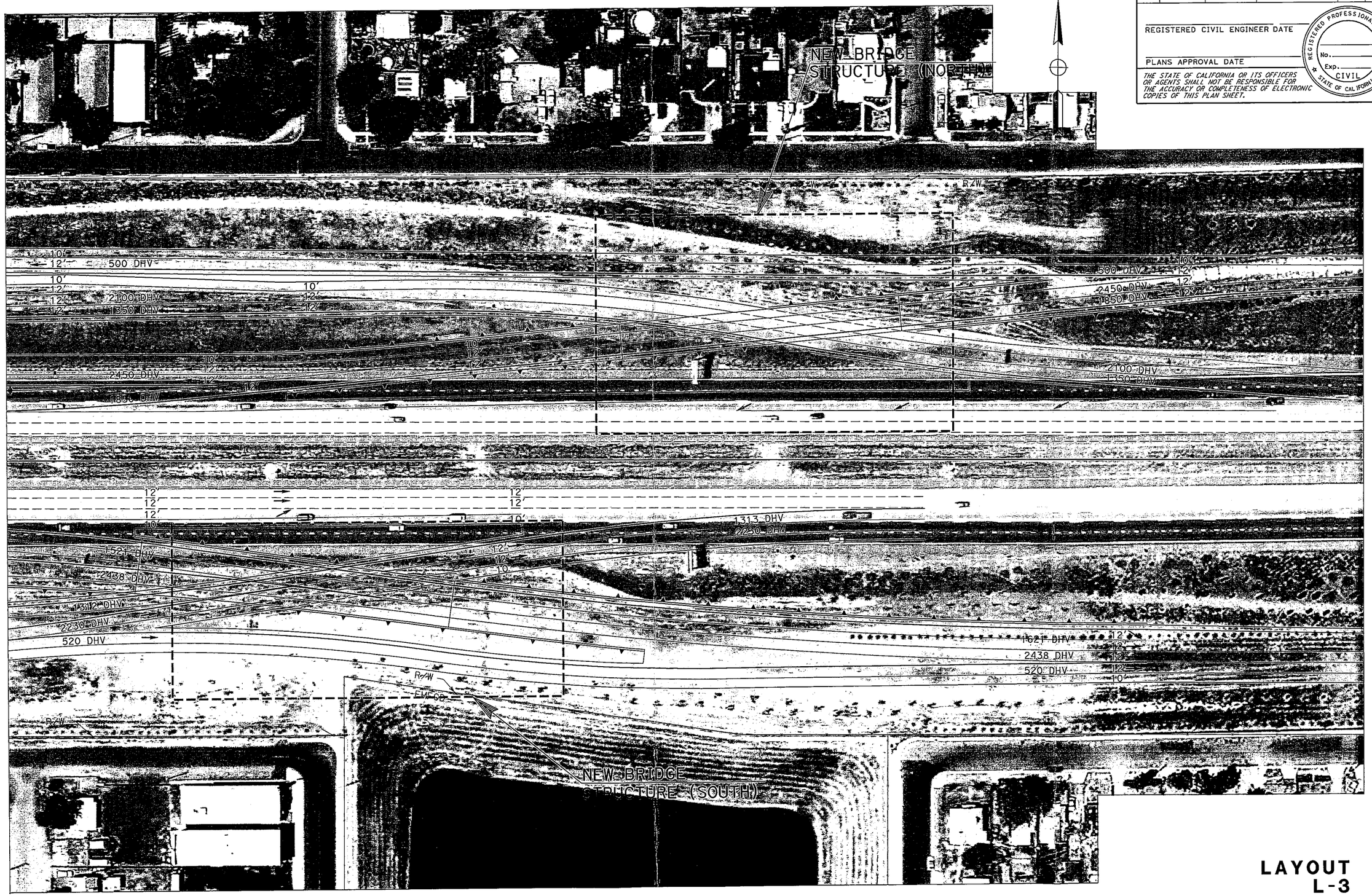

LAYOUT L-3

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY

CHECKED BY

SUPERVISING ENGINEER **THANH NGUYEN**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 02-01-09

DATE PLOTTED => 08-JUN-2009
TIME PLOTTED => 12:23

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s127769
DGN FILE => LAYOUT003.dgn

CU 06245

EA 0C110K

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
6	Fre	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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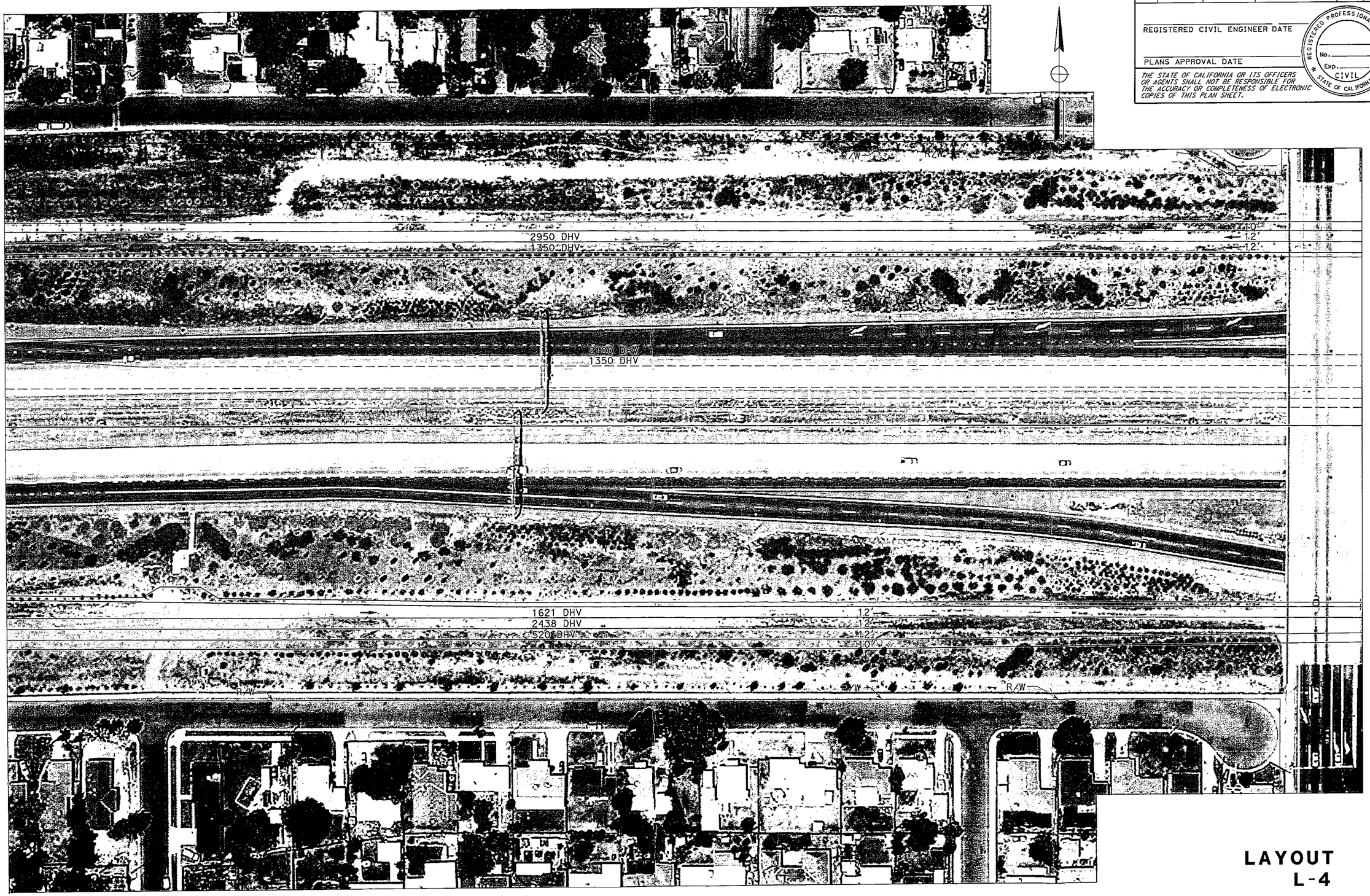

LAYOUT L-4

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY

CHECKED BY

SUPERVISING ENGINEER **THANH NGUYEN**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 02-01-09

DATE PLOTTED => 08-JUN-2009
TIME PLOTTED => 12:24

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => s127769
DGN FILE => LAYOUT004.dgn

CU 06245

EA 0C110K

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
6	Fre	180	58.8/60.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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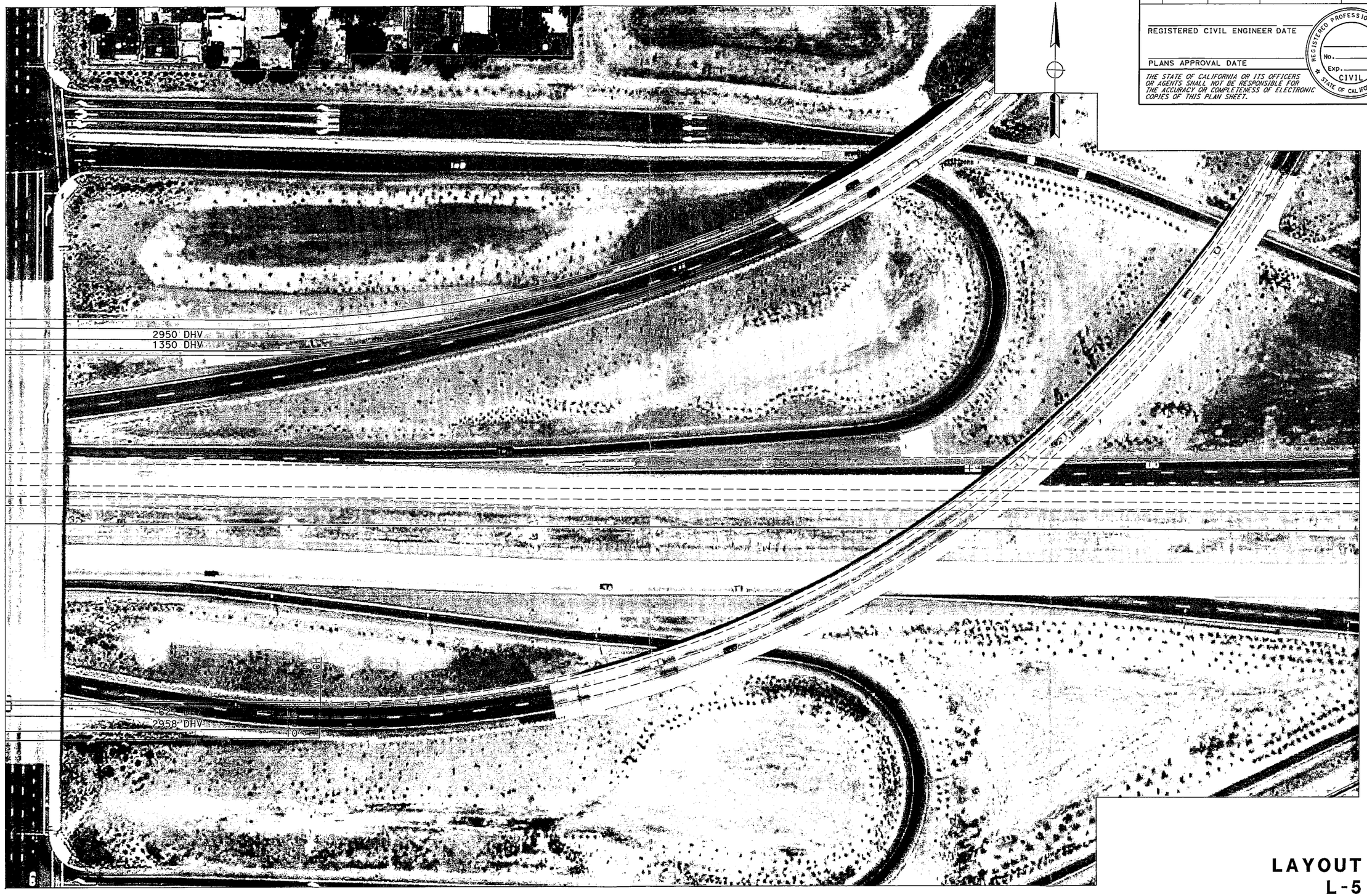

LAYOUT L-5

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 02-01-09

DATE PLOTTED => 08-JUN-2009
TIME PLOTTED => 12:25

EXHIBIT 11-C

Fact Sheet Exceptions to Mandatory Design Standards

This exhibit is provided as an electronic file.

06-Fre-180 (PM R58.8/R60.4)
06-245-0C110K
Program Code 075.600
$64,000,000
June 2009

Fact Sheet Exceptions to Mandatory Design Standards

Prepared by:

Steve M. Lee, PE

REGISTERED PROFESSIONAL ENGINEER
STEVE M. LEE
No. C52613
Exp. 10/30/10
CIVIL
STATE OF CALIFORNIA

Submitted by: Thanh Nguyen — Design Engineer — Date: 06-09-09 — Telephone: (559) 243-3813

Recommended For Approval: Neil Bretz — Project Manager — Date: 6/10/09 — Telephone: (559) 243-3465

Concurrence by: Rory Quince — Chief, Office of Design I, Central Region Project Development — Date: 6/10/09 — Telephone: (559) 243-3860

Approved by: KEN COZAD — Design Coordinator for Chief, HQ Division of Design — Date: 6-23-09

6-10-09

1. PROPOSED PROJECT

A. Project Description

It is proposed to improve traffic operation on Route 180 between Route 41 and Route 168 in Fresno County by braiding the connectors. This stretch of freeway has experienced substantial traffic congestion during peak hour periods, in the morning, in the westbound Route 180 direction and in the afternoon, in the eastbound direction. Traffic merging and weaving movements between the three freeways are very heavy and occur within inadequate weaving distances. (Attachment A). Funding for PA&ED support is being pursued in the 2010 STIP. Project funding is anticipated from a combination of STIP and Fresno County Measure C.

B. Existing Highway

Within the limits of this braided ramp project, Route 180 has three lanes with two auxiliary lanes in each direction. In the westbound direction, the auxiliary lanes are connecting the westbound Route 168 and Route 180 to the southbound and northbound Route 41. In the eastbound direction, the auxiliary lanes are connecting the eastbound Route 180 and the northbound and southbound Route 41 connectors to the eastbound Route 168 and Route 180. In each direction, the mainline roadway has three 12-foot portland cement concrete (PCC) lanes, with two 12-foot asphalt concrete (AC) auxiliary lanes, 10-foot AC inside shoulder, and 10 foot AC outside shoulder. The median is 60 feet wide and divided by a Type 60 concrete median barrier installed in 2005.

Route 168 is oriented in the north-south direction and begins at Route 180. The Route 180/168 interchange is an F-5 trumpet while the Route 180/41 interchange is a modified F-1. The centerlines of Routes 41 and 168 are 1½ miles apart. Between connectors, the weaving distances are approximately 3,000 feet in the eastbound direction, and approximately 2,800 feet in the westbound direction. The local interchange at Cedar Avenue is an L-7 (westbound) / L-8 (eastbound). Cedar Avenue is located 0.3 mile west of the Route 168 centerline and 1.2 miles east of the Route 41 centerline. Collector-distributor (C-D) roads on Route 180 begin near the Route 168 centerline to allow the local interchange at Chestnut Avenue. (Attachment A).

Along Route 180 within the project limits, the current design speed is 70 mph and the posted speed limit is 65 mph. All existing signs, stripes, and pavement markers are in good condition. The latest available pavement skid test results indicate that there are no pavement friction problems on the pavement.

C. Safety Improvements

The proposed braided connector system would eliminate major weaving movements within the freeway system, reduce traffic congestion, improve traffic operation, and consequently would lower traffic-weaving-related and rear-end collision accidents.

D. Total Project Cost

The June 2009 estimated capital cost for the project is as follows:

Construction	64,000,000
R/W Acquisition & Utilities	0
Total	$ 64,000,000

2. FEATURES REQUIRING AN EXCEPTION

A. Nonstandard Feature #1:

The project proposes to maintain the existing spacing between the Route 41/180 interchange and the Route 168/180 interchange, which is 1½ miles (Attachment B). Braiding eliminates all connector-to-connector weaving sections.

Standard for Which Exception Is Requested:

Highway Design Manual (HDM) Index 501.3 Traffic Interchanges, Spacing: The minimum interchange spacing shall be 2 miles between freeway-to-freeway interchanges.

Design Information Bulletin #77, Section IIA: The minimum spacing between interchanges shall be 2 miles between freeway to freeway interchanges and local street interchanges. Compliance will be attained when the following physical criteria are met:

Physical Feature	Required Spacing
Minimum weaving length as defined by Topic 504	5,000 feet
Minimum distance between centerlines of intersecting roadways	2 miles

Reasons for Requesting Exception:

The standard solution would require either relocating the Route 41/180 interchange to the west or the Route 168/180 interchange to the east. The standard solution used for comparison in this fact sheet was moving the Route 168/180 interchange ½ mile to the east.

1. The benefit to meet standard spacing would not be justifiable for the substantial added cost. Land use and property access patterns have developed along the existing Route 168 in this area. Costs to relocate approximately 2 miles of Route 168 include costs associated with extensive right of way and utility impacts. Costs and impacts associated with relocating the Route 168/180 interchange and the section of Route 168 would render that solution impractical and not feasible.
2. With the proposed braided ramp system, traffic weaving between the two interchanges would be eliminated. There would be no significant traffic operational improvement with a 2 mile spacing.
3. If the Route 168/180 interchange were to move east, existing interchanges such as Chestnut, Peach, Clovis, Fowler, and Temperance could be affected. Closing the

Peach Avenue interchange instead of relocating it would prevent the standard solution from impacting interchanges further east.

Added Cost to Make Standard:

The anticipated cost for relocating the Route 168/180 interchange ½ mile to the east would be approximately $220,000,000 as detailed in the following:

Roadway	$ 200,000,000
R/W	20,000,000
Total	$ 220,000,000

B. Nonstandard Feature #2:

The project proposes to maintain the existing spacing between the Cedar Avenue interchange to Route 41/180 interchange (1.2 miles) or to the Route 168/180 interchange, which is 0.3 mile (Attachment A). The proposed weaving distances between the Route 41 connectors and Cedar Avenue ramps are 2,350 feet eastbound and 1,900 feet westbound. It is also proposed to maintain the existing locations of the Chestnut Avenue C-D roads. The proposed weaving distances between the Route 41 connectors and C-D roads are 3,500 feet eastbound and C-D road to Route 41 connectors is 2,700 feet westbound.

Standard for Which Exception Is Requested:

Highway Design Manual (HDM) Index 501.3 Traffic Interchanges, Spacing: The minimum interchange spacing shall be 2 miles between a local freeway interchange and a freeway-to-freeway interchange.

Design Information Bulletin #77, Section IIA: The minimum spacing between interchanges shall be 2 miles between freeway-to-freeway interchanges and local street interchanges. Compliance will be attained when the following physical criteria are met:

Physical Feature	Required Spacing
Minimum weaving length as defined by Topic 504	5,000 feet
Minimum distance between centerlines of intersecting roadways	2 miles

Reasons for Requesting Exception:

The standard solution would entail closing the Cedar Avenue interchange (or at least the eastbound exit and westbound entrance) and closing the C-D roads to Chestnut Avenue. The Cedar Avenue interchange has only been in service since the late 1990s and is found in the freeway agreement dated 1994. If the Cedar Avenue interchange were closed, there would be a gap in local access to Route 180 between Abby Street and Chestnut Avenue or a space of 3 miles. Local circulation is further impacted because only one local street crosses Route 180 between Route 41 and Cedar Avenue. Other crossings were eliminated in anticipation of the braids proposed by this project. Closing the C-D

roads would even further impact local circulation. The gap in local access to Route 180 would grow by 1 mile, with no local access between Route 41 and Peach Avenue. Although there have been no discussions with the City of Fresno, it is assumed that a superseding freeway agreement would be difficult to negotiate.

The project proposes an EN-2EX weaving section in the eastbound direction of Route 180. Segment 1 is between the Route 41 connector entrance and the Cedar Avenue exit and would operate at LOS "E" at the end of the 20-year design period. Segment 2 is between the Cedar exit and the exit to the C-D road to Chestnut Avenue, and would operate at LOS "C". The district Traffic Operations Engineer has determined that the LOS "E" along the above-described weaving section is acceptable, because at the end of the 20 year design period, without the proposed improvement, LOS at these sections would be already deteriorating to "F".

The project proposes a 2EN-EX weaving section in the westbound direction of Route 180. Segment 1is from the C-D road entrance to the Cedar Avenue entrance and would operate at LOS "D" in the 20th year. Segment 2 is from the Cedar Avenue entrance to the Route 41 connector exit and would operate at LOS "D" in the 20th year. Ramp metering is proposed on the Cedar Avenue entrance and has been reflected in the operational analysis.

It is not possible to eliminate these weaving sections due to the alignments and profiles of the Route 168 connectors, Cedar Avenue, Cedar Avenue ramps, and the C-D roads.

Added Cost to Make Standard:

No attempt has been made to estimate the standard solution. It would consist of local road improvements of unknown scope to respond to losses in local road circulation.

3. TRAFFIC DATA

Design Designation (Route 180)
2020 ADT 137,000
2040 ADT 186,000
2040 DHV 18,600
D=56%
T=3%
V=70 mph (Route 180) and 50 mph for connectors

4. ACCIDENT ANALYSIS

The accident history for the freeway segment within the project limits for the most recent available three-year study period (01-01-05 to 12-31-07) as shown in the Table below indicates that the actual total accident rates are higher than the statewide average total accident rates in both directions on Route 180. For the actual fatal accident rates, it is higher than the statewide average fatal accident rate in the eastbound direction, but lower in the westbound direction. The accident rates in accidents per million-vehicle-miles are:

	Actual (MVM)			Average (MVM)		
	Fatal	F+I	Total	Fatal	F+I	Total
EB	0.009	0.36	1.09	0.007	0.29	0.87
WB	0.000	0.43	1.32	0.007	0.29	0.87

In the eastbound direction, within the study period, 126 accidents (1-Fatal, 41-Injury, 84-Property Damage Only (PDO)) were reported as detailed below. The fatal accident was a Hit Object accident that was caused by driving under the influence. Sixty-four percent (64%) of the accidents occurred during afternoon rush hours (4:00-6:00 p.m.), 94% occurred on weekdays, 77% in clear weather, 62% in daylight, and 91% in dry roadway conditions.

Sideswipe	Rear-End	Broadside	Hit Object	Overturn	Other
26	72	2	23	1	2

In the westbound direction 153 accidents (0-Fatal, 50-Injury, 103-PDO) were reported as detailed below. Forty-seven percent (47%) of the accidents took place during morning rush hours (6:00-8:00 a.m.), 89% occurred on weekdays, 75% in clear weather, 86% in daylight, and 82% in dry roadway conditions.

Sideswipe	Rear-End	Broadside	Hit Object	Overturn	Other
31	81	2	27	10	2

With the proposed braided connector system, it would eliminate major weaving movements within the freeway system, reduce traffic congestion, improve traffic operation, and consequently would lower traffic-weaving-related and rear-end collision accidents. The Operational Analysis dated April 15, 2009 included the statement: "...safety concerns intrinsic with large speed differentials on freeway segments would be significantly decreased" as a result of the project.

5. INCREMENTAL IMPROVEMENTS

There are no practical alternatives that are intermediate in scope and cost between this proposal and the full standard solution.

6. FUTURE CONSTRUCTION

No future construction is planned.

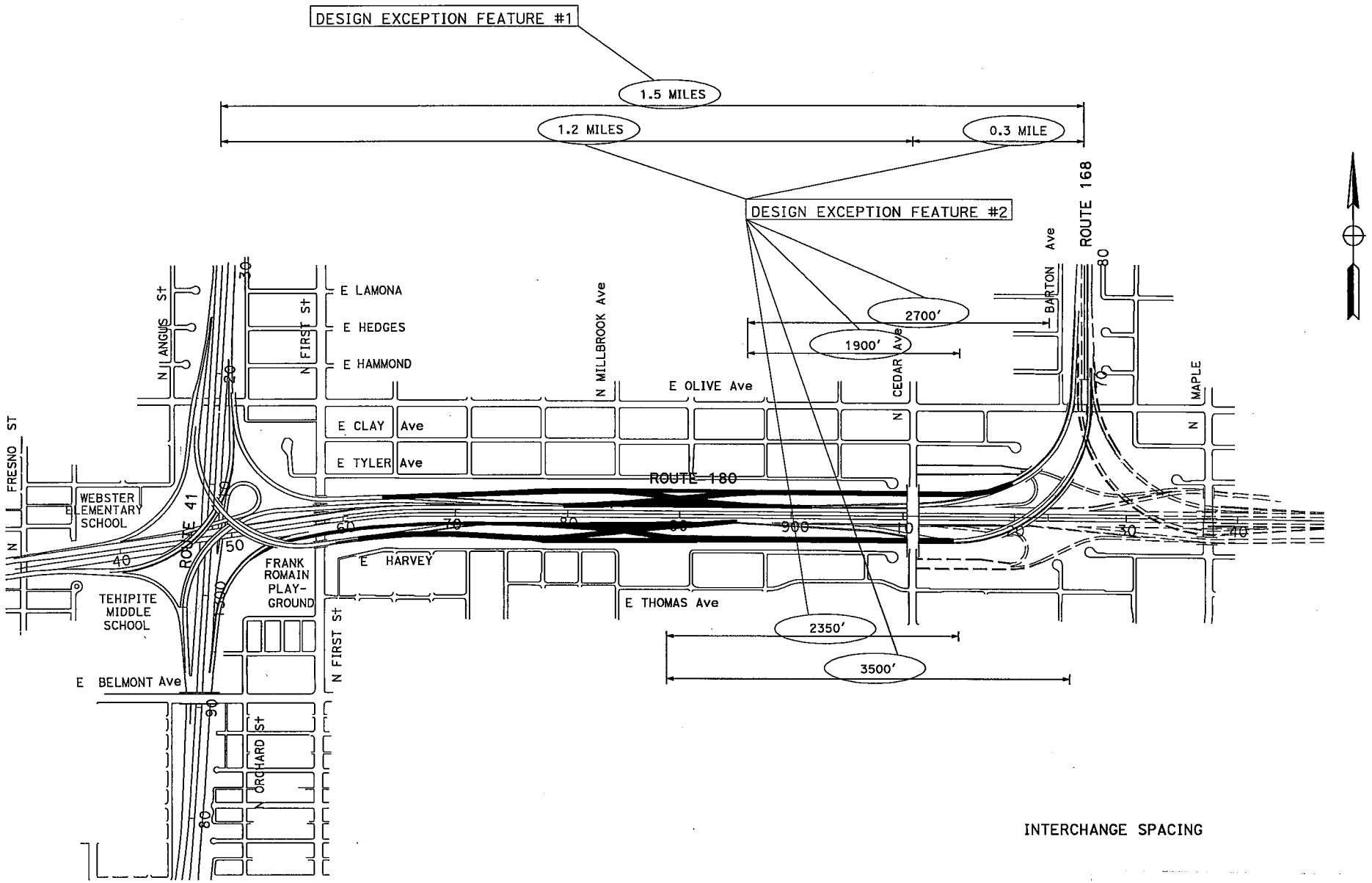
7. PROJECT REVIEWS, CONCURRENCE

Michael Janzen, HQ Design Reviewer, reviewed this Design Exception Fact Sheet on June 5, 2009 and concurred with the proposed Design Exceptions.

Albert Lee, district Traffic Operations Engineer, has determined that the proposal would provide overall operational benefits and supports the design as proposed, including nonstandard interchange spacing.

8. ATTACHMENTS

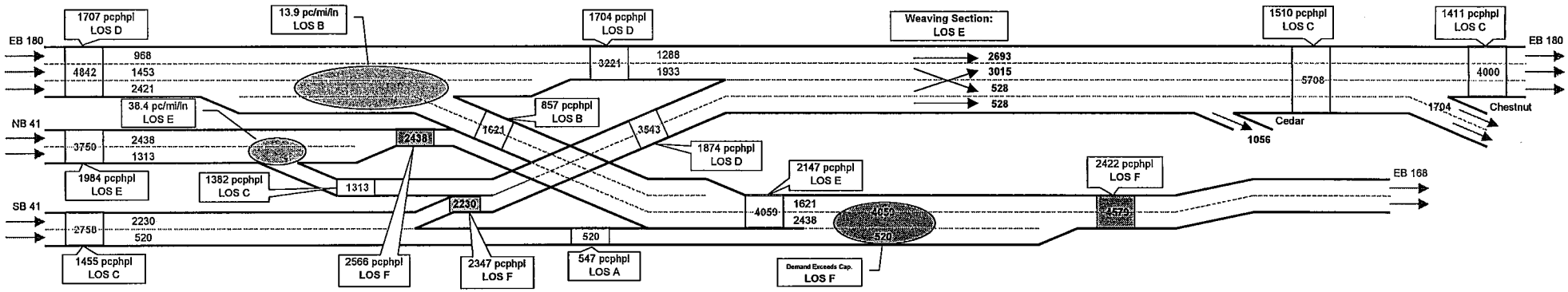
A. Project Location Traffic Weaving Map
B. 2040 AM/PM Peak Traffic Volumes



INTERCHANGE SPACING

ATTACHMENT A

Eastbound SR 180 - 2040 Build Peak Hour Level of Service



Mainline
Base FFS = 70 mph

Connector
Base FFS = 65 mph

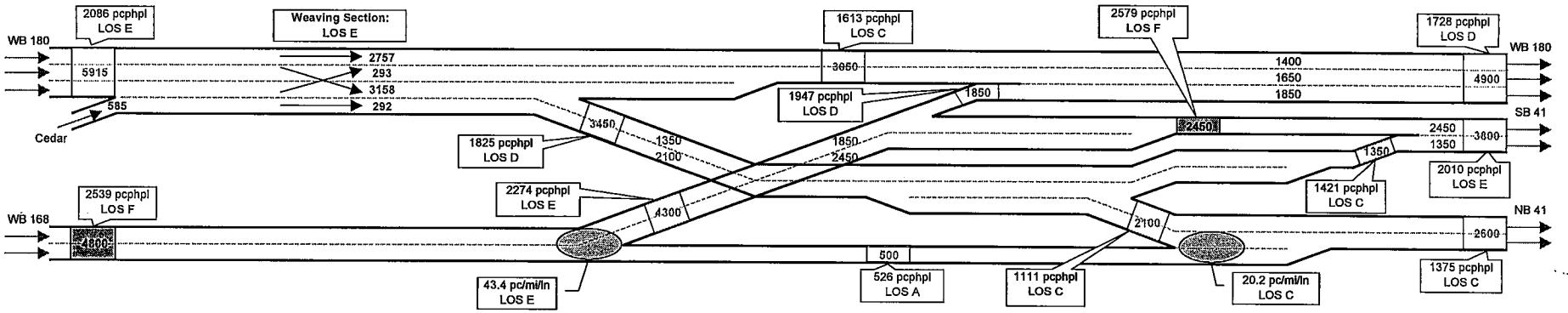
Interchange
Density = 1.00

Heavy
Vehicles = 1%

PHF = 0.95

ATTACHMENT B

Westbound SR 180 - 2040 Build Peak Hour Level of Service



Mainline
Base FFS = 70 mph

Connector
Base FFS = 65 mph

Interchange
Density = 1.00

Heavy
Vehicles = 1%

PHF = 0.95

ATTACHMENT B

EXHIBIT 15-A

Visual Impact Assessment

This exhibit is provided as an electronic file.

VISUAL IMPACT ASSESSMENT

180 BRAIDED RAMPS
Highway 180

April 29, 2010

06-Fresno-180
PM R58.4/R60.4

EA 0C1100

Caltrans District 06
Office of Landscape Architecture

Prepared by:

Gloria Ramirez
Landscape Associate

Approved by:

Elbert Cox
License # 4062
Caltrans District Landscape Architect
Central Region/Branch "A", District 6

VISUAL IMPACT ASSESSMENT

This Visual Impact Assessment (VIA) was prepared using the process developed by Federal Highway Administration (FHWA) in conjunction with the American Society of Landscape Architects. The process for assessing visual impacts satisfies the requirements of the National Environmental Policy Act (NEPA). The intent of this Visual Impact Assessment is to substantiate findings presented within the environmental document by acting as a technical support document.

This assessment defines the visual environment of the project area, quantifies the visual resources of the project area, and identifies viewer responses to those resources. The study assesses the resource change that would be introduced by the project and the corresponding viewer response to that change. This perceived change is analyzed and used to determine the degree of potential visual impacts.

I. INTRODUCTION

Existing Facility

Route 180 is an east-west freeway that serves the central valley of California. The freeway runs east of Route 33, near Mendota, into Kings Canyon National Park, connecting the communities of Mendota, Kerman, Fresno, Sanger, Centerville and Minkler. Within the project limits the freeway traverses residential, and commercial land uses and serves as vital link to the eastside of the valley. Route 180 also serves as a commuter route with access to the Fresno Yosemite International Airport and as a recreational route to Kings Canyon and Sequoia National Parks.

The project begins at the interchange of Route 41 and Route 180. The existing facility consists of three lanes with two auxiliary lanes in each direction (built in 1999). In the eastbound direction the auxiliary lanes connect Route 41 to Route 180 and Route 168. In the westbound direction, the auxiliary lanes connect Route 168 and Route 180 to Route 41. A 60 foot wide median is divided by a Type 60 concrete median barrier, installed in 2005. Within the project limits the freeway fluctuates between elevated areas and depressed areas, with side slope ratios varying from 1:1.5 (V:H), to 1:2 (V:H), and flatter. Side slopes vary from 160 feet to 200 feet wide. When this portion of Route 180 was originally developed, a concept for a future braided ramp system was included with the right of way requirements. Some grading was done in anticipation of the braided ramps project and adjacent landscaping was kept to a minimum. The grading allowed for berms, which provided screening of the freeway. The pre-construction character of the project area can be typically described as urban/residential, with single homes located on both sides of the corridor.

This section of Route 180 (within the Fresno-Clovis metropolitan area) is designated as part of the National Highway System (NHS) and an STAA route. Further east, outside of the project limits, Route 180 is eligible for scenic highway as it approaches Kings Canyon National Park.

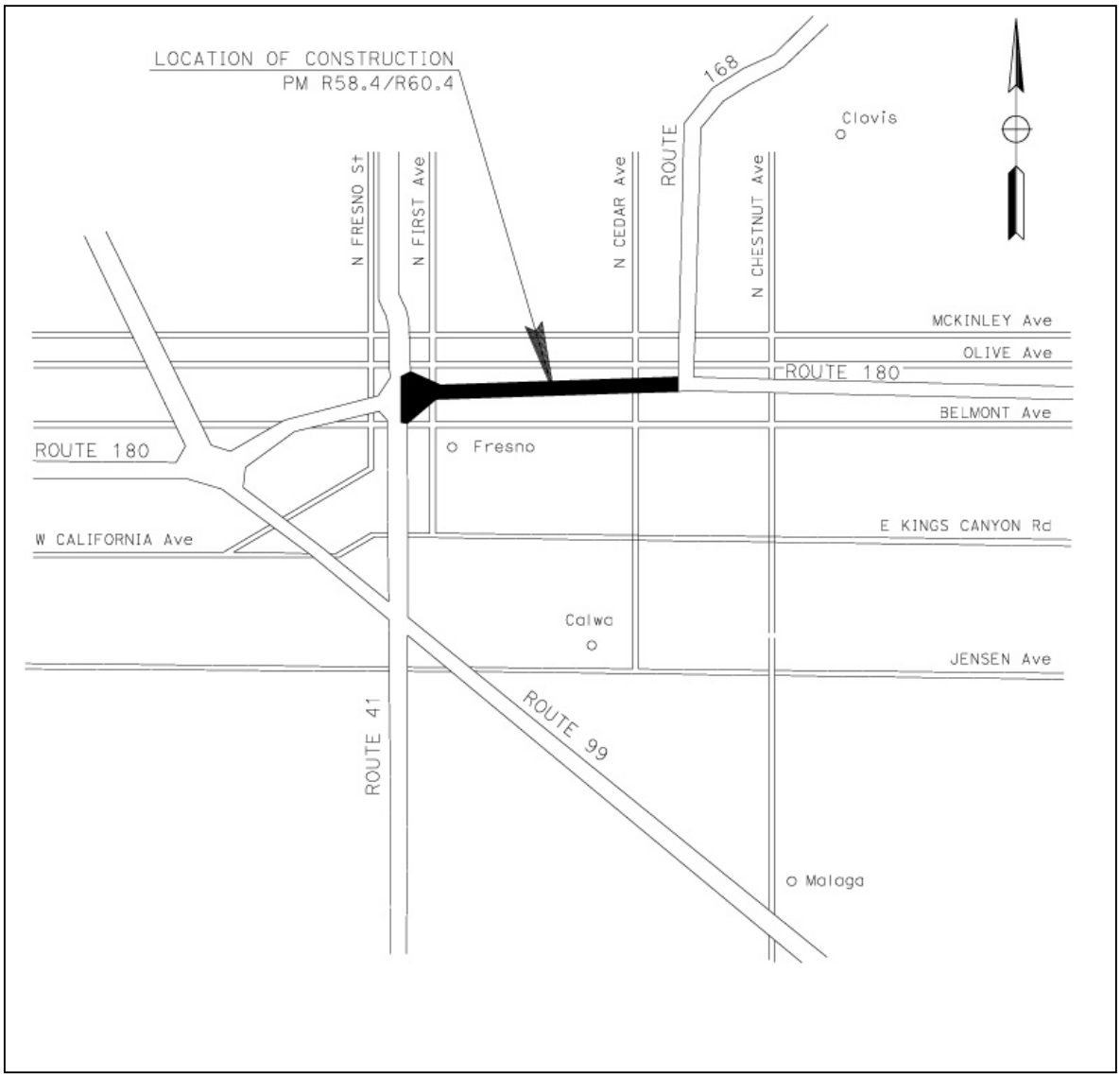


Figure 1 Vicinity Map

Project Description

The proposed project will improve traffic operations on Route 180 between Route 41 and Route 168 in Fresno County by constructing a braided ramp system. The proposed braided connector system would eliminate major weaving movements within the freeway system, reduce traffic congestion, improve traffic operation, and consequently would lower traffic-weaving-related and rear-end collision accidents. This stretch of freeway has experienced substantial traffic congestion during peak hour periods, in the morning, in the westbound Route 180 direction and in the afternoon, in the eastbound direction. Traffic merging and weaving movements between the three freeways are very heavy and occur within short weaving distances.

The proposed project is a modification of the original concept developed for this section of Route 180, which allowed for some of the earthwork to be done in anticipation of this project. The project will construct new portland concrete cement (PCC) branch connections, braided by two new structures, one on each side (north and south) of Route 180. Ramp-metering is also proposed on the westbound State Route 180 to southbound State Route 41 branch connection. Retaining walls will be needed at several locations. Soundwalls will also be required. Some of the existing landscape will be removed. Where possible, trees will be maintained/protected. All work will be constructed within existing right of way.

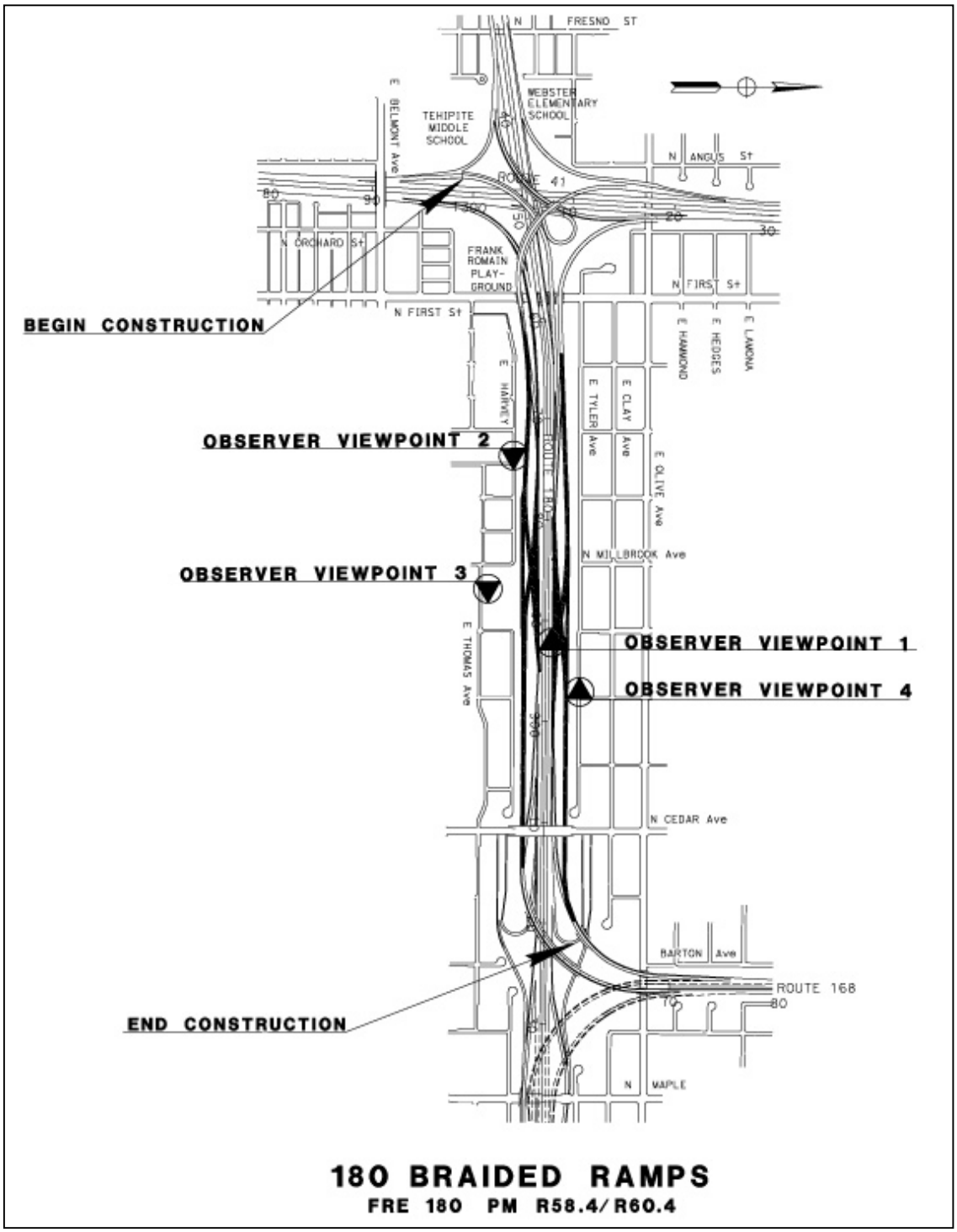


Figure 2 Observer Viewpoints

II. EXISTING VISUAL ENVIRONMENT

Regional Landscape

Defining the regional landscape establishes a frame of reference for comparing the visual effects of the proposed alternatives for the project and determining the significance of these effects. A regional landscape is made up of a combination of landscape components, which distinguishes it from the next. The landscape components of the regional landscape for the project area are its landform (or topography) and landcover; which are described as follows:

- Landform
  The region can be generally defined as flat, valley bottom urban/residential area. The project is located on the eastern side of the flat San Joaquin Valley at an approximate elevation above sea level of 296 feet. The freeway itself fluctuates from being elevated at the west end of the project limits, to being depressed at the east end of the project limits. Visible, during the winter months, in the distant east, are the snow-capped mountains of the Sierra Nevada Mountain Range, which create a dominant element in the landscape.

- Landcover – Vegetation
  The vegetation within the project region consists of landscaping associated with homes, businesses, schools and parks. Landscaped freeways are typical within urban/residential areas. Along the freeway, the landscaped slopes provide some contrast in terms of color and form to the engineered freeway. Continuing east on 180, agricultural lands with mature orchards and cultivated fields can be found outside of the project area.

- Landcover – Built Development
  The built development is extensive within the region. The overall character of the region can be typically described as urban/residential. Where the freeway is elevated residential homes dominate the views on both sides of the freeway. Other man-made objects include the interchange of Route 41/180 to the west and the interchange of Route168/180 to the east.

Landscape Units

Understanding the relationship between the regional landscape and the immediate visual environment is necessary to assess visual effects. In order to provide a framework for understanding the visual effects of the proposed project, the regional landscape is divided into distinct landscape units. A landscape unit may be thought of as an outdoor room, perceived as a complete visual environment with certain visual characteristics that distinguish it from the next.

The proposed project area includes one specific landscape unit, the urban freeway. The length of the proposed project area is about two miles. The six-lane facility with auxiliary lanes and existing sides slopes is the predominant landscape unit within the

project area. The boundaries to the landscape unit are the Route 41/180 interchange to the west and Route 168/180 interchange to the east. The topography within the project area fluctuates from elevated areas near the western end to depressed areas at the eastern end. The freeway landscape provides some screening to and from the freeway.

Visual Character

The visual character of the landscape is based on the order of the patterns elements composing it such as form, line, color, and texture; as well as the pattern character, or relationship between the elements. The proposed project lies entirely within one landscape unit - the urban freeway. The existing roadway and planting along the roadsides provide a well-defined corridor. The visual contrast between the freeway and the adjacent landscape is constant throughout the project area. The vegetation is mature, yet not large in scale and creates a visual pattern and harmony in the landscape, without any dominant elements.

III. VIEWER SENSITIVITY

Viewer Groups

Viewer response to a roadway project is affected by a number of factors, including viewer exposure, duration of the view and viewer sensitivity. Two general viewer groups were considered for the evaluation of viewer response, those with views from the road and those with views of the road.

- Viewers from the Road

  This viewer group is comprised of the highway user. These viewers are almost exclusively in motor vehicles and include tourists, commuters, commercial vehicle operators and local highway users. These viewers will be numerous, and will be traveling through the project area at relatively high speeds. The posted speed limit throughout the project area is 65mph. The present ADTs for this portion of Route 180 is estimated at 158,000 (including auxiliary lanes). With the construction of the braided ramps and separation of traffic, the expected ADTs (Annual Daily Traffic) for Route 180 for the year 2017 is 112,400 and 155,200 for the year 2037. The combined ADTs for Route 180 and Route 168 is 192,600 for the year 2017 and 265,700 for the year 2037.

  The awareness of visual resources by these highway users is expected to vary with their specific activity. The duration of their views of the project area will be short due the length of the project, which is less than two miles long. Generally, highway users will experience the area as a cumulative sequence of views and may focus less on specific roadway features. The local highway users are the most sensitive to aesthetic issues due to their familiarity as well as their personal investment in the area. Tourists, which comprise a portion of viewers on Route 180, generally have a high awareness of the visual resources around them, yet are anticipated to be less sensitive to specific changes in that environment.

- Viewers of the Road
  This viewer group is made of all those who can see the roadway project or any of its components from off-site locations. In the case of this project, the number of people viewing the road from off-site locations may be less than those who will see the project while on the highway. However, this group has longer duration of views of the freeway. These viewers will experience the most visual changes, which consist of the addition of the braided ramps within the existing right of way, reducing the distance between the residential homes and the freeway. The addition of soundwalls will provide visual screening and noise attenuation from the freeway at some locations. In other places, the new structures for the elevated ramps will make the freeway more visible to the local residents. Their degree of familiarity with the project area will make them more sensitive towards change.

IV. VISUAL ASSESSMENT METHODOLOGY

The focus of this visual assessment is to determine the proposed project's impacts on views to and from Route 180, as well as other potentially critical locations. Such possible impacts include new structures and soundwalls, removal of existing landscape, grading and overall aesthetic character.

The existing landscape of the proposed project is viewed from both sides of the freeway and an inventory of on-site visual resources is developed. These visual resources are evaluated and rated for their aesthetic benefit and for their contribution to the existing character of the landscape and region. The existing visual resource inventory is then compared with the proposed project features, and any potential conflicts or impacts to existing visual resources are identified.

Observer Viewpoints

The Observer Viewpoints were selected for their effectiveness in either representing the typical visual character of the project, or showing unique project components or affected resources as seen by the two viewer groups. Field analysis identified a total of four viewing locations, or Observer Viewpoints (OV), which would best reveal the project's components and any potential visual character change.

V. VISUAL QUALITY EVALUATION RATINGS

A Visual Quality Evaluation (VQE) was conducted in order to assess the magnitude of the potential visual changes caused by the proposed project. The VQE compares the visual quality of both the existing and proposed conditions.

For existing conditions, field reviews of the Observer Viewpoints were conducted and a numerical rating between 1 and 7 was assigned for the existing quality from each viewpoint, with 1 having the lowest value and 7 the highest. For proposed conditions, visual simulations, depicting the visual changes that may occur as a result of the proposed project were studied and rated using the same numerical rating system and assigning numerical ratings to each of the "proposed" views. The numerical difference, if any, between the existing and proposed conditions quantified the change that may occur as a result of the proposed project. This numerical difference was compared to the expected sensitivities of potential viewer groups in order to determine a level of visual impact.

The numerical rating system described above is based on evaluative criteria using three primary components identified as vividness, intactness, and unity. These three criteria are defined by FHWA and described as follows:

- Vividness is the visual power or memorability of the landscape components as they combine in striking and distinctive visual pattern.

- Intactness is the visual integrity of the landscape and its freedom from non-typical encroaching elements. If all of the various elements of a landscape seem to "belong" together, there will be a high level of intactness.

- Unity is the visual harmony of the landscape considered as a whole. Unity represents the degree to which the visual elements maintain a coherent visual pattern.

The visual quality evaluation helps quantify any visual change and establish a baseline for application of mitigation measures (if needed). The Observer Viewpoints and visual quality ratings for each Observer Viewpoint are presented in the following pages.

Observer Viewpoint 1

This view shows the existing westbound lanes and adjacent slopes. Some of the grading was done with the original freeway project in anticipation of this project. This is a typical view from the freeway. Adjacent slopes are landscaped and provide screening to and from the freeway.

Existing View

The existing roadway and planting along the roadsides provide a well-defined corridor. Visually, there is not dominant element in this landscape. The graded and vegetated slopes provide visual interest for the highway traveler, however, the unpaved area adjacent to the shoulder give it an unfinished look. The continuous vegetation along both sides of the road contribute to a unified view which results in moderate unity and intactness.

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV1, **Existing**	3.5	3.5	3.5	3.5

Simulated View,

This project proposes to construct braided ramps along this section of Route 180. The existing right of way area will accommodate the proposed project minimizing the removal of existing vegetation. Although the freeway remains three lanes each way, the increase in pavement and the added ramps make the scale of the facility appear larger. As the freeway becomes a transitional urbanized landscape, the vividness and unity increase. The intactness decreases slightly, however, as a result of the added structure encroaching on the skyline.

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV1, **Existing**	3.5	3.5	3.5	3.5
OV1, **Simulated**	3.8	3.3	3.8	3.6
Visual Quality Difference =				0.1

Observer Viewpoint 2

This view consists of the section of the project as it is viewed from the nearby homes along the eastbound lanes, near Third Street and Harvey Avenue. The existing landscape and berms screen out most of the freeway.

Existing View

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV2, Existing	3.7	3.7	3.7	3.7

Observer Viewpoint 2 shows Road 180 as it is viewed from nearby homes, where the freeway is elevated. The graded slopes add visual interest and screening of the freeway and the mature and continuous vegetation along the frontage road contribute to a unified view, which results in moderate unity and intactness.

Simulated View

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV2, Existing	3.7	3.7	3.7	3.7
OV2, Simulated	2.5	2.0	2.0	2.2
Visual Quality Difference =				-1.5

Based on noise studies, the proposed project warrants a soundwall at this location. The 16-foot high wall would screen the freeway from the adjacent neighbors. However, most of the landscape would also be removed or blocked by the new wall. The vividness and intactness decrease, as a result of the added structure encroaching on the view. The unity also drops as transparency of the chain link fence is interrupted by the new soundwall.

Observer Viewpoint 3

This view looks at the freeway from the homes across the detention basin on the eastbound side (along E. Thomas Ave).

Existing View

Observer Viewpoint 3 shows the existing freeway on the other side of the detention basin. The vividness of this view is moderate high because of the water and the reflection of the surrounding landscape. The harmonious elements of the landscape contribute to a more unified view resulting in moderate high unity and intactness.

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV3, Existing	5.0	4.5	4.54.7	

Simulated View

Some of the proposed ramps will be elevated and more visible, even from a distance. The visual quality of the area decreases slightly as the two new ramps become visible, encroaching on the landscape. Although it dropped a little, the vividness is still moderate high. The drop in unity and intactness is small because the proximity to the freeway is not as close at this location, making it less noticeable.

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV3, Existing	5.0	4.5	4.54.7	
OV3, Simulated	4.7	4.2	4.2	4.4
Visual Quality Difference =				-0.3

Observer Viewpoint 4

This view is typical from the north side of the freeway, along E. Tyler Avenue, near N. Ninth Street. The existing grading and mature landscape provide visual screening from the freeway.

Existing View

Observer Viewpoint 4 shows the westbound freeway as it is viewed from nearby homes. The landscape is more dominant here, as the freeway is not very visible. The existing vegetation creates a coherent and harmonious visual quality resulting in a moderate degree of unity and intactness.

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV4, Existing	3.8	3.8	3.8	3.8

Simulated View

The proposed project will provide new ramps, near the street level at this location, bringing the freeway closer to the neighbors. The visual quality of the area decreases because of added pavement and loss of plant material. The unity and intactness also drops because of the added visually encroaching features.

Location	Vividness /	Intactness /	Unity	(=V+I+U/3)
OV4, Existing	3.8	3.8	3.8	3.8
OV4, Simulated	3.0	2.7	2.7	2.8
Visual Quality Difference =				-1.0

VI. SUMMARY OF VISUAL QUALITY IMPACTS

The Visual Quality Ratings for this landscape unit is determined by averaging the ratings for each Observer Viewpoint. The assessment indicates an above average visual quality rating for the existing facility, with a numerical rating of 3.9. If constructed, the proposed project would result in a lowered visual quality rating, slightly below average, with a numerical rating of 3.3. The net visual quality difference from the existing to the proposed project is -0.6.

Based on the simulations, the visual quality ratings were reduced with the proposed project. The following is a summary of the visual impacts for the project area:

- Removal of existing vegetation along the roadside to accommodate the proposed braided ramps
- Construction of soundwalls and elevated structures
- Additional grading

As a result of the physical changes conceived by the proposed project, the freeway becomes a more urbanized landscape. The reduction of vividness, intactness and unity is due primarily to the higher visibility of the freeway, new soundwalls and the loss of vegetation. Although the physical changes are substantial, it will not affect the overall character of the landscape unit. For freeway users, people traveling through the project area at relatively high speeds with destinations outside the project area, the project improvements could be in line with what they might expect as they travel east or west on Route 180. The physical components of the proposed project will relate to the existing character of Route 180, with existing interchanges on either end of the project where similar structures can be found.

The soundwalls will have a visual impact on both freeway users and freeway neighbors. The proposed soundwalls vary in height from 14-feet high to 16-feet high. In areas where the soundwall is located adjacent to the right of way the impact will be most noticeable by the freeway neighbors. In areas where the soundwall is located at the shoulder, the impact will be most noticeable to the freeway users. In both cases the result will be blocked views to and from the freeway.

Substantial impacts are expected for the viewers of the freeway, who are in close proximity to the proposed project area. They have a longer duration of views of the freeway. They will experience an increased exposure of the freeway, as the ramps are constructed along the existing side slopes. This, in addition to the removal of existing vegetation, could result in a greater visual awareness of the freeway.

VII. MANAGEMENT OF VISUAL QUALITY IMPACTS

Visual impacts can be managed by avoidance, minimization and/or rectification. To manage the proposed impacts Management Objectives and Management Recommendations must relate to the adverse visual impacts associated with the project. The following management objectives and recommendations are intended to manage and lessen impacts to the visual quality of the proposed project:

1. **Management Objective**: Conserve visual unity and intactness for all viewers. **Management Recommendations**: Existing mature vegetation should be preserved where possible or replaced. The proposed project is located in an area that warrants additional highway planting. Per Caltrans policy, warranted highway planting is required on existing freeways when areas are impacted by major modifications to the highway where adjacent properties are developed at the time of the roadway construction contract acceptance. The warranted highway planting, as directed by Caltrans policy, will help lessen visual impacts associated with the proposed project.

2. **Management Objective**: Minimize loss of intactness resulting from added structures.
   Management Recommendations: Planting, as recommended previously will reduce the visual scale of the new structures and soften their appearance. Location and height of the soundwalls should consider ways to lessen the visual impact. In addition, architectural treatments, such as color and/or textures applied to vertical surfaces or structures should relate to other structures within the region. These aesthetic treatments should be coordinated through the Landscape Architecture unit and the Bridge Aesthetics unit in Headquarters throughout the various phases of the project.

Although the implementation of management recommendations may not eliminate all the visual impacts, it will reduce them, lessening the substantial changes in the overall visual quality.

EXHIBIT 18-A

Lane Closure Charts

This exhibit is provided as an electronic file.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

LANE CLOSURE CHART NO. 1 OF 2

EA:	0C1100	PROJECT LOCATION:	06-FRE 180S-PM R58.8/T60.4

	COUNTY	RTE		DESCRIPTION	PM		DESCRIPTION	PM
CLOSURE LIMITS:	FRE	180S	FROM	0.06 Mi W/O First St. UC Br. No. 42-323	R58.8	TO	Maple Ave. UC Br. No. 42-398	T60.4

TYPE OF WORK:	Construct Braided Ramps
TYPE OF FACILITY:	6 Lane Freeway
PERCENT PASSENGER CARS:	95%
PERCENT TRUCKS:	5%
ESTIMATED SINGLE OPEN LANE CAPACITY IN PCPH:	1600
ESTIMATED DOUBLE OPEN LANE CAPACITY IN PCPH:	3200
ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH:	1561
ESTIMATED DOUBLE OPEN LANE CAPACITY IN VPH:	3122

DIRECTION: Eastbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM											
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday	1	1	1	1	1	1	2													2	2	2	1	1	
Friday	1	1	1	1	1	1	2																		
Saturday																									
Sunday																				2	2	2	2	1	

DIRECTION: Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM											
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday	1	1	1	1	1	1	2													2	2	2	2	2	
Friday	1	1	1	1	1	1	2																		
Saturday																									
Sunday																				2	2	2	1	1	

LEGEND:

1	PROVIDE AT LEAST ONE THROUGH FREEWAY LANE OPEN IN DIRECTION OF TRAVEL
2	PROVIDE AT LEAST TWO ADJACENT THROUGH FREEWAY LANES OPEN IN DIRECTION OF TRAVEL
3	PROVIDE AT LEAST THREE ADJACENT THROUGH FREEWAY LANES OPEN IN DIRECTION OF TRAVEL
S	SHOULDER CLOSURE PERMITTED (RIGHT/LEFT)
N	NO WORK PERMITTED
	WORK PERMITTED WITHIN PROJECT RIGHT OF WAY WHERE SHOULDER OR LANE CLOSURE IS NOT REQUIRED

REMARKS:

a. Unless approved by the Engineer, the maximum length of a single stationary lane closure shall be 1.6 miles.

b. Unless approved by the Engineer, not more than 1 separate stationary lane closures will be allowed at one time. Concurrent stationary closures shall be spaced no closer than 5.0 miles apart.

c. The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

LANE CLOSURE CHART NO. 2 OF 2

A:	0C1100	PROJECT LOCATION:	06-FRE 180S-PM R58.8/T60.4					
	COUNTY	RTE	DESCRIPTION	PM		DESCRIPTION	PM
CLOSURE LIMITS:	FRE	180S	FROM	0.06 Mi W/O First St. UC Br. No. 42-323	R58.8	TO	Maple Ave. UC Br. No. 42-398	T60.4
TYPE OF WORK:	Removal of Overhead Sign Bridges							
TYPE OF FACILITY:	6	Lane Freeway	ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH:	2000				
	3	Lanes Per Direction	ESTIMATED TRIPLE OPEN LANE CAPACITY IN VPH:	6000				
PERCENT PASSENGER CARS:	95%							
PERCENT TRUCKS:	5%							

DIRECTION: East/Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM												
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday	C	C	C	C	C																				C
Friday	C	C	C	C	C																				
Saturday																									
Sunday																									

LEGEND:

C — FREEWAY OR EXPRESSWAY MAY BE CLOSED COMPLETELY.

NO COMPLETE FREEWAY OR EXPRESSWAY CLOSURE IS PERMITTED

REMARKS:

COUNTS BASED ON: COUNT STATION NO. 382 TAKEN BETWEEN JUNE 7-14, 2000.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

CONNECTOR CLOSURE CHART NO. 1 OF 4

EA:	0C1100	PROJECT LOCATION:	06-FRE 180S-PM R58.8/T60.4

	COUNTY	RTE		DESCRIPTION	PM
CLOSURE LIMITS:	FRE	180S		WB Route 168s to WB Route 180s	R60.01
	FRE	180S		WB Route 180s to NB Route 41	R59.12
	FRE	168S		WB Route 180S to SB Route 41	R58.93

TYPE OF WORK: Construct Braided Ramps (Westbound)

TYPE OF FACILITY: On/Off-Ramp Connector — ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH: 1500

DIRECTION: East/Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM											
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday	1	1	1	1	1	1	1													1	1	1	1	1	
Friday	1	1	1	1	1	1	1																		
Saturday																									
Sunday																				1	1	1	1	1	

LEGEND:

- 1 — PROVIDE AT LEAST ONE CONNECTOR OPEN IN DIRECTION OF TRAVEL
- 2 — PROVIDE AT LEAST TWO ADJACENT CONNECTOR LANES OPEN IN DIRECTION OF TRAVEL
- C — CONNECTOR MAY BE CLOSED COMPLETELY
- S — SHOULDER CLOSURE PERMITTED
- N — NO WORK PERMITTED
- (blank) — WORK PERMITTED WITHIN PROJECT RIGHT OF WAY WHERE SHOULDER OR LANE CLOSURE IS NOT REQUIRED

REMARKS:

a. Public traffic shall be informed at least 7 calendar days before closing the connector, but not more than 15 days before the connector closure.

b. Complete interchange closure shall not be permitted.

c. The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

CONNECTOR CLOSURE CHART NO. 2 OF 4

EA:	0C1100	PROJECT LOCATION:		06-FRE 180S-PM R58.8/T60.4	
	COUNTY	RTE		DESCRIPTION	PM
CLOSURE LIMITS:	FRE	180S		SB Route 41 to EB Route 180s	R58.85
	FRE	180S		NB Route 41 to EB Route 180S	R58.59
	FRE	180S		EB Route 180S to EB Route 168S	R59.50
TYPE OF WORK:	Construct Braided Ramps (Eastbound)				
TYPE OF FACILITY	On/Off-Ramp Connector			ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH:	1500

DIRECTION: East/Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM											
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday	1	1	1	1	1	1	1													1	1	1	1	1	
Friday	1	1	1	1	1	1	1																		
Saturday																									
Sunday																				1	1	1	1	1	

LEGEND:

- 1 — PROVIDE AT LEAST ONE CONNECTOR OPEN IN DIRECTION OF TRAVEL
- 2 — PROVIDE AT LEAST TWO ADJACENT CONNECTOR LANES OPEN IN DIRECTION OF TRAVEL
- C — CONNECTOR MAY BE CLOSED COMPLETELY
- S — SHOULDER CLOSURE PERMITTED
- N — NO WORK PERMITTED
- (blank) — WORK PERMITTED WITHIN PROJECT RIGHT OF WAY WHERE SHOULDER OR LANE CLOSURE IS NOT REQUIRED

REMARKS:

a. Public traffic shall be informed at least 7 calendar days before closing the connector, but not more than 15 days before the connector closure.

b. Complete interchange closure shall not be permitted.

c. The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

CONNECTOR CLOSURE CHART NO. 3 OF 4

EA:	0C1100	PROJECT LOCATION:	06-FRE 180S-PM R58.8/T60.4

	COUNTY	RTE		DESCRIPTION	PM
CLOSURE LIMITS:	FRE	180S		WB Route 168s to WB Route 180s	R60.01
	FRE	180S		WB Route 180s to NB Route 41	R59.12
	FRE	168S		WB Route 180S to SB Route 41	R58.93

TYPE OF WORK:	Construct Braided Ramps (Weekend Closure)		
TYPE OF FACILITY	On/Off-Ramp Connector	ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH:	1500

DIRECTION: East/Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM											
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday																									
Friday	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Saturday	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Sunday	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	

LEGEND:

C — CONNECTOR MAY BE CLOSED COMPLETELY

WORK PERMITTED WITHIN PROJECT RIGHT OF WAY WHERE SHOULDER OR LANE CLOSURE IS NOT REQUIRED

REMARKS:

a. Public traffic shall be informed at least 7 calendar days before closing the connector, but not more than 15 days before the connector closure.

b. Complete interchange closure shall not be permitted.

c. Continuous complete closure of any of the ramp connectors shall not exceed 72 hours.

d. The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

CONNECTOR CLOSURE CHART NO. 4 OF 4

EA:	0C1100	PROJECT LOCATION:	06-FRE 180S-PM R58.8/T60.4		
	COUNTY	RTE	DESCRIPTION		PM
CLOSURE LIMITS:	FRE	180S	SB Route 41 to EB Route 180s		R58.85
	FRE	180S	NB Route 41 to EB Route 180S		R58.59
	FRE	180S	EB Route 180S to EB Route 168S		R59.50
TYPE OF WORK:	Construct Braided Ramps (Weekend Closure)				
TYPE OF FACILITY	On/Off-Ramp Connector		ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH:		1500

DIRECTION: East/Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM											
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday																									
Friday	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Saturday	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Sunday	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

LEGEND:

C — CONNECTOR MAY BE CLOSED COMPLETELY

WORK PERMITTED WITHIN PROJECT RIGHT OF WAY WHERE SHOULDER OR LANE CLOSURE IS NOT REQUIRED

REMARKS:

a. Public traffic shall be informed at least 7 calendar days before closing the connector, but not more than 15 days before the connector closure.

b. Complete interchange closure shall not be permitted.

c. Continuous complete closure of any of the ramp connectors shall not exceed 72 hours.

d. The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

DISTRICT 6 - MAINTENANCE AND OPERATIONS DIVISION
OFFICE OF TRAFFIC OPERATIONS

DATE:	10/18/2010
PREPARED BY:	Bill Le

RAMP CLOSURE CHART NO. 1 OF 1

EA:	0C1100	PROJECT LOCATION:	06-FRE 180S-PM R58.8-T60.4
CLOSURE LIMITS:	COUNTY: FRE / RTE: 180S	DESCRIPTION: EB Off-ramp to Cedar Avenue	PM: R59.98
TYPE OF WORK:	Braided Ramps		
TYPE OF FACILITY:	Off-Ramp	ESTIMATED SINGLE OPEN LANE CAPACITY IN VPH:	800

DIRECTION: East/Westbound

LANE REQUIREMENTS AND HOURS OF WORK

	AM												PM												
	Midnight	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	Midnight
Monday through Thursday	S	S	S	S	S	S	S													S	S	S	S	S	
Friday	S	S	S	S	S	S	S																		
Saturday																				S	S	S	S	S	
Sunday																									

LEGEND:

- [1] PROVIDE AT LEAST ONE RAMP LANE, NOT LESS 12.0 FT (3.6 M) IN WIDTH, OPEN IN DIRECTION OF TRAVEL
- [2] PROVIDE AT LEAST TWO ADJACENT RAMP LANES OPEN IN DIRECTION OF TRAVEL
- [ ] RAMP MAY BE CLOSED COMPLETELY
- [S] SHOULDER CLOSURE PERMITTED
- [N] NO WORK PERMITTED
- [ ] WORK PERMITTED WITHIN PROJECT RIGHT OF WAY WHERE SHOULDER OR LANE CLOSURE IS NOT REQUIRED

REMARKS:

a. Public traffic shall be informed at least 7 calendar days before closing the ramp, but not more than 15 days before the ramp closure.

b. The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

EXHIBIT 22-A

PAED Stormwater Data Report

This exhibit is provided as an electronic file.

Caltrans

Dist-County-Route: 06-Fre-180

Post Mile Limits: PM R58.4/R60.4

Project Type: Braided Ramps

EA: 06-0C1100

RU: 06-245

Program Identification: 400.000

Phase: ☐PID ☒PA/ED ☐PS&E

Regional Water Quality Control Board(s): Central Valley Region, Fresno Office (5F)

Is the project required to consider incorporating Treatment BMPs? ☒Yes ☐No

If yes, can Treatment BMPs be incorporated into the project? ☒Yes ☐No

If No, a Technical Data Report must be submitted to the RWQCB at least 60 days prior to PS&E Submittal. List submittal date: _____

Total Disturbed Soil Area: 77.25 acres

Estimated Construction Start Date: 10/2014 Construction Completion Date: 10/2016

Notification of Construction (NOC) Date to be submitted: 9/2014

Notification of ADL reuse (if Yes, provide date) ☐Yes Date: _____ ☒No

Separate Dewatering Permit (if Yes, permit number) ☐Yes Permit #: _____ ☒No

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

4/29/10

Steve M Lee, *Registered Project Engineer* Date

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

4/29/10

Neil Bretz, *Project Manager* Date

(AKMAL MOSTAFA) 4/30/10

for **Bill Moses,** *Designated Maintenance Representative* Date

4/29/2010

Elbert Cox, *Designated Landscape Architect Representative* Date

4-30-10

Marissa Nishikawa, *District/Regional SW Coordinator or Designee* Date

STORM WATER DATA INFORMATION

1. Project Description

- The project proposes to improve traffic operations on Route 180 from Route 41 (PM R58.4) to Route 168 (PM R60.4) and on Routes 41, 168 and 180 branch connectors in the City of Fresno. This project will widen the First Street Undercrossing (Bridge No. 42-323R) and construct two new bridges and ramps on the north and south sides of Route 180 to separate the traffic movements between Routes 41, 168 and 180 (Vicinity Map).
- The total disturbed soil area (DSA) for the project is approximately 77.25 acres. The total DSA was calculated by summing the areas of disturbed soil within the construction limits.
- The existing impervious surface area is 13.23 acres and the impervious surface area after the project is completed will be 37.66 acres. There will be a new net impervious surface area of 24.43 acres.
- The project lies within the City of Fresno urban MS4 area, with most drainage within the control of the Fresno Metropolitan Flood Control District (FMFCD).

2. Define Site Data and Storm Water Quality Design Issues (refer to Checklists SW-1, SW-2, and SW-3)

- The project lies within the South Valley Floor/Fresno HSA (551.30). There are no receiving waters within the general vicinity of the project limits.
- There are no 303(d) receiving water bodies within the project limits.
- Although there are no direct discharges to a receiving water body, most storm water runoff is collected within an existing drainage system that discharges to FMFCD infiltration systems. The remaining storm water runoff flows to existing retention basins within the State's right of way that provide some infiltration and also have the ability to overflow to a nearby FMFCD basin just south of the freeway. The FMFCD basins have the ability to discharge overflow to nearby receiving waters, such as the San Joaquin River, which is a 303(d) listed water body, for exotic species.
- A 401 certification is not required for this project.
- There are no Drinking Water Reservoirs and/or Recharge Facilities within project limits.
- The area has a mild climate with cool winters and relatively hot summers. Annual rainfall for the area is approximately 7.8 inches. The topography is generally flat.
- Soils in the area are primarily found to consist of Greenfield sandy loam and Hanford sandy loam. The hydrologic soils group (HSG) is A.
- This project will not involve reuse of soil containing Aerially Deposited Lead (ADL).
- No additional Right-of-way costs are required for BMP's for this project.

3. Regional Water Quality Control Board Agreements

- Currently there are no agreements with the Regional Water Quality Control Board (RWQCB), and none are anticipated.
- The General Construction Activities NPDES Permit (GCP) was renewed on September 2, 2009, by the State Water Resources Control Board, and becomes effective on July 1, 2010. Since this project disturbs more than one acre of soil and this project is scheduled to break ground after the GCP becomes effective, there may be a need to obtain coverage under the new GCP. Negotiations are still on-going with regard to the various affects the GCP will have on Caltrans. Caltrans' Municipal Separate Stormwater Sewer System (MS4) NPDES Permit Federal Order No. CA000003 (State Order No. 99-06-DWQ) (Caltrans MS4 Permit) remains in force for this phase but new Notice of Construction instructions may be required when this project proceeds to construction.

4. Describe Proposed Design Pollution Prevention BMPs to be used on the Project.

Downstream Effects Related to Potentially Increased Flow, Checklist DPP-1, Parts 1 and 2

- Increase in velocity and volume of downstream flow is anticipated due to the increase of impervious surface area.
- The existing drainage system consist of many drainage inlets, cross pipes, two storm water trunk lines located in the freeway median, a pump station, numerous existing small Caltran's retention basins, and a Fresno Metropolitan Flood Control District (FMFCD) basin located on the south side of the freeway.
- After construction, several drainage inlets will be needed for the new ramp connectors. The cross pipes will either be extended or shortened to support the new inlets. The storm water trunk lines and the drainage inlets located on the median will remain intact. The lateral pipes that were constructed to accommodate the ultimate freeway will be extended or removed and replaced.
- According to the Hydraulics recommendation, a cooperative agreement exists between Caltrans and the FMFCD to allow Caltrans to drain all areas within the right of way between the project limits into the FMFCD basin. Hydraulics has stated that the FMFCD basin was designed with the capacity to handle the proposed increased flows from this project. Caltrans will need to proactively notify the FMFCD as early in the project as possible of our plans to increase discharges of runoff to the FMFCD basin system.

Slope/Surface Protection Systems, Checklist DPP-1, Parts 1 and 3

- Within the project limits, SR 180 is mostly depressed with slide slopes of 1:2 (V: H) and flatter. This section of SR 180 is classified as a "Landscaped Freeway". The original highway construction anticipated the need for this project and allowed for some grading to facilitate the construction of this project.
- In order to construct the braided ramps, it is anticipated that the existing side slopes will be modified and the existing landscaped areas may be disturbed.
- Erosion control will be provided for all areas (proposed fill and cut slopes and medians) disturbed by the proposed project.
- Hard surfaces for this project include the extended gore areas.

Concentrated Flow Conveyance Systems, Checklist DPP-1, Parts 1 and 4

- According to the Hydraulics Recommendation, construction of the braided ramps connectors will decrease the capacity of two existing Caltrans basins (Basin No.5 and Basin No. 6). To mitigate for this loss, it is recommended to construct two side ditches and maintain as much storage as possible in the impacted basins. One ditch should be constructed between Basin No. 5 and Basin No. 6 on the northbound side and the other ditch constructed near the FMFCD basin on the eastbound side. The dikes will also convey water to the inlets.

Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5

- This project may require the removal of existing trees, shrubs, and other vegetation with the Caltrans right of way. Any vegetation removal as a result of the proposed construction activities will need to be replaced. Replacement planting will be part of the required visual mitigation. In addition to the replacement planting, this area warrants additional highway planting.
- There are no ESA areas within the project limits.

5. Describe Proposed Permanent Treatment BMPs to be used on the Project

- Per the Evaluation Documentation Form, this project is required to consider Treatment BMPs. However, permanent treatment is already provided by use of an existing infiltration basin owned and operated by the FMFCD. Per a cooperative agreement, the FMFCD has agreed to treat storm water runoff from Caltrans facilities through the FMFCD system.

- There are numerous existing retention basins within the right of way that provide storage and some infiltration capabilities. However, the majority of the storm water runoff ultimately is conveyed to the FMFCD basin. No new basins are proposed.

6. Describe Proposed Temporary Construction Site BMPs to be used on Project

- A Storm Water Pollution Prevention Plan (SWPPP) is required for this project. A SWPPP will be developed by the contractor and submitted to the Caltrans Resident Engineer for approval prior to the start of construction. The SWPPP will incorporate applicable temporary construction site best management practices (BMPs) within the project limits.
- The following Construction Site Water Pollution Control BMPs are identified:

  Prepare SWPPP

  Construction Site Management

  Additional Water Pollution Control
- The following temporary construction site BMP's will be incorporated into the project:

  Water Pollution Control Maintenance Sharing

  Temporary Concrete Washout Facility

  Temporary Fiber Roll

  Temporary Drainage Inlet Protection

  Temporary Hydraulic Mulch (Polymer Stabilized Fiber Matrix)

  Street Sweeping

  Temporary Construction Entrance
- Dewatering will not be required during the construction of this project.
- Temporary construction site BMP's for this project will be discussed with the Construction Storm Water Coordinator during the PS&E phase of the project to assure compliance with current strategies and cost estimates.
- The percent of total project cost method was used to estimate the cost for the storm water BMP's for the PID document, as shown in the attached Storm Water BMP Cost Summary.

7. Maintenance BMPs (Drain Inlet Stenciling)

Drain Inlet stenciling is not required within the project limits since there is no public access to storm drain inlets within the project limits.

REQUIRED ATTACHMENTS

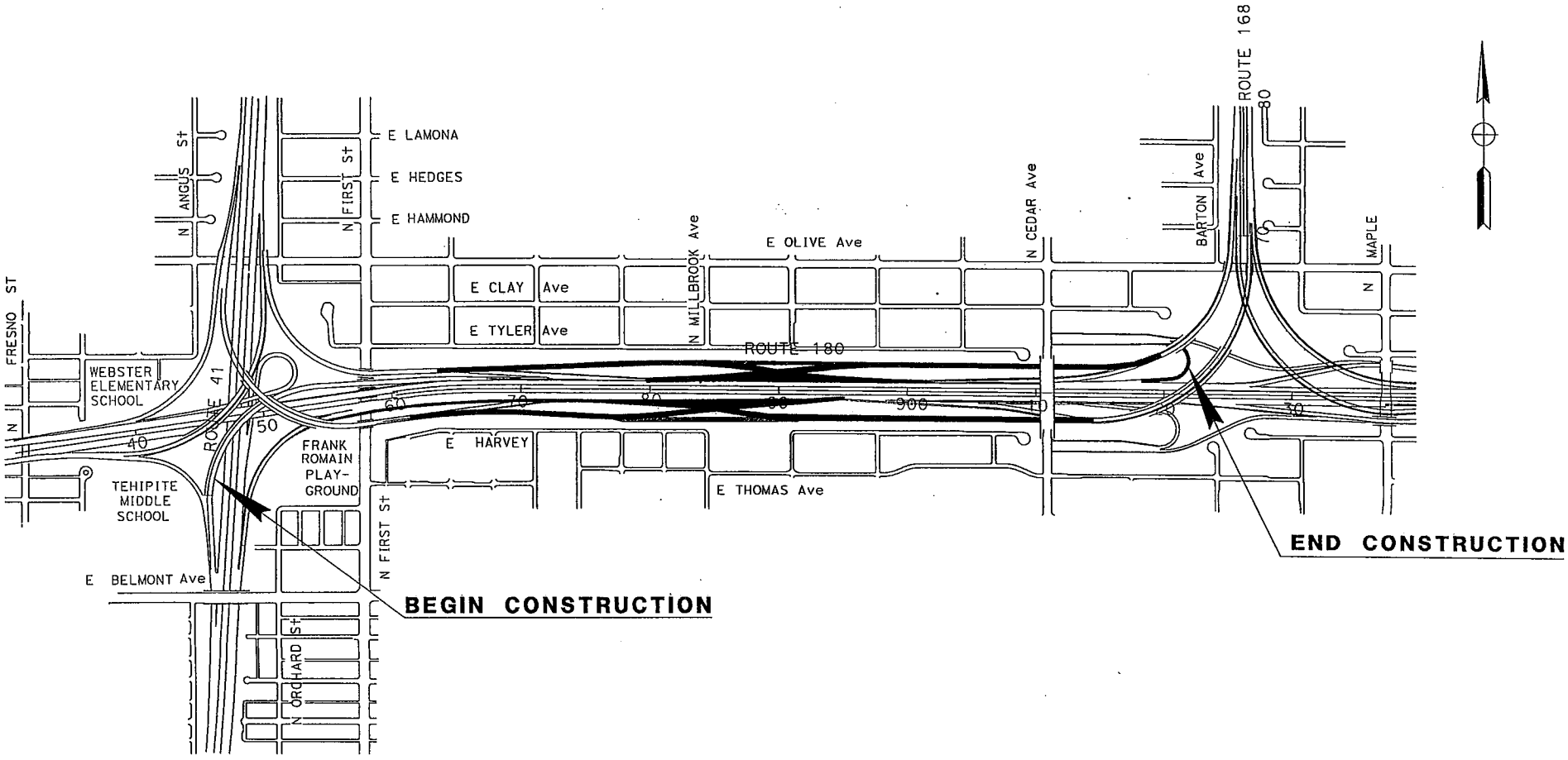
⇒ **Vicinity Map**
⇒ **Evaluation Documentation Form (EDF)**
⇒ **Construction Site BMP Consideration Form**

SUPPLEMENTAL ATTACHMENTS

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

⇒ Storm Water BMP Cost Summary
⇒ BMP cost information from: Preliminary Project Cost Estimate (PPCE) during the PA/ED project phase
⇒ Checklist SW-1, Site Data Sources

- ⇒ Checklist SW-2, Storm Water Quality Issues Summary
- ⇒ Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- ⇒ Checklists DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)


N FRESNO ST
N ANGUS St
N FIRST St
E LAMONA
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E HAMMOND
N MILLBROOK Ave
E OLIVE Ave
N CEDAR Ave
BARTON Ave
ROUTE 168
N MAPLE
E CLAY Ave
E TYLER Ave
ROUTE 180
WEBSTER ELEMENTARY SCHOOL
ROUTE 41
40
50
60
70
80
90
900
10
30
FRANK ROMAIN PLAY-GROUND
E HARVEY
E THOMAS Ave
TEHIPITE MIDDLE SCHOOL
N FIRST St
E BELMONT Ave
N ORCHARD St
BEGIN CONSTRUCTION
END CONSTRUCTION

DATE: 04/21/10

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPS EA: 0C1100

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	☒		Go to 2
2.	Is this an emergency project?	☐	☒	If **Yes**, go to 11. If **No**, continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	☐	☒	If **Yes**, contact the District/Regional NPDES Coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 10 or 4. _____ *(Dist./Reg. SW Coordinator initials)* If **No**, continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	☒	☐	If **Yes**. (*City of Fresno*) go to 5. If **No**, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	☒	☐	If **Yes**, continue to 6. If **No**, go to 11.
6.	Is this a new facility or major reconstruction?	☒	☐	If **Yes**, continue to 8. If **No**, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?	☒	☐	If **Yes**, continue to 8. If **No**, go to 11.
8.	Does the project result in a net increase of one acre or more of new impervious surface?	☒	☐	If **Yes**, continue to 10. If **No**, go to 9. *(24.43 acres)*
9.	Is the project part of a Common Plan of Development?	☐	☐	If **Yes**, continue to 10. If **No**, go to 11.
10.	Project is required to consider approved Treatment BMPs.	☒	See Sections 2.4 and either Section 5.5 or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E. **Since permanent treatment BMPs are already provided by the FMFCD using an existing infiltration basin and treatment provided per an existing cooperative agreement, completion of the T-1 forms is not necessary.**	
11.	Project is not required to consider Treatment BMPs. _____*(Dist./Reg. SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*	☐	Document for Project Files by completing this form, and attaching it to the SWDR.	

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs

Construction Site BMP Consideration Form

DATE: 04/21/10

Project Evaluation Process for the Consideration of Construction Site BMPs

EA: 0C1100

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	☒	☐	If **Yes**, Construction Site BMPs for Soil Stabilization (SS) will be required. Complete CS-1, Part 1. Continue to 2. If **No**, Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the right of way, etc?	☒	☐	If **Yes**, Construction Site BMPs for Sediment Control (SC) will be required. Complete CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	☒	☐	If **Yes**, Construction Site BMPs for Tracking Control (TC) will be required. Complete CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	☒	☐	If **Yes**, Construction Site BMPs for Wind Erosion Control (WE) will be required. Complete CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?	☐	☒	If **Yes**, Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	☒	☐	If **Yes**, Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	☒	☐	If **Yes**, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with precipitation; storm water run-on, or stormwater runoff; be dispersed by wind; be dumped and/or spilled into storm drain systems?	☒	☐	If **Yes**, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 9.
9.	End of checklist.	☒	Document for Project Files by completing this form, and attaching it to the SWDR.	

PE to initialize after concurrence with Construction (PS&E only) *Date*

Checklist SW-1, Site Data Sources

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project-planning phase. Collect any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 5.5 of this document. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Topographic	
• Topozone.com	
•	
•	
Hydraulic	
• Hydraulic Recommendation	April 15, 2009
•	
•	
Soils	
• Preliminary Landscape Recommendation	March 16, 2009
• http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvery.aspx	
•	
Climatic	
• Office of Water Programs, CSU Sacramento	
•	
•	
Water Quality	
• Office of Water Programs, CSU Sacramento	
•	
•	
Other Data Categories	
• Storm Water Project Planning Design Guide	March 2007
• Construction Site BMP Manual	March 2003
• SWPPP/WPCP Preparation Manual	March 2007

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Complete responses to applicable questions, consulting other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Storm Water Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR.

1. Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation). **There are no receiving waters within the project limits. All storm water runoff is stored in existing retention basins or ditches and ultimately discharges to an FMFCD infiltration basin.**	☒Complete	☐NA
2. For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern. **No 303(d) listed receiving waters within project limits.**	☒Complete	☐NA
3. Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits. Consider appropriate spill contamination and spill prevention control measures for these new areas. **There are not any High Risk areas within project limits.**	☒Complete	☐NA
4. Determine the RWQCB special requirements, including TMDLs, effluent limits, etc. **There are not any RWQCB special requirements.**	☒Complete	☐NA
5. Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies. **None**	☒Complete	☐NA
6. Determine if a 401 certification will be required. **A 401 certification is not required**	☒Complete	☐NA
7. List rainy season dates. **October 15 to April 15**	☒Complete	☐NA
8. Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves. **The general climate is cool winters and relatively hot summers.**	☒Complete	☐NA
9. If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater. **Permanent treatment BMP's are required for this project. However, treatment is provided by the FMFCD through a cooperative agreement.**	☐Complete	☒NA
10. Determine contaminated or hazardous soils within the project area. **There are no known hazardous waste and spills associated with the project site.**	☒Complete	☐NA
11. Determine the total disturbed soil area of the project. **Total DSA is 77.25 acres**	☒Complete	☐NA
12. Describe the topography of the project site. **Relatively Flat**	☒Complete	☐NA
13. List any areas outside of the Caltrans right-of-way that will be included in the project (e.g. contractor's staging yard, work from barges, easements for staging, etc.). **None**	☒Complete	☐NA
14. Determine if additional right-of-way acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much? **None**	☒Complete	☐NA

15. Determine if a right-of-way certification is required. **Yes** ☒Complete ☐NA
16. Determine the estimated unit costs for right-of-way should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches. **None** ☒Complete ☐NA
17. Determine if project area has any slope stabilization concerns. **There are no stabilization concerns** ☒Complete ☐NA
18. Describe the local land use within the project area and adjacent areas. **Project runs through incorporated city residential/ business.** ☒Complete ☐NA
19. Evaluate the presence of dry weather flow. **None** ☒Complete ☐NA

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

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

The PE must confer with other functional units, such as Landscape Architecture, Hydraulics, Environmental, Materials, Construction and Maintenance, as needed to assess these issues. Summarize pertinent responses in Section 2 of the SWDR.

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

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

Design Pollution Prevention BMPs
Checklist DPP-1, Part 1

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

Consideration of Design Pollution Prevention BMPs

1. Consideration of Downstream Effects Related to Potentially Increased Flow [to streams or channels]?

(a) Will project increase velocity or volume of downstream flow?	☒Yes	☐No	☐NA
(b) Will the project discharge to unlined channels?	☐Yes	☒No	☐NA
(c) Will project increase potential sediment load of downstream flow?	☒Yes	☐No	☐NA
(d) Will project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	☐Yes	☒No	☐NA

If Yes was answered to any of the above questions, consider ***Downstream Effects Related to Potentially Increased Flow***, complete the DPP-1, Part 2 checklist.

2. Slope/Surface Protection Systems

(a) Will project create new slopes or modify existing slopes?	☒Yes	☐No	☐NA

If Yes was answered to the above question, consider ***Slope/Surface Protection Systems***, complete the **DPP-1, Part 3** checklist.

3. Concentrated Flow Conveyance Systems

(a) Will the project create or modify ditches, dikes, berms, or swales?	☒Yes	☐No	☐NA
(b) Will project create new slopes or modify existing slopes?	☒Yes	☐No	☐NA
(c) Will it be necessary to direct or intercept surface runoff?	☒Yes	☐No	☐NA
(d) Will cross drains be modified?	☒Yes	☐No	☐NA

If Yes was answered to any of the above questions, consider ***Concentrated Flow Conveyance Systems***; complete the **DPP-1, Part 4 checklist.**

4. Preservation of Existing Vegetation

a) It is the goal of the Storm Water Program to maximize the protection of desirable existing vegetation to provide erosion and sediment control benefits on all projects. ☒Complete

Consider ***Preservation of Existing Vegetation***, complete the DPP-1, Part 5 checklist.

Design Pollution Prevention BMPs
Checklist DPP-1, Part 2

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

Downstream Effects Related to Potentially Increased Flow

1. Review total paved area and reduce to the maximum extent practicable. ☒Complete
2. Review channel lining materials and design for stream bank erosion control. ☒Complete
   (a) See Chapters 860 and 870 of the HDM. ☒Complete
   (b) Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity. ☒Complete
3. Include, where appropriate, energy dissipation devices at culvert outlets. ☒Complete
4. Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour. ☒Complete
5. Include, if appropriate, peak flow attenuation basins to reduce peak discharges. ☒Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 3

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
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Slope / Surface Protection Systems

1. What are the proposed areas of cut and fill? ☒Complete
2. Were benches or terraces provided on high cut and fill slopes to reduce concentration of flows? ☐Yes ☒No
3. Were slopes rounded and/or shaped to reduce concentrated flow? ☒Yes ☐No
4. Were concentrated flows collected in stabilized drains or channels? ☒Yes ☐No
5. Are slopes > 1:4 vertical: horizontal (V: H))? ☒Yes ☐No

   If Yes, District Landscape Architecture must prepare or approve an erosion control plan.
6. Are slopes > 1:2 (V: H)? ☐Yes ☒No

   If Yes, Geotechnical Services must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Storm Water Coordinator for slopes steeper than 1:2 (V:H).
7. Estimate the change to the impervious areas that will result from this project. **24.43 acres** ☒Complete

VEGETATED SURFACES

1. Identify existing vegetation. **Project may require removal of existing trees, shrubs, and ground cover.** ☒Complete
2. Evaluate site to determine soil types, appropriate vegetation and planting strategies. **By PS&E Phase.** ☐Complete
3. How long will it take for permanent vegetation to establish? **Replacement planting will be a part of visual mitigation. This area also warrants additional highway planting. The plant establishment period is 750 working days. The plant establishment will be under a separate EA.** ☒Complete
4. Minimize overland and concentrated flow depths and velocities. ☒Complete

HARD SURFACES

1. Are hard surfaces required? **Safety for maintenance workers** ☒Yes ☐No

   If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations. ☒Complete

Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems. ☒Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 4

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Chapters 813, 836, and 860 of the HDM. ☒Complete
2. Evaluate risks due to erosion, overtopping, flow backups or washout. ☒Complete
3. Consider outlet protection where localized scour is anticipated. ☒Complete
4. Examine the site for run-on from off-site sources. ☒Complete
5. Consider channel lining when velocities exceed scour velocity for soil. ☒Complete

Overside Drains

1. Consider downdrains, as per Index 834.4 of the HDM. ☒Complete
2. Consider paved spillways for side slopes flatter than 1:4 V:H. ☒Complete

Flared Culvert End Sections

1. Consider flared end sections on culvert inlets and outlets as per Chapter 827 of the HDM. ☒Complete

Outlet Protection/Velocity Dissipation Devices

1. Consider outlet protection/velocity dissipation devices at outlets, including cross drains, as per Chapters 827 and 870 of the HDM. ☒Complete

Review appropriate SSPs for Concentrated Flow Conveyance Systems. ☒Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 5

Prepared by: Shakila Hanif Date: 04/21/10 District-Co-Route: 06-Fre-180
PM (KP): R58.4/R60.4 EA: 0C1100
RWQCB: Central Valley Region, Fresno Office (5F)

Preservation of Existing Vegetation

1. Review Preservation of Property, Standard Specifications 16.1.01 and 16-1.02 (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation. ☒Complete
2. Has all vegetation to be retained been coordinated with Environmental, and identified and defined in the contract plans? ☒Yes ☐No
3. Have steps been taken to minimize disturbed areas, such as locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling? ☒Complete
4. Have impacts to preserved vegetation been considered while work is occurring in disturbed areas? ☒Yes ☐No
5. Are all areas to be preserved delineated on the plans? **By PS&E phase** ☐Yes ☐No

Storm Water BMP's Cost Estimates

Construction Storm Water BMP's Estimate:

Prepare Storm Water Pollution Prevention Plan	$10,000
Street Sweeping	$15,000
Construction Site Management	$50,000
Temporary Construction Entrance	$15,000
Temporary Concrete Washout (Portable)	$20,000
Temporary Fiber Roll	$10,000
Temporary Hydraulic Mulch	$10,000
Water Pollution Control Maintenance Sharing	$15,000
Temporary Drainage Inlet Protection	$10,000
Additional Water Pollution Control	$20,000
Total:	**$175,000**

EA: **1100 Fre 180 (Braided Ramps)**

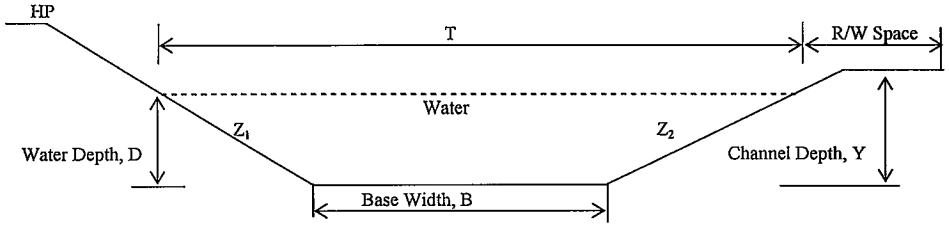
Biofiltration swales

WATER QUALITY FLOW: RATIONAL METHOD
COMPUTATION SHEET
(ENGLISH- UNITS)

Date: **April 21, 2010** Route No. **Fre 180**

Computed By: SH Checked by:

No.	Location	Drainage Area, A						Runoff Coefficient, C			WQF Intensity Rainfall Intensity, i_{25}yr and Water Quality Depth, d			WQF and Flow Rate, Q_{25} Rational method Q=CiA		Water Quality Volume, WQV	
		Dimensions		Sub-Areas		Total Area											
	Location, STA	Length (ft)	Width (ft)	Non Paved Area (square feet)	Paved Area (square feet)	(square feet)	(acres)	C - Non-Paved	C-Paved	C- Weighted	WQF intensity (from basin Sizer) (in/hr)	i_{25}yr (in/hr)	WQ Depth (from basin Sizer) d, (in)	WQF ft^3/s	Q_{25} ft^3/s	Cubic feet ft^3	Acre-feet
1	2	3						4			5			6		7	
1	North Side	Varies	Varies	0.00	19012.24	19012.24	0.4365	0.60	0.95	0.95	0.16	4.15	0.54	0.07	1.72	813	0.019
2	North Side	Varies	Varies	0.00	59605.15	59605.15	1.3683	0.60	0.95	0.95	0.16	4.15	0.54	0.21	5.39	2548	0.058
3	South Side	Varies	Varies	0.00	32409.11	32409.11	0.7440	0.60	0.95	0.95	0.16	4.15	0.54	0.11	2.93	1385	0.032
4	South Side	Varies	Varies	0.00	20406.88	20406.88	0.4685	0.60	0.95	0.95	0.16	4.15	0.54	0.07	1.85	872	0.020



Biofiltration Swales Criteria

(HRT*60)/(Depth*Velocity) > or = C, Where:
HRT = Hydraulic Residence Time in minutes
depth = depth of WQF, D < or equal to 0.5 ft
velocity= velocity of WQF, v < 1 ft/s
C= Constant, C > or = 1300 (sec^2/ft^2)
Manning's Coefficient 0.20 < n < 0.24

Open Channel Criteria

Swale should also Convey the Q_{25} or the design storm flow
Manning's Coefficient, n = 0.05
Interminent Velocity, v < 4 ft/s
Prefer Channel base, 4 < b < 12 ft

Z = Ditch Side Slope, prefer Z = 4 or flatter

Open Channel Flow, Manning's Equation = 1.49/n(A*R^(2/3))*S^0.5

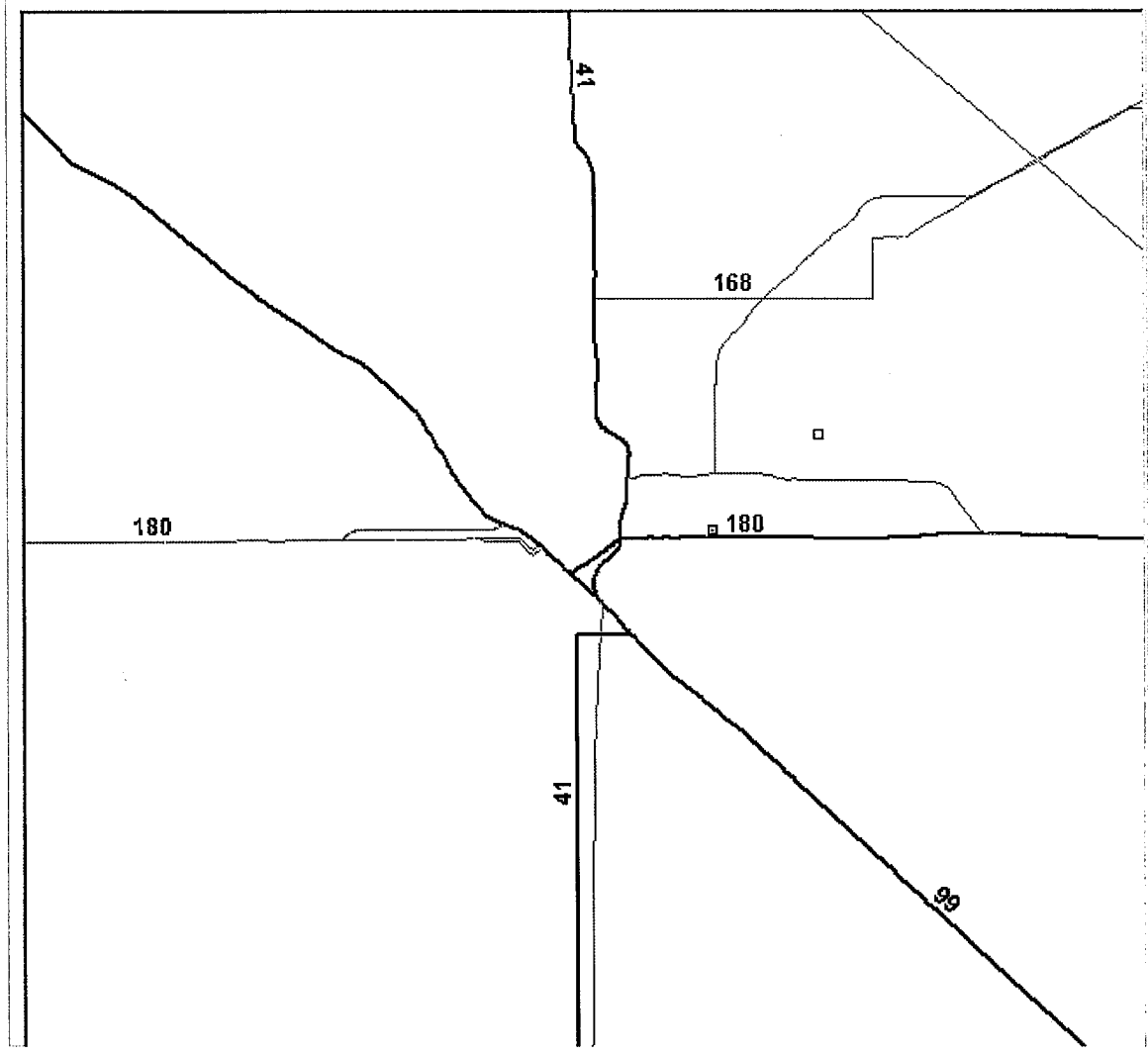
No.	Location	Channel Geometry				Intermediate Channel Calculatuions				Channel Slope and roughnes		Channel Flow Capacity and Velocity		Minimum Biofiltration Swale Legth and Check (HRT*60)/(Depth*Velocity)>1300			
	Location (STA)	Depth of Water, D (ft)	Base, B (ft)	Z_1	Z_2	T (ft)	Cross sectional Area (ft^2)	Wetter Perimeter, P (ft)	Hydraulic Radius, R=A/P (ft)	S (ft/ft)	Manning's n	Flow Rate, Q (ft^3/s)	Velocity, v (ft/s)	Minimum HRT (minutes)	Minimum Length (ft)	Check (HRT*60)/(Depth*Velocity) (sec^2/ft^2)	Swale Length (ft)
1	2			3			4			5		6				7	
1	North Side	0.11	4	4	4	4.88	0.49	4.91	0.1	0.02	0.2	0.11	0.23	5	68	12053	100
1	North Side	0.25	4	4	4	6	1.25	6.06	0.2	0.02	0.05	1.84	1.47	Use 100 ft biofiltration swale			
2	North Side	0.17	4	4	4	5.36	0.80	5.40	0.1	0.02	0.2	0.23	0.29	5	88	6006	100
2	North Side	0.46	4	4	4	7.68	2.69	7.79	0.3	0.02	0.05	5.57	2.07	Use 100 ft biofiltration swale			
3	South Side	0.12	4	4	4	4.96	0.54	4.99	0.1	0.02	0.2	0.13	0.24	5	72	10479	100
3	South Side	0.33	4	4	4	6.64	1.76	6.72	0.3	0.02	0.05	3.02	1.72	Use 100 ft biofiltration swale			
4	South Side	0.11	4	4	4	4.88	0.49	4.91	0.1	0.02	0.2	0.11	0.23	5	68	12053	100
4	South Side	0.26	4	4	4	6.08	1.31	6.14	0.2	0.02	0.05	1.97	1.50	Use 100 ft biofiltration swale			

EA: **06:0C1100 Fre 180 (Braided Ramps)**

Water Quality Depth

File Layers Units Help

Lat 36.895 Lon -119.926



Caltrans Methods | CASQA Methods | Other

Rainfall Stations

Dist (km)	Elev (m)	Years	Station
☑ 4.27	101	58	FRESNO YOSEMITE INTL
☐ 27.61	124	58	FRIANT GOVERNMENT CAMP
☐ 33.32	177	17	PIEDRA
☐ 34.58	82	58	MADERA
☐ 38.07	185	41	PINE FLAT DAM

Water Quality Volumes

Maximized Volume Method

Drawdown Time (hours) 48

Runoff Coefficient 0.95

Unit Basin Storage Volume (inches) 0.54

Predetermined Numbers

Caltrans Water Quality Flows

Region 5, South West counties: below 2000 ft = 0.16 in/hr; above 2000 ft = 0.20 in/hr.

See Basin Sizer Help for discussion of output.

Storm Water BMP's Cost Estimates

Construction Storm Water BMP's Estimate:

Prepare Storm Water Pollution Prevention Plan		$10,000
Street Sweeping		$15,000
Construction Site Management		$450,000
Temporary Construction Entrance		$15,000
Temporary Concrete Washout (Portable)		$20,000
Temporary Fiber Roll		$10,000
Temporary Hydraulic Mulch		$10,000
Water Pollution Control Maintenance Sharing		$15,000
Temporary Drainage Inlet Protection		$10,000
Additional Water Pollution Control		$20,000
	Total:	**$625,000**

Total Project Cost: **$50,000,000**