THIS REPORT IS PROVIDED AS AN EXAMPLE ONLY. ALL PROJECT INFORMATION, NAMES, AND DATES ARE FICTITIOUS. THIS IS NOT INTENDED TO BE A FINAL REPRESENTATION OF THE WORK DONE OR RECOMMENDATIONS MADE BY CALTRANS FOR AN ACTUAL PROJECT.

Long Form - Storm Water Data Report

Dist-County-Route: 07-LA-05
Post Mile Limits: 36.0 / 39.4
Project Type: HOV Lane Construction
Project ID (or EA): 07-XXXXXX
Program Identification: HB5
Phase: ☐ PID ☐ PA/ED ☒ PS&E

Regional Water Quality Control Board(s): Los Angeles, Region 4

Is the Project required to consider 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 30 days prior to the projects RTL date. List RTL Date:

Total Disturbed Soil Area: 82.7 ac Risk Level: 2
Estimated: Construction Start Date: 05-01-2012 Construction Completion Date: 01-01-2015
Notification of Construction (NOC) Date to be submitted: 30-days prior to construction

Erosivity Waiver	Yes ☐	Date:	No ☒
Notification of ADL reuse (if Yes, provide date)	Yes ☒	Date: 04-01-2012	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 date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Betsy Ross — 10-8-10
Betsy Ross, Registered Project Engineer — Date

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

REGISTERED PROFESSIONAL ENGINEER
BETSY ROSS
No. CXXXXX
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA

[Stamp Required for PS&E only)

George Washington — 10-8-10
George Washington, Project Manager — *Date*

Paul Revere — 10.8.10
Paul Revere, Designated Maintenance Representative — *Date*

Horatio Gates — 10.8.10
Horatio Gates, Designated Landscape Architect Representative — *Date*

Friedrich Wilhelm von Steuben — 10-8-10
Friedrich Wilhelm von Steuben, District/Regional Design SW Coordinator or Designee — *Date*

STORM WATER DATA INFORMATION

1. Project Description

This project is a high occupancy vehicle (HOV) lane and roadway widening project that proposes to construct one HOV lane in each direction in the median along Interstate Route 5 (I-5) from the I-5 and State Route 170 (SR-170) interchange to the I-5 and SR-118 interchange (I-5 PM 36.0/39.4). The project consists mainly of roadway widening along northbound (NB) I-5. The project also includes the removal and reconstruction of the I-5/SR-170 interchange to provide both a mixed-flow connector ramp and a direct HOV connector to and from SR-170 and I-5. As part of the roadway widening and connector reconstruction, a total of 11 on- and off-ramps will be re-aligned or widened, 6 bridge structures will be widened, and 16 retaining walls and 11 sound walls will be constructed and/or modified. Three construction stages are expected to complete the project.

The total disturbed soil area for this project is 82.7 acres. The total disturbed soil area was calculated using the project survey and AutoCAD and includes areas needed for the project construction activities. Within the project limits, the existing impervious surface is 100.3 acres, which will be increased to 124.5 acres at the completion of construction (i.e., an addition of 24.2 acres). The proposed impervious surface was calculated by combining all proposed pavement areas within the project limits.

The project limits are shown on the attached vicinity map. The project is located within the County of Los Angeles urban MS4 area.

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

The project is located in the Los Angeles River watershed and the Bull Canyon hydraulic sub-area (HSA 412.21). The project receiving waterbody is Tujunga Wash from Hansen Dam to the Los Angeles River. The Tujunga Wash crosses within the project limits just south of the I-5/SR-170 interchange at PM 36.34. The Tujunga Wash is a 303(d) listed waterbody and is listed for coliform bacteria and trash. The Tujunga Wash also has TMDLs for ammonia and copper.

According to an Initial Study/Environmental Assessment (IS/EA) prepared in December 2004 and an Environmental Reevaluation Addendum dated January 23, 2009, a Regional Water Quality Control Board (RWQCB) 401 certification and an Army Corps of Engineers 404 permit are required for this project. Applications of the required permits are in progress.

There is one high risk area identified within the project limits according to the Caltrans Stormwater Management Program District 7 Work Plan 2010/2011 dated April 1, 2010: Pacoima Spreading Grounds (PM 39.28/40.46 on I-5). The Pacoima Spreading Grounds are located on both sides of old Pacoima Wash Channel from Arleta Avenue southwest to Woodman Avenue.

To accommodate this roadway widening project, properties and parcels will be affected and have been identified as residential, commercial, and industrial uses. These properties will need to be acquired for this project as fee takes, permanent footing

easement, drainage easement, or temporary construction easement. A right-of-way certificate will be required for this project.

The project is located in the San Fernando Valley Basin, and the Los Angeles RWQCB (Region 4) has jurisdiction over these project limits. The project limits are within the Los Angeles River watershed which has three established TMDLs: Los Angeles River Trash TMDL, Los Angeles River Nitrogen Compounds and Related Effects TMDL, and Los Angeles River and Tributaries Metals TMDL.

Los Angeles River Trash TMDL

The Los Angeles River Trash TMDL became effective August 28, 2002. Caltrans is proceeding with Trash TMDL Implementation Projects, which are to retrofit GSRDs at the existing drainage outfalls in the right-of-way.

Los Angeles River Nitrogen Compounds and Related Effects TMDL

The Los Angeles River Nitrogen Compounds and Related Effects TMDL became effective March 23, 2004. The TMDL requires the Storm Water NPDES Permittees to submit a Monitoring Work Plan by March 23, 2005 to estimate nitrogen loadings associated with runoff from the storm drain systems. County of Los Angeles has submitted the Monitoring Work Plan as required on behalf of Caltrans and other Storm Water NPDES Co-Permittees in the watershed. Targeted pollutants are total ammonia as nitrogen (NH3-N), Nitrate-nitrogen (NO3-N), nitrite-nitrogen (NO2-N), and nitrate-nitrogen plus nitrite-nitrogen (NO3-N + NO2-N). The Department's monitoring data depicts Caltrans discharges to be below the TMDL limits, thus no additional measures are needed to be considered for meeting the conditions of the Nitrogen TMDL.

Los Angeles River and Tributaries Metals TMDL

The Los Angeles River and Tributaries Metals TMDL became effective on January 11, 2006. Caltrans will work with 5 groups of Responsible Agencies toward compliance of the TMDL. Targeted pollutants are total Cu, Pb, Zn, Cd, and Se.

The climate is mild with average temperatures ranging from 49 to 78 degrees Fahrenheit. The average annual rainfall in the area is 18 inches and the elevation is 600 feet above sea level. The rainy season for the project is October 1 to May 1, and the water quality rainfall intensity for Region 4 is 2 inches per hour. Topography within the project limits is relatively level. The existing soil type within the project limits is Soil Hydrologic Group B and the depth to ground water is 35 feet per the geotechnical report. The infiltration rate for the site has been determined by the Geotechnical Engineer to be 0.5 in/hr.

The project risk level has been determined in accordance with the requirements of the Construction General Permit. The risk level is based on project sediment risk and receiving water risk. For this project an overall risk level of 2 has been determined. Initially, the GIS Map Method was used to calculate the risk per the Project Risk Level Determination Guidance July 2010. The Individual Method was then used in an attempt to lower the risk level as directed by the guidance. Since the soils in the project area have not been mapped by the United States Department of Agriculture the Web Soil Survey tool is not available for this project. The project Geotechnical Investigation Report provided the needed soil information. While the project sediment risk was reduced with the Individual Method, the overall risk level remained a Level 2. See attached calculations.

Aerially deposited lead (ADL) is anticipated during the construction of the project. An Aerially Deposited Lead Investigation Report dated June 29, 2005 indicates that ADL exists at depths ranging from 6 inches to 5 feet below ground surface and within 30 feet from the edge of pavement. Handling of ADL material will also be required beyond the 30 feet along the retaining wall and sound wall layout lines. The June 2005 report recommends the reuse of certain ADL contaminated soils within Caltrans right-of-way in conformance with the conditions set forth by the Department of Toxic Substances Control Variance. Potential pollutant sources include the cut and fill slopes.

All proposed Treatment BMPs are located within the existing and/or proposed Caltrans right-of-way. No right-of-way acquisition is required for Treatment BMP implementation. There are no existing Treatment BMPs within the project limits.

The construction of the project will be completed in phases to account for potential conflicts including, but not limited to, traffic handling and consideration of rainy seasons. Erosion control and BMPs will be incorporated as part of this project to reduce storm water impacts.

3. Regional Water Quality Control Board Agreements

A meeting was held by District NPDES Stormwater Coordinator, Nathanael Greene, on 9/1/10 with the Los Angeles RWQCB. There are no negotiated understandings or agreements between Caltrans and the RWQCB for this project.

The Notification of Construction (NOC) will be submitted to the Los Angeles RWQCB 30-days prior to the start of construction.

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

Design Pollution Prevention BMPs will be incorporated into the project, where appropriate, in order to minimize impacts to water quality by preventing downstream erosion and stabilizing disturbed soil areas. These BMPs can also provide water quality benefits including settling of solids and other pollutants and increasing detention time by incorporating and preserving vegetated surfaces.

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

The project is anticipated to increase storm water volume and flow velocity to Tujunga Wash due to the proposed increase in impervious surfaces to accommodate the widening. This increase has been accounted for in the project design and mitigated through the use of BMPs. Landscape areas currently exist within the project limits with widths as wide as 54 feet along NB I-5. Widening of the freeway will require most of the existing landscape along the NB I-5 to be permanently removed. A maximum slope of 2:1 (H:V) has been maintained throughout the project. Per the project Drainage Report, the design matches the pre-project runoff curve number and time of concentration and controls erosive velocities in accordance with the HDM. Because the design has accounted for the increased velocity and volume of flow, the project should have a negligible impact on downstream flow.

The following table shows the proposed treatment BMP by subwatershed area and the amount of total water quality volume (WQV) it will infiltrate:

BMP and Area	% of total WQV Infiltrated
Swale & Inf Basin #36	94%
Strip & AVSF #37	96%
Swale #38	100%
Inf Basin #41	99%
AVSF #42	100%
Swale #44	13%
AVSF #47, #49, #102	100%

115% of the net new impervious WQV (net WQV) will be infiltrated by the proposed BMPs.

This project will not discharge to unlined channels, increase the potential sediment load of downstream flow, or encroach, cross, realign, or cause other hydraulic changes that may affect downstream channel stability. Rock slope protection has been used to dissipate energy at culvert outlets to prevent scour. All transitions between culvert outlets, headwalls, wing walls, and channels will be smooth to reduce turbulence and scour.

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

Cut and fill requirements are expected to be minimal. There will be an embankment slope for approximately 1,100 feet along SR-170. Benching and slope rounding have been specified to reduce concentrated flows on this slope. Existing slopes at the project site are 2:1 (H:V) or flatter, stable, and vegetated. New slopes will be 2:1 (H:V) or flatter.

The existing vegetated surface consists of trees and ground cover. When substantially complete, all disturbed slopes will be revegetated in accordance with Caltrans Landscape policy and procedures. All vegetated surfaces will be identified on the project plans. Hard surfaces are not required on this project.

The Erosion Prediction Procedure was used to validate final stabilization of project surfaces. The RUSLE 2 program was used and it was determined that the post-construction site conditions are better than pre-construction conditions.

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

New inlets and pipes will intercept runoff created by the new impervious areas and part of the existing runoff. The conveyance system will direct the runoff to new treatment BMPs. The existing system will continue to intercept and discharge the remainder of the project runoff. Scouring and gulling is not anticipated as the runoff is collected in asphalt concrete dikes. Rock slope protection will be added to existing outfalls as needed to prevent scour.

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

Clearing and grubbing is required in specific locations to facilitate construction of the new interchanges, travel lanes, retaining walls, sound walls, and treatment devices. Preservation of existing vegetation has been maximized, and the locations of clearing and grubbing have been defined on the contract plans.

All areas that will be off limits to the contractor (i.e. environmentally sensitive areas and areas of landscape preservation) have been delineated on the plans. The project design has considered minimizing the footprint of new construction, and existing grades have been matched as close as possible to preserve existing vegetation.

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

This project is required to consider Treatment BMPs per the EDF form. Since the project geotechnical conditions are uniform throughout the project area, the sub-watersheds have been grouped together for analysis using the T-1 checklist. Treatment BMPs are feasible and there is right-a-way available on the site for BMP implementation. All BMPs will be located within the project limits.

Treatment BMP Strategy, Checklist T-1

The Tujunga Wash is 303 (d) listed for coliform bacteria and trash and has TMDLs for ammonia and copper. The Los Angeles River TMDLs include trash, nitrogen, and metals. The Targeted Design Constituents (TDCs) for the project are nitrogen and copper. The constituents and TDCs were identified using the Water Quality Planning Tool and the RWQCB Basin Plan. The proposed Treatment BMP strategy for this project will utilize bioswales, biostrips, infiltration basins, and Austin Vault sand filters to limit the amount of trash, nitrogen, and copper discharged to the Tujunga Wash. GSRDs are not being considered because infiltration devices and media filters can capture litter to meet the TMDL. All storm water will be diverted to the Treatment BMPs prior to infiltrating or discharging to Tujunga Wash.

Using the T-1 checklist approach along with the T-1 tool, preliminary calculations were done to assess biofiltration. The preliminary calculations show that biofiltration alone will infiltrate less than 20% the WQV. Other treatment BMP options have been considered for this project, in addition to biofiltration, to treat the remaining project WQV. Using the T-1 Part 1 checklist questions 1 through 10, the project is required to use matrix D to identify feasible treatment BMPs. Each of the storm water treatment devices will be designed to treat as much of the WQV/WQF as possible from its tributary area. On average, 100% of the WQV will be treated by the treatment BMPs (question 14 on Checklist T-1 Part 1). A total of 110% of the net WQV will be infiltrated by the treatment BMPs (question 15 on Checklist T-1 Part 1). A summary of the BMPs that were chosen from matrix D to treat the remaining WQV is provided below.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2

Biofiltration Swales/Strips cannot be designed to treat runoff from all project areas due to constraints by existing conditions. However, they are incorporated at on- and off-ramps. Three bioswales and one biostrip are used on this project. All bioswales are designed to follow existing or new slopes with minimal excavation required. The locations of the bioswales/strips are shown on the project plans.

Since the soil type is B, a 12-hr drawdown time was used to calculate the WQV for biofiltration as required by the PPDG (question 5 on Checklist T-1 Part 1). Compost amendments have been included in the design to increase the infiltration capacity of the swales and strip. The swales and strip will treat a total of 1,868 ft^3 of runoff. The biofiltration tributary area is approximately 3.7 acres

Infiltration Devices – Checklist T-1, Parts 1 and 4

Infiltration basins are feasible at on- and off-ramp loops and are incorporated into the project. Two infiltration basins are used on this project. The project soils have a high infiltration rate therefore, a 24-hr drawdown time was used to calculate the WQV (question 7 on Checklist T-1 Part 1). The infiltration basins will treat a total of 6,270 ft^3 of runoff. The locations of the infiltration basins are shown on the project plans.

Infiltration basin #36 has a tributary area of 2.2 acres and will treat a total of 2,970 ft^3 of runoff. Infiltration basin #36 is being used in combination with a bioswale. In total, these treatment devices infiltrate 94% of the WQV. Infiltration basin #41 has a tributary area of 2.1 acres and will infiltrate a total of 3,300 ft^3 of runoff which is 99% of the WQV.

Soil within the project area has been identified as Group B, indicating a moderate infiltration rate when thoroughly wet. The infiltration rate for the site has been determined to be 0.5 in/hr. The depth of first encountered groundwater underlying the site is 35 feet. All infiltration devices are designed with a minimum invert to groundwater separation distance of 10 feet. The geotechnical integrity of the onsite soils is not a concern for this project.

Media Filters, Checklist T-1, Parts 1 and 8

Media Filters are feasible along the project alignment and five Partial Sedimentation Austin Vault Sand Filters (AVSF) are incorporated into the project. Locations of the filters are shown on the project plans. Due to space constraints, all five AVSFs will utilize concrete walls, a lined configuration. The media filters will treat a total of 35,227 ft^3 of runoff. A 24-hr drawdown time was used to calculate the WQV for the media filters. Pretreatment will be used with all five filters to capture sediment and litter. The depth of first encountered groundwater underlying the site is 35 feet and there are no local vector agency issues. The locations and hydraulic properties of the filters are summarized below:

AVSF #37
NB I-5 Van Nuys Blvd off-ramp loop
Tributary Area of Impervious Surface: 2.2 ac
WQV: 3,798 ft^3
Percent of WQV Treated: 100%

AVSF #42
SB I-5 about 200 feet north of Osborne Street
Tributary Area of Impervious Surface: 3.8 ac
WQV: 6,456 ft^3
Percent of WQV Treated: 100%

AVSF #47
Interchange of 1-5/Route 170 and about 1,500 feet north of Sheldon Street
Tributary Area of Impervious Surface: 3.5 ac
WQV: 5,946 ft^3
Percent of WQV Treated: 100%

AVSF #49
SB I-5 about 600 feet north of Sheldon Street
Tributary Area of Impervious Surface: 4.0 ac
WQV: 6,795 ft^3
Percent of WQV Treated: 100%

AVSF #102
Interchange of I-5/Route 118 and about 900 feet north of Paxton Street
Tributary Area of Impervious Surface: 7.2 ac
WQV: 12,232 ft^3
Percent of WQV Treated: 100%

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

This project has a total disturbed soil area of 82.7 acres and, therefore, requires the preparation of a Storm Water Pollution Prevention Plan (SWPPP). This project does not qualify for a Rainfall Erosivity Waiver.

The overall site risk level has been determined to be Level 2. The project will require five monitoring locations as shown on the project plans. The project working days are specified in the order of work specification for this project.

The Construction Site BMP strategy for this project requires the implementation of the Construction Site BMPs identified in this section. Soil stabilization and sediment control shall consist of placing linear sediment barriers (e.g., fiber rolls and temporary fence) around the excavation to provide run-on and run-off control and to prevent concentrated flow from eroding areas of soil disturbance. Storm drain inlet protection will be deployed throughout the project. Since there are three rainy seasons, multiple temporary erosion control mobilizations will be required. Compliance of the CGP can be met through the use of traditional BMPs; therefore, active treatment systems are not required.

Tracking controls, including stabilized construction entrances and street sweeping, will be required as the work will be adjacent to a roadway.

Various non-storm water management, waste management, and housekeeping BMPs shall be used throughout the duration of the project and will be included in the Construction Site Management cost item. Concrete wastes shall be managed through the use of concrete washout bins.

Because this project has a site risk level of 2, storm water monitoring is required. Monitoring will consist of storm water sampling and analysis. In addition to monitoring, this project is required to implement a rain event action plan (REAP). Quantities for sampling and testing are included in the table below and costs are included in the cost summary attached to this report.

The following BMPs are included as separate bid line items: scheduling, move-in/move-out temporary erosion control, temporary fence type ESA, temporary hydraulic mulch (bonded fiber matrix), temporary silt fence, temporary fiber rolls, temporary drainage inlet protection, plastic covers, stabilized construction entrance/exit, street sweeping, temporary concrete washout bins, preparation of a Storm Water Pollution Prevention Plan, implementation of a REAP, storm water sampling and analysis day, and storm water sampling and analysis.

The following BMPs are included as a lump sum under the Construction Site Management item: stockpile management, spill prevention and control, concrete waste management, paving and grinding operations, vehicle and equipment cleaning, vehicle and equipment cleaning fueling, vehicle and equipment maintenance, concrete curing, and concrete finishing. Dewatering will not be required during the construction of this project.

The Actual Unit Cost Method (Option 4) was used to estimate costs for Construction Site BMPs. The quantities shown in the following table are related to the selected Construction Site BMPs and were estimated from take-off measurements using the layout sheets.

BEES	Temporary BMPs - PPDG Appendix C	Quantity	Unit
	Scheduling	1	LS
074037	Move-In/Move-out (Temporary Erosion Control)	20	EA
071325	Temporary Fence (Type ESA)	25,000	ft
074040	Temp. Hydraulic Mulch (Bonded Fiber Matrix)	384,780	yd^2
074029	Temp. Silt Fence	25,000	ft
074028	Temporary Fiber Roll	128,550	ft^2
074038	Temp. Drainage Inlet Protection	120	EA
074034	Plastic Covers	6,000	ft^2
074033	Stabilized Constr. Entrance/Exit	16	EA
074041	Street Sweeping	1	LS
074043	Temp. Concrete Washout Bins	7	LS
074019	Water Pollution Control (SWPPP)	1	LS
	Rain Event Action Plan (REAP)	72	EA
074058	Storm Water Sampling and Analysis Day	13	EA
066597	Storm Water Sampling and Analysis	1	LS
CSM*	*Construction Site Management	1	LS
*CSM**	*Stockpile Management*		*LS*
*CSM**	*Spill Prevention and Control*		*LS*
*CSM**	*Concrete Waste Management*		*LS*
*CSM**	*Paving & Grinding Operations*		*LS*
*CSM**	*Vehicle and Equipment Cleaning*		*LS*
*CSM**	*Vehicle and Equipment Fueling*		*LS*
*CSM**	*Vehicle and Equipmt Maintenance*		*LS*
*CSM**	*Concrete Curing*		*LS*
*CSM**	*Concrete Finishing*		*LS*

A meeting was held on 9/1/10 to coordinate the temporary construction site BMP implementation strategy with the District Construction Stormwater Coordinator (CSWC) William Alexander. Other attendees included Betsy Ross– Project Engineer, Horatio Gates – District Landscape Architect, and Nathanael Greene – District NPDES Stormwater Coordinator. Topics discussed at the meeting included: construction site BMP selection, construction site BMP quantity estimating strategy, temporary soil stabilization BMP selection, monitoring requirements, the construction site management item, permanent erosion control strategy, mitigation planting and plant establishment period, and stream crossing concerns. Additional email communication between all parties was maintained until concurrence was reached. Concurrence on the implementation strategy was obtained via email from William Alexander to Betsy Ross on 9/30/10.

7. Maintenance BMPs (Drain Inlet Stenciling)

A meeting was held on 9/1/10 to coordinate the maintenance BMPs and concerns for this project with the District Maintenance Stormwater Coordinator (MSWC) Paul Revere. Topics discussed included protection of existing inlets, drain inlet stenciling, and the permanent erosion control strategy for the site. Drain inlet stenciling is not required as determined by the District MSWC. Final concurrence on the implementation strategy was obtained from Paul Revere via email to Betsy Ross on 9/30/10.

Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)
- Construction Site BMP Consideration Form
- RUSLE2 Summary Sheet
- Risk Level Determination Documentation
    - GIS Map Method
    - Individual Method
- SWDR Tracking Form

Supplemental Attachments

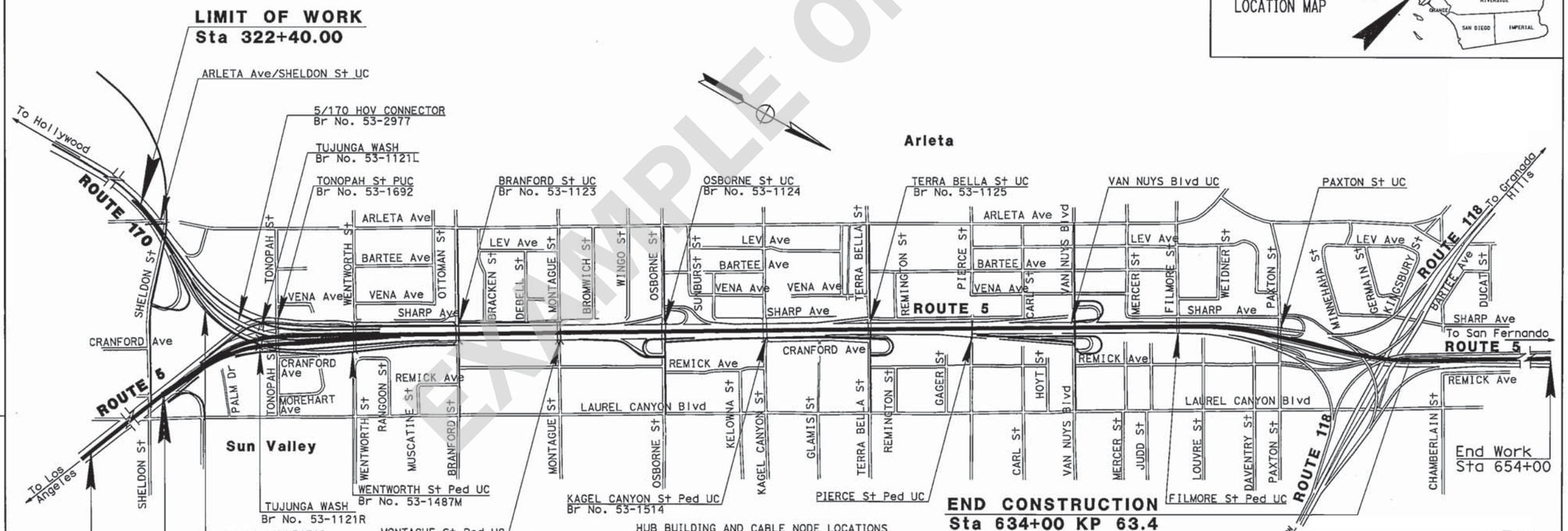
- Storm Water BMP Cost Summary
- Water Pollution Control Sheets showing BMP Deployment (15)
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1–5 (Design Pollution Prevention BMPs) [only those parts that are applicable]
- Checklist T-1, Part 1 (Treatment BMPs)
    - T-1 Calculations related to BMPs
- Checklists T-1, Parts 2–10 (Treatment BMPs) [only those Parts that are applicable]
- Checklists CS-1, Parts 1–6 (Construction Site BMPs) [only those Parts that are applicable, at PS&E only]

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5	58.0/63.4	1	1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN LOS ANGELES COUNTY
IN LOS ANGELES

FROM 0.10 KM NORTH OF SHELDON STREET OVER CROSSING TO ROUTE 5/118 SEPARATION



HUB BUILDING AND CABLE NODE LOCATIONS

LOCATION	DESCRIPTION
ROUTE 2/134 SEPARATION	LOS ANGELES REGIONAL TRANSPORTATION CENTER
ROUTE 101/10/5 SEPARATION	EAST LOS ANGELES HUB
ROUTE 170/134 SEPARATION	NORTH HOLLYWOOD HUB
ROUTE 5/405 SEPARATION	CABLE NODE SD486
ROUTE 405/118 SEPARATION	CABLE NODE SD468
ROUTE 405/134 SEPARATION	CABLE NODE SD398
ROUTE 5/405 SEPARATION	DATA NODE 7
ROUTE 5/405 SEPARATION	VIDEO NODE 4

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

DESIGN ENGINEER: BETSY ROSS
PROJECT MANAGER: GEORGE WASHINGTON

Betsy Ross 10-8-10
Project Engineer Date
Registered Civil Engineer

REGISTERED PROFESSIONAL ENGINEER
BETSY ROSS
No. CXXXXX
Exp. 9-30-11
CIVIL
STATE OF CALIFORNIA

Plans Approval Date

NO SCALE

CONTRACT No. 07-XXXXXX
CU XXXXX EA XXXXXX

LAST REVISION 10-8-10

BORDER LAST REVISED 10-8-10

USERNAME => s109859
DGN FILE => 712190ab01.dgn

DATE: 10-08-10

Project ID (or EA): 07-XXXXXX

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs. Go to 2
2.	Is this an emergency project?		✓	If **Yes**, go to 10. 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 9 or 4. JWS *(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**. *(County of Los Angeles)*, 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 10.
6.	Is it 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 10.
8.	Does the project result in a net increase of one acre or more of new impervious surface?	✓		If **Yes**, continue to 9. If **No**, go to 10. *24.2 ac (Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.	✓	See Sections 2.4 and either Section 5.5or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.	
10.	Project is not required to consider Treatment BMPs. _____*(Dist./Reg. Design 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

DATE: 10-8-10

Project ID (or EA): 07-XXXXXX

Project Evaluation Process for the Consideration of Construction Site BMPs

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, Parts 5 & 6. 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; stormwater 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.	

BR 10-8-10

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

RUSLE2 Summary Sheet

Rev: 0 (9/09)

Location - Los Angeles, CA.

Proposed Project Summary - HOV Lane Construction

Latitude - 34°, 14 min, 47 sec N
Longitude - 118°, 25 min, 27 sec W

Project Phase	RUSLE 2 RUN #	INPUT									OUTPUT		Notes
		CLIMATE - R	SOIL - R		TOPOGRAPHY - LS		COVER - C			PRACTICE/BMP	SOIL LOSS EROD PORTION (t/ac/yr)	SEDIMENT DELIVERY (t/ac/yr)	
			SOIL TYPE	SOIL K VALUE	SLOPE %	SLOPE LENGTH	DISTURBED?	Veg Type	% Cover				
Pre-Construction/ Reference Site	1	USA\California\DIST-07\LosAngeles County\CA_Los Angeles_R16-18	Los Angeles Co., W. San Fernando Valley Area, Ca\114 DANVILLE-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES\DANVILLE silty clay loam 40%	0.32	30	30	No	grasses & forbs	0 to 25%	None - Preconstruction; Existing vegetation	9.7	9.7	used most conservative (hi erosion) soil, vegetation
Construction Max Erosion	2	USA\California\DIST-07\LosAngeles County\CA_Los Angeles_R16-18	Soil #114 - Danville Silty Cl L	0.32	30	30	Yes	0	0	None - Construction Max no BMPs	19.4	19.4	Construction MAER (80% reduction) = 3.9 t/ac/yr
Construction BMPs - MAER	3	USA\California\DIST-07\LosAngeles County\CA_Los Angeles_R16-18	Soil #114 - Danville Silty Cl L	0.32	30	30	Yes	0	>70	hydromulch with 12-inch fiber rolls	2.8	1.7	no vegetation; physical BMPs only
Post- Construction	4	USA\California\DIST-07\LosAngeles County\CA_Los Angeles_R16-18	Soil #114 - Danville Silty Cl L	0.32	30	30	Yes	50-70	<70	Hydraulic mulch PSFM plus grasses + forbs (equivalent to bioswale)	2.2	1.2	Post Construction; BMP equivalent to bioswale

Notes:

1) For purposes of "final stabilization," the site will not pose any additional sediment discharge risk than it did prior to the commencement of construction activity (Sediment Delivery at Post-Construction < Sediment Delivery Pre-Construction).

2) Soil #114 - Danville Si Cl L was used because this was the most erodable soil; other soils (#107, K=0.24) may be in the same vicinity but were not modeled because they will have lower rates of erosion.

Background:

Legally Responsible Parties must file a Notice of Termination (NOT) with the Regional Water Board when construction is complete and final stabilization has been reached or ownership has been transferred. The discharger must certify that all State and local requirements have been met in accordance with this General Permit. In order for construction to be found complete, the discharger must install post-construction storm water management measures and establish a long-term maintenance plan. This requirement is intended to ensure that the post-construction conditions at the project site do not cause or contribute to direct or indirect water quality impacts (i.e., pollution and/or hydromodification) upstream and downstream. Specifically, the discharger must demonstrate compliance with the post-construction standards set forth in this General Permit (Section XIII). The discharger is responsible for all compliance issues including all annual fees until the NOT has been filed and approved by the local Regional Water Board.

Risk Level - GIS Method
EA 07-XXXXXX, PS&E 10/8/10

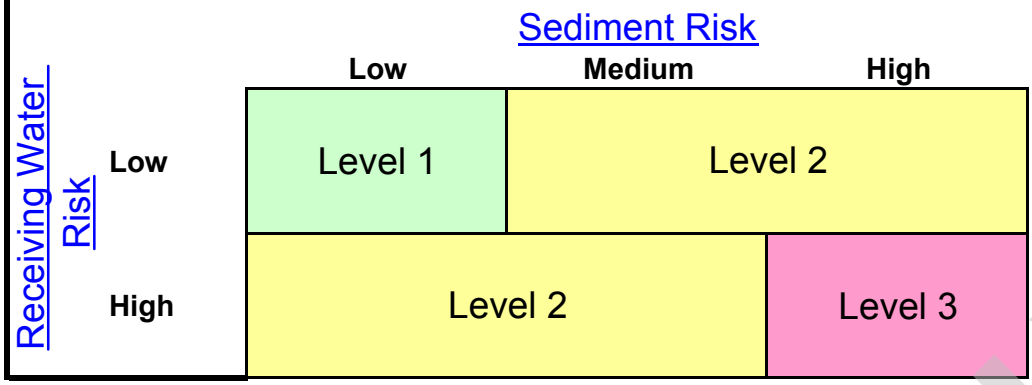
	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		110.52
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		1.9
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		1
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		209.988
16	**Site Sediment Risk Factor**		**High**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Risk Level - GIS Method
EA 07-XXXXXX, PS&E 10/8/10

Receiving Water (RW) Risk Factor Worksheet	**Entry**	**Score**
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment**? For help with impaired waterbodies please check the attached worksheet or visit the link below: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml **OR**	**No**	**Low**
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp		

Risk Level - GIS Method
EA 07-XXXXXX, PS&E 10/8/10

Combined Risk Level Matrix



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

SWDR Tracking Form

Rpt_to_hq	Dist_EA	District	EA	County	Route	Beg_PM	End_PM	Descrip	Phase	LongSWDR	PhaseRptDate	Exempt	TBMP	Pollution_Program	Disturbance Acr	AddImpArea	PercentTreated	MS4Area	MS4CiCo	ter Bodies Affec	Criteria	BioStrip	BioSwale	Detention	Infiltration	InfilTrench	GSRD	TST	DryWeath	MedFilter	MCTT	WetBasin	Const_Start	Const_Comp	SWComment
08-Oct-10	07-XXXXXX	7	XXXXXX	LA	5	36	39.4	HOV Lane Construction	PID	TRUE	08-Oct-10	FALSE	TRUE	SWPPP	82.7	24.2	100	TRUE	County of LA	Tujunga Wash	303, TMDL	1	3	0	2	0	0	0	0	5	0	0	01-May-12	01-Jan-15	

SWDR Tracking Form

IDNO	STBMPCode	PE	District	County	Route	LocBPM	LocEPM	Location	Direction	Facility	Cubic Yards	Const_Comp	Comments
Swale #36	BIOSWL	B. Ross	7	LA	5	36	39.4	RW-STBMP	L			01-Jan-15	VANON3' 620+54 to 622+15
Swale #38	BIOSWL	B. Ross	7	LA	5	36	39.4	RW-STBMP	R			01-Jan-15	VANOFF2 618+48 to 619+68
Swale #44	BIOSWL	B. Ross	7	LA	5	36	39.4	RW-STBMP	R			01-Jan-15	OSBORNE ST' 601+15 to 601+65
Strip #37	BIOSTP	B. Ross	7	LA	5	36	39.4	RW-STBMP	R			01-Jan-15	VANOFF1' 620+90 to 622+10

Storm Water BMP Cost Summary PS&E
THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

Project Name:	**HOV Lane Construction I-5**
District:	**7**
County:	**LA**
Route:	**5**
Postmile Limits:	**36.0 / 39.4**
Project ID (or EA):	**07-XXXXXX**

Total Treatment BMP Costs	$ 1,758,500
Total Design Pollution Prevention BMP Costs	$ 582,580
Total Permanent Storm Water BMP Costs	$ 2,341,080
Subtotal Soil Stabilization BMPs	$ 638,975
Subtotal Sediment Control BMPs	$ 515,650
Subtotal Wind Erosion Control BMPs	$ 13,500
Subtotal Tracking Control BMPs	$ 66,000
Subtotal Waste Management & Materials Handling BMPs	$ 8,400
Subtotal Non-Storm Water Management	$ 2,250,000
Subtotal Miscellaneous Items	$ 68,035
Total Construction Site BMP Costs	$ 3,560,560
TOTAL COST FOR STORM WATER BMPs	$ 5,901,640

Note: Please enter data in the fields shaded on this and the following pages. The totals will be reflected on this sheet automatically.

Storm Water BMP Cost Summary PS&E
THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

Treatment BMPs

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Biofiltration Strip			1	EA	1,000	$ 1,000
	Biofiltration Swale			3	EA	2,500	$ 7,500
034731	Austin Vault Sand Filter			5	LS	350,000	$ 1,750,000
						Total Treatment BMP Costs	$ 1,758,500

Design Pollution Prevention BMPs

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Downstream Effects/Increased Flow Mitigation						
705307	- 12" Alternative Flared End Section	No	Yes	2	EA	250	$ 500
	Slope/Surface Protection Systems- Hard Surfaces						
729010	- Rock Slope Protection Fabric	72-150	No	1,200	SQYD	2	$ 2,280
	- Rock Slope Protection			1,140	CY	70	$ 79,800
	Slope/Surface Protection Systems- Vegetated Surfaces						
204099	Plant Establishment Work	20-550		1	LS	500,000	$ 500,000
						Total Design Pollution Prevention BMP Costs	$ 582,580

Total Permanent Storm Water BMP Costs	**$ 2,341,080**

Storm Water BMP Cost Summary PS&E

THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

Temporary Construction Site BMPs

BEES	Temporary BMPs - PPDG Appendix C	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
074037	Move-In/Move-out (Temporary Erosion Control)	07-485	No	18	EA	1,000	$ 18,000
	Scheduling		No	1	LS	50,000	$ 50,000
071325	Temporary Fence (Type ESA)	07-446	Yes	18,000	ft	5	$ 90,000
074040	Temp. Hydraulic Mulch (Bonded Fiber Matrix)	07-381	No	384,780	yd^2	1	$ 480,975
						Subtotal Soil Stabilization BMPs	**$ 638,975**

BEES	*Temporary Sediment Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074029	Temp. Silt Fence	07-430	Yes	18,000	ft	5	$ 90,000
074028	Temporary Fiber Roll	07-420	Yes	128,550	ft^2	3	$ 385,650
074038	Temp. Drainage Inlet Protection	07-490	Yes	200	EA	200	$ 40,000
						Subtotal Sediment Control BMPs	**$ 515,650**

BEES	*Temporary Wind Erosion Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074034	Plastic Covers	07-395	Yes	6,000	ft^2	2	$ 13,500
						Subtotal Wind Erosion Control BMPs	**$ 13,500**

BEES	*Temporary Tracking Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074033	Stabilized Constr. Entrance/Exit	07-480	Yes	16	EA	3,000	$ 48,000
074041	Street Sweeping	07-360	No	1	LS	18,000	$ 18,000
						Subtotal Tracking Control BMPs	**$ 66,000**

BEES	*Temporary Waste Management Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
CSM*	Stockpile Management	07-346	No		LS		$ -
CSM*	Spill Prevention and Control	07-346	No		LS		$ -
CSM*	Concrete Waste Management	07-346	No		LS		$ -
074043	Temp. Concrete Washout Bin	07-407	No	7	EA	1,200	$ 8,400
						Subtotal Waste Management & Materials Handling BMPs	**$ 8,400**

BEES	*Temporary Non-Storm Water Management*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
CSM*	Paving & Grinding Operations				LS		$ -
CSM*	Vehicle and Equipment Cleaning	07-346	No		LS		$ -
CSM*	Vehicle and Equipment Fueling	07-346	No		LS		$ -
CSM*	Vehicle and Equipmt Maintenance	07-346	No		LS		$ -
CSM*	Concrete Curing	07-346	No		LS		$ -
CSM*	Concrete Finishing	07-346	No		LS		$ -
CSM*	***Construction Site Management**	07-346	No	1	LS	2,250,000	$ 2,250,000
						Subtotal Non-Storm Water Management	**$ 2,250,000**

BEES	*Miscellaneous Items*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074019	Water Pollution Control (SWPPP)	07-345	No	1	LS	16,500	$ 16,500
	Rain Event Action Plan (REAP)		No	72	EA	500	$ 36,000
074058	Storm Water Sampling and Analysis Day		No	13	EA	1,195	$ 15,535
						Subtotal Miscellaneous Items	**$ 68,035**

Total Construction Site BMP Costs	**$ 3,560,560**

07-XXXXXX
Storm Water Costs
PS+E
B. Ross 10-8-10
1/2

Construction Site BMPs - Miscellaneous Items

- Prepare a SWPPP: > 12,000,000 = $6,000 + RQM
  (Table F-6, PPDG 2010 pg F-11)

RQM = ((mths/3)+1) x (N+4) x Labor
EQN 1, PPDG 2010 pg F-11

where:
mths (project duration) : 32
N : 5
Labor : $100

RQM = $10,500

Prepare a SWPPP = $16,500

- Rain Event Action Plan (REAP):

Project Risk Level: 2 REAP = $500 x Days 0.1" pg. F-12 PPDG 2010

Annual Mean Number of Daily Precipitation ≥0.1 = 24.3
↳ Project Rainfall: Burbank Valley (see print out attached)

REAP = 24 x $500 x 3 rainy seasons = $36,000

- Storm Water Sampling & Analysis Day:

SW Sampling & Analysis Day = SWM Cost / Days 0.5" eqn 3 PPDG 2010 pg F-13

SWM costs = $M \times \{[Days_{0.5"} \times \$1{,}000] + \$2000(1+0.1(Mths/12))\}$

where:
M : 1
Mths : 32
$Days_{0.5"}$: 13

Annual Mean #s of Daily Precipitation (def. PPDG 2010 pg F-13)
≥0.1 = 24.3 ≥0.5 = 11.1
$Days_{0.5"} = 24.3 - 11.1 = 13.2$

07-xxxxxx
Storm Water Costs
PS&E
B. Ross 10-8-10
2/2

Storm Water Sampling + Analysis Day (cont)

SWM costs = $ 15,533

SW Sampling + Analysis Day = $15,533/13 = $1,195

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	1	8

Betsy Ross 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER
BETSY ROSS
No. CXXXXX
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA

24 in AUTOMATIC DRAINAGE GATE
24 in RCP
Exist TUJUNGA WASH CHANNEL WALL
SAWCUT LIMIT
DRILL & BOND 5 in INTO Exist WALL @ 12 in C-C (Typ)
JUNCTION STRUCTURE WITH AUTOMATIC DRAINAGE GATE SEE WD-11
SAWCUT LIMIT

SECTION A-A

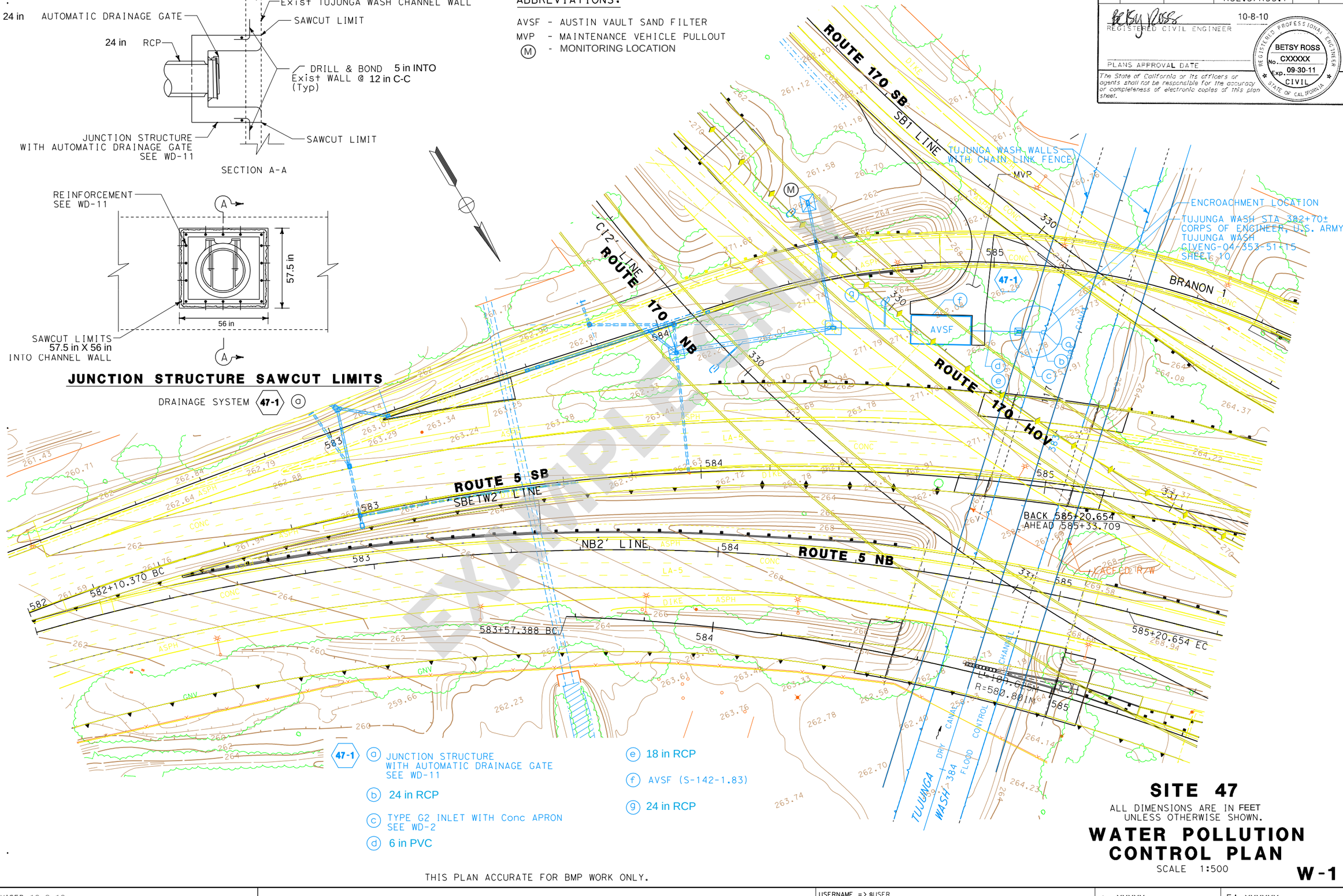
REINFORCEMENT SEE WD-11
57.5 in
56 in
SAWCUT LIMITS 57.5 in X 56 in INTO CHANNEL WALL

JUNCTION STRUCTURE SAWCUT LIMITS

DRAINAGE SYSTEM 47-1 (a)

ABBREVIATIONS:

AVSF - AUSTIN VAULT SAND FILTER
MVP - MAINTENANCE VEHICLE PULLOUT
(M) - MONITORING LOCATION



THIS PLAN ACCURATE FOR BMP WORK ONLY.

SITE 47

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-1

LAST REVISION 10-8-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY
CHECKED BY

BETSY ROSS
GEORGE WASHINGTON

REVISED BY
DATE REVISED

BORDER LAST REVISED 10-8-10

USERNAME => $USER
DGN FILE => $REQUEST

CU XXXXX

EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	2	8

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
BETSY ROSS
No. CXXXXX
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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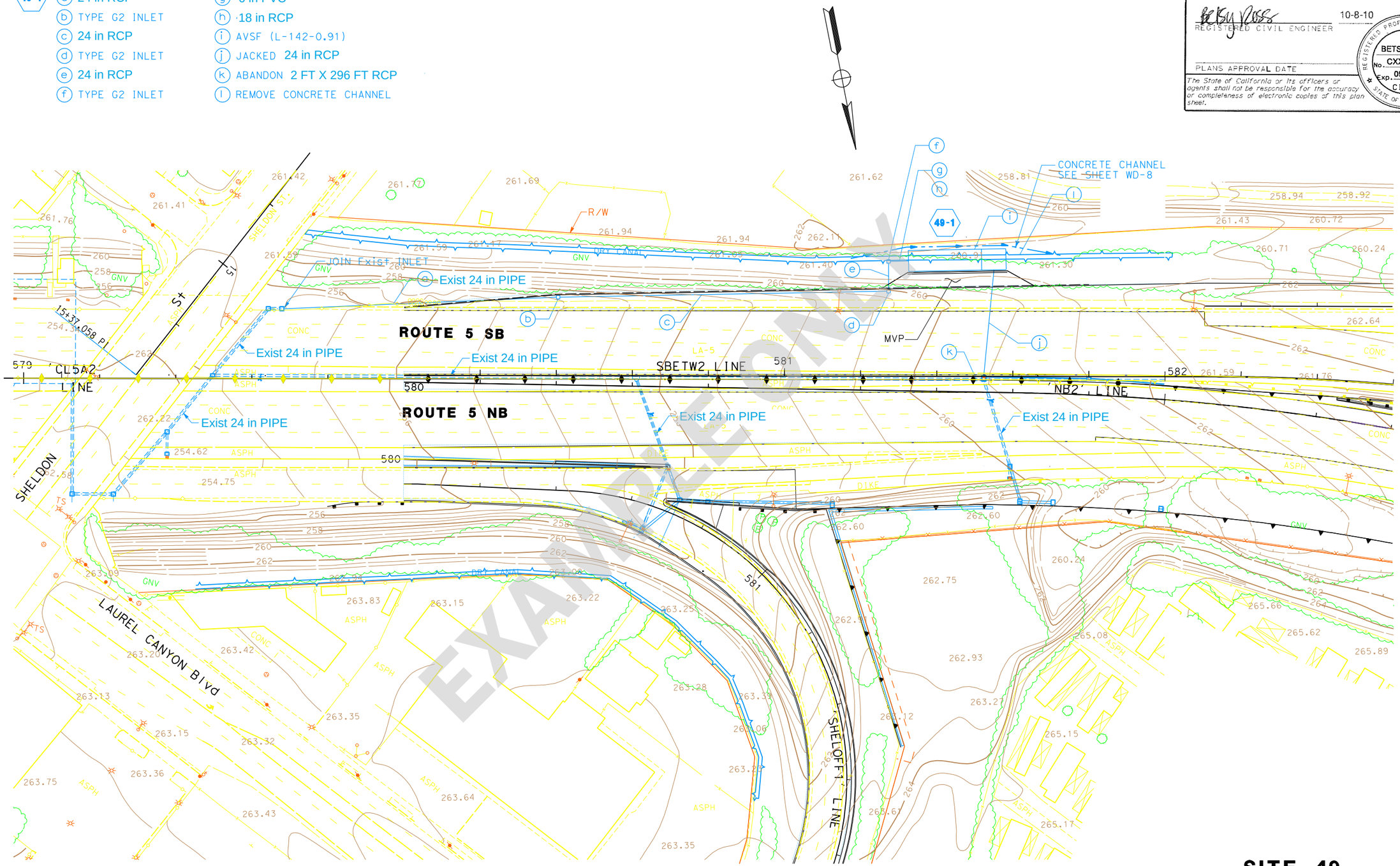
49-1

- (a) 24 in RCP
- (b) TYPE G2 INLET
- (c) 24 in RCP
- (d) TYPE G2 INLET
- (e) 24 in RCP
- (f) TYPE G2 INLET
- (g) 6 in PVC
- (h) 18 in RCP
- (i) AVSF (L-142-0.91)
- (j) JACKED 24 in RCP
- (k) ABANDON 2 FT X 296 FT RCP
- (l) REMOVE CONCRETE CHANNEL



SITE 49

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-2

THIS PLAN ACCURATE FOR BMP WORK ONLY.

LAST REVISION 10-8-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

BETSY ROSS

GEORGE WASHINGTON

REVISED BY

DATE REVISED

BORDER LAST REVISED 10-8-10

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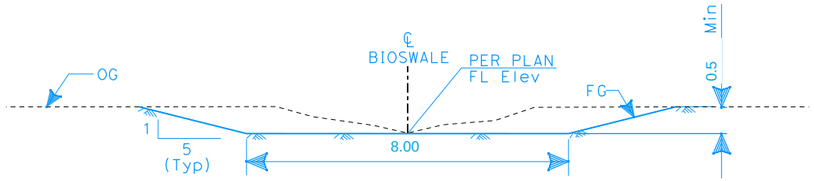
DGN FILE => $REQUEST

CU XXXXX

EA XXXXXX



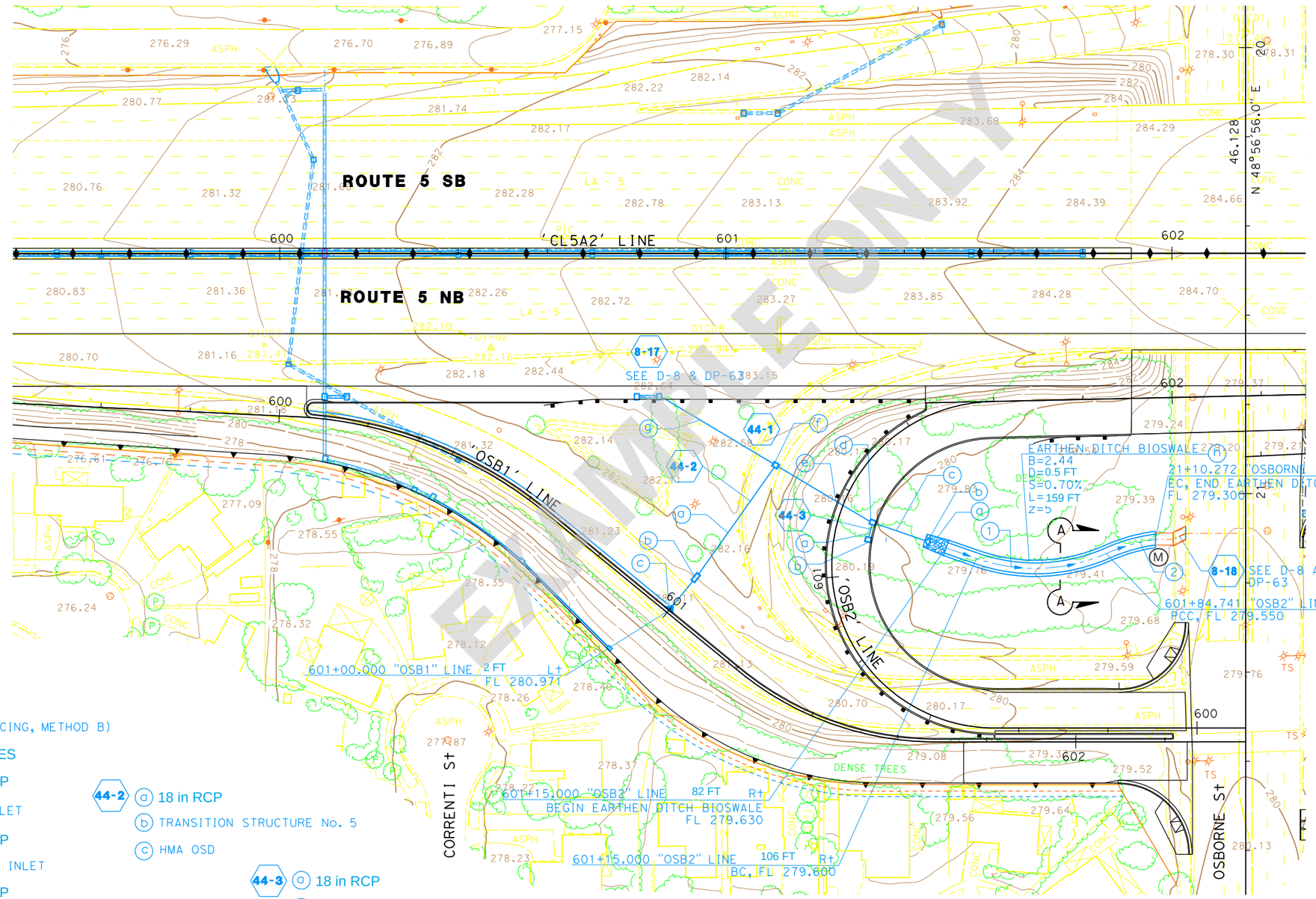
SECTION A-A

EARTHEN DITCH BIOSWALE

NOT TO SCALE

CURVE DATA

No.	R	Δ	T	L
(1)	131.2	42°58'51"	51.7	98.4
(2)	131.2	16°4'22"	18.5	36.8



44-1
- (a) RSP (FACING, METHOD B)
- (b) 24 in AFES
- (c) 24 in RCP
- (d) GD-1 INLET
- (e) 24 in RCP
- (f) TYPE G2 INLET
- (g) 18 in RCP
- (h) EARTHEN DITCH BIOSWALE

44-2
- (a) 18 in RCP
- (b) TRANSITION STRUCTURE No. 5
- (c) HMA OSD

44-3
- (a) 18 in RCP
- (b) GD1 INLET

THIS PLAN ACCURATE FOR BMP WORK ONLY.

SITE 44

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-3

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	3	8

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS No. CXXXXX Exp. 09-30-11 CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR
CALCULATED-DESIGNED BY
CHECKED BY
BETSY ROSS
GEORGE WASHINGTON
REVISED BY
DATE REVISED

LAST REVISION 10-8-10

BORDER LAST REVISED 10-8-10

USERNAME => $USER
DGN FILE => $REQUEST

CU XXXXX

EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	4	8

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA

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CURVE DATA

No.	R	Δ	T	L
1	984.3	3°44'43"	32.2	64.34

602+75.000 "CL5A2"
108 FT Lt
284.402
ANGLE POINT HMA DIKE
(TYPE A)

602+67.000 "CL5A2"
94 FT Lt
284.570
BEGIN REMOVE AC DIKE
BEGIN HMA DIKE
(TYPE A)

603+37.752 "CL5A2" 115 FT Lt
BC

603+57.346 "CL5A2" 113 FT Lt
EC

Exist 18 in RCP
Exist 24 in RCP
Exist INLET
Exist INLET
EXISTING INLETS
ABANDONED INLET
MVP
MVP
SHARP Ave
KELOWNA St
ROUTE 5 SB
ROUTE 5 NB
CL5A2' LINE
OSB2' LINE
OSB3' LINE
N 41°03'09.1" W
3505.227
R/W
POOL
DENSE TREES
DIRT
ASPH
CONC
U/B

42-1
- (a) 18 in RCP
- (b) TYPE G1 INLET

42-2
- (a) RSP
- (b) HEADWALL
- (c) 24 in RCP
- (d) TYPE G2 INLET
- (e) 6 in PVC
- (f) 18 in RCP
- (g) AVSF (S-283-0.91)
- (h) 24 in RCP
- (i) TYPE G2 INLET

42-3
- (a) 24 in RCP
- (b) TYPE G2 INLET
- (c) 24 in RCP
- (d) TYPE G2 INLET
- (e) 24 in RCP
- (f) ABANDON 24 in X 16 FT CSP
- (g) ABANDON 24 in X 55 FT CSP
- (h) ABANDON 24 in X 12 FT CSP

SITE 42

ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-4

THIS PLAN ACCURATE FOR BMP WORK ONLY.

LAST REVISION 10-8-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

BETSY ROSS

GEORGE WASHINGTON

REVISED BY

DATE REVISED

BORDER LAST REVISED 10-8-10

USERNAME => $USER
DGN FILE => $REQUEST

CU XXXXX

EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	5	8

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA

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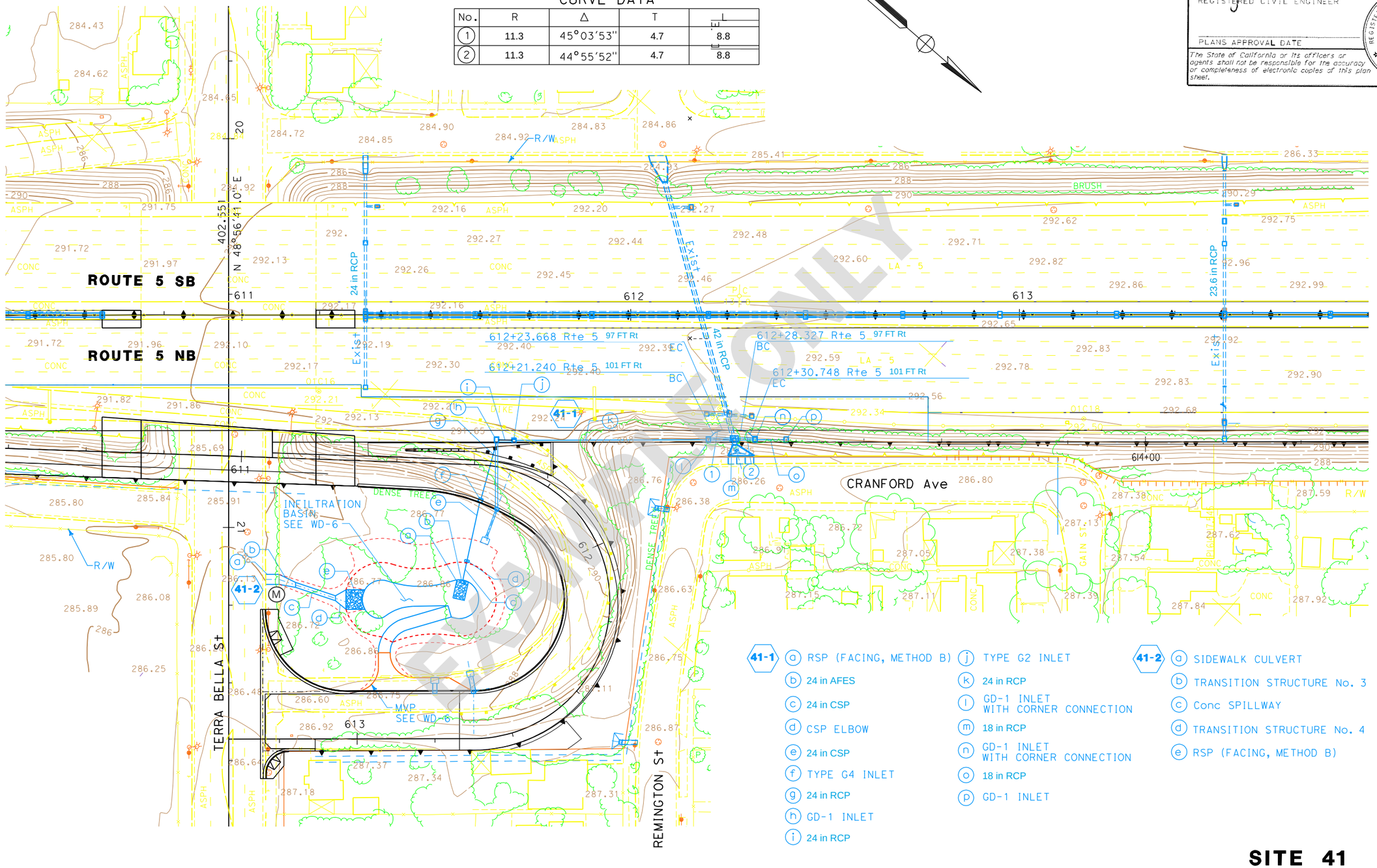
CURVE DATA

No.	R	Δ	T	L
1	11.3	45°03'53"	4.7	8.8
2	11.3	44°55'52"	4.7	8.8



41-1
- (a) RSP (FACING, METHOD B)
- (b) 24 in AFES
- (c) 24 in CSP
- (d) CSP ELBOW
- (e) 24 in CSP
- (f) TYPE G4 INLET
- (g) 24 in RCP
- (h) GD-1 INLET
- (i) 24 in RCP
- (j) TYPE G2 INLET
- (k) 24 in RCP
- (l) GD-1 INLET WITH CORNER CONNECTION
- (m) 18 in RCP
- (n) GD-1 INLET WITH CORNER CONNECTION
- (o) 18 in RCP
- (p) GD-1 INLET

41-2
- (a) SIDEWALK CULVERT
- (b) TRANSITION STRUCTURE No. 3
- (c) Conc SPILLWAY
- (d) TRANSITION STRUCTURE No. 4
- (e) RSP (FACING, METHOD B)

SITE 41

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-5

THIS PLAN ACCURATE FOR BMP WORK ONLY.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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CONSULTANT FUNCTIONAL SUPERVISOR

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BETSY ROSS — GEORGE WASHINGTON

REVISED BY — DATE REVISED

LAST REVISION 10-8-10

BORDER LAST REVISED 10-8-10

USERNAME => $USER
DGN FILE => $REQUEST

CU XXXXX

EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	6	8

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA

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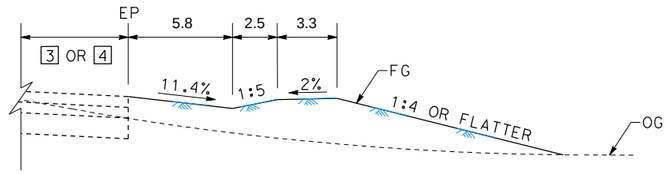
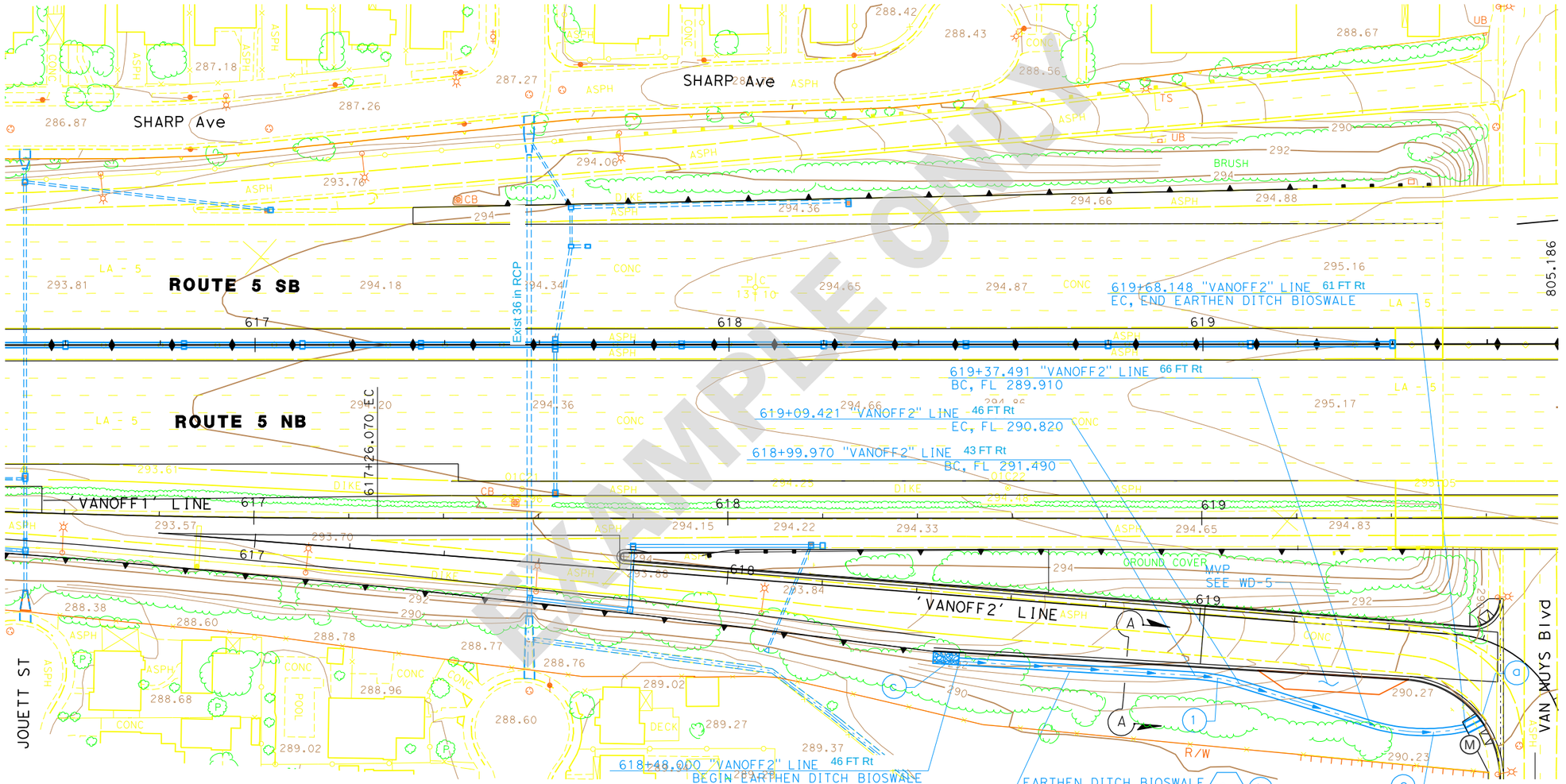


SECTION A-A
"VANOFF2" 618+48.000 TO 619+68.148

EARTHEN DITCH BIOSWALE TYPICAL SECTION

NOT TO SCALE



CURVE DATA

No.	R	Δ	T	L
1	131.2	13°38'19"	15.7	31.2
2	131.2	29°18'58"	34.3	67.2

38-1 (a) SIDEWALK CULVERT SEE WD-5
(b) EARTHEN DITCH BIOSWALE
(c) RSP (BACKING No. 2, METHOD B) SEE WD-5

THIS PLAN ACCURATE FOR BMP WORK ONLY.

SITE 38

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-6

REVISED BY	DATE REVISED
BETSY ROSS	GEORGE WASHINGTON
CALCULATED-DESIGNED BY	CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 10-8-10

BORDER LAST REVISED 10-8-10

USERNAME => $USER
DGN FILE => $REQUEST

CU XXXXX

EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	7	8

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

BETSY ROSS No. CXXXXX Exp. 09-30-11 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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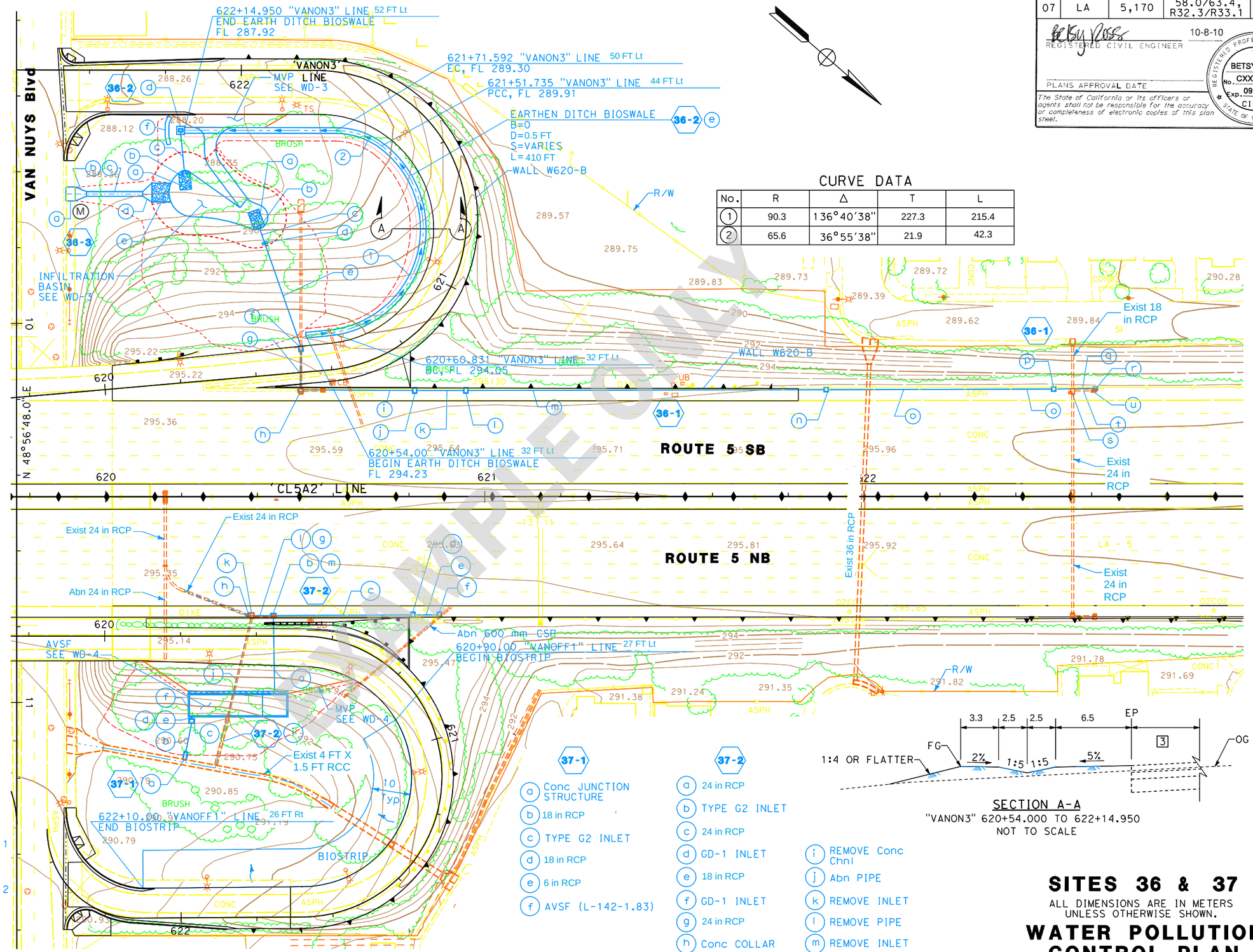
CALCULATED-DESIGNED BY
CHECKED BY
FUNCTIONAL SUPERVISOR
CONSULTANT

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

36-1
- (a) RSP (FACING METHOD B)
- (b) 24 in AFES
- (c) 24 in CSP
- (d) CSP ELBOW
- (e) 24 in CSP
- (f) GD-1 INLET
- (g) 24 in RCP
- (h) TYPE G2 INLET
- (i) 24 in RCP
- (j) GD-1 INLET
- (k) 24 in RCP
- (l) GD-1 INLET
- (m) 24 in RCP
- (n) TYPE G2 INLET
- (o) 24 in RCP
- (p) TYPE G2 INLET
- (q) 18 in SCSP
- (r) TYPE G1 INLET
- (s) CAP INLET
- (t) REMOVE PIPE
- (u) REMOVE INLET

36-2
- (a) RSP (FACING METHOD B)
- (b) 12 in AFES
- (c) 12 in RCP
- (d) TYPE G1 INLET WITH Conc APRON
- (e) EARTHEN DITCH BIOSWALE
- (f) EARTHEN BERM

36-3
- (a) SIDEWALK CULVERT
- (b) TRANSITION STRUCTURE No. 1
- (c) CONCRETE SPILLWAY
- (d) TRANSITION STRUCTURE No. 2
- (e) RSP (FACING, METHOD B)



CURVE DATA

No.	R	Δ	T	L
1	90.3	136°40'38"	227.3	215.4
2	65.6	36°55'38"	21.9	42.3

SECTION A-A
"VANON3" 620+54.000 TO 622+14.950
NOT TO SCALE

37-1
- (a) Conc JUNCTION STRUCTURE
- (b) 18 in RCP
- (c) TYPE G2 INLET
- (d) 18 in RCP
- (e) 6 in RCP
- (f) AVSF (L-142-1.83)

37-2
- (a) 24 in RCP
- (b) TYPE G2 INLET
- (c) 24 in RCP
- (d) GD-1 INLET
- (e) 18 in RCP
- (f) GD-1 INLET
- (g) 24 in RCP
- (h) Conc COLLAR
- (i) REMOVE Conc Chnl
- (j) Abn PIPE
- (k) REMOVE INLET
- (l) REMOVE PIPE
- (m) REMOVE INLET

SITES 36 & 37

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1: 500

W-7

THIS PLAN ACCURATE FOR BMP WORK ONLY.

LAST REVISION 10-8-10

BORDER LAST REVISED 10-8-10 | USERNAME => $USER | DGN FILE => $REQUEST | CU XXXXX | EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	8	8

Betsy Ross 10-8-10
REGISTERED CIVIL ENGINEER

BETSY ROSS No. CXXXXX Exp. 09-30-11 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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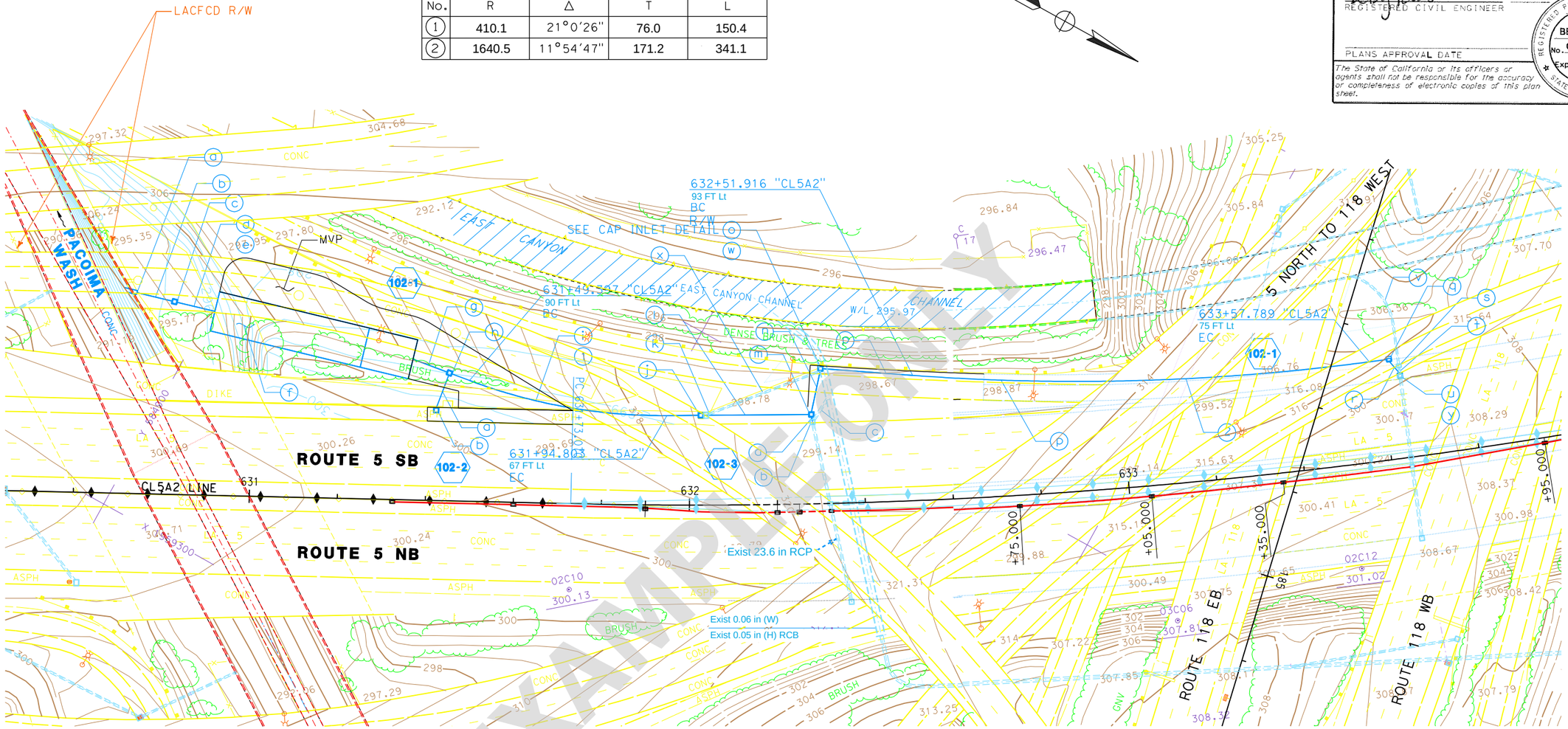
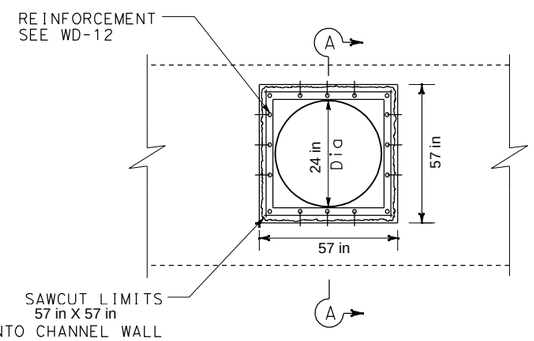
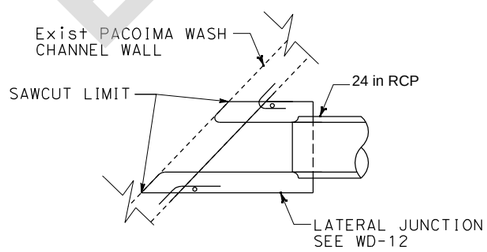
CURVE DATA

No.	R	Δ	T	L
(1)	410.1	21°0'26"	76.0	150.4
(2)	1640.5	11°54'47"	171.2	341.1







SECTION A-A

JUNCTION STRUCTURE SAWCUT LIMITS

DRAINAGE SYSTEM 102-1 (a)

102-1
- (a) LATERAL JUNCTION SEE WD-12
- (b) 24 in RCP
- (c) TYPE G2 INLET
- (d) 6 in RCP
- (e) 18 in RCP
- (f) AVSF (L-425-0.91)
- (g) 30 in RCP
- (h) TYPE G2 INLET
- (i) 30 in RCP
- (j) TYPE G2 INLET
- (k) REMOVE INLET
- (l) 30 in RCP
- (m) TYPE G2 INLET
- (n) 24 in RCP
- (o) REMOVE 6.5 FT Min OF INLET & CAP INLET
- (p) 24 in RCP
- (q) TYPE G2 INLET
- (r) 24 in RCP
- (s) REMOVE INLET & RISER
- (t) REMOVE 18 in RCP
- (u) REMOVE INLET
- (v) ABANDON 24 X 80 FT RCP
- (w) TYPE G2 INLET
- (x) ABANDON 24 X 94 FT RCP
- (y) TYPE G2 INLET (MODIFIED JUNCTION STRUCTURE)

102-2
- (a) 24 in RCP
- (b) TYPE G2 INLET

102-3
- (a) 24 in RCP
- (b) REMOVE INLET
- (c) ABANDON 24 X 20 FT RCP

SITE 102

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL PLAN

SCALE 1:500

W-8

THIS PLAN ACCURATE FOR BMP WORK ONLY.

REVISED BY | DATE REVISED
BETSY ROSS | GEORGE WASHINGTON
CALCULATED-DESIGNED BY | CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 10-8-10

BORDER LAST REVISED 10-8-10 | USERNAME => $USER | DGN FILE => $REQUEST | CU XXXXX | EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	1	7

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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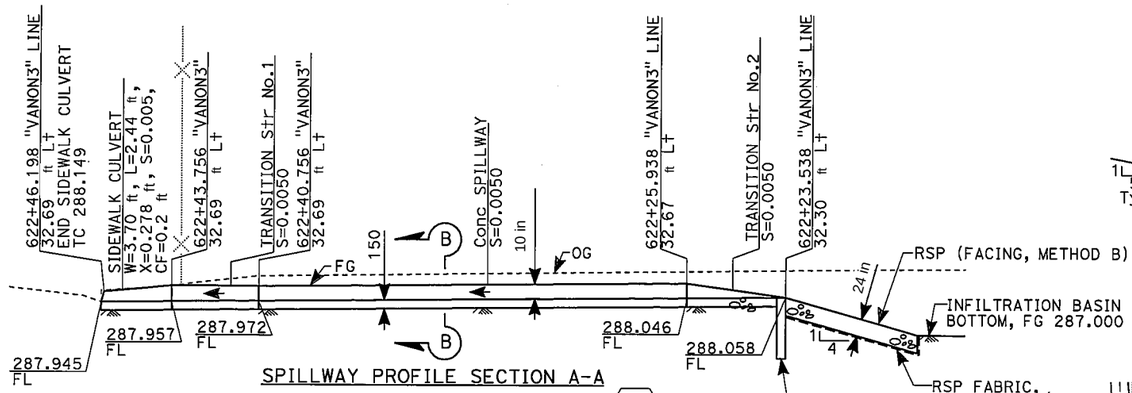
REVISED BY	DATE REVISED
GEORGE WASHINGTON	

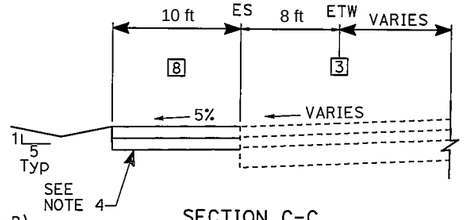
CALCULATED-DESIGNED BY: BETSY ROSS
CHECKED BY:

CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans



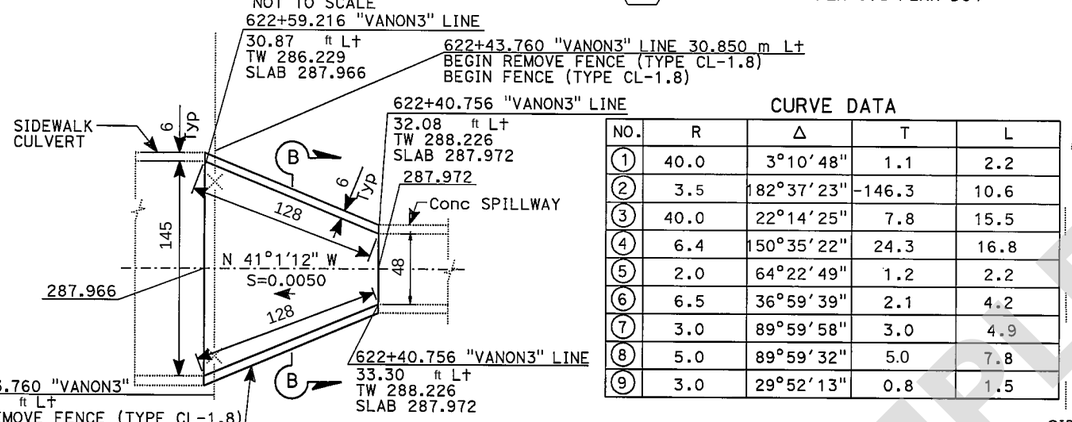
SPILLWAY PROFILE SECTION A-A



SECTION C-C
"VANON3" 621+87.866 TO 622+18.745
NOT TO SCALE

DRAINAGE SYSTEM No 36-3

NOT TO SCALE

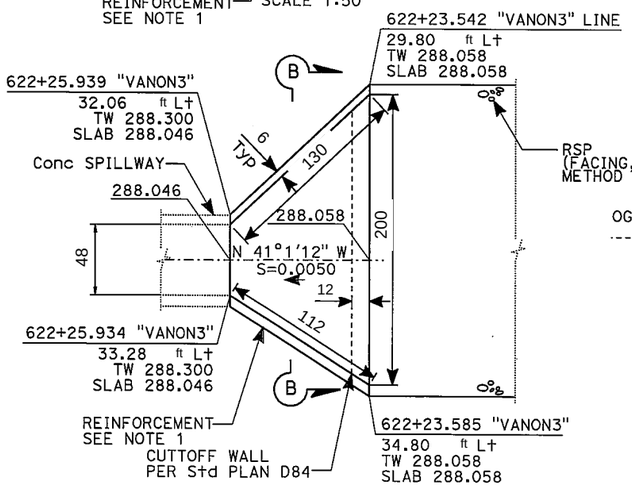


NO.	R	Δ	T	L
1	40.0	3°10'48"	1.1	2.2
2	3.5	182°37'23"	-146.3	10.6
3	40.0	22°14'25"	7.8	15.5
4	6.4	150°35'22"	24.3	16.8
5	2.0	64°22'49"	1.2	2.2
6	6.5	36°59'39"	2.1	4.2
7	3.0	89°59'58"	3.0	4.9
8	5.0	89°59'32"	5.0	7.8
9	3.0	29°52'13"	0.8	1.5

CURVE DATA

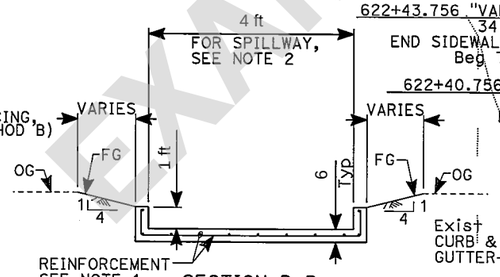
TRANSITION STRUCTURE No. 1

SCALE 1:50



TRANSITION STRUCTURE No. 2

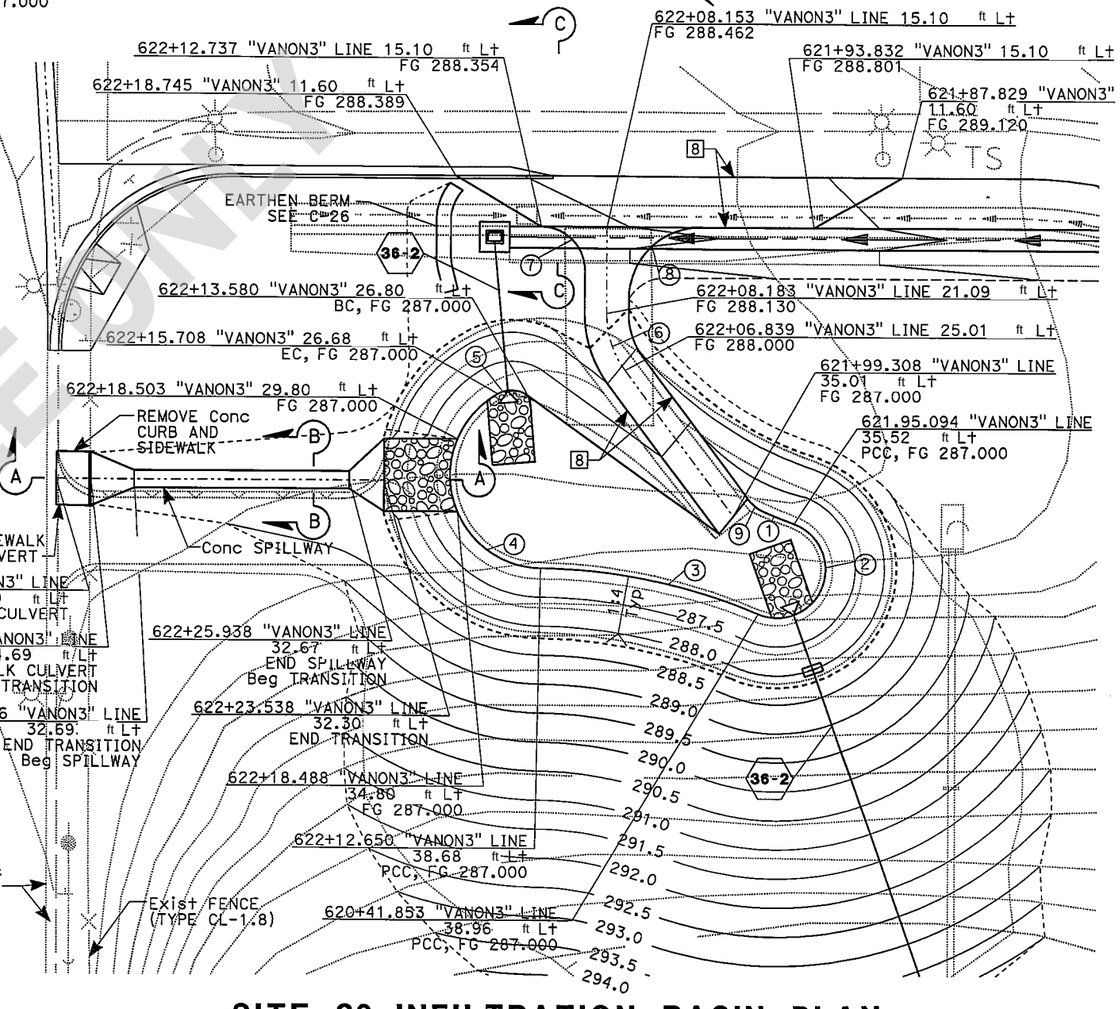
SCALE 1:50



SECTION B-B
NOT TO SCALE

NOTES:

1. REINFORCING STEEL SHALL BE #13 @ 12 C-C, BOTH WAYS. Min Clr SHALL BE 1.5.
2. HEIGHTS AND WIDTHS VARY FOR TRANSITIONS 1 AND 2.
3. RSP FABRIC SHALL BE PLACED AT SOIL INTERFACES.
4. FOR MVP AND ACCESS ROAD TYPICAL STRUCTURAL SECTION, SEE WD-5.



SITE 36 INFILTRATION BASIN PLAN

SCALE 1:200

ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL DETAILS

SCALE AS SHOWN

WD-3

LAST REVISION 10-1-10

THIS PLAN ACCURATE FOR WATER POLLUTION CONTROL WORK ONLY.

BORDER LAST REVISED 10-8-10 | BORDER LAST REVISED 3/1/2007 | USERNAME => s125081 | DGN FILE => 71219uih003.dgn | CU XXXXX | EA XXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	2	7

BETSY ROSS
REGISTERED CIVIL ENGINEER 10-8-10
PLANS APPROVAL DATE

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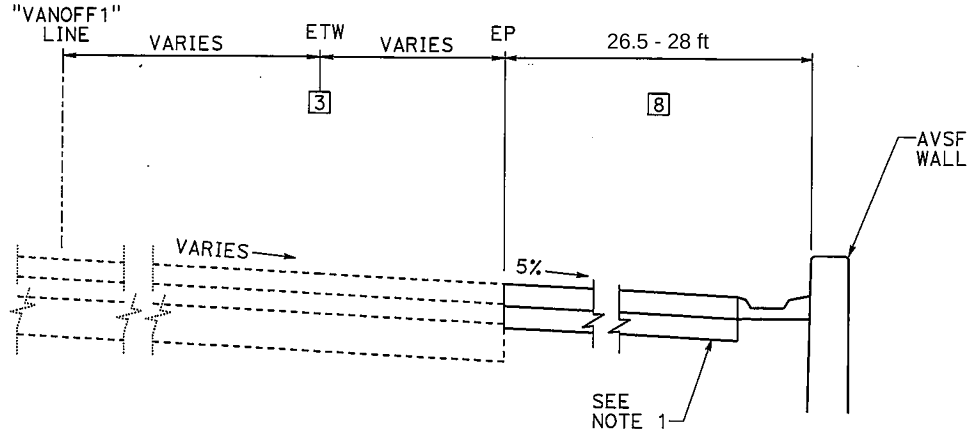
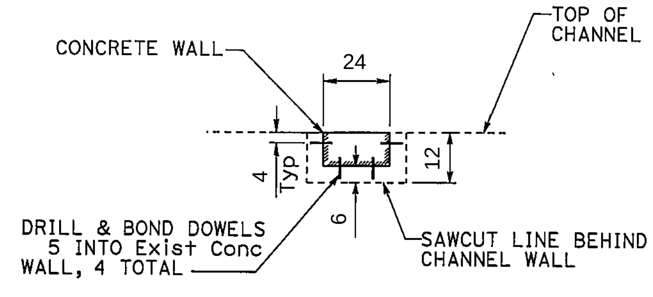
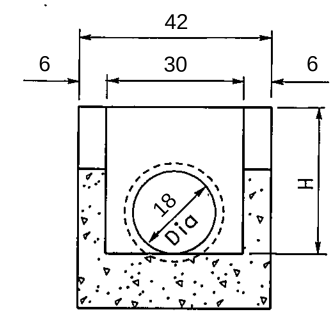
REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA



SECTION B-B
"VANOFF1" 620+10.000 TO "VANOFF1" 620+70.000
NOT TO SCALE



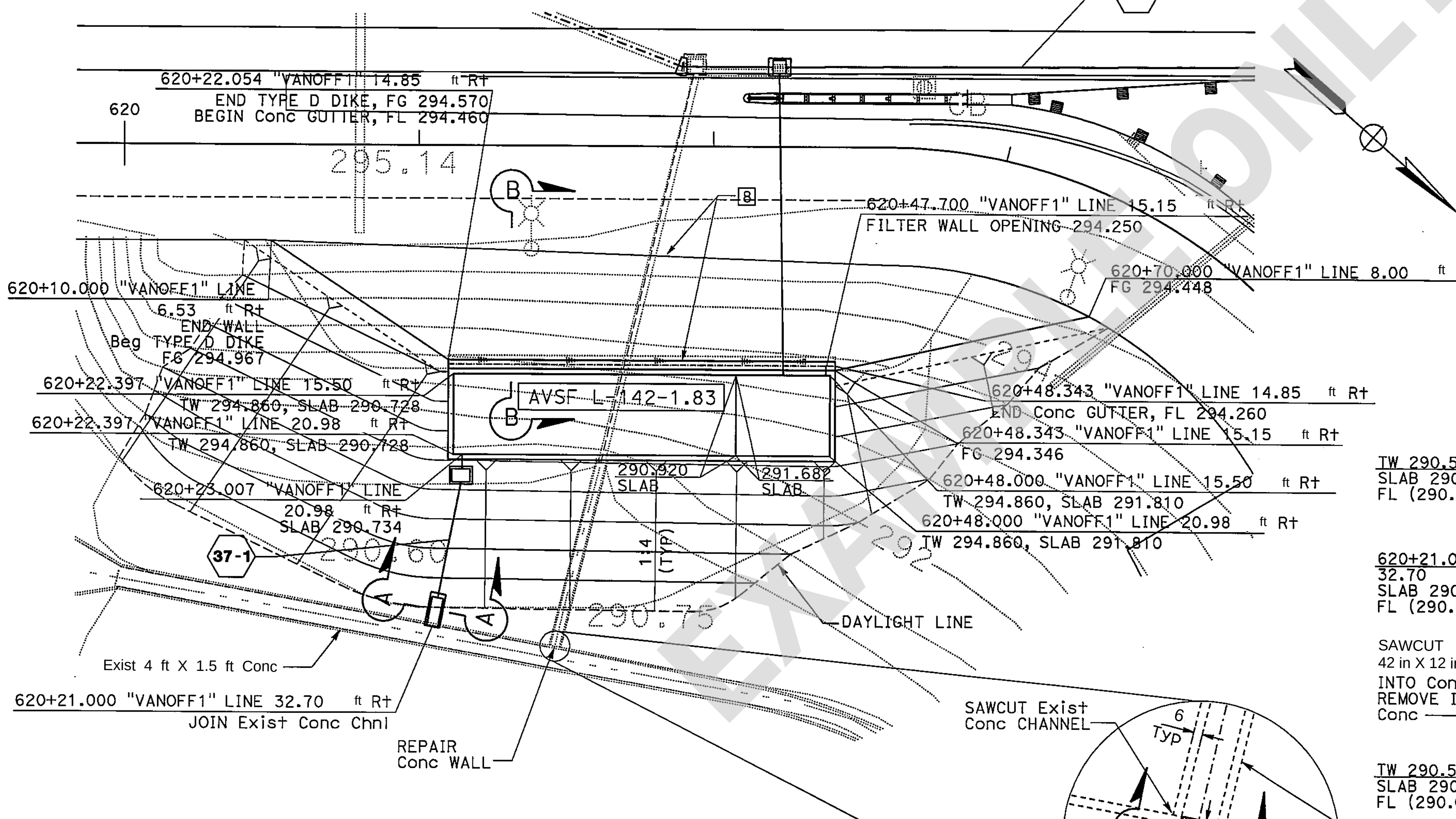
SECTION C-C



SECTION A-A

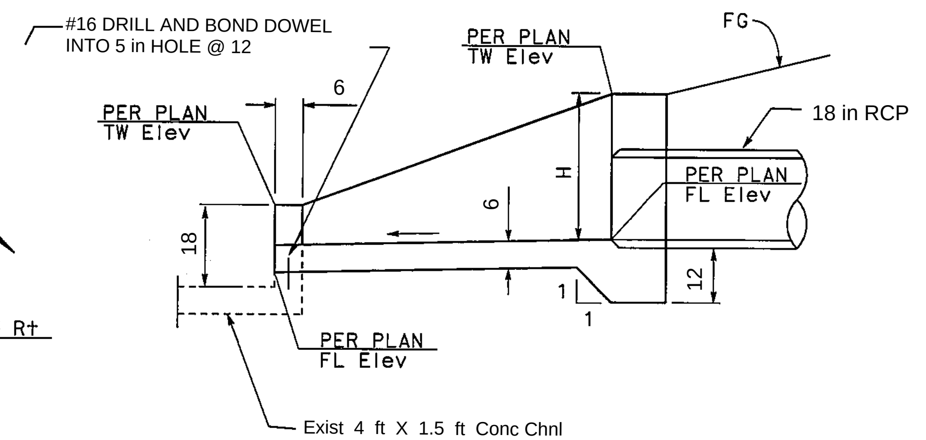
CONCRETE TRANSITION STRUCTURE NOTES:

1. REINFORCING SHALL BE #13 @ 12 C-C, BOTH WAYS FOR SLAB AND WALLS.
2. PROVIDE A CONSTRUCTION JOINT BETWEEN TS AND Exist Conc Chnl.

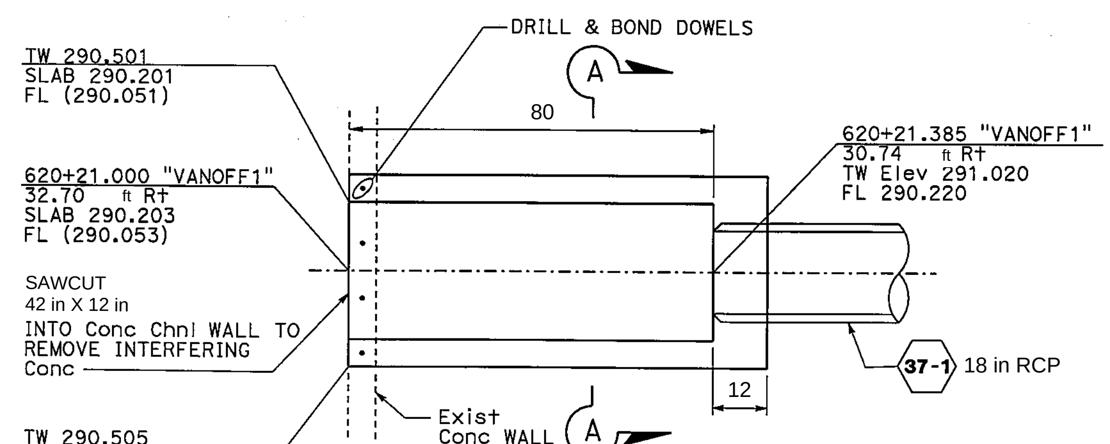


SITE 37 AUSTIN VAULT SAND FILTER PLAN

SCALE 1:200



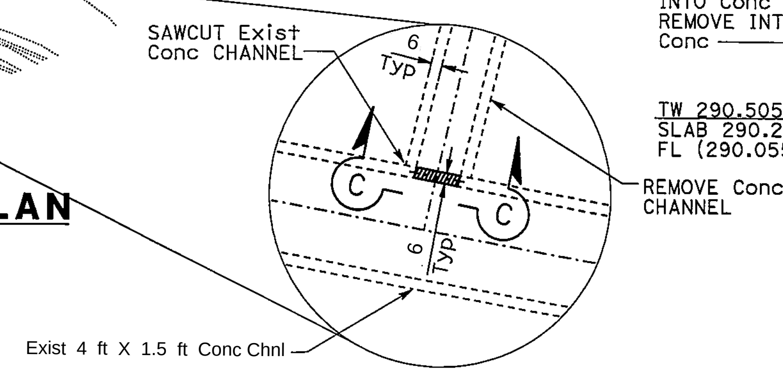
PROFILE



PLAN

CONCRETE JUNCTION STRUCTURE

NOT TO SCALE



Conc WALL REPAIR DETAIL

NOTE:

1. FOR MVP AND ACCESS ROAD TYPICAL STRUCTURAL SECTION, SEE WD-5.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL DETAILS

SCALE AS SHOWN

THIS PLAN ACCURATE FOR WATER POLLUTION CONTROL WORK ONLY

WD-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR: BETSY ROSS
CALCULATED-DESIGNED BY / CHECKED BY: GEORGE WASHINGTON
REVISED BY / DATE REVISED

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	3	7

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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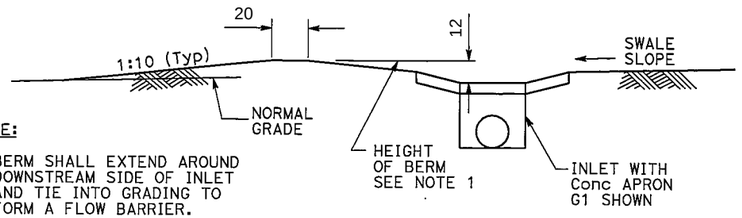
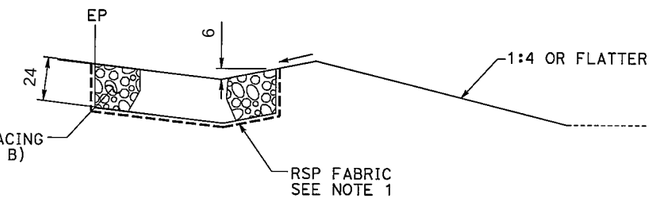
REGISTERED PROFESSIONAL ENGINEER
BETSY ROSS
No. CXXXXX
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA



NOTE:

1. BERM SHALL EXTEND AROUND DOWNSTREAM SIDE OF INLET AND TIE INTO GRADING TO FORM A FLOW BARRIER.

EARTHEN BERM



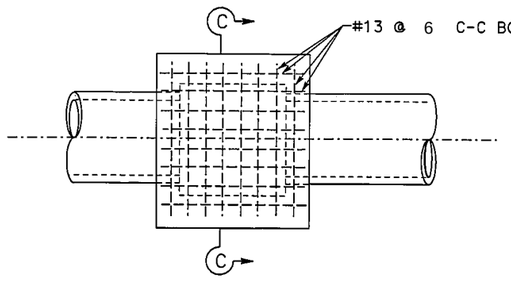
NOTE:

1. RSP FABRIC SHALL BE PLACED AT SOIL INTERFACES.

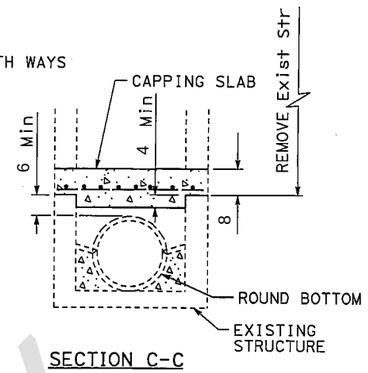
SECTION A-A

RSP TYPICAL SECTION

NOT TO SCALE

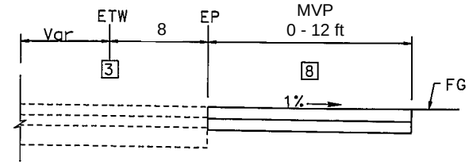


PLAN



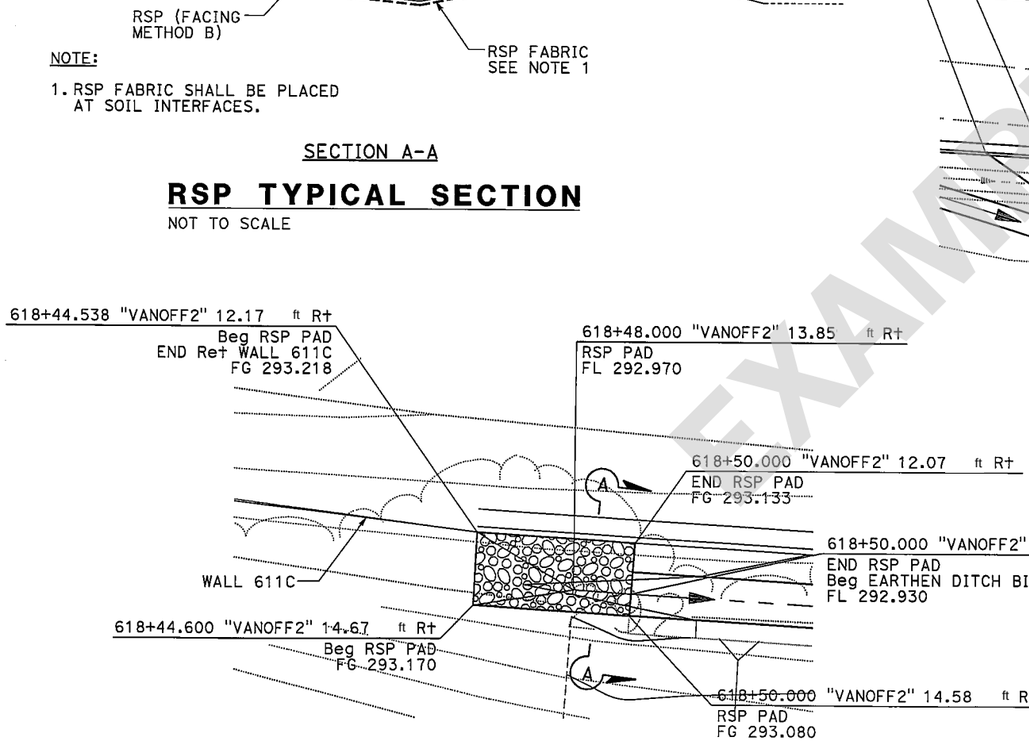
SECTION C-C

CAP INLET



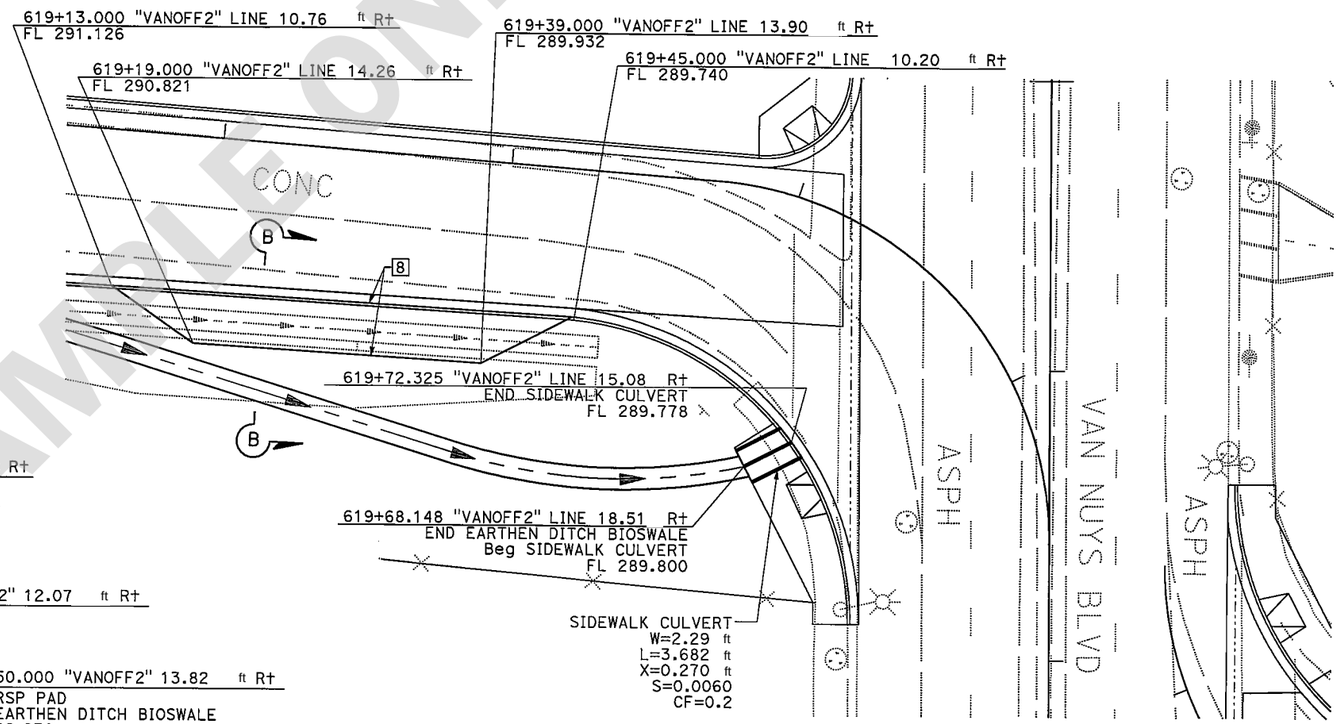
SECTION B-B

"VANOFF2" 619+13.000 TO 619+45.000
NOT TO SCALE



SITE 38 CURB AND GUTTER TRANSITION PLAN

SCALE 1:50



SITE 38 SIDEWALK CULVERT PLAN

SCALE 1:100

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL DETAILS

SCALE AS SHOWN

WD-5

LAST REVISION 10-1-10

THIS PLAN ACCURATE FOR WATER POLLUTION CONTROL WORK ONLY.

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: BETSY ROSS
CHECKED BY: GEORGE WASHINGTON
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

BORDER LAST REVISED 10-8-10

USERNAME => s125081
DGN FILE => 71219uih005.dgn

CU XXXXX

EA XXXXXX

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5,170	58.0/63.4, R32.3/R33.1	4	7

BETSY ROSS 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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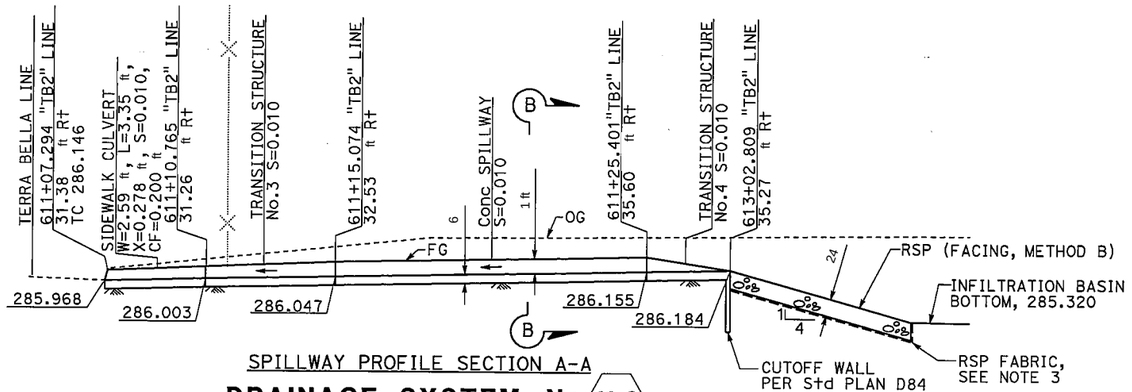
REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA

REVISED BY	DATE REVISED
BETSY ROSS	GEORGE WASHINGTON

CALCULATED-DESIGNED BY
CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

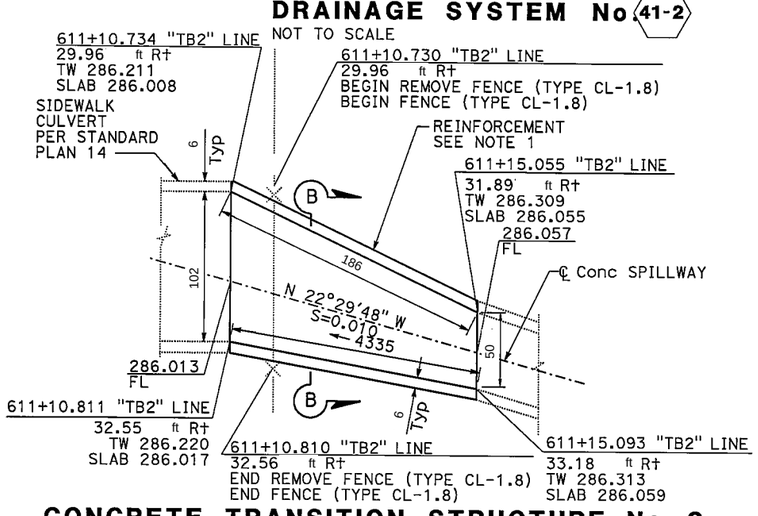


SPILLWAY PROFILE SECTION A-A

DRAINAGE SYSTEM No. 41-2

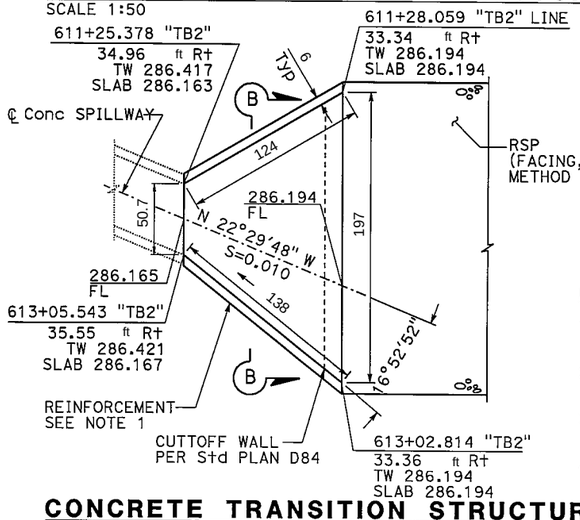
NOT TO SCALE

CURVE DATA				
NO.	R	Δ	T	L
1	11.8	36°22'46"	3.9	7.5
2	5.0	175°24'44"	124.8	15.3
3	26.0	37°28'28"	8.8	17.0
4	5.0	217°34'51"	14.6	18.9
5	7.6	74°1'52"	5.7	9.8
6	6.1	89°49'32"	6.0	9.5
7	6.1	90°6'57"	6.1	9.5
8	3.0	60°41'50"	1.7	3.1



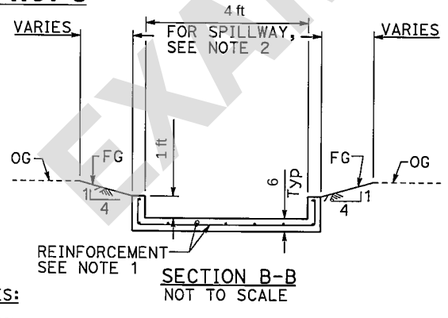
CONCRETE TRANSITION STRUCTURE No. 3

SCALE 1:50



CONCRETE TRANSITION STRUCTURE No. 4

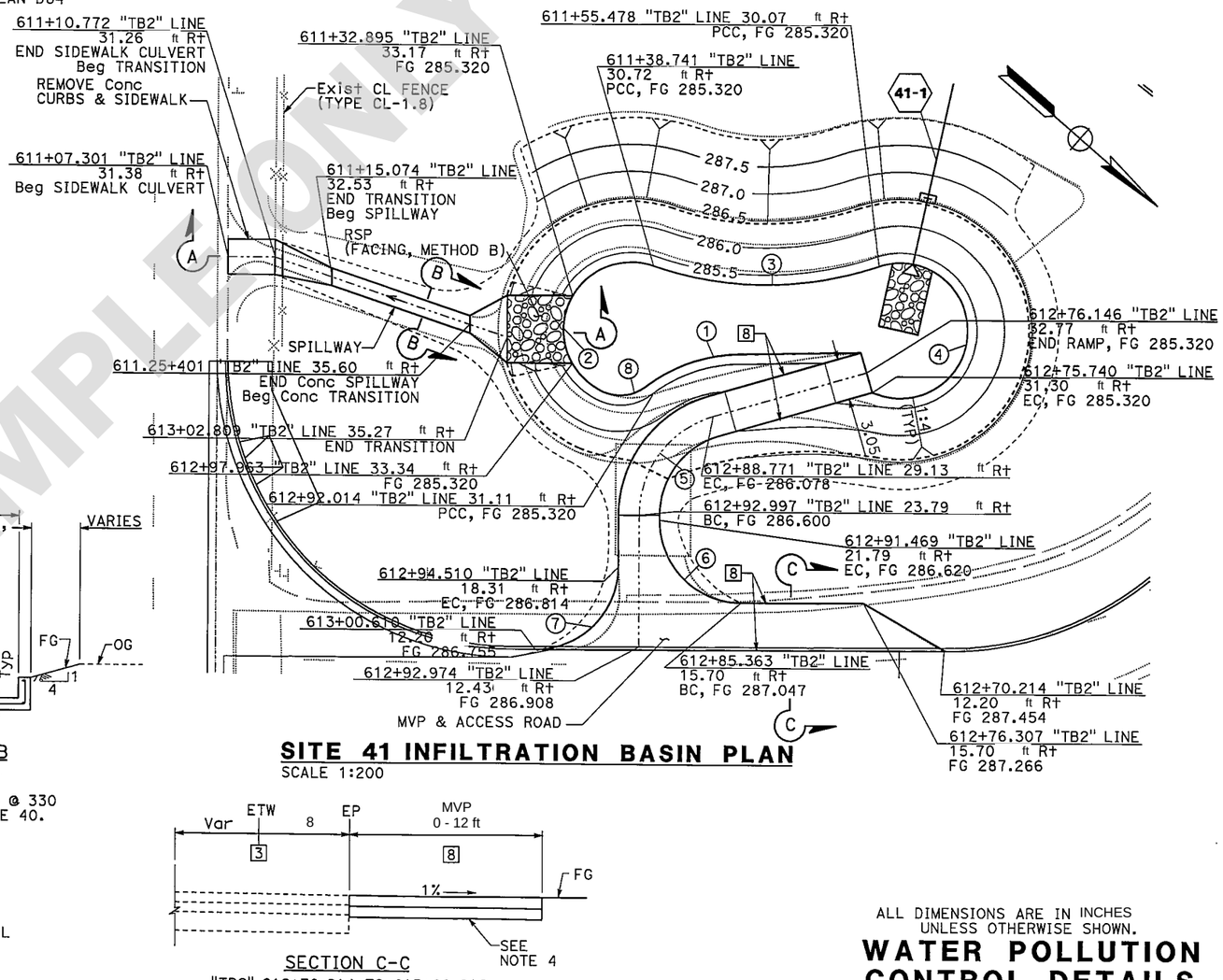
SCALE 1:50



SECTION B-B
NOT TO SCALE

NOTES:

1. REINFORCING STEEL SHALL BE #13 @ 330 C-C, BOTH WAYS. Min Clr SHALL BE 40.
2. HEIGHTS AND WIDTHS VARY FOR TRANSITIONS 1 AND 2.
3. RSP FABRIC SHALL BE PLACED AT SOIL INTERFACES.
4. FOR MVP AND ACCESS ROAD TYPICAL STRUCTURAL SECTION, SEE WD-5.



SITE 41 INFILTRATION BASIN PLAN

SCALE 1:200

SECTION C-C
"TB2" 612+70.214 TO 613+00.610
NOT TO SCALE

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.

WATER POLLUTION CONTROL DETAILS

SCALE AS SHOWN

THIS PLAN ACCURATE FOR WATER POLLUTION CONTROL WORK ONLY.

WD-6

LAST REVISION 10-1-10

BORDER LAST REVISED 10-8-10

USERNAME => s125081
DGN FILE => 71219uih006.dgn

CU XXXXX

EA XXXXXX

DIST.	COUNTY	ROUTE	MILE POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	5, 170	58.0/63.4, R32.3/R33.1	5	7

Betsy Ross 10-8-10
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS No. CXXXXX Exp. 09-30-11 CIVIL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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GENERAL NOTES

Designation:
Partial Austin Vault Sand Filters (AVSFs) are open air reinforced concrete vaults utilizing both sedimentation and sand filtration basins. Type designation is based on length configuration, water quality volume to be drained in a 24 hour period, and average depth of water.

Standard configurations are noted for the following design water quality volumes (WQV): 5,000, 7,5000, 10,000, and 15,000 cubic feet. Length configurations are either short (S) or long (L). The average water depth can be either 36 in, 54 in, 72 in as designed in Design Water Quality Volumes (WQV) table.

Special Reinforcement Coverage:
AVSF Standard Details are not to be used in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special Design:
Required for the following conditions: ground water conditions above bottom of AVSF, surcharge loads exceeding HS20 truck load, design bearing pressures or sizes greater than those on this plan, inlet velocities which exceed 8 ft/sec at gabion wall, and settlement due to liquefaction.

DESIGN WATER QUALITY VOLUMES (WQV)

AVSF Type*	WQV (ft^3)	W(ft)	Ls(ft)	Lf(ft)	Hw(ft)
L - 5,000 - 3	5,000	18	21	63	3
S - 7,500 - 6	7,500	27	15	42	6
L - 10,000 - 3	10,000	36	21	63	3
L - 15,000 - 3	15,000	30	37	115	3

* AVSF Type = Length configuration (S or L) - water quality volume (CM) - design water depth (Hw elevation)

DESIGN NOTES

Specifications:
Design:
Bridge Design Specification April 2000 (LFD) (1996 AASHTO) with interims and revisions by Caltrans

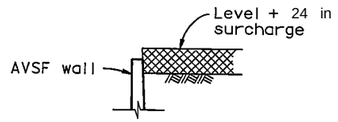
Wall & Footing (LFD): 1.5 D + 1.5 E + 1.5 W
Where D = Dead Load
E = Earth Load
W = Water Load
Capacity reduction factor is included.

Earth Load:
22 kPa/ft vertical,

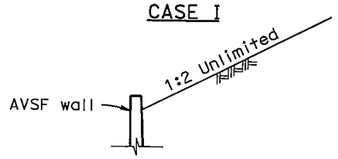
Water Load:
9.8 kPa/ft horizontal/vertical,

Equivalent Fluid Pressure =
15.7 kPa/ft horizontal (Case I).

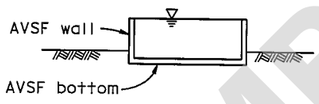
Earth pressure for 1:2 unlimited slope determined from Rankine's formula with ø = 33°42' (Case II).



CASE I



CASE II



CASE III

DETAIL OF DESIGN LOADING CASES

CASE I Level + 24 in surcharge, AVSF empty
CASE II 2:1 Unlimited slope, AVSF empty
CASE III AVSF full of water, no soil pressure

Design Conditions:
Design H may be exceeded by 6 in before going to the next size.

Unit Stresses:
f'_c = 25 MPa
fy= 420 MPa

Shear:
Maximum allowable shear, Vc = $0.25\sqrt{f'c}$ Mpa

Design Bearing Pressure = 144 kPa (service)

INDEX TO PLAN

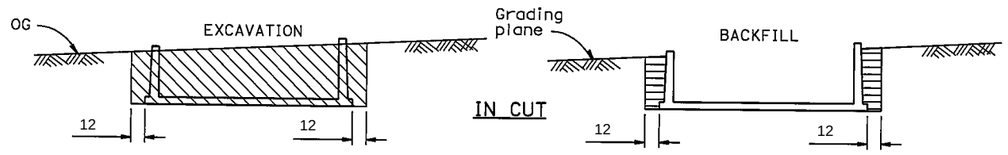
CONSTRUCTION NOTES

Expansion joints:
Inverts and sidewalls - Place 2 in expansion joint filler at 360 in + centers with waterstop, see "Details No. 2" sheet for specific wall & invert details.

Construction Joints:
Temporary joints may be permitted if normal (or radial) to ℄ of AVSF. Otherwise, the contractor is to submit a proposal for consideration.

Backfill:
See Standard Specifications, except the difference in backfill shall not exceed 2.43 m between side walls and inlet and outlet walls.

Earthwork:
Limits of payment for excavation and backfill.



IN CUT

LEGEND:
Structure excavation (AVSF)
Structure backfill (AVSF)
Original ground, OG

NOTES:
1. Slope or shore excavation sides as necessary.
2. Dimensions shown are minimum.

STANDARD PLANS DATED JULY 2004

B0-3	BRIDGE DETAILS
B3-9	RETAINING WALL DETAILS No. 2
B6-21	JOINT SEALS (MAXIMUM MOVEMENT RATING = 2 in)
B11-47	CABLE RAILING
D100A	GABION BASKET DETAILS No. 1
D100B	GABION BASKET DETAILS No. 2

STANDARD PLAN SHEET No.
DETAIL No.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN

WD-16

RELEASE DATE ---	DESIGN	BY B. ROSS	CHECKED G. WASHINGTON		
FILE NO. ---	DETAILS	BY B. ROSS	CHECKED G. WASHINGTON		
	SUBMITTED	BY B. ROSS	DRAWING DATE 8/01/10		

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO.
MILE POST

AUSTIN VAULT SAND FILTER
GENERAL NOTES

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU XXXXX
EA XXXXX

DISREGARD PRINTS BEARING EARLIER REVISION DATES.

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET OF

USERNAME => s125081

71219uih016.dgn

DIST.	COUNTY	ROUTE	MILE POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	5, 170	58.0/63.4, R32.3/R33.1	6	7

Betsy Ross 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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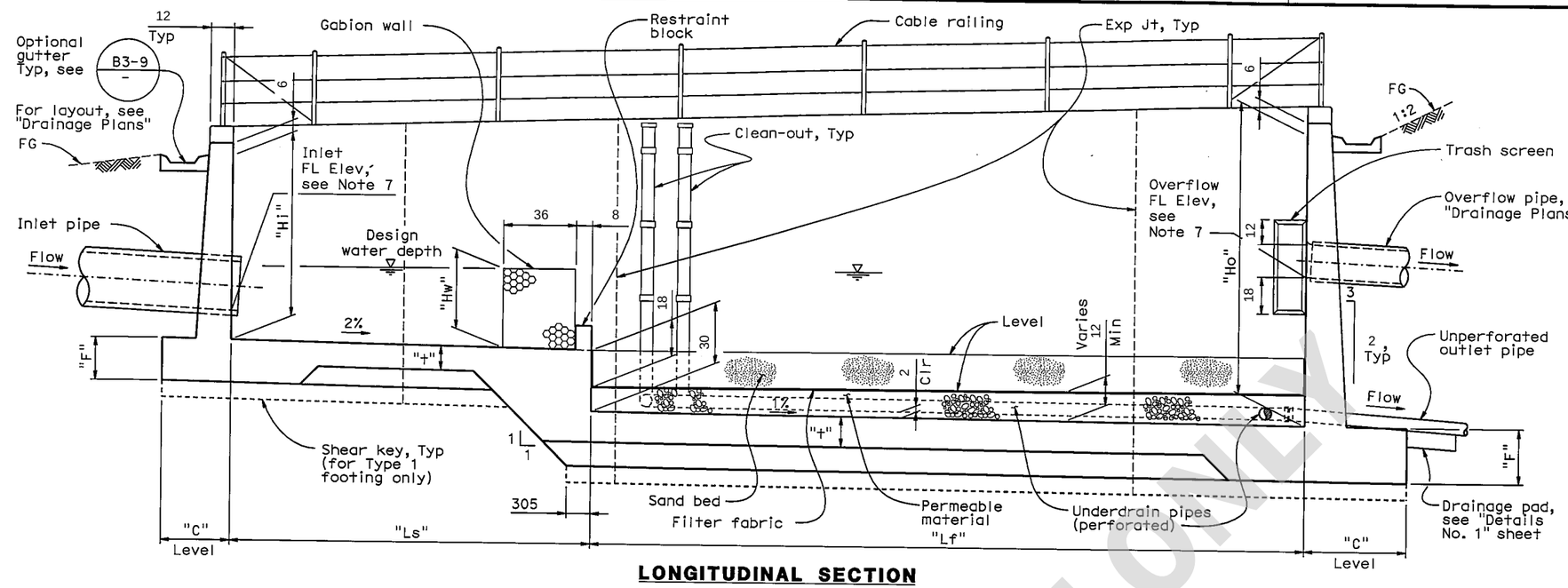
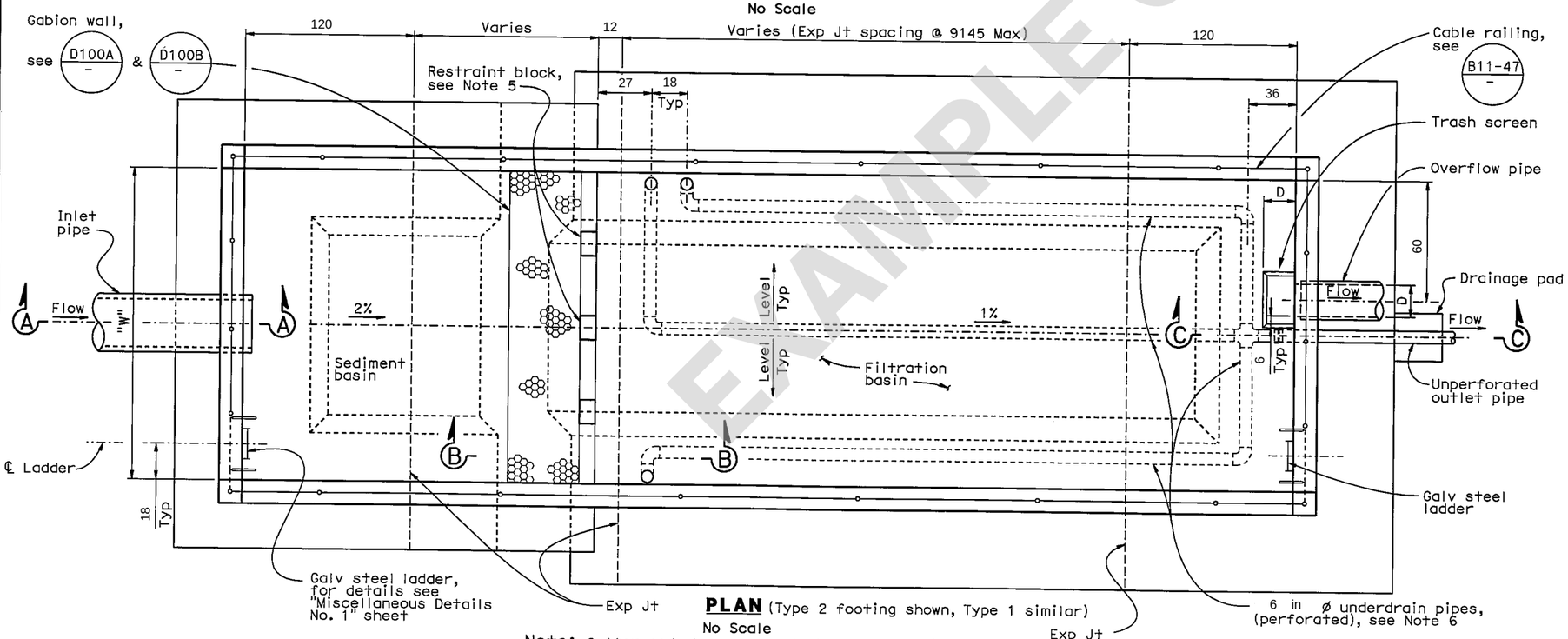
REGISTERED PROFESSIONAL ENGINEER — BETSY ROSS — No. CXXXXX — Exp. 09-30-11 — CIVIL — STATE OF CALIFORNIA



LONGITUDINAL SECTION

No Scale



PLAN (Type 2 footing shown, Type 1 similar)

No Scale

Note: Gutter and shear key not shown for clarity.

NOTES:

1. For dimensions "W", "Ls", "Lf" and "Hw", see Design WQV table on "General Notes" sheet.
2. For dimensions "C" and "F", see "Wall Details" sheet.
3. For Typical Section, see "Wall Details" sheet.
4. For Section A - A, B - B and C - C, see "Details No. 1" sheet.
5. For restraint block details, see "Details No. 1" and "Details No. 2" sheets.
6. For details of underdrain (sand filter), see "Details No. 4" sheet.
7. FL elevation, see "Drainage Plans".
8. For Type 1 and Type 2 footing, see "Footing Details" sheet.
9. For slope of unperforated outlet pipe, see "Drainage Plans".
10. For dimension "+", see "Footing Details" sheet.
11. For trash screen details (frame and perforated metal skin), see "Details No 3" sheet.

Austin Type	Allowable Wall Heights	
	Sediment Basin (Hi)	Filtration Basin (Ho)
L - 5,000 - 3	72 - 144	120 - 192
S - 7,500 - 6	120 - 144	168 - 192
L - 10,000 - 3	72 - 144	120 - 192
L - 15,000 - 3	72 - 144	120 - 192

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN

WD-17

RELEASE DATE ---	DESIGN	BY B. ROSS	CHECKED G. WASHINGTON	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES
FILE NO. ---	DETAILS	BY B. ROSS	CHECKED G. WASHINGTON		
	SUBMITTED	BY B. ROSS	DRAWING DATE 8/01/10		

BRIDGE NO.
MILE POST

AUSTIN VAULT SAND FILTER
LAYOUT No. 1

CU XXXXX
EA XXXXX

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES:

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET OF

USERNAME => s125081

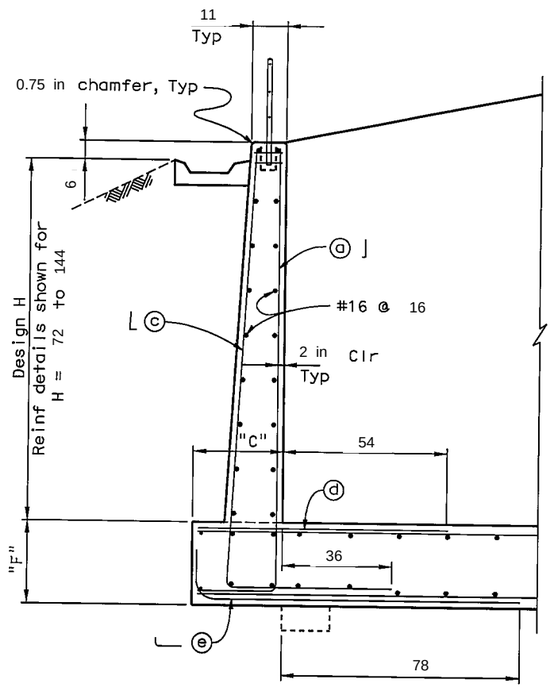
71219uih017.dgn

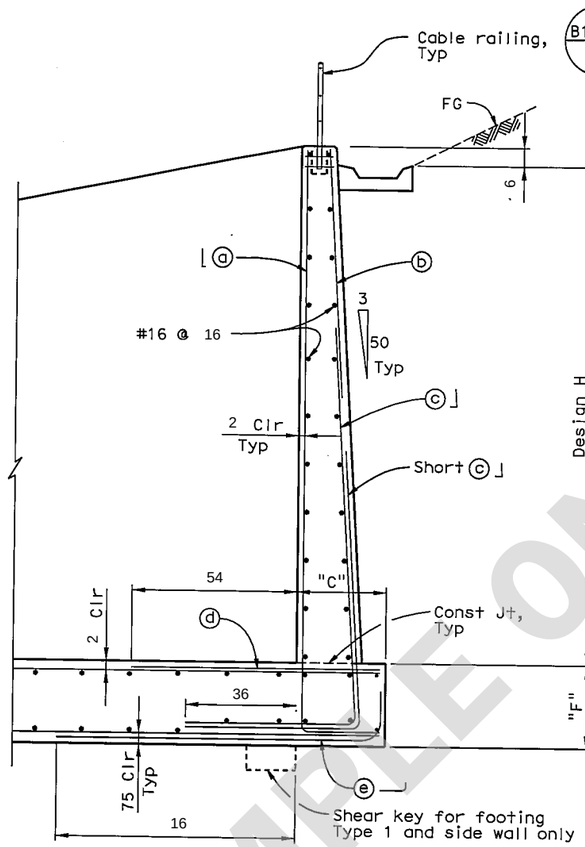
DIST.	COUNTY	ROUTE	MILE POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	5, 170	58.0/63.4, R32.3/R33.1	5	7

Janie Doe 10-8-10
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
JANIE DOE
No. CXXXXX
Exp. 09-30-11
CIVIL
STATE OF CALIFORNIA





TYPICAL SECTION
No Scale

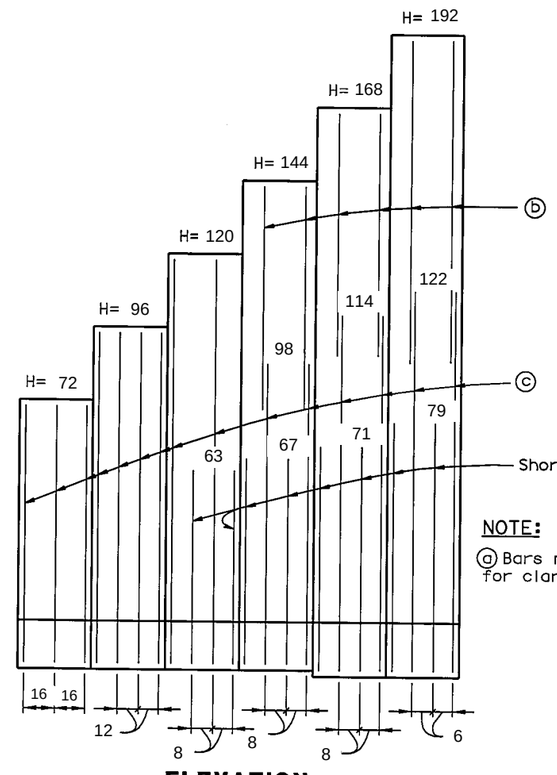
TABLE OF REINFORCING STEEL DIMENSIONS AND DATA FOR WALL

Design H	72	96	120	144	168	192
Batter V:H	100:6	100:6	100:6	100:6	100:6	100:6
C	30	30	30	30	33	33
F	21	21	21	21	27	27
⌋ ⓐ bars # @ "	16 @ 16	16 @ 12	19 @ 16	16 @ 8	19 @ 8	16 @ 6
ⓑ bars # @ "	-	-	-	16 @ 16	16 @ 16	16 @ 12
L ⓒ bars # @ "	16 @ 16	19 @ 12	19 @ 8	22 @ 8	25 @ 8	25 @ 6
ⓓ bars # @ "	19 @ 16	19 @ 12	16 @ 8	19 @ 8	19 @ 8	19 @ 6
└ ⓔ bars # @ "	19 @ 16	19 @ 12	22 @ 8	25 @ 8	25 @ 8	29 @ 6
Concrete (ft^3/ft)	0.70	0.95	1.25	1.56	1.88	2.23
* Steel (kg/ft)	74.41	116.08	165.19	226.20	287.22	391.39

* Including all wall stem reinforcement and footing slab ⓓ, ⓔ bars.

NOTES:

1. For dimension W, see "General Notes" sheet.
2. Design "H" may be exceed by 6 in before going to next size.
3. For footing details not shown, see "Footing Details" sheet.
4. Concrete and steel quantities noted are based on foot of wall length.



NOTE:
ⓐ Bars not shown for clarity.

ELEVATION
No Scale

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN

WD-19

RELEASE DATE ---	DESIGN	J. DOE	CHECKED J. DOE
FILE NO. ---	DETAILS	J. DOE	CHECKED J. DOE
	SUBMITTED	J. DOE	DRAWING DATE 8/01/10

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO.
WILE POST

AUSTIN VAULT SAND FILTER
WALL DETAILS

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU XXXXX
EA XXXXX

DISREGARD PRINTS BEARING EARLIER REVISION DATES.

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET OF

USERNAME => s125081

71219uih019.dgn

Checklist SW-1, Site Data Sources

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

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	
• Photogrammetric Data and USGS Quad Maps	August 2010
• Survey Data, Topographic Maps, and Aerial Photographs	March 2006, August 2010
Hydraulic	
• Initial Study/Environmental Assessment, Environmental Reevaluation Addendum	December 2004, January 2009
• http://www.water-programs.com/wqpt.htm	August 2010
•	
Soils	
• Initial Site Assessment	March 2005
• Geotechnical Investigation Report	December 2006
• NRCS Maps (Soil Group Index Maps)	August 2010
• Aerially Deposited Lead Investigation Report	June 2005
Climatic	
• http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7759	August 2010
Water Quality	
• http://www.water-programs.com/wqpt.htm	August 2010
• http://www.swrcb.ca.gov/rwqcb4/	August 2010
• Caltrans SWPPP/WPCP Preparation Manual	March 2007
Other Data Categories	
• Caltrans Stormwater Management Program District 7 Work Plan 2010/2011	April 2010
• Caltrans Storm Water Quality Handbooks, Project Planning and Design Guide (PPDG)	July 2010
•	

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

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). **Tujunga Wash**	☒Complete	☐NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern. **Tujunga Wash: coliform bacteria and trash**	☒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. **Pacoima Spreading Grounds (PM 39.28/40.46 on I-5)**	☒Complete	☐NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc. **Tujunga Wash: Ammonia and copper. Prescriptive TMDLs: trash, nutrients, and metals**	☒Complete	☐NA
5.	Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.	☒Complete	☐NA
6.	Determine if a 401 certification will be required. **Yes, 401 and 404 are required**	☒Complete	☐NA
7.	List rainy season dates. **Rainy season Oct 1 to May 1**	☒Complete	☐NA
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves. **Mild, annual rainfall 18"**	☒Complete	☐NA
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater. **Soil Type B, groundwater depth 35'**	☒Complete	☐NA
10.	Determine contaminated soils within the project area.	☒Complete	☐NA
11.	Determine the total disturbed soil area of the project. **83 ac**	☒Complete	☐NA
12.	Describe the topography of the project site. **Relatively level**	☒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.	☒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. **none**	☒Complete	☐NA
18.	Describe the local land use within the project area and adjacent areas. **Completed developed residential and commercial**	☒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: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

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: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Consideration of Design Pollution Prevention BMPs

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

Will project increase velocity or volume of downstream flow?	☒ Yes	☐ No	☐ NA
Will the project discharge to unlined channels?	☐ Yes	☒ No	☐ NA
Will project increase potential sediment load of downstream flow?	☐ Yes	☒ No	☐ NA
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.

Slope/Surface Protection Systems

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.

Concentrated Flow Conveyance Systems

Will the project create or modify ditches, dikes, berms, or swales?	☒ Yes	☐ No	☐ NA
Will project create new slopes or modify existing slopes?	☒ Yes	☐ No	☐ NA
Will it be necessary to direct or intercept surface runoff?	☒ Yes	☐ No	☐ NA
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.

Preservation of Existing Vegetation

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: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

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 or devices to reduce peak discharges. ☒Complete

Design Pollution Prevention BMPs

Checklist DPP-1, Part 3

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Slope / Surface Protection Systems

1.	What are the proposed areas of cut and fill? (attach plan or map)	☒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 new or disturbed slopes > 4:1 horizontal:vertical (h:v)? If Yes, District Landscape Architect must prepare or approve an erosion control plan, at the District's discretion.	☒Yes ☐No
6.	Are new or disturbed slopes > 2:1 (h:v)? 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 2:1 (h:v).	☐Yes ☒No
7.	Estimate the net new impervious area that will result from this project. 24.2 acres	☒Complete

VEGETATED SURFACES

1.	Identify existing vegetation.	☒Complete
2.	Evaluate site to determine soil types, appropriate vegetation and planting strategies.	☒Complete
3.	How long will it take for permanent vegetation to establish?	☒Complete
4.	Minimize overland and concentrated flow depths and velocities.	☒Complete

HARD SURFACES

1.	Are hard surfaces required? If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations.	☐Yes ☒No ☐Complete

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, and 835, and Chapter 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 4:1 h:v. ☒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: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

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? ☒Yes ☐No

Treatment BMPs

Checklist T-1, Part 1

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-watershed within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project, when considering Treatment BMPs. Use the responses to the questions as the basis when developing the narrative in Section 5 of the Storm Water Data Report to document that Treatment BMPs have been appropriately considered.

Answer all questions, unless otherwise directed. Questions 14 through 16 should be answered after all subwatershed (drainages) are considered using this checklist.

1. Is the project in a watershed with prescriptive TMDL treatment BMP requirements in an adopted TMDL implementation plan? ☒Yes ☐No

   If Yes, consult the District/Regional Storm Water Coordinator to determine whether the T-1 checklist should be used to propose alternative BMPs because the prescribed BMPs may not be feasible or other BMPs may be more cost-effective. Special documentation and regulatory response may be necessary.

2. Dry Weather Flow Diversion

   (a) Are dry weather flows generated by Caltrans anticipated to be persistent? ☐Yes ☒No

   (b) Is a sanitary sewer located on or near the site? ☐Yes ☒No

   If Yes to both 2 (a) and (b), continue to (c). If No to either, skip to question 3.

   (c) Is connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices? ☐Yes ☐No

   (d) Is the domestic wastewater treatment authority willing to accept flow? ☐Yes ☐No

   If Yes was answered to all of these questions consider ***Dry Weather Flow Diversion***, complete and attach **Part 3** of this checklist

3. Is the receiving water on the 303(d) list for litter/trash or has a TMDL been issued for litter/trash? ☒Yes ☐No

If Yes, consider ***Gross Solids Removal Devices (GSRDs)***, complete and attach **Part 6** of this checklist. Note: Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter. Before considering GSRDs for stand-alone installation or in sequence with other BMPs, consult with District/Regional NPDES Storm Water Coordinator to determine whether Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins should be considered instead of GSRDs to meet litter/trash TMDL.

4. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year? ☐Yes ☒No

   If Yes, consider ***Traction Sand Traps***, complete and attach **Part 7** of this checklist.

5. Maximizing Biofiltration Strips and Swales

   Objectives:

   1) Quantify infiltration from biofiltration alone
   2) Identify highly infiltrating biofiltration (i.e. > 90%) and skip further BMP consideration.
   3) Identify whether amendments can substantially improve infiltration.

   (a) Have biofiltration strips and swales been designed for runoff from all project areas, including sheet flow and concentrated flow conveyance? If no, document justification in Section 5 of the SWDR. ☐Yes ☒No

   (b) Based on site conditions, estimate what percentage of the WQV[1] can be infiltrated. When calculating the WQV, use a 12-hour drawdown for Type A and B soils, a 24-hour drawdown for Type C soils, and a 48-hour drawdown for Type D soils.

   _X_ < 20%
   ___ 20 % - 50%
   ___ 50% - 90%
   ___ > 90%

   ☒Complete

   (c) Is infiltration greater than 90 percent? If Yes, skip to question 13. ☐Yes ☒No

[1] A complete methodology for determining WQV infiltration is available at: http://www.dot.ca.gov/hq/oppd/stormwtr/index.htm

(d) Can the infiltration ranking in question 5(b) above be increased by using soil amendments? Use the 'drain time' associated with the amended soil (the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils[2]). ☒Yes ☐No

If Yes, consider including soil amendments; increasing the infiltration ranking allows more flexibility in the selection of BMPs (strips and swales will show performance comparable to other BMPs). Record the new infiltration estimate below:

_X_ < 20% (skip to 6)
___ 20 % - 50% (skip to 6)
___ 50% - 90% (skip to 6)
___ >90%

☒Complete

(e) Is infiltration greater than 90 percent? If Yes, skip to question 13. ☐Yes ☒No

6. Biofiltration in Rural Areas

Is the project in a rural area (outside of urban areas that is covered under an NDPES Municipal Stormwater Permit[3]). If Yes proceed to question 13. ☐Yes ☒No

7. Estimating Infiltration for BMP Combinations

Objectives:

1) Identify high-infiltration biofiltration or biofiltration and infiltration BMP combinations and skip further BMP consideration.

2) If high infiltration is infeasible, then identify the infiltration level of all feasible BMP combinations for use in the subsequent BMP selection matrices

(a) Has concentrated infiltration (i.e., via earthen basins or earthen filters) been prohibited? Consult your District/Regional Storm Water Coordinator and/or environmental documents. ☐Yes ☒No

If No proceed to 7 (b); if Yes skip to question 8 and do not consider earthen basin-type BMPs

[2] Type D soils are not expected where amendments are incorporated

[3] See pages 39 and 40 of the Fact Sheets for the CGP.
http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf

(b) Assess infiltration of an infiltration BMP that is used in conjunction with biofiltration. Include infiltration losses from biofiltration, if biofiltration is feasible. ☒Complete

(use 24 hr WQV)
_X_ < 20% (do not consider this BMP combination)
___ 20% - 50%
___ 50% - 90%
___ >90%

Is at least 90 percent infiltration estimated? If Yes proceed to 13. If No proceed to 7(c). ☐Yes ☒No

(c) Assess infiltration of biofiltration with combinations with remaining approved earthen BMPs using water quality volumes based on the drain time of those BMPs. This assessment will be used in subsequent BMP selection matrices.

Earthen Detention Basin (use 48 hr WQV)	Earthen Austin SF (use 48 hr WQV)
___ < 20%	___ < 20%
___ 20% - 50%	___ 20% - 50%
___ > 50%	___ > 50%

☐Complete

Continue to Question 8

8. Identifying BMPs based on the Target Design Constituents

(a) Does the project discharge to a water body that has been placed on the 303-d list or has had a TMDL adopted? If "No," use Matrix A to select BMPs, consider designing to treat 100% of the WQV, then skip to question 12. ☒Yes ☐No

If Yes, is the identified pollutant(s) considered a Targeted Design Constituent (TDC) (check all that apply below)?

☐ sediments	☒ copper (dissolved or total)
☐ phosphorus	☐ lead (dissolved or total)
☒ nitrogen	☐ zinc (dissolved or total)
	☐ general metals (dissolved or total)[1]

(b) Treating Sediment. Is sediment a TDC? If Yes, use Matrix A to select BMPs, then skip to question 12. Otherwise, proceed to question 9. ☐Yes ☒No

[1] General metals include cadmium, nickel, chromium, and other trace metals. Note that selenium and arsenic are not metals. Mercury is a metal, but is considered later during BMP selection, under Question 12 below.

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Strip: HRT > 5 Austin filter (concrete) Austin filter (earthen) Delaware filter MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Swale MCTT Wet basin	Austin filter (concrete) Delaware filter MCTT Wet basin
HRT = hydraulic residence time (min) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

9. Treating both Metals and Nutrients.
   Is copper, lead, zinc, or general metals *AND* nitrogen or phosphorous a TDC? If Yes use Matrix D to select BMPs, then skip to question 12. Otherwise, proceed to question 10. ☒Yes ☐No

10. Treating Only Metals.
    Are copper, lead, zinc, or general metals listed TDCs? If Yes use Matrix B below to select BMPs, and skip to question 12. Otherwise, proceed to question 11. ☐Yes ☐No

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	MCTT Wet basin Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Biofiltration Strip Biofiltration Swale Wet basin
Tier 2	Strip: HRT > 5 Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

11. Treating Only Nutrients.
Are nitrogen and/or phosphorus listed TDCs? If "Yes," use Matrix C to select BMPs. If "No", please check your answer to 8(a). At this point one of the matrices should have been used for BMP selection for the TDC in question, unless no BMPs are feasible. ☐Yes ☐No

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter**	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches*	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip Biofiltration Swale
Tier 2	Wet basin Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale Wet basin	Austin filter (concrete) Delaware filter Wet basin
* Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			
** Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Wet basin* Austin filter (earthen) Austin filter (concrete) Delaware filter**	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches***	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches*** Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
* The wet basin should only be considered for phosphorus			
** In cases where earthen BMPs can infiltrate, Delaware filters are ranked in Tier 2 if the TDC is nitrogen only, but they are Tier 1 for phosphorous only or both nitrogen and phosphorous.			
*** Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

12. Does the project discharge to a waterbody that has been placed on the 303-d list or has had a TMDL adopted for mercury or low dissolved oxygen? ☐Yes ☒No

    If Yes contact the District/Regional NPDES Storm Water Coordinator to determine if standing water in a Delaware filter, wet basin, or MCTT would be a risk to downstream water quality.

13. After completing the above, identify and attach the checklists shown below for every Treatment BMP under consideration. (use one checklist every time the BMP is considered for a different drainage within the project) ☒Complete

    _✓_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
    ___ Dry Weather Diversion: Checklist T-1, Part 3
    _✓_ Infiltration Devices: Checklist T-1, Part 4
    ___ Detention Devices: Checklist T-1, Part 5
    ___ GSRDs: Checklist T-1, Part 6
    ___ Traction Sand Traps: Checklist T-1, Part 7
    _✓_ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
    ___ Multi-Chambered Treatment Train: Checklist T-1, Part 9
    ___ Wet Basins: Checklist T-1, Part 10

14. Estimate what percentage of WQV (or WQF, depending upon the Treatment BMP selected) will be treated by the preferred Treatment BMP(s): **100% has been treated to MEP, calculations attached.** ☒Complete

    (a) Have Treatment BMPs been considered for use in parallel or series to increase this percentage? ☒Yes ☐No

15. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) that will be treated by the preferred treatment BMP(s): **100% has been treated (110% of net WQV has been infiltrated), calculations attached.** ☒Complete

16. Prepare cost estimate, including right-of-way, and site specific determination of feasibility (Section 2.4.2.1) for selected Treatment BMPs and include as supplemental information for SWDR approval. ☒Complete

WQV Infiltrated Using the Free-Flow BMP Infiltration Tool

This page presents the results of infiltration with and without ammendment from the infiltration tool. It also provides a summary of the inputs for reference.

PROJECT INFORMATION

Project	HOV Lanes
Sub-watershed	Bull Canyon (HAS 412.21)
Free-Flow BMP type	Swale - SA 36

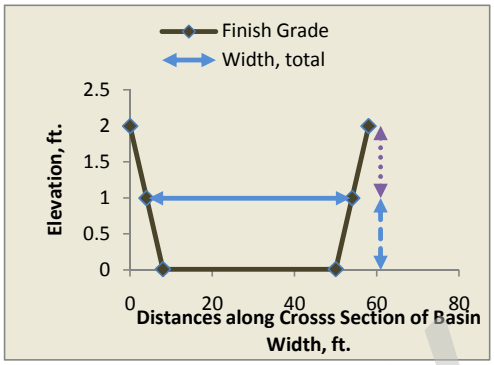
INPUT	**Proposed Design**	**Mitigation Check**	
Native or fill (underlying) HSG soil type	B	B	
Density of water	1	1	g/cm3
Bulk density	1.5	1.5	g/cm3
Specific gravity of soil particles	2.73	2.73	
Depth of incorporation, below FG	12	0	in
Unit basin storage volume from Basin Sizer, where C=1.0	0.65	0.65	in
Drawdown time used in Basin Sizer	24	24	hr
Rainfall rate from Basin Sizer "Caltrans Water Quality Flows"	0.2	0.2	in/hr
Contributing drainage area	24394	24394	ft2
Contributing drainage area runoff coefficient	0.9	0.9	
BMP area: strip area or swale invert area	3200	3200	ft2
Infiltration rate of native soil or fill	0.5	0.5	in/hr
Pervious area for non-amended infiltration (may be different than BMP area)	3200.00	3200.00	ft2
Bulk density (of compost)	0.50	0.50	g/cm3
Specific gravity of compost particles	0.80	0.80	
Depth of placement	4	4	in
Final bulk density	1.43	0.52	g/cm3

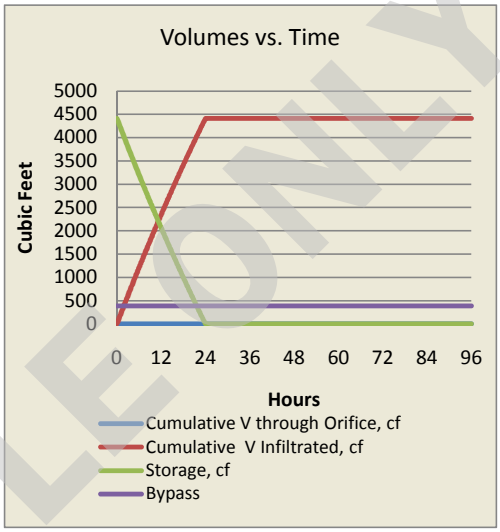
RESULT: Native Soil or Fill	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP with no amendment	0.68	0.68
Portion of WQV from net new impervious that is infiltrated with native soil or fill (use for T-1, 5b)	**22%**	**22%**

RESULTS: Amended Soil	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP after amendment	0.04	0.74
Portion of WQV from net new impervious area that is infiltrated with amended soil (use for T-1, 5d)	**96%**	**16%**

WQV Infiltrated Using the Basin Infiltration Tool

PROJECT INFORMATION		
Project Name	HOV lanes	
Sub-watershed	Bull Canyon (HSA 4:	
SITE CHARACTERISTICS		
Unit Basin Storage Volume (Basin Size	0.65	in
Drawdown time (Basins Sizer)	24	hr
Runoff coefficient for CDA to the basi	0.9	
Duration of rain fall	0.01	hr
Contributing drainage area (CDA) to b	98370	ft2
BMP area/contributing area	5%	
Edge of Pavement Information		
Runoff coefficient at edge of pavemer	0.9	
CDA at edge of pavement	98370	ft2
BASIN CHARACTERISTICS		
Target basin capture volume	4796	ft3
Length, basin (at WQV water surface)	100	ft
Width, total (at WQV water surface)	50	ft
Area, total (at WQV water surface)	5000	ft2
Side Slope	4	none
Geometry based volume	4412	cf
Maximum Water Level	1.00	ft
Length, invert	92.02	ft
Width, invert	42.02	ft
Area, invert	3867	ft2
SOIL CHARACTERISTICS		
Invert soil infiltration rate	0.5	in/hr
Side slope soil infiltration rate	0.5	in/hr
ORIFICE CHARACTERISTICS		
Orifice height above the invert	0.00	ft
Orifice coefficient, C	0.6	
Orifice diameter	0	in
Orifice area	0.00	ft2





RESULTS	
infiltration basins	
Drawdown time	24 hours
WQV Infiltrated (including upstream BMPs, if any)	**92.0%**

WQV Infiltrated Using the Free-Flow BMP Infiltration Tool

This page presents the results of infiltration with and without ammendment from the infiltration tool. It also provides a summary of the inputs for reference.

PROJECT INFORMATION

Project	HOV Lanes
Sub-watershed	Bull Canyon (HAS 412.21)
Free-Flow BMP type	Swale - SA 37

INPUT	**Proposed Design**	**Mitigation Check**	
Native or fill (underlying) HSG soil type	B	B	
Density of water	1	1	g/cm3
Bulk density	1.5	1.5	g/cm3
Specific gravity of soil particles	2.73	2.73	
Depth of incorporation, below FG	0	0	in
Unit basin storage volume from Basin Sizer, where C=1.0	0.54	0.54	in
Drawdown time used in Basin Sizer	12	12	hr
Rainfall rate from Basin Sizer "Caltrans Water Quality Flows"	0.2	0.2	in/hr
Contributing drainage area	24394	24394	ft2
Contributing drainage area runoff coefficient	0.9	0.9	
BMP area: strip area or swale invert area	13300	13300	ft2
Infiltration rate of native soil or fill	0.5	0.5	in/hr
Pervious area for non-amended infiltration (may be different than BMP area)	13300.00	13300.00	ft2
Bulk density (of compost)	0.50	0.50	g/cm3
Specific gravity of compost particles	0.80	0.80	
Depth of placement	4	4	in
Final bulk density	0.52	0.52	g/cm3

RESULT: Native Soil or Fill	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP with no amendment	0.06	0.06
Portion of WQV from net new impervious that is infiltrated with native soil or	**91%**	**91%**

RESULTS: Amended Soil	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP after amendment	0.06	0.06
Portion of WQV from net new impervious area that is infiltrated with	**91%**	**91%**

WQV Infiltrated Using the Free-Flow BMP Infiltration Tool

This page presents the results of infiltration with and without ammendment from the infiltration tool. It also provides a summary of the inputs for reference.

PROJECT INFORMATION

Project	HOV Lanes
Sub-watershed	Bull Canyon (HAS 412.21)
Free-Flow BMP type	Swale - SA 38

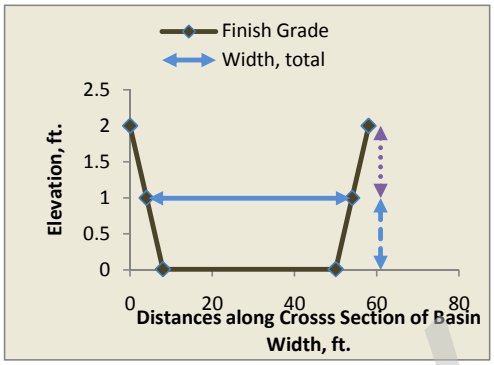
INPUT	**Proposed Design**	**Mitigation Check**	
Native or fill (underlying) HSG soil type	B	B	
Density of water	1	1	g/cm3
Bulk density	1.5	1.5	g/cm3
Specific gravity of soil particles	2.73	2.73	
Depth of incorporation, below FG	10	0	in
Unit basin storage volume from Basin Sizer, where C=1.0	0.54	0.54	in
Drawdown time used in Basin Sizer	12	12	hr
Rainfall rate from Basin Sizer "Caltrans Water Quality Flows"	0.2	0.2	in/hr
Contributing drainage area	13068	13068	ft2
Contributing drainage area runoff coefficient	0.9	0.9	
BMP area: strip area or swale invert area	1750	1750	ft2
Infiltration rate of native soil or fill	0.5	0.5	in/hr
Pervious area for non-amended infiltration (may be different than BMP area)	1750.00	1750.00	ft2
Bulk density (of compost)	0.50	0.50	g/cm3
Specific gravity of compost particles	0.80	0.80	
Depth of placement	4	4	in
Final bulk density	1.38	0.52	g/cm3

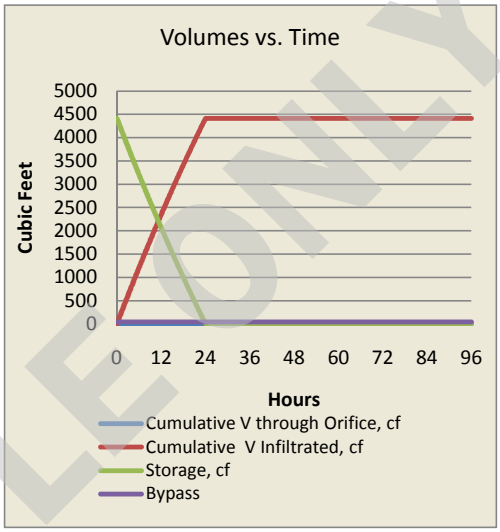
RESULT: Native Soil or Fill	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP with no amendment	0.68	0.68
Portion of WQV from net new impervious that is infiltrated with native soil or	**22%**	**22%**

RESULTS: Amended Soil	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP after amendment	0.00	0.68
Portion of WQV from net new impervious area that is infiltrated with	**100%**	**22%**

WQV Infiltrated Using the Basin Infiltration Tool

PROJECT INFORMATION		
Project Name	HOV lanes	
Sub-watershed	Bull Canyon (HSA 4:	
SITE CHARACTERISTICS		
Unit Basin Storage Volume (Basin Size	0.65	in
Drawdown time (Basins Sizer)	24	hr
Runoff coefficient for CDA to the basi	0.9	
Duration of rain fall	0.01	hr
Contributing drainage area (CDA) to b	91476	ft2
BMP area/contributing area	5%	
Edge of Pavement Information		
Runoff coefficient at edge of pavemer	0.9	
CDA at edge of pavement	91476	ft2
BASIN CHARACTERISTICS		
Target basin capture volume	4459	ft3
Length, basin (at WQV water surface)	100	ft
Width, total (at WQV water surface)	50	ft
Area, total (at WQV water surface)	5000	ft2
Side Slope	4	none
Geometry based volume	4415	cf
Maximum Water Level	1.00	ft
Length, invert	92.01	ft
Width, invert	42.01	ft
Area, invert	3866	ft2
SOIL CHARACTERISTICS		
Invert soil infiltration rate	0.5	in/hr
Side slope soil infiltration rate	0.5	in/hr
ORIFICE CHARACTERISTICS		
Orifice height above the invert	0.00	ft
Orifice coefficient, C	0.6	
Orifice diameter	0	in
Orifice area	0.00	ft2





RESULTS	
infiltration basins	
Drawdown time	24 hours
WQV Infiltrated (including upstream BMPs, if any)	**99.0%**

WQV Infiltrated Using the Free-Flow BMP Infiltration Tool

This page presents the results of infiltration with and without ammendment from the infiltration tool. It also provides a summary of the inputs for reference.

PROJECT INFORMATION

Project	HOV Lanes
Sub-watershed	Bull Canyon (HAS 412.21)
Free-Flow BMP type	Swale - SA 44

INPUT	**Proposed Design**	**Mitigation Check**	
Native or fill (underlying) HSG soil type	B	B	
Density of water	1	1	g/cm3
Bulk density	1.5	1.5	g/cm3
Specific gravity of soil particles	2.73	2.73	
Depth of incorporation, below FG	18	0	in
Unit basin storage volume from Basin Sizer, where C=1.0	0.65	0.65	in
Drawdown time used in Basin Sizer	24	24	hr
Rainfall rate from Basin Sizer "Caltrans Water Quality Flows"	0.2	0.2	in/hr
Contributing drainage area	100188	100188	ft2
Contributing drainage area runoff coefficient	0.9	0.9	
BMP area: strip area or swale invert area	1280	1280	ft2
Infiltration rate of native soil or fill	0.5	0.5	in/hr
Pervious area for non-amended infiltration (may be different than BMP area)	1280.00	1280.00	ft2
Bulk density (of compost)	0.50	0.50	g/cm3
Specific gravity of compost particles	0.80	0.80	
Depth of placement	4	4	in
Final bulk density	1.52	0.52	g/cm3

RESULT: Native Soil or Fill	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP with no amendment	0.97	0.97
Portion of WQV from net new impervious that is infiltrated with native soil or	**2%**	**2%**

RESULTS: Amended Soil	**Proposed Design**	**Mitigation Check**
C factor for downstream BMP after amendment	0.86	0.97
Portion of WQV from net new impervious area that is infiltrated with	**13%**	**2%**

Infiltration From Biofiltration BMPs
EA 07-XXXXXX PS&E
10/8/2010

T-1 Part 1 Question 5

Infiltration by Biofiltration - Results from T-1 Tool

Sub-watershed:	36	Sub-watershed:	37	Sub-watershed:	38	Sub-watershed:	44
Percent Infiltrated	22.0%	Percent Infiltrated	91.0%	Percent Infiltrated	22.0%	Percent Infiltrated	2.0%

Biofiltration With Compost Amendments - Results from T-1 Tool

Sub-watershed:	36	Sub-watershed:	37	Sub-watershed:	38	Sub-watershed:	44
Percent Infiltrated	96.0%	Percent Infiltrated	NA	Percent Infiltrated	100.0%	Percent Infiltrated	13.0%

Infiltration From Biofiltration and Infiltration BMPs
EA 07-XXXXXX PS&E
10/8/2010

T-1 Part 1 Question 7b

Infiltration Basins - Results from Basin Tool (48-hr drawdown)

Sub-watershed:	36	Sub-watershed:	41
Percent Infiltrated	92.0%	Percent Infiltrated	99.0%

Infiltration From All BMPs
EA 07-XXXXXX PS&E
10/8/2010

T-1 Part 1 Question 8

Using Matrix D - Austin Vault Sand Filters will be used.

Sub-watershed:	37	Sub-watershed:	42	Sub-watershed:	47
Percent Infiltrated	100.0%	Percent Infiltrated	100.0%	Percent Infiltrated	100.0%
Sub-watershed:	49	Sub-watershed:	102		
Percent Infiltrated	100.0%	Percent Infiltrated	100.0%		

Austin Vault Sand Filters - Calculations
EA 07-XXXXXX PS&E
10/8/2010

BMP and Site	Conversion Constant	Original WQV (c.f.)	Depth of Sand Layer (typ 1.5 ft)	Coefficient of Permeability (in/hr)	Drain Time for WQV (hrs)	Max. Head Height in 2nd Chamber (ft)	Avg Water Height Above Media Bed (ft)	Area of 2nd Chamber - Full Sed (ft^2)	Area of 2nd Chamber - Partial Sed (ft^2)
AVSF #37	12	3,798	0.5	2	24	6	3	136	244
AVSF #42	12	6,456	0.5	2	24	3	2	403	726
AVSF #47	12	5,946	0.5	2	24	6	3	212	382
AVSF #49	12	6,795	0.5	2	24	3	2	425	764
AVSF #102	12	12,232	0.5	2	24	3	2	764	1,376

BMP and Site	Area of 2nd Chamber - Partial Sed (ft^2) - Full WQV	Length Available for 2nd Chamber (ft)	Width Available for 2nd Chamber (ft)	Available Area for 2nd Chamber - Partial Sed (ft^2)	Total WQV Infiltrated (c.f.)
AVSF #37	244	42	21	882	3,798
AVSF #42	726	63	32	1,985	6,456
AVSF #47	382	42	21	882	5,946
AVSF #49	764	63	32	1,985	6,795
AVSF #102	1,376	115	58	6,613	12,232

Net New Impervious Infiltrated by All BMPs
EA 07-XXXXXX PS&E
10/8/2010

T-1 Part 1 Question 15

NNI for Project Area:	1,054,152
Total Runoff Area Infiltrated by BMPs:	1,162,982
Percent of NNI Infiltrated:	110.3%

Net New Impervious Surface (sf)
1,054,152

Sub-watershed	BMP and Site	Drianage Area (sf)	Percent WQV Infiltrated (%)	Runoff Area Infiltrated BMP (sf)
36	Swale #36	24,394	96.0%	23,418
	Inf Basin #36	105,932	92.0%	97,457
37	Strip #37	24,394	91.0%	22,199
	AVSF #37	97,394	100.0%	97,394
38	Swale #38	13,068	100.0%	13,068
41	Inf Basin #41	91,476	99.0%	90,561
42	AVSF #42	165,528	100.0%	165,528
44	Swale #44	100,188	13.0%	13,024
47	AVSF #47	152,460	100.0%	152,460
49	AVSF #49	174,240	100.0%	174,240
102	AVSF #102	313,632	100.0%	313,632
			Total	**1,162,982**

Treatment BMPs
Checklist T-1, Part 2

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Biofiltration Swales / Biofiltration Strips Swale #36

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No

2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)? ☒Yes ☐No

   If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.

3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist? ☐Yes ☒No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.

4. Does adequate area exist within the right-of-way to place Biofiltration device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 5.

5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration devices and how much right-of-way would be needed to treat WQF? _____ acres **NA** ☐Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.

6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. **NA** ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * ☒Yes ☐No

2. Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.) ☒Yes ☐No

3. Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)* ☒Yes ☐No

4. Is the maximum length of a biofiltration strip ≤ 300 ft? * ☒Yes ☐No

5. Has the minimum width (in the direction of flow) of the invert of the biofiltration swale received the concurrence of Maintenance? * ☒Yes ☐No

6. Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? ** ☒Yes ☐No

7. Is the biofiltration strip sized as long as possible in the direction of flow? ** ☒Yes ☐No

8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? ** ☒Yes ☐No

Biofiltration Swales / Biofiltration Strips Strip #37

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No

2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)? ☒Yes ☐No

   If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.

3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist? ☐Yes ☒No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.

4. Does adequate area exist within the right-of-way to place Biofiltration device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 5.

5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration devices and how much right-of-way would be needed to treat WQF? _____ acres **NA** ☐Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.

6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. **NA** ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * ☒Yes ☐No
2. Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.) ☒Yes ☐No
3. Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)* ☒Yes ☐No
4. Is the maximum length of a biofiltration strip ≤ 300 ft? * ☒Yes ☐No
5. Has the minimum width (in the direction of flow) of the invert of the biofiltration swale received the concurrence of Maintenance? * ☒Yes ☐No
6. Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? ** ☒Yes ☐No
7. Is the biofiltration strip sized as long as possible in the direction of flow? ** ☒Yes ☐No
8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? ** ☒Yes ☐No

Biofiltration Swales / Biofiltration Strips Swale #38

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No
2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)? ☒Yes ☐No

   If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.

3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist? ☐Yes ☒No
If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.

4. Does adequate area exist within the right-of-way to place Biofiltration device(s)? ☒Yes ☐No
If "Yes", continue to Design Elements section. If "No", continue to Question 5.

5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration devices and how much right-of-way would be needed to treat WQF? _____ acres **NA** ☐Yes ☐No
If "Yes", continue to Design Elements section. If "No", continue to Question 6.

6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. **NA** ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * ☒Yes ☐No

2. Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.) ☒Yes ☐No

3. Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)* ☒Yes ☐No

4. Is the maximum length of a biofiltration strip ≤ 300 ft? * ☒Yes ☐No

5. Has the minimum width (in the direction of flow) of the invert of the biofiltration swale received the concurrence of Maintenance? * ☒Yes ☐No

6. Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? ** ☒Yes ☐No

7. Is the biofiltration strip sized as long as possible in the direction of flow? ** ☒Yes ☐No

8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? ** ☒Yes ☐No

Biofiltration Swales / Biofiltration Strips Swale #44

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No

2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)? ☒Yes ☐No

   If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.

3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist? ☐Yes ☒No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.

4. Does adequate area exist within the right-of-way to place Biofiltration device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 5.

5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Biofiltration devices and how much right-of-way would be needed to treat WQF? _____ acres **NA** ☐Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.

6. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. **NA** ☐Complete

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? * ☒Yes ☐No

2. Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.) ☒Yes ☐No

3. Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)* ☒Yes ☐No

4. Is the maximum length of a biofiltration strip ≤ 300 ft? * ☒Yes ☐No

5.	Has the minimum width (in the direction of flow) of the invert of the biofiltration swale received the concurrence of Maintenance? *	☒Yes	☐No
6.	Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? **	☒Yes	☐No
7.	Is the biofiltration strip sized as long as possible in the direction of flow? **	☒Yes	☐No
8.	Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? **	☒Yes	☐No

Treatment BMPs

Checklist T-1, Part 4

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Infiltration Devices – Infiltration Basin #36

Feasibility

1.	Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality?	☐Yes	☒No
2.	Does infiltration at the site compromise the integrity of any slopes in the area?	☐Yes	☒No
3.	Per survey data or U.S. Geological Survey (USGS) Quad Map, are existing slopes at the proposed device site >15%?	☐Yes	☒No
4.	At the invert, does the soil type classify as NRCS Hydrologic Soil Group (HSG) D, or does the soil have an infiltration rate < 0.5 inches/hr?	☐Yes	☒No
5.	Is site located over a previously identified contaminated groundwater plume?	☐Yes	☒No

If "Yes" to any question above, Infiltration Devices are not feasible; stop here and consider other approved Treatment BMPs.

6.	(a) Does site have groundwater within 10 ft of basin invert?	☐Yes	☒No
	(b) Does site investigation indicate that the infiltration rate is significantly greater than 2.5 inches/hr? **0.5 in/hr**	☐Yes	☒No

If "Yes" to either part of Question 6, the RWQCB must be consulted, and the RWQCB must conclude that the groundwater quality will not be compromised, before approving the site for infiltration.

7.	Does adequate area exist within the right-of-way to place Infiltration Device(s)? If "Yes", continue to Design Elements sections. If "No", continue to Question 8.	☒Yes	☐No
8.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Infiltration Devices and how much right-of-way would be needed to treat WQV? _____ acres If Yes, continue to Design Elements section. If No, continue to Question 9.	☐Yes	☐No
9.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☐Complete	

Design Elements – Infiltration Basin

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) *	☒ Yes	☐ No
2.	Has an overflow spillway with scour protection been provided? *	☒ Yes	☐ No
3.	Is the Infiltration Basin size sufficient to capture the WQV while maintaining a 40-48 hour drawdown time? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) *	☐ Yes	☒ No
4.	Can access be placed to the invert of the Infiltration Basin? *	☒ Yes	☐ No
5.	Can the Infiltration Basin accommodate the freeboard above the overflow event elevation (reference Appendix B.1.3.1)? *	☒ Yes	☐ No
6.	Can the Infiltration Basin be designed with interior side slopes no steeper than 4:1 (h:v) (may be 3:1 [h:v] with approval by District Maintenance)? *	☒ Yes	☐ No
7.	Can vegetation be established in the Infiltration Basin? **	☒ Yes	☐ No
8.	Can diversion be designed, constructed, and maintained to bypass flows exceeding the WQV? **	☒ Yes	☐ No
9.	Can a gravity-fed Maintenance Drain be placed? **	☒ Yes	☐ No

Infiltration Devices Infiltration Basin #41

Feasibility

1.	Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality?	☐Yes	☒No
2.	Does infiltration at the site compromise the integrity of any slopes in the area?	☐Yes	☒No
3.	Per survey data or U.S. Geological Survey (USGS) Quad Map, are existing slopes at the proposed device site >15%?	☐Yes	☒No
4.	At the invert, does the soil type classify as NRCS Hydrologic Soil Group (HSG) D, or does the soil have an infiltration rate < 0.5 inches/hr?	☐Yes	☒No
5.	Is site located over a previously identified contaminated groundwater plume?	☐Yes	☒No

If "Yes" to any question above, Infiltration Devices are not feasible; stop here and consider other approved Treatment BMPs.

6.	(a) Does site have groundwater within 10 ft of basin invert?	☐Yes	☒No
	(b) Does site investigation indicate that the infiltration rate is significantly greater than 2.5 inches/hr? **0.5 in/hr**	☐Yes	☒No

If "Yes" to either part of Question 6, the RWQCB must be consulted, and the RWQCB must conclude that the groundwater quality will not be compromised, before approving the site for infiltration.

7.	Does adequate area exist within the right-of-way to place Infiltration Device(s)? If "Yes", continue to Design Elements sections. If "No", continue to Question 8.	☒Yes	☐No
8.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Infiltration Devices and how much right-of-way would be needed to treat WQV? _____ acres If Yes, continue to Design Elements section. If No, continue to Question 9.	☐Yes	☐No
9.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☐Complete	

Design Elements – Infiltration Basin

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) *	☒Yes	☐No
2.	Has an overflow spillway with scour protection been provided? *	☒Yes	☐No
3.	Is the Infiltration Basin size sufficient to capture the WQV while maintaining a 40-48 hour drawdown time? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) *	☐Yes	☒No
4.	Can access be placed to the invert of the Infiltration Basin? *	☒Yes	☐No
5.	Can the Infiltration Basin accommodate the freeboard above the overflow event elevation (reference Appendix B.1.3.1)? *	☒Yes	☐No
6.	Can the Infiltration Basin be designed with interior side slopes no steeper than 4:1 (h:v) (may be 3:1 [h:v] with approval by District Maintenance)? *	☒Yes	☐No
7.	Can vegetation be established in the Infiltration Basin? **	☒Yes	☐No
8.	Can diversion be designed, constructed, and maintained to bypass flows exceeding the WQV? **	☒Yes	☐No
9.	Can a gravity-fed Maintenance Drain be placed? **	☒Yes	☐No

Treatment BMPs

Checklist T-1, Part 8

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Media Filters

Caltrans has approved two types of Media Filter: Austin Sand Filters and Delaware Filters. Austin Sand filters are typically designed for larger drainage areas, while Delaware Filters are typically designed for smaller drainage areas. The Austin Sand Filter is constructed with an open top and may have a concrete or earthen invert, while the Delaware is always constructed as a vault. See Appendix B, Media Filters, for a further description of Media Filters.

AVSF #37

Feasibility – Austin Sand Filter

1. Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) ☒Yes ☐No
2. Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)? ☒Yes ☐No
3. If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater? ☒Yes ☐No
4. If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? ☒Yes ☐No

   If No to any question above, then an Austin Sand Filter is not feasible.
5. Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? ☒Yes ☐No

   If Yes, continue to Design Elements sections. If No, continue to Question 6.
6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section.

   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

Design Elements – Austin Sand Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Is the drawdown time of the 2nd chamber 24 hours? *	☒Yes	☐No
2.	Is access for Maintenance vehicles provided to the Austin Sand Filter? *	☒Yes	☐No
3.	Is a bypass/overflow provided for storms > WQV? *	☒Yes	☐No
4.	Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? **	☒Yes	☐No
5.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? **	☒Yes	☐No
6.	Can the Austin Sand Filter be placed using an earthen configuration? ** If No, go to Question 9.	☐Yes	☒No
7.	Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * If No, design with an impermeable liner.	☒Yes	☐No
8.	Are side slopes of the earthen chamber 3:1 (h:v) or flatter? *NA	☐Yes	☐No
9.	Is maximum depth ≤ 13 ft below ground surface? *	☒Yes	☐No
10.	Can the Austin Sand Filter be placed in an offline configuration? **	☐Yes	☒No

AVSF #42

Feasibility – Austin Sand Filter

1.	Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet])	☒Yes	☐No
2.	Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)?	☒Yes	☐No
3.	If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater?	☒Yes	☐No

4. If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? ☒Yes ☐No
   If No to any question above, then an Austin Sand Filter is not feasible.
5. Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? ☒Yes ☐No
   If Yes, continue to Design Elements sections. If No, continue to Question 6.
6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No
   If Yes, continue to the Design Elements section.
   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

   If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

Design Elements – Austin Sand Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Is the drawdown time of the 2nd chamber 24 hours? * ☒Yes ☐No
2. Is access for Maintenance vehicles provided to the Austin Sand Filter? * ☒Yes ☐No
3. Is a bypass/overflow provided for storms > WQV? * ☒Yes ☐No
4. Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? ** ☒Yes ☐No
5. Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? ** ☒Yes ☐No
6. Can the Austin Sand Filter be placed using an earthen configuration? ** ☐Yes ☒No
   If No, go to Question 9.
7. Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * ☒Yes ☐No
   If No, design with an impermeable liner.

8. Are side slopes of the earthen chamber 3:1 (h:v) or flatter? * **NA** ☐Yes ☐No
9. Is maximum depth ≤ 13 ft below ground surface? * ☒Yes ☐No
10. Can the Austin Sand Filter be placed in an offline configuration? ** ☐Yes ☒No

AVSF #47

Feasibility – Austin Sand Filter

1. Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) ☒Yes ☐No
2. Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)? ☒Yes ☐No
3. If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater? ☒Yes ☐No
4. If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? ☒Yes ☐No

   If No to any question above, then an Austin Sand Filter is not feasible.
5. Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? ☒Yes ☐No

   If Yes, continue to Design Elements sections. If No, continue to Question 6.
6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section.

   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

   If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

Design Elements – Austin Sand Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Is the drawdown time of the 2nd chamber 24 hours? *	☒Yes	☐No
2.	Is access for Maintenance vehicles provided to the Austin Sand Filter? *	☒Yes	☐No
3.	Is a bypass/overflow provided for storms > WQV? *	☒Yes	☐No
4.	Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? **	☒Yes	☐No
5.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? **	☒Yes	☐No
6.	Can the Austin Sand Filter be placed using an earthen configuration? ** If No, go to Question 9.	☐Yes	☒No
7.	Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * If No, design with an impermeable liner.	☒Yes	☐No
8.	Are side slopes of the earthen chamber 3:1 (h:v) or flatter? * NA	☐Yes	☐No
9.	Is maximum depth ≤ 13 ft below ground surface? *	☒Yes	☐No
10.	Can the Austin Sand Filter be placed in an offline configuration? **	☐Yes	☒No

AVSF #49

Feasibility – Austin Sand Filter

1.	Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet])	☒Yes	☐No
2.	Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)?	☒Yes	☐No
3.	If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater?	☒Yes	☐No
4.	If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? If No to any question above, then an Austin Sand Filter is not feasible.	☒Yes	☐No
5.	Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? If Yes, continue to Design Elements sections. If No, continue to Question 6.	☒Yes	☐No

6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No
   If Yes, continue to the Design Elements section.
   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

   If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

Design Elements – Austin Sand Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Is the drawdown time of the 2nd chamber 24 hours? * ☒Yes ☐No
2. Is access for Maintenance vehicles provided to the Austin Sand Filter? * ☒Yes ☐No
3. Is a bypass/overflow provided for storms > WQV? * ☒Yes ☐No
4. Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? ** ☒Yes ☐No
5. Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? ** ☒Yes ☐No
6. Can the Austin Sand Filter be placed using an earthen configuration? ** ☐Yes ☒No
   If No, go to Question 9.
7. Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * ☒Yes ☐No
   If No, design with an impermeable liner.
8. Are side slopes of the earthen chamber 3:1 (h:v) or flatter? * **NA** ☐Yes ☐No
9. Is maximum depth ≤ 13 ft below ground surface? * ☒Yes ☐No
10. Can the Austin Sand Filter be placed in an offline configuration? ** ☐Yes ☒No

AVSF #102

Feasibility – Austin Sand Filter

1.	Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet])	☒Yes	☐No
2.	Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)?	☒Yes	☐No
3.	If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater?	☒Yes	☐No
4.	If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? If No to any question above, then an Austin Sand Filter is not feasible.	☒Yes	☐No
5.	Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? If Yes, continue to Design Elements sections. If No, continue to Question 6.	☒Yes	☐No
6.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres If Yes, continue to the Design Elements section. If No, continue to Question 7.	☐Yes	☐No
7.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.	☐Complete	

Design Elements – Austin Sand Filter

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Is the drawdown time of the 2nd chamber 24 hours? *	☒Yes	☐No
2.	Is access for Maintenance vehicles provided to the Austin Sand Filter? *	☒Yes	☐No

3.	Is a bypass/overflow provided for storms > WQV? *	☒Yes	☐No
4.	Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? **	☒Yes	☐No
5.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? **	☒Yes	☐No
6.	Can the Austin Sand Filter be placed using an earthen configuration? ** If No, go to Question 9.	☐Yes	☒No
7.	Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * If No, design with an impermeable liner.	☒Yes	☐No
8.	Are side slopes of the earthen chamber 3:1 (h:v) or flatter? * **NA**	☐Yes	☐No
9.	Is maximum depth ≤ 13 ft below ground surface? *	☒Yes	☐No
10.	Can the Austin Sand Filter be placed in an offline configuration? **	☐Yes	☒No

Construction Site BMPs
Checklist CS-1, Part 1

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Soil Stabilization

General Parameters

1. How many rainy seasons are anticipated between begin and end of construction? 3

2. What is the total disturbed soil area for the project? (ac) 82.7

   (a) How much of the project DSA consists of slopes 4:1 (h:v) or flatter? (ac) 56.3

   (b) How much of the project DSA consists of 4:1 (h:v) < slopes < 2:1 (h:v)? (ac) 20.9

   (c) How much of the project DSA consists of slopes 2:1 (h:v) and steeper? (ac) 5.5

   (d) How much of the project DSA consists of slopes with slope lengths longer than 20 ft? (ac) 30.6

3. What rainfall area does the project lie within? (Refer to Table 2-1 of the Construction Site Best Management Practices Manual) Area 4

4. Review the required combination of temporary soil stabilization and temporary sediment controls and barriers for area, slope inclinations, rainy and non-rainy season, and active and non-active disturbed soil areas. (Refer to Tables 2-2, and 2-3 of the Construction Site Best Management Practices Manual for Rainfall Area requirements.) ☒Complete

Scheduling (SS-1)

5. Does the project have a duration of more than one rainy season and have disturbed soil area in excess of 25 acres? **3 rainy seasons** ☒Yes ☐No

   (a) Include multiple mobilizations (Move-in/Move-out) as a separate contract bid line item to implement permanent erosion control or revegetation work on slopes that are substantially complete. (Estimate at least 6 mobilizations for each additional rainy season. Designated Construction Representative may suggest an alternate number of mobilizations.) ☒Complete

   (b) Edit Order of Work specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete. ☒Complete

(c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal. ☒Complete

Preservation of Existing Vegetation (SS-2)

6. Do Environmentally Sensitive Areas (ESAs) exist within or adjacent to the project limits? (Verify the completion of DPP-1, Part 5) ☒Yes ☐No

   (a) Verify the protection of ESAs through delineation on all project plans. ☒Complete

   (b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP. ☒Complete

7. Are there areas of existing vegetation (mature trees, native vegetation, landscape planting, etc.) that need not be disturbed by project construction? Will areas designated for proposed treatment BMPs need protection (infiltration characteristics, vegetative cover, etc.)? (Coordinate with District Environmental and Construction to determine limits of work necessary to preserve existing vegetation to the maximum extent practicable.) ☒Yes ☐No

   (a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans. ☒Complete

   (b) Protect with high visibility plastic fence or other BMP. ☒Complete

8. If yes for 6, 7, or both, then designate ESA fencing as a separate contract bid line item, *if not already incorporated as part of design pollution prevention work (See DPP-1, Part 5).* ☒Complete

Slope Protection

9. Provide a soil stabilization BMP(s) appropriate for the DSA, slope steepness, slope length, and soil erodibility. (Consult with District/Regional Landscape Architect.)

   (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-6 (Straw Mulch), SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), SS-8 (Wood Mulching), other BMPs or a combination to cover the DSA throughout the project's rainy season. **Hydraulic Mulch** ☒Complete

   (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☒Complete

   (c) Designate as a separate contract bid line item. ☒Complete

Slope Interrupter Devices

10. Provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 20 ft in length. (Consult with District/Regional Landscape Architect and Designated Construction Representative.)

    (a) Select SC-5 (Fiber Rolls) or other BMPs to protect slopes throughout the project's rainy season. **Fiber Rolls** ☒Complete

    (b) For slope inclination of 4:1 (h:v) and flatter, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 20 ft on center. ☒Complete

    (c) For slope inclination between 4:1 (h:v) and 2:1 (h:v), SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 15 ft on center. ☒Complete

    (d) For slope inclination of 2:1 (h:v) and greater, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 10 ft on center. ☒Complete

    (e) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest alternate increase.) ☒Complete

    (f) Designate as a separate contract bid line item. ☒Complete

Channelized Flow

11. Identify locations within the project site where concentrated flow from stormwater runoff can erode areas of soil disturbance. Identify locations of concentrated flow that enters the site from outside of the right-of-way (off-site run-on). ☒Complete

    (a) Utilize SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), SS-9 (Earth Dikes/Swales, Ditches), SS-10 (Outlet Protection/Velocity Dissipation), SS-11 (Slope Drains), SC-4 (Check Dams), or other BMPs to convey concentrated flows in a non-erosive manner. **Fiber Rolls** ☒Complete

    (b) Designate as a separate contract bid line item. ☒Complete

Construction Site BMPs
Checklist CS-1, Part 2

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Sediment Control

Perimeter Controls - Run-off Control

1. Is there a potential for sediment laden sheet and concentrated flows to discharge offsite from runoff cleared and grubbed areas, below cut slopes, embankment slopes, etc.? ☒Yes ☐No

   (a) Select linear sediment barrier such as SC-1 (Silt Fence), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or a combination to protect wetlands, water courses, roads (paved and unpaved), construction activities, and adjacent properties. (Coordinate with District Construction for selection and preference of linear sediment barrier BMPs.) **Fiber Rolls** ☒Complete

   (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) ☒Complete

   (c) Designate as a separate contract bid line item. ☒Complete

Perimeter Controls - Run-on Control

2. Do locations exist where sheet flow upslope of the project site and where concentrated flow upstream of the project site may contact DSA and construction activities? ☒Yes ☐No

   (a) Utilize linear sediment barriers such as SS-9 (Earth Dike/Drainage Swales and Lined Ditches), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or other BMPs to convey flows through and/or around the project site. (Coordinate with District Construction for selection and preference of perimeter control BMPs.) **Fiber Rolls** ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the project limits? ☒Yes ☐No

   (a) Select SC-10 (Storm Drain Inlet Protection) to protect municipal storm drain systems or receiving waters wetlands at each drainage inlet. (Coordinate with District Construction for selection and preference of inlet protection BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in SC-10 (Storm Drain Inlet Protection- Type 2)? ☒Yes ☐No

   (a) Include with other types of SC-10 (Storm Drain Inlet Protection). ☒Complete

Sediment/Desilting Basin (SC-2)

5. Does the project lie within a Rainfall Area where the required combination of temporary soil stabilization and sediment control BMPs includes desilting basins? (Refer to Tables 2-1, 2-2, and 2-3 of the Construction Site Best Management Practices Manual for Rainfall Area requirements.) ☐Yes ☒No

   (a) Consider feasibility for desilting basin allowing for available right-of-way within the project limits, topography, soil type, disturbed soil area within the watershed, and climate conditions. Document if the inclusion of sediment/desilting basins is infeasible. ☐Complete

   (b) If feasible, design desilting basin(s) per the guidance in SC-2 Sediment/ Desilting Basins of the Construction Site BMP Manual to maximize capture of sediment-laden runoff. ☐Complete

   Designate as a separate contract bid item. ☐Complete

6. Is ATS to be used for controlling sediment? ☐Yes ☒No

   (a) If "yes", then will desilting basin or other means of natural storage be used? ☐Yes ☐No

   (b) If "no", then plan for storage tanks sufficient to hold treatment volume. ☐Comple

7. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.) ☒Yes ☐No

   (a) Edit Order of Work specifications for permanent treatment BMP work to be implemented in a manner that will allow its use as a construction site BMP. ☒Complete

Sediment Trap (SC-3)

8. Can sediment traps be located to collect channelized runoff from disturbed soil areas prior to discharge? ☐Yes ☒No

   (a) Design sediment traps in accordance with the Construction Site BMP Manual. ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Construction Site BMPs
Checklist CS-1, Part 3

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Tracking Controls

Stabilized Construction Entrance/Exit (TC-1)

1. Are there points of entrance and exit from the project site to paved roads where mud and dirt could be transported offsite by construction equipment? (Coordinate with District Construction for selection and preference of tracking control BMPs.) ☒Yes ☐No

   (a) Identify and designate these entrance/exit points as stabilized construction entrances (TC-1). ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

Tire/Wheel Wash (TC-3)

1. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.) ☐Yes ☒No

   Designate as a separate contract bid line item. ☐Complete

Stabilized Construction Roadway (TC-2)

3. Are temporary access roads necessary to access remote construction activity locations or to transport materials and equipment? (In addition to controlling dust and sediment tracking, access roads limit impact to sensitive areas by limiting ingress, and provide enhanced bearing capacity.) (Coordinate with District Construction.) ☐Yes ☒No

   (a) Designate these temporary access roads as stabilized construction roadways (TC-2). ☐Complete

   (b) Designate as a separate contract bid line item. ☐Complete

Street Sweeping and Vacuuming (SC-7)

1. Is there a potential for tracked sediment or construction related residues to be transported offsite and deposited on public or private roads? (Coordinate with District Construction for preference of including street sweeping and vacuuming with tracking control BMPs.) ☒Yes ☐No

   Designate as a separate contract bid line item. ☒Complete

Construction Site BMPs
Checklist CS-1, Part 4

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Wind Erosion Controls

Wind Erosion Control (WE-1)

1. Is the project located in an area where standard dust control practices in accordance with Standard Specifications, Section 10: Dust Control, are anticipated to be inadequate during construction to prevent the transport of dust offsite by wind? *(Note: Dust control by water truck application is paid for through the various items of work. Dust palliative, if it is included, is paid for as a separate item.)* ☒Yes ☐No

   (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), SS-8 (Wood Mulching) or a combination to cover the DSA subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) **Hydroseeding** ☒Complete

   (b) Designate as a separate contract bid line item. ☒Complete

Construction Site BMPs
Checklist CS-1, Part 5

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Non-Storm Water Management

Temporary Stream Crossing (NS-4) & *Clear Water Diversion* (NS-5)

1. Will construction activities occur within a waterbody or watercourse such as a lake, wetland, or stream? (Coordinate with District Construction for selection and preference for stream crossing and clear water diversion BMPs.) ☐Yes ☒No

   (a) Select from types offered in NS-4 (Temporary Stream Crossing) to provide access through watercourses consistent with permits and agreements.[1] ☐Complete

   (b) Select from types offered in NS-5 (Clear Water Diversion) to divert watercourse consistent with permits and agreements.[1] ☐Complete

   (c) Designate as a separate contract bid line item(s). ☐Complete

Other Non-Storm Water Management BMPs

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒Yes ☐No

   (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as NS-1 (Water Conservation Practices), NS-2 (Dewatering Operations), NS-3 (Paving and Grinding Operations), NS-7 (Potable Water/Irrigation), NS-8 (Vehicle and Equipment Cleaning), NS-9 (Vehicle and Equipment Fueling), NS-10 (Vehicle and Equipment Maintenance), NS-11 (Pile Driving Operations), NS-12 (Concrete Curing), NS-13 (Material and Equipment Use Over Water), NS-14 (Concrete Finishing), and NS-15 (Structure Demolition/Removal Over or Adjacent to Water).[1] ☒Complete

   (b) Verify that costs for non-stormwater management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction. ☒Complete

[1] Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 and 401 permits and Dept. of Fish and Game 1601 Streambed alteration Agreements.

Construction Site BMPs
Checklist CS-1, Part 6

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 07-LA-05

PM : 36.0 / 39.4 Project ID (or EA): 07-XXXXXX RWQCB: Los Angeles (4)

Waste Management & Materials Pollution Control

Concrete Waste Management (WM-8)

1. Does the project include concrete placement or mortar mixing? ☒Yes ☐No

   (a) Select from types offered in WM-8 (Concrete Waste Management) to provide concrete washout facilities. In addition, consider portable concrete washouts and vendor supplied concrete waste management services. (Coordinate with District Construction for selection and preference of waste management and materials pollution control BMPs.) ☒Complete

   (b) Designate as a separate contract bid line item if the quantity of concrete waste and washout are anticipated to exceed 5.2 yd^3 or if requested by Construction. ☒Complete

Other Waste Management and Materials Pollution Controls

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? ☒Yes ☐No

   (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as WM-1 (Material Delivery and Storage), WM-2 (Material Use), WM-4 (Spill Prevention and Control), WM-5 (Solid Waste Management), WM-6 (Hazardous Waste Management), WM-7 (Contaminated Soil Management), WM-9 (Sanitary/Septic Waste Management) and WM-10 (Liquid Waste Management) ☒Complete

   (b) Verify that costs for waste management and materials pollution control BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction. ☒Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction? ☒Yes ☐No

   (a) Select WM-3 (Stockpile Management), SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), or a combination as appropriate to cover temporary stockpiles of soil, etc. ☒Complete

(b) Select linear sediment barrier such as SC-1 (Silt Fence), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or a combination to encircle temporary stockpiles of soil, etc. (Coordinate with District Construction for selection and preference of BMPs related to stockpiles.) ☒Complete

(c) Designate as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction. ☒Complete

4. Is there a potential for dust and debris from construction material (fill material, etc.) and waste (concrete, contaminated soil, etc.) stockpiles to be transported offsite by wind? ☒Yes ☐No

(a) Select SS-7, temporary cover, plastic sheeting or other BMP to cover stockpiles subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) ☒Complete

(b) Designate as a separate contract bid line item. ☒Complete