OPERATION & MAINTENANCE MANUAL

DFI No. : D00633
Facility Type: Water Quality Biofiltration Swale

JULY, 2018

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00633**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	46V-003
Location:	District: 08
	Highway No.: 001
	Mile Post: 66.70; 66.90 (beg./end)
	Description: This facility is located on the east side of northbound I-5. Access to the facility can be obtained along the shoulder of Old Hwy 99 (Sexton Mountain Frontage Rd).

2. Facility Contact Information

Contact the Engineer of Record, Region Technical Center, or Geo-Environmental's Senior Hydraulics Engineer for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

Engineering Contacts:

Region Technical Center Hydro Unit Manager

Or

Geo-Environmental Senior Hydraulics Engineer (503) 986-3365.

3. Construction

Engineer of Record: Jered Carpenter – Region 3 Tech Center

Facility construction: 2012
Contractor: N/A

4. Storm Drain System and Facility Overview

A water quality swale is a flat-bottomed open channel designed to treat stormwater runoff from highway pavement areas. This type of facility is lined with grass. Treatment by trapping sedimentation occurs when stormwater runoff flows through the grass.

Description: This facility is located on the east side of northbound I-5. Access to the facility can be obtained along the shoulder of Old Hwy 99 (Sexton Mountain Frontage Rd). Stormwater enters the facility via roadway runoff and a drainage ditch located along the west side of Old Hwy 99. As the water flows south, it is treated as it slows and spreads out within the swale before outfalling into a ditch.

A. Maintenance equipment access:
This facility can be accessed from Old Hwy 99 (Sexton Mountain Frontage Rd).

B. Heavy equipment access into facility:

☐ Allowed (no limitations)
☒ Allowed (with limitations)
☐ Not allowed

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

5. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the facility outlet through use of sandbags.

6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure can not safely pass the projected high flows. Broad-crested spillway weirs and over flow risers are the two most common auxiliary outlets used in stormwater treatment facility design. The auxiliary outlet feature is either a part of the facility or an additional storm drain feature/structure.

The auxiliary outlet feature for this facility is:

☐ Designed into facility

☒ Other
There are no auxiliary outlets built into this facility. In the event that flows exceed design flows the water will overtop the swale.

7. Maintenance Requirements

Routine maintenance table for non-proprietary stormwater treatment and storage/detention facilities have been incorporated into ODOT's Maintenance Guide. These tables summarize the maintenance requirements for ponds, swales, filter strips, bioslopes, and detention tanks and vaults. Special maintenance requirements in addition to the routine requirements are noted below when applicable.

The ODOT Maintenance Guide can be viewed at the following website:

http://www.oregon.gov/ODOT/HWY/OOM/MGuide.shtml

Maintenance requirements for proprietary structures, such as underground water quality manholes and/or vaults with filter media are noted in Appendix C when applicable.

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual or follow the Maintenance requirements outlined in Appendix C when proprietary structure is selected below:

☒ Table 1 (general maintenance)
☐ Table 2 (stormwater ponds)
☒ Table 3 (water quality biofiltration swales)
☐ Table 4 (water quality filter strips)
☐ Table 5 (water quality bioslopes)
☐ Table 6 (detention tank)
☐ Table 7 (detention vault)
☐ Appendix C (proprietary structure)
☐ Special Maintenance requirements:

Note: Special maintenance Requirements Require Concurrence from ODOT SR Hydraulics Engineer.

8. Waste Material Handling

9. Material removed from the facility is defined as waste by the Department of Environment Quality (DEQ). Refer to the roadwaste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

http://www.oregon.gov/ODOT/Maintenance/Documents/ems_manual.pdf

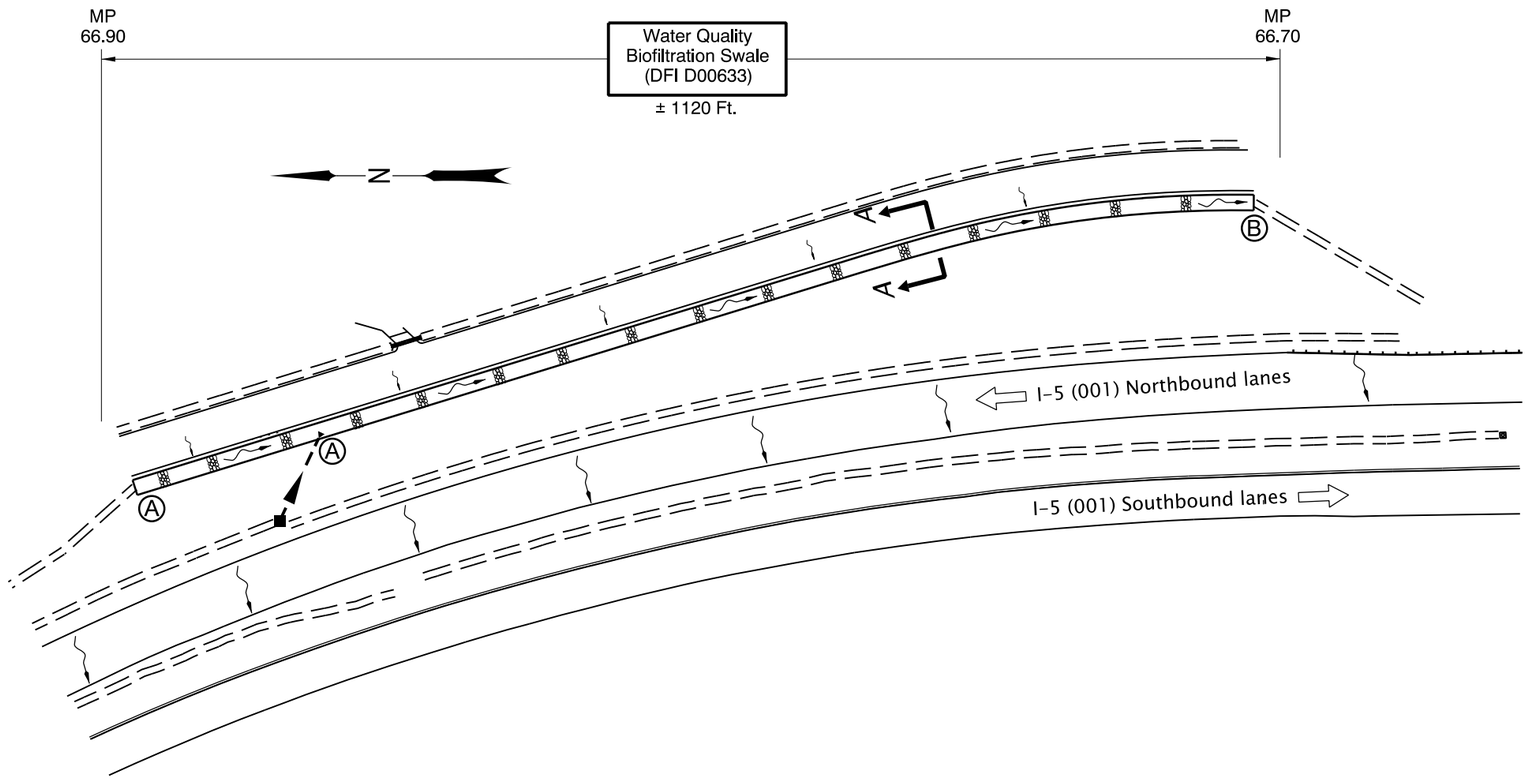
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator	(541) 963-1590
ODEQ Northwest Region Office	(503) 229-5263

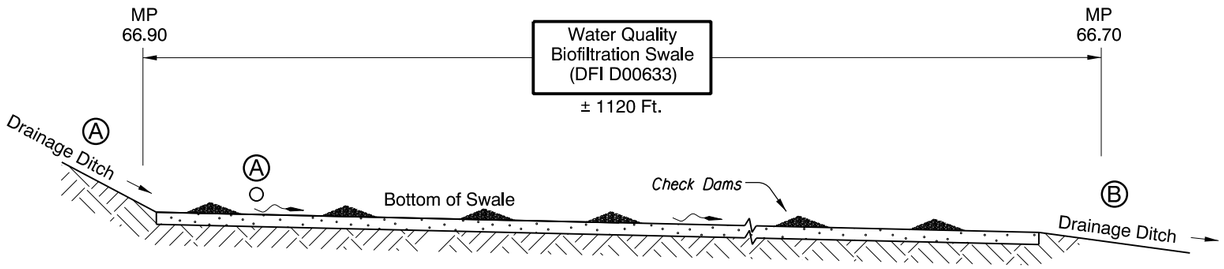
Appendix A

Content:

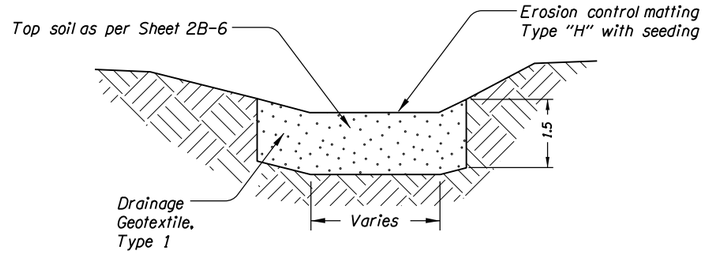
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



PROFILE
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- Ⓐ Swale Inlet
- Ⓑ Swale Outlet
- ◉ and/or ◎ Manhole
- ■ and/or □ Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: J. GONZALEZ

Drafted By: J. GONZALEZ

DFI D00633
MAINTENANCE DISTRICT 8 HWY 001
WQ BIOFILTRATION SWALE
HIGHWAY MP 66.70 TO 66.90
JOSEPHINE

DFI_D00000.dgn

Appendix B

Content:

- **ODOT Project Plan Sheets**
  - ***Cover/Title Sheet***
  - ***Water Quality/Detention Plan Sheets***
  - ***Other Details***

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Std. Dwg. Nos.

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING & PAVING

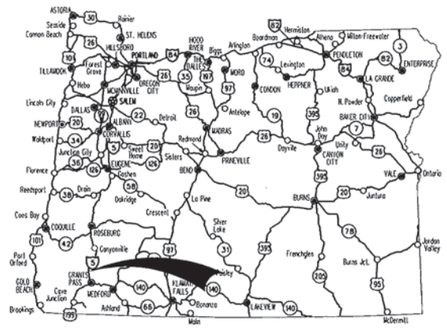
I-5: GLENDALE-HUGO PAVING/ SEXTON CLIMBING LANE

PACIFIC HIGHWAY

JOSEPHINE & DOUGLAS COUNTY

DECEMBER 2012

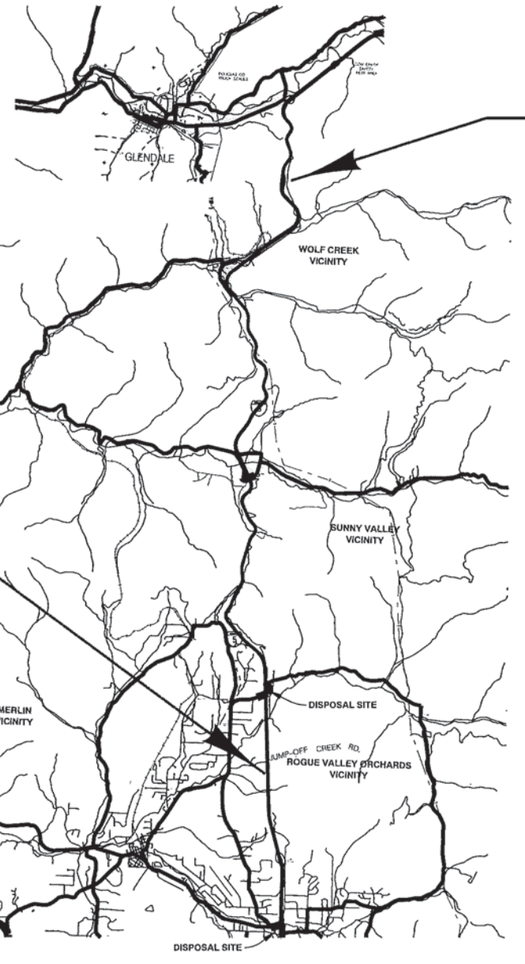
46V-003



Overall Length Of Project - 14.5 Miles

ATTENTION:
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules By Calling The Center. (Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE



BEGINNING OF PROJECT
IM-STP-S001(407)
STA. "NB" 15+82.5 (M.P. 81.40)

END OF PROJECT
IM-STP-S001(407)
STA. "SB" 866+00.0 (M.P. 66.7)

N

T. 32 S., R. 6 W., W.M.
T. 33 S., R. 6 W., W.M.
T. 34 S., R. 6 W., W.M.

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
Mary F. Olson	COMMISSIONER
David Lohman	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tammy Baney	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: M. Thom
Signature & date 12-15-12

Mark Thompson Rg. 3 Tech. Ctr. Mgr.
Print name and title

Concurrence by ODOT Chief Engineer

I-5: GLENDALE-HUGO PAVING/ SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSHEPHINE & DOUGLAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	IM-STP-S001(407)	1

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1:1200 - 001

46V-003

INDEX OF SHEETS, CONT'D.

SHEET NO.	DESCRIPTION
1C Thru 1C-7	Survey Control Sheets
2 Thru 2A-7	Typical Sections
2B Thru 2B-21	Details
2C Thru 2C-14	Traffic Control Plans
2D Thru 2D-2	Pipe Data Sheets
3 Thru 5A 6 Thru 36	General Construction
36A	Construction Notes
37, 37A, 38 Thru 47	General Construction
47A	Profile
48, 49	General Construction
49A	Construction Notes
49B, 49C	Profiles
50	General Construction
50A	Profiles
51	General Construction
51A	Profiles
52	General Construction
52A	Profiles
53, 54	General Construction
54A	Profiles
55	General Construction
55A	Profiles
56	General Construction
56A	Profiles
57, 58	General Construction
58A, 58B	Profiles
59	General Construction

GEO/HYDRO	
GA Thru GA-16	Erosion Control
GB Thru GB-39	Geotechnical Data
GM-1 Thru GM-3	Prospective Material Source

DRAWING NO.	DESCRIPTION
BRIDGE	
89917	Bridge Index Sheet
89918	Plan Br.# 09352, 09352A, 09337, 09339
89922	Plan Br.#09440, 09440A, 09439, 09439A, 19626, 19627
89923	Misc. Details

PERMANENT PAVEMENT MARKINGS	
ST-1 Thru ST-5	Striping Plan

PERMANENT SIGNING	
S-13412 Thru S-13434	Sign Plans

ITS	
ITS-1158	Pavement Sensor Installation Details

Standard Dwg. Nos.

RD150	- Slope Rounding
RD300	- Trench Backfill, Bedding, Pipe Zone And Mult. Installations
RD302	- Street Cut
RD312	- Subsurface Drain
RD316	- Sloped Ends For Metal Pipe
RD318	- Sloped Ends For Concrete Pipe
RD319	- Miscellaneous Culvert Details
RD320	- Paved End Slope For Culverts 60" Maximum Pipe Size
RD326	- Coupling Bands For Corrugated Metal Pipe
RD334	- Locator Post
RD335, RD336, RD342, RD344, RD346	- Manholes
RD348	- Manhole with inlet
RD356	- Manhole Cover & Frames
RD360	- Manhole Frame Adjustment
RD364, RD368,	- Concrete Inlets
RD376	- Miscellaneous Drainage Structures
RD380, RD384, RD386, RD388, RD390	- Pipe Fill Height Tables
RD398	- Culvert ID Marker
RD399	- Stormwater Treatment and Storage Facility Field Markers
RD400, RD405, RD410, RD415, RD420, RD435, RD440, RD450	- Guardrail
RD500	- Precast Concrete Barrier Pin And Loop Assembly
RD505	- Concrete Barrier Cast-in-Place
RD510	- Concrete Barrier Terminal
RD515	- Median Barrier Anchoring Details
RD516	- Securing Concrete Barrier To Roadway
RD530	- Guardrail Transition To Concrete Barrier
RD545	- Precast Tall (42") Concrete Barrier
RD560	- Cast-In-Place Tall Conc. Barrier Tran. to Std. Conc. Barrier
RD570	- Guardrail Transition To Tall Concrete Barrier
RD575	- Tall Concrete Barrier (Modified) Around Median Obstacle
RD610	- Asphalt Pavement Details
RD700, RD701	- Curbs
RD810	- Barbed And Woven Wire Fences
RD815	- Chain Link Fence
RD1000	- Construction Entrances
RD1005	- Check Dams
RD1015	- Inlet Protection
RD1040	- Sediment Fence
RD1055	- Matting

R/W Map No.

BR203	- Transition Concrete Bridge Rail To Guardrail
BR236	- Trailing End Bridge Connection Conc. Bridge Rail To Guardrail
BR270	- Rail Transition From Flex Beam Rail To Curb & Parapet Rail
TM200	- Sign Installation Details
TM201	- Miscellaneous Sign Placement Details
TM211	- Signing Details
TM221, TM222	- Milepost Marker Details
TM224	- Directional Sign Layout
TM230, TM231, TM232, TM233	- Mounting Details For Removable Legend
TM500, TM501, TM502, TM503	- Pavement Marking Standard Details
TM515	- Raised Pavement Markers
TM516	- Raised Pavement Markers Freeway Med. Crossover
TM517	- Recessed Pavement Markers
TM522	- Durable Pavement Markings
TM530	- Intersection Pavement Markings
TM547	- Freeway Entrance Ramp Pavement Markings
TM551	- Freeway Exit Ramp Pavement Markings
TM560,	- Alignment Layout
TM570	- Traffic Delineators
TM571	- Traffic Delineators Steel Post Details
TM575	- Traffic Delineator Installation
TM602	- Triangular Base Breakaway Multi-Direction Slip Base
TM635	- Breakaway Sign & Luminaire Supports
TM670	- Wood Post Sign Supports
TM671	- 3 Second Gust Wind Speed Isotach
TM675	- Extruded Aluminum Panels
TM676	- Sign Attachments
TM678	- Secondary Sign Mounting Details
TM681, TM687, TM688	- Square Tube Sign Supports
TM800	- Tables, Abrupt Edge And PCMS Details
TM810	- Temporary Reflective Pavement Markers
TM820	- Temporary Barricades
TM821	- Temporary Sign Supports
TM830	- Temporary Concrete Barrier And Rumble Strips
TM831, TM832	- Temporary Impact Attenuators
TM860, TM861, TM862	- Freeway Sections
TM870	- Bridge Construction
TM871	- Blasting Zones

No.	DATE	REVISIONS	BY
1	10-30-12	Added std. dwg. no.	
2	11-07 -12	Added sheets	

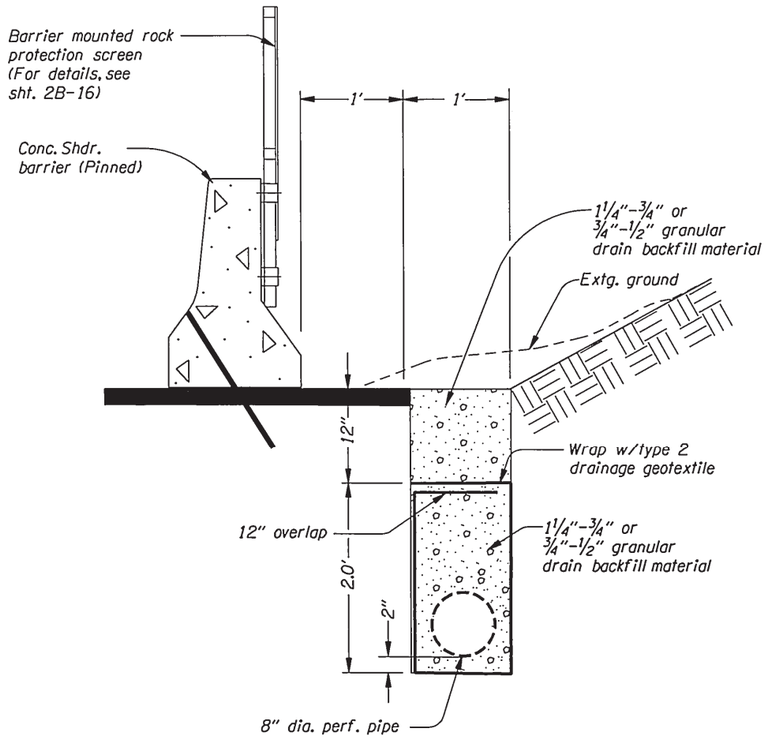
Standard Drawings located on the web at:
http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard_drawings_home.shtml

I-5: GLENDALE-HUGO PAVING/ SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSEPHINE & DOUGLAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	IM-STP-S001(407)	1A

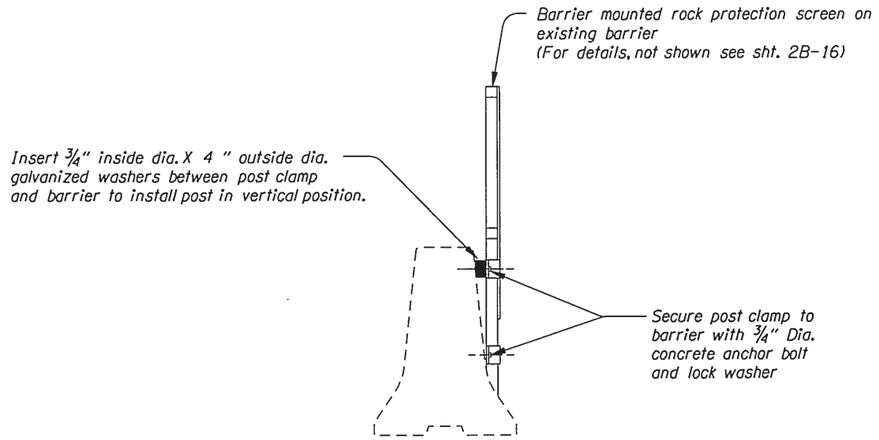
46V-003

SUBSURFACE DRAIN DETAIL



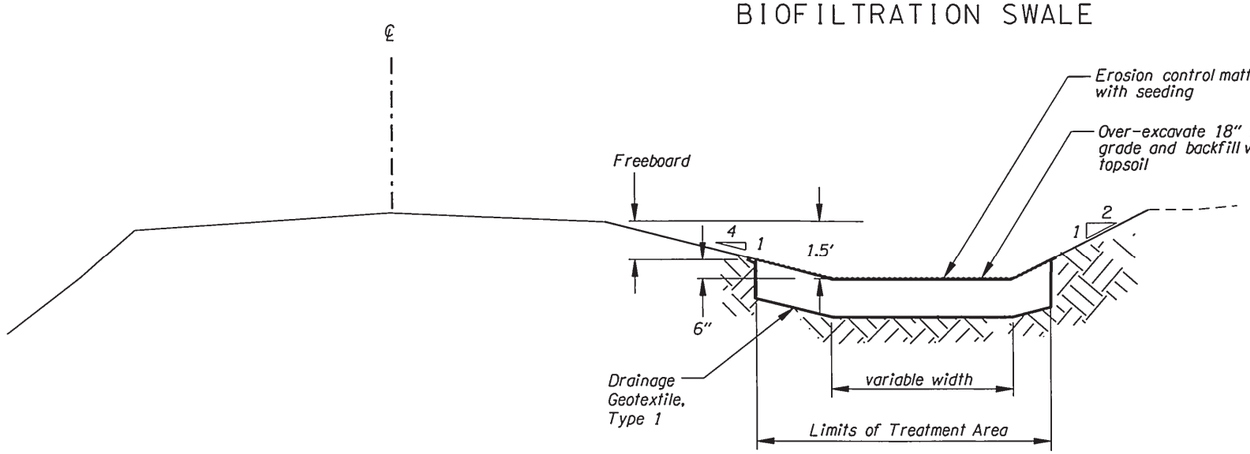
1. For details not shown See dwg. no. RD312

BARRIER MOUNTED ROCK PROTECTION SCREEN ON EXISTING BARRIER



SECTION A-A

BIOFILTRATION SWALE



SECTION

NOTE:
1. Side-slopes are shown as vert. to horiz.

REGISTERED PROFESSIONAL ENGINEER
74492PE
OREGON
JAN. 13, 2009
JERED W. CARPENTER
EXPIRES: 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I-5: GLENDALE - HUGO PAVING/
SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSEPHINE & DOUGLAS COUNTY

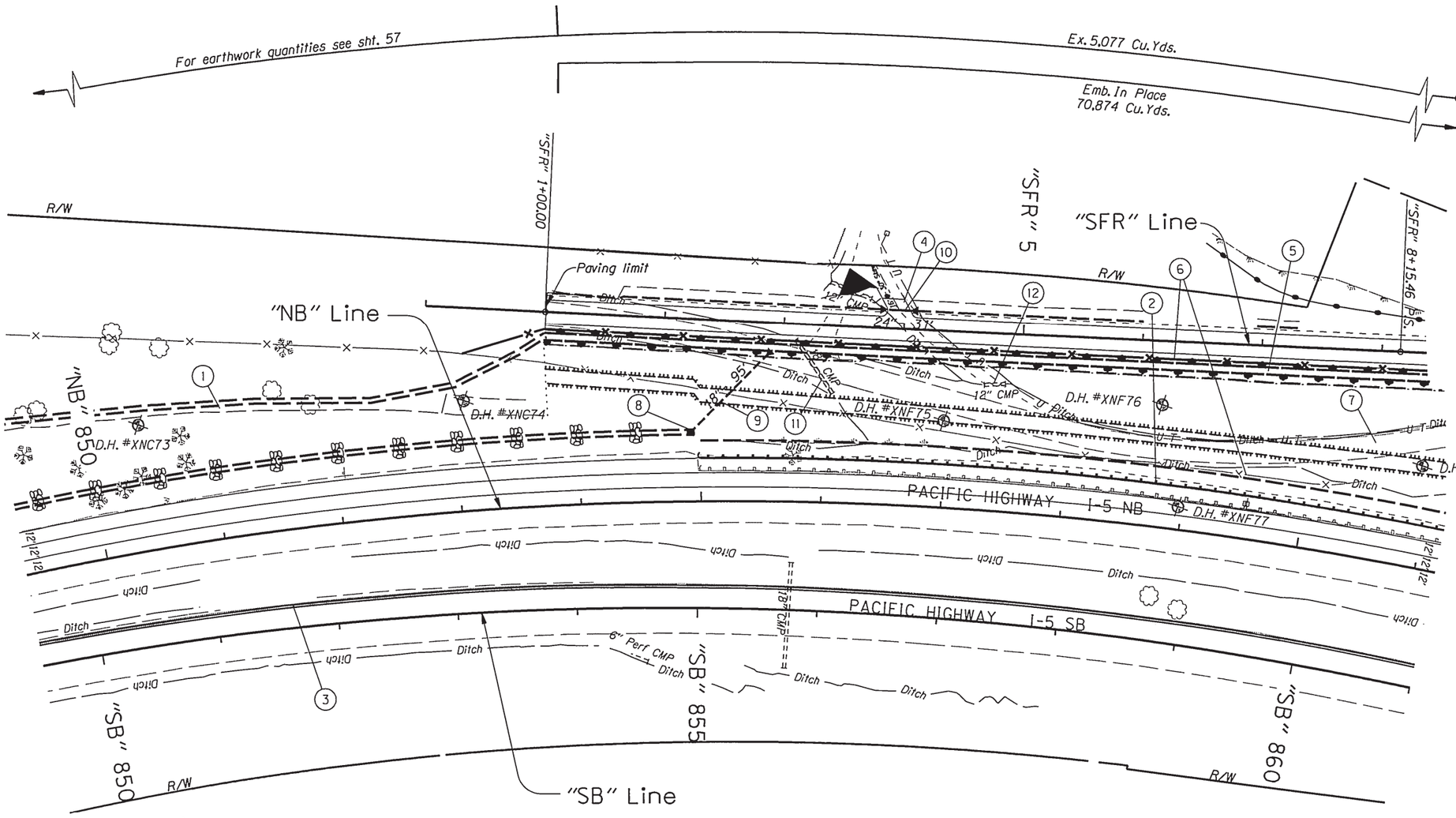
Designed By - Jered Carpenter
Reviewed by - Brian Sheadel
Drafted By - Billy Shafer

DETAILS

SHEET NO. 2B-6

Sec. 35, T. 34 S, R. 6 W, W.M.

46V-003



(1) See sht. 57, note 6

(2) Sta. "NB" 855+00 to Sta. "NB" 866+00, Lt.
Remove guardrail - 1,100'
Const. guardrail - 1,100' (type 2A)
Const. anchor (Type 1mod.)
Inst. end piece (type B)
Inst. Type 4 (Alt. 2) delineators - 7

(3) See sht. 38, note 8

(4) Const. approach, asphalt
(For details, see sht. 2B-18)

(5) Const. 4' flat bottom bioswale - 760 sq. yds.
(For details, see sht. 2B-6)

(6) Sta. "SFR" 0+32 to Sta. "SFR" 12+87, Rt.
Remove fence - 1,255'
Const. Type 2 fence - 1,261'
Connect to extg.

(7) Remove AC surfacing on frontage road - 1,575 sq. yds.

Legend
Check dam shown thus:
(For details, see sht. 2B-7)

NOTES:
1. All dimensions shown are in feet unless otherwise noted.
2. Replace all existing striping/pavement markings in accordance with Standard Drawings TM500, TM501, TM502, TM530, TM547, TM551 & TM560. Replace all recessed pavement markers in accordance with Standard Drawings TM516 & TM517
3. Guardrail design is based on a terminal length of 37.5', if longer terminal is used, reduce the length of Type 2A guardrail accordingly.
4. Ammended soil not required for check dams between Sta. "NB" 843+00 to "NB" 866+00

(8) Sta. "NB" 854+92.06, 57.91' Lt.
Const. type B-SL inlet
(For details, see sht. 58A)

(9) Sta. "NB" 854+92.06, 57.91' Lt. to
Sta. "SFR" 2+90.00, 23.84' Rt.
Const. 18" storm sew. - 95'
5' depth
Const. paved end slope - 30 sq. ft.
(For details, see sht. 58A)
(See Std. dwg. no. RD320)

(10) Sta. "SFR" 3+79.81, 15.77' Lt. to
Sta. "SFR" 4+11.33, 15.77' Lt.
Const. 24" culvert - 31'
5' depth
Const. paved end slope each end - 74 sq. ft.

(11) Remove 18" CMP - 54'

(12) Remove 12" CMP - 18'

REGISTERED PROFESSIONAL ENGINEER
74492PE
OREGON
JAN. 13, 2009
JERED W. CARPENTER
EXPIRES: 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I-5: GLENDALE-HUGO PAVING/
SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSEPHINE & DOUGLAS COUNTY

Designed By - Jered Carpenter
Reviewed By - Brian Sheadel
Drafted By - Linda K. Coffel

GENERAL CONSTRUCTION

SHEET NO. 58

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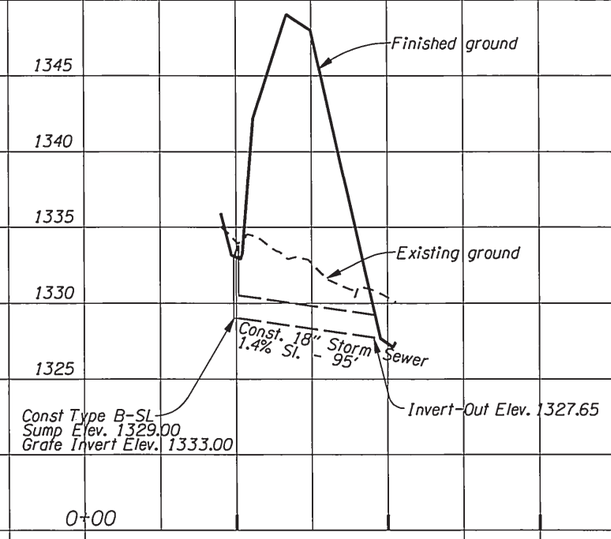
46V-003



Invert-in of proposed pipe @
Sta. "NB" 854+92.06, 57.91' Lt.
See sht. 58, note 8
Profile shown @ pipe ℄

REGISTERED PROFESSIONAL ENGINEER
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JAN. 13, 2009
JERED W. CARPENTER
EXPIRES: 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I-5: GLENDALE-HUGO PAVING/
SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSEPHINE & DOUGLAS COUNTY

Designed By - Jered Carpenter
Reviewed By - Brian Sheadel
Drafted By - Linda K. Coffel

PROFILE

SHEET NO. 58A

46V-003

SEXTON FRONTAGE ROAD

1351.52

+00.00

Existing ground

Invert-In Elev. 1319.31

917' V.C.

1297.33

24" @ 9.71%

Invert-Out Elev. 1316.27

31'

Finish grade

+61.56

Existing ground

1261.48

-5.28%

+40.00

1+00 5+00 7+00 10+00

1355 1350 1345 1340 1335 1330 1325 1320 1315 1310 1305 1300 1295 1290 1285

1300 1295 1290 1285 1280 1275 1270 1265 1260 1255 1250

REGISTERED PROFESSIONAL ENGINEER
74492PE
OREGON
JAN. 13, 2009
JERED W. CARPENTER
EXPIRES: 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I-5: GLENDALE-HUGO PAVING/
SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSEPHINE & DOUGLAS COUNTY

Designed By - Jered Carpenter
Reviewed By - Brian Sheadel
Drafted By - Linda K. Coffel

PROFILE

SHEET NO. 58B

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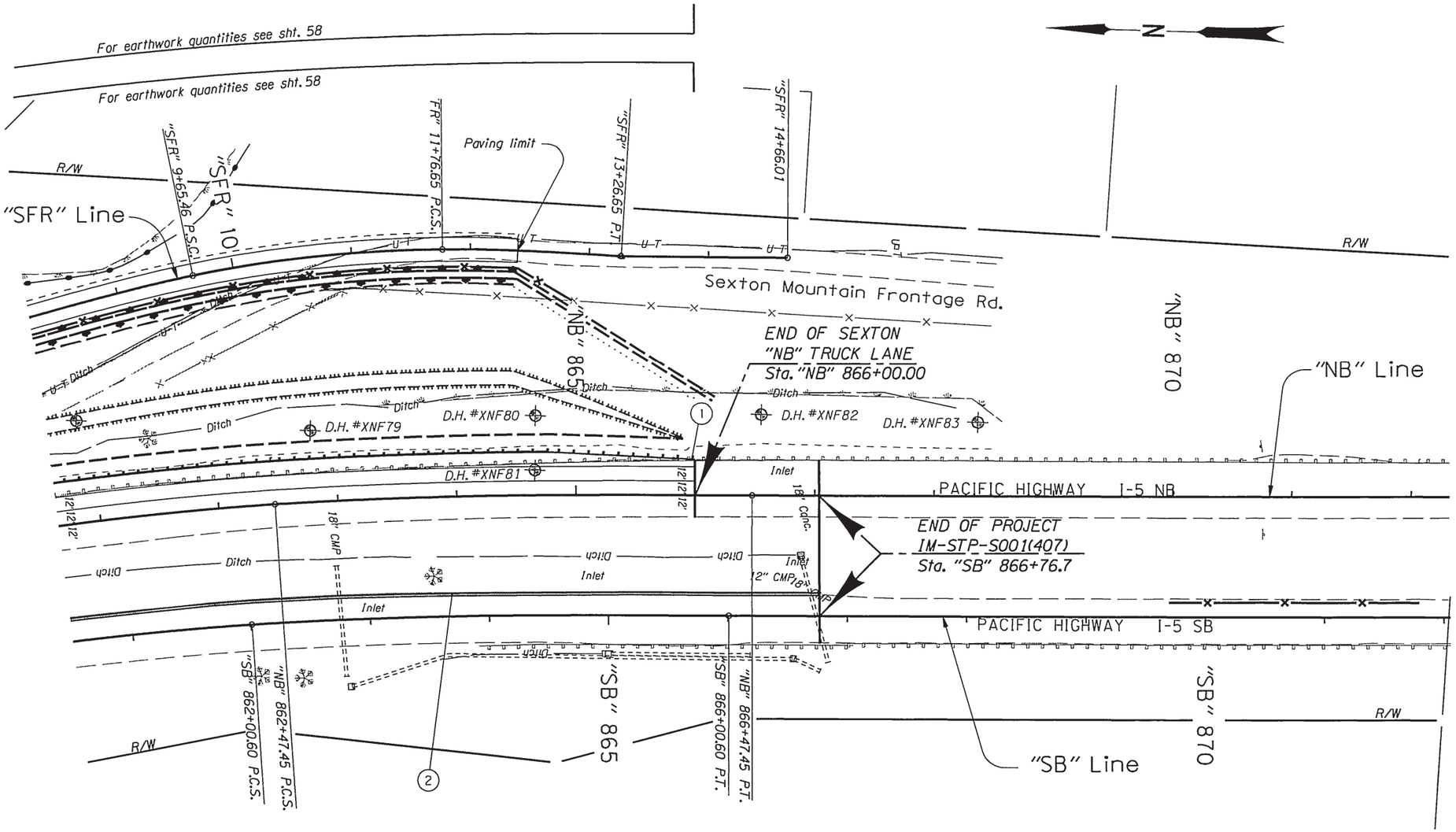
1:1200 BL - 025

Sec. 35, T. 34 S, R. 6 W, W.M.

46V-003



(1) See sht. 58, note 2
Connect to extg. guardrail

(2) See sht. 38, note 8

NOTES:

1. All dimensions shown are in feet unless otherwise noted.
2. Replace all existing striping/pavement markings in accordance with Standard Drawings TM500, TM501, TM502, TM530, TM547, TM551 & TM560. Replace all recessed pavement markers in accordance with Standard Drawings TM516 & TM517
3. Guardrail design is based on a terminal length of 37.5'. if longer terminal is used, reduce the length of Type 2A guardrail accordingly.

REGISTERED PROFESSIONAL ENGINEER
74492PE
OREGON
JAN. 13, 2009
JERED W. CARPENTER

EXPIRES: 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I-5: GLENDALE-HUGO PAVING/
SEXTON CLIMBING LANE
PACIFIC HIGHWAY
JOSEPHINE & DOUGLAS COUNTY

Designed By - Jered Carpenter
Reviewed By - Brian Sheadel
Drafted By - Linda K. Coffel

GENERAL CONSTRUCTION

SHEET NO. 59