

OPERATION & MAINTENANCE MANUAL

DFI No.: D00370

**Facility Type: Water Quality Biofiltration
Swale**



MARCH, 2011

1. Identification

Drainage Facility ID (DFI): **D00370**
Facility Type: Water Quality Biofiltration Swale
Construction Drawings: (V-File Number) 40V-091
Location: District: 7
Highway No.: 001
Mile Post: 103.93 / 103.95 (beg./end)
Description: This facility is located on the western side of I-5 (Hwy 001, Pacific Highway) in the gore area between the Weaver Road southbound off-ramp and I-5. Access can be obtained from the southbound shoulder of I-5 or from the Weaver Road off-ramp.

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 Hydraulics Engineer (541) 957-3693

Or

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

3. Construction

Engineer of Record: ODOT Designer – Region 3 Tech. Center, James Kent, P.E., 541-957-3573

Facility construction: 2006
Contractor: Hamilton Construction Company.]

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.

Stormwater for the facility is conveyed to the facility through a roadside ditch. The ditch collects stormwater from sheet flow generated by I-5 southbound travel lanes and the Weaver Road off-ramp. An inlet located at the beginning of the swale contributes flow from the Weaver Road overcrossing structure. Refer to the Operational Plan in Appendix A for further information. Water conveyed into the swale undergoes treatment as it flows through the length of the channel. The treated water flows out of the swale through an inlet that is connected to an 18-inch storm pipe. This storm pipe discharges into a roadside ditch on the west side of the Weaver Road southbound off-ramp. The flow from this roadside ditch is conveyed off of ODOT right-of-way before discharging into the South Umpqua River.

A. Maintenance equipment access:

Maintenance crew can access the facility from the southbound shoulder of I-5 or from the Weaver Road off-ramp.

B. Heavy equipment access into facility:

- Allowed (no limitations)
- Allowed (with limitations)
- Not allowed

C. Special Features:

- Amended Soils
- Porous Pavers
- Liners
- Underdrains

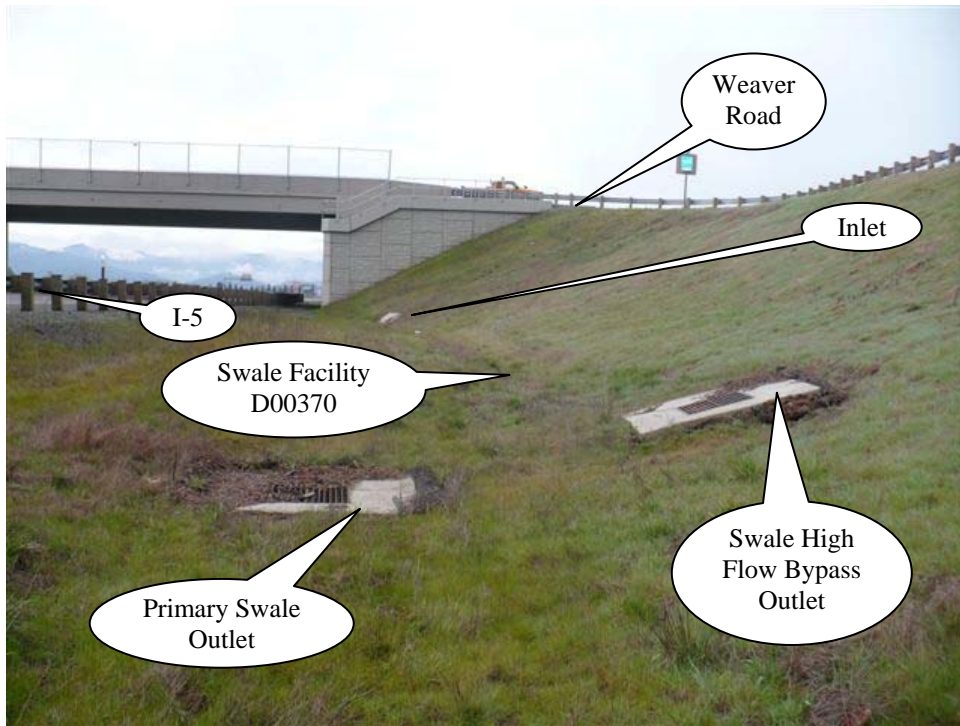


Photo 1: Looking south at the outlet control structure, flow into the swale is generated from I-5 shown on the left side of the picture and from the Weaver Road off-ramp shown to the right.



Photo 2: Looking north, flow into the swale is generated from I-5 shown on the right side of the picture and from the Weaver Road off-ramp shown to the left.

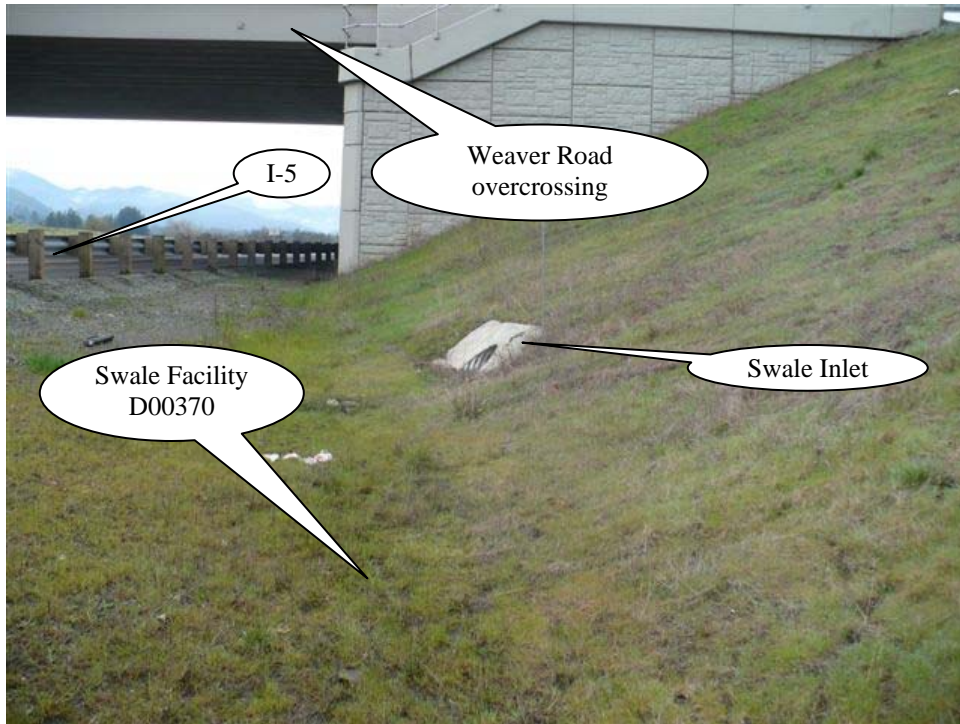


Photo 3: Looking south. Flow is generated from I-5, shown on the left side of the picture, from the Weaver Road off-ramp to the right, and from the inlet shown at the center of the picture.

5. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the 18-inch diameter outlet pipe located at the outlet of the water quality biofiltration swale. Refer to Photo 2 for a picture of outlet structure.

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

A secondary auxiliary inlet/outlet grated catch basin has been designed as part of the facility's outlet control structure, and acts as an emergency overflow in the event the primary outlet control device is plugged.

Before flows ever reach the higher level of the secondary inlet/outlet device, however, they are typically released through a primary inlet/outlet grated catch basin located below the secondary device. If runoff should ever exceed the water quality event, where flows normally are directed to the lower primary outlet, the pond level will rise and flows will be released through the secondary auxiliary inlet/outlet device located just above the primary outlet.

- Other, as noted below

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

Material removed from the facility is defined as waste by DEQ. Refer to the roadwaste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options: <http://egov.oregon.gov/ODOT/HWY/OOM/EMS.shtml>

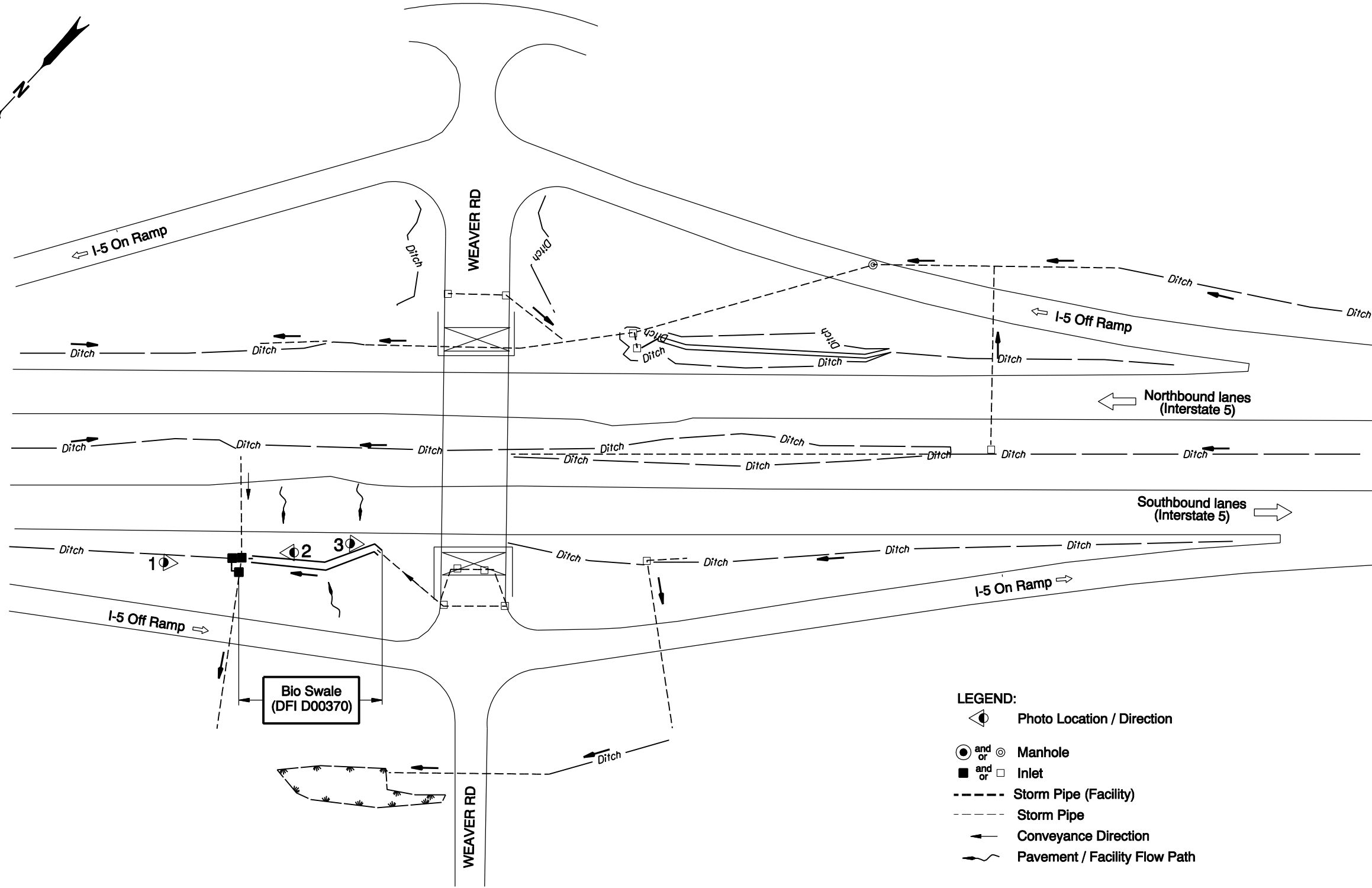
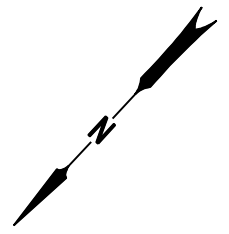
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(541) 957-3594
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

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



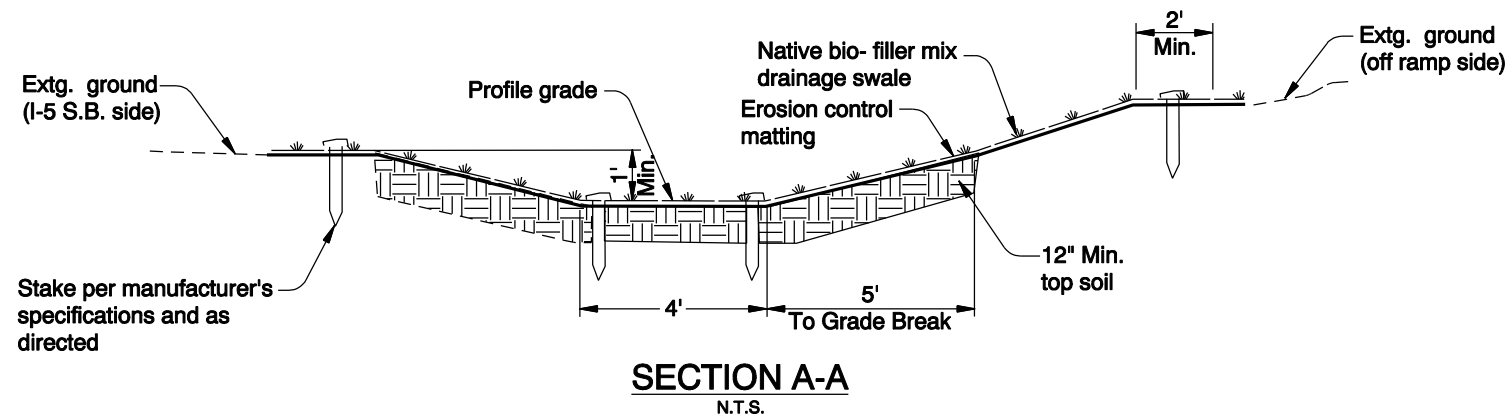
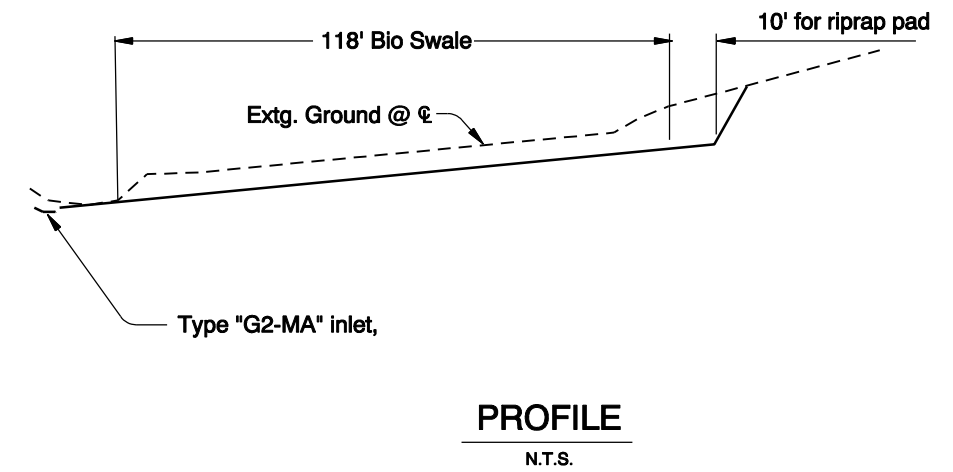
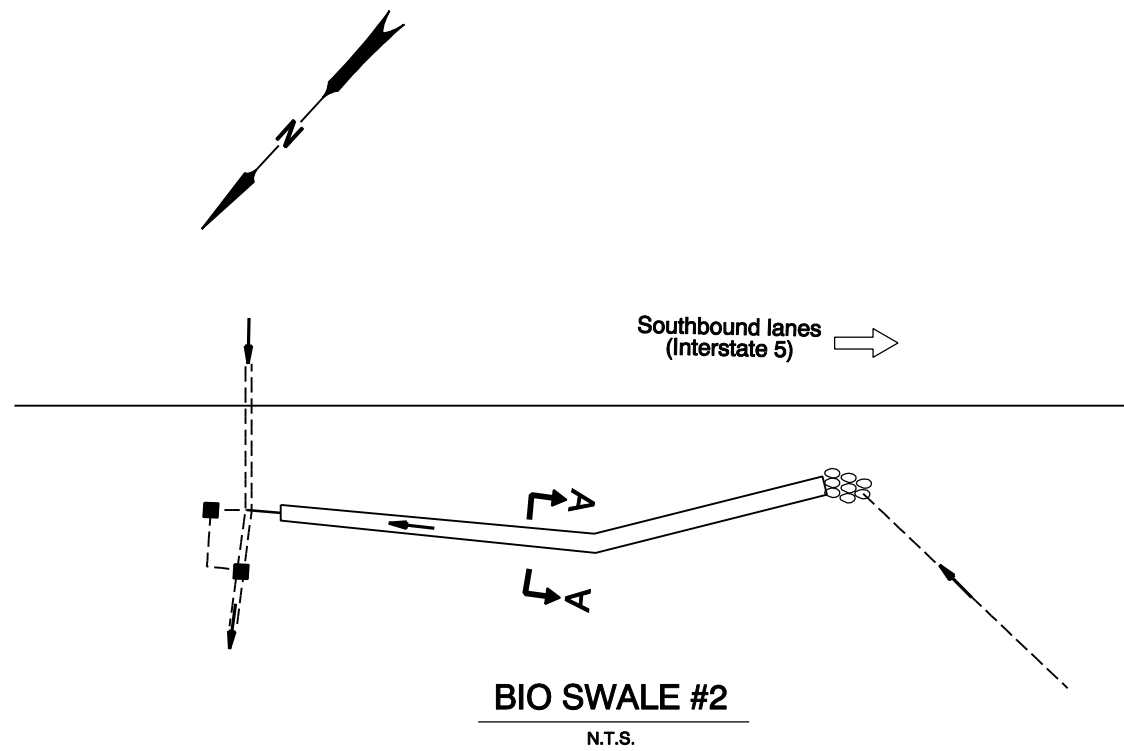
- LEGEND:**
- Photo Location / Direction
 - and Manhole
 - and Inlet
 - Storm Pipe (Facility)
 - Storm Pipe
 - Conveyance Direction
 - Pavement / Facility Flow Path

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: J. Carpenter

Drafted By: B. Shafer

DFI D00370
MAINTENANCE DISTRICT 7 HWY 001
WATER QUALITY BIOFILTRATION SWALE
 PACIFIC HIGHWAY MP 103.93/103.95
 DOUGLAS COUNTY



 OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: J. Carpenter

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DFI D00370
MAINTENANCE DISTRICT 7 HWY 001
WATER QUALITY BIOFILTRATION SWALE
PACIFIC HIGHWAY MP 103.93/103.95
DOUGLAS COUNTY

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. & Standard Drg. Nos.

STATE OF OREGON
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

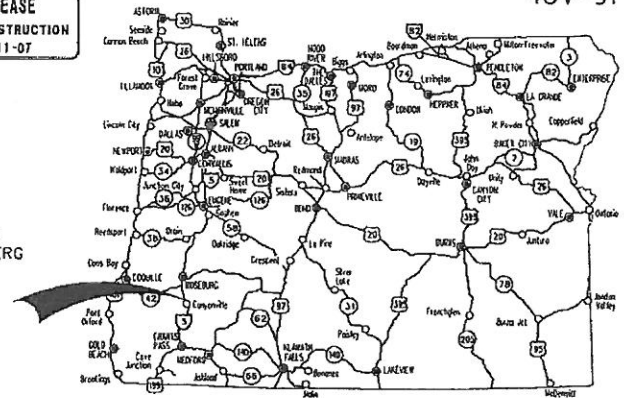
GRADING, DRAINAGE, STRUCTURES, PAVING & SIGNING

**I-5 : WEAVER BUNDLE 306 SEC.
WEAVER ROAD OVER HWY 1**

PACIFIC HIGHWAY

**DOUGLAS COUNTY
NOVEMBER 2006**

RELEASE
FOR CONSTRUCTION
07-11-07

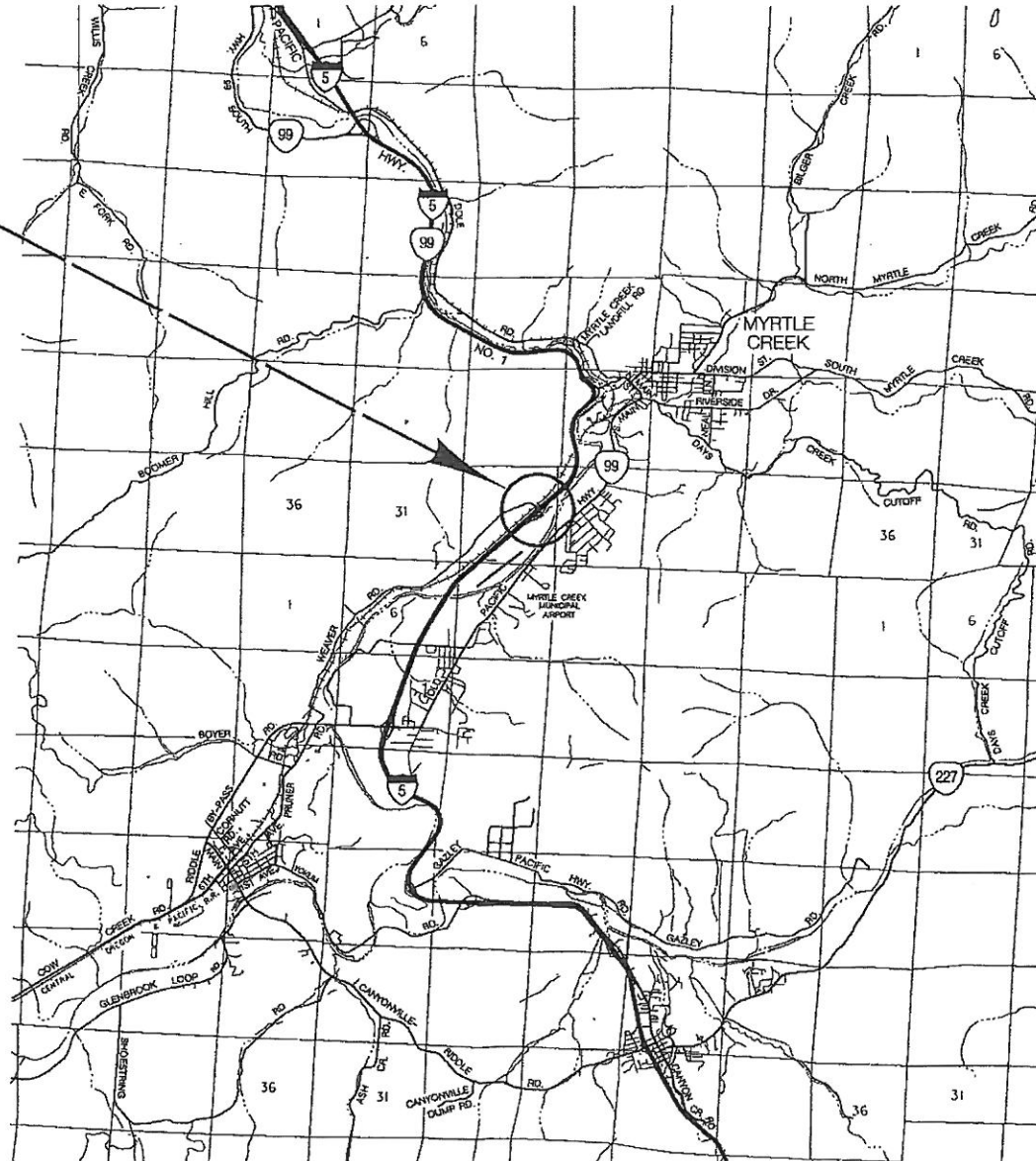


40V-91

REVISED AS CONSTRUCTED
01/20/09 CONTRACT 13308
PROJ. MGR. SAM M. GROSSBERG

Overall Length Of Project - 0.11 Miles

**PROJECT
IM-OTIA-S001(222)
STA. "NB" 82+50 (M.P. 106)**

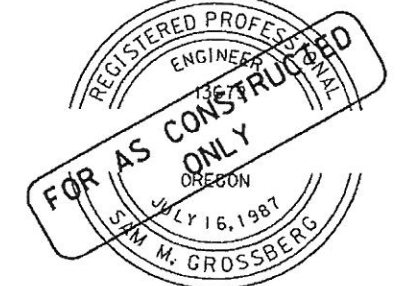


ATTENTION:
Oregon Law Requires You To Follow Rules
Adopted By The Oregon Utility Notification
Center. Those Rules Are Set Forth In
OAR 952-001-0010 Through OAR 952-001-0090.
You May Obtain Copies Of The Rules By Calling
The Center. (Note: The Telephone Number For
The Oregon Utility Center Is (503) 232-1987.)

OREGON TRANSPORTATION COMMISSION	
Stuart Foster	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Mike Nelson	COMMISSIONER
Randall Papé	COMMISSIONER
Janice J. Wilson	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION
BY:
DAVID EVANS AND ASSOCIATES INC.

OBEC CONSULTING ENGINEERS
Corporate Office: 920 COUNTRY CLUB ROAD, SUITE 1000 EUREKA, OREGON 97401-6099, 541-683-6099
2235 WISSON STREET SE, SUITE 100 SALEM, OREGON 97302-1295, 503-589-4100
831 OYAKO PARKWAY MEDFORD, OREGON 97504-4005, 541-774-5590
5025 SW WEAVERS ROAD, SUITE 120 LAKE OSWEGO, OREGON 97035, 503-680-6105
www.evadec.com



EXPIRES: 06/30/

OREGON DEPARTMENT OF TRANSPORTATION
CONCURRENCE

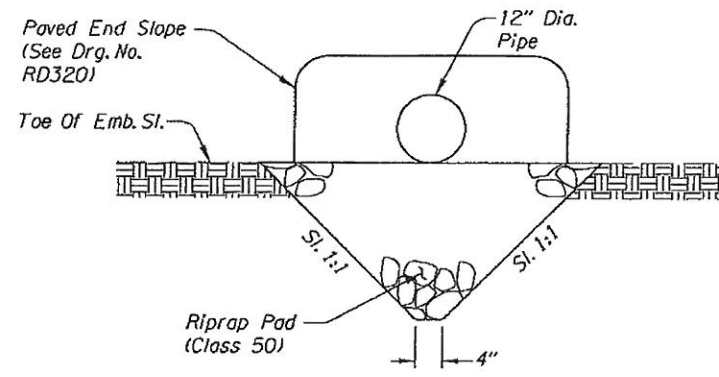
CHIEF ENGINEER _____ DATE _____

**I-5 : WEAVER BUNDLE 306 SEC.
WEAVER ROAD OVER HWY 1
PACIFIC HIGHWAY
DOUGLAS COUNTY**

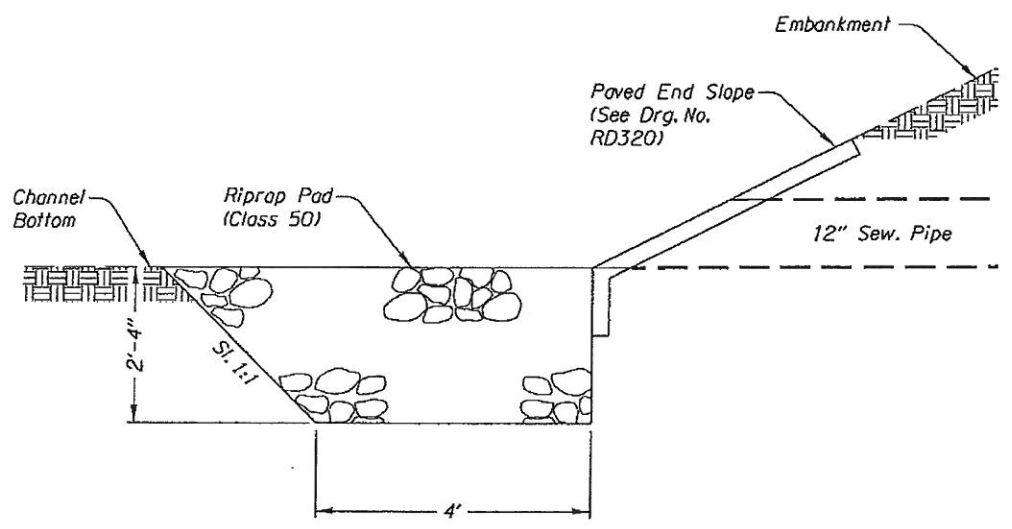
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	IM-OTIA-S001(222)	1



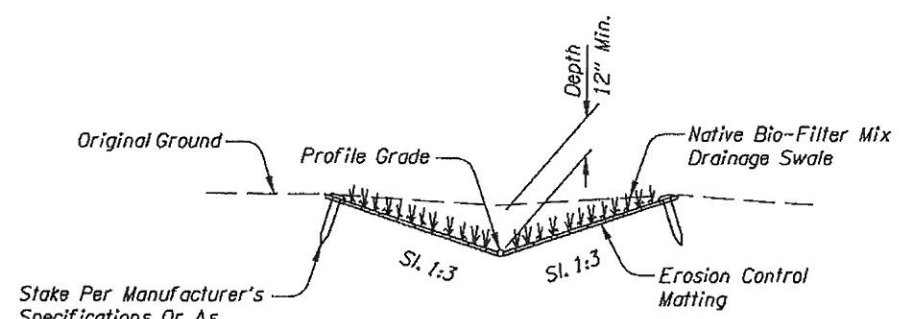
T. 29 S., R. 5 W., W.M.



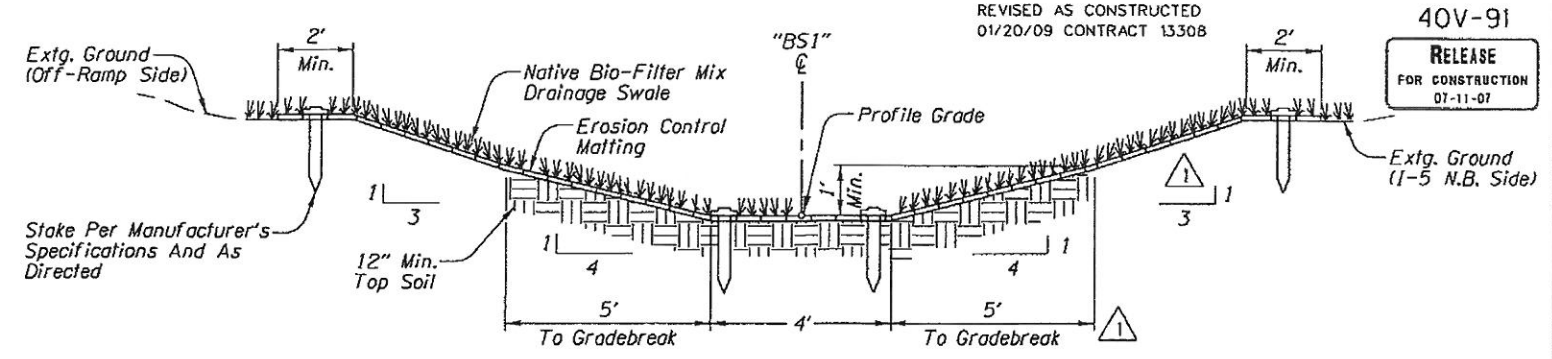
FRONT VIEW



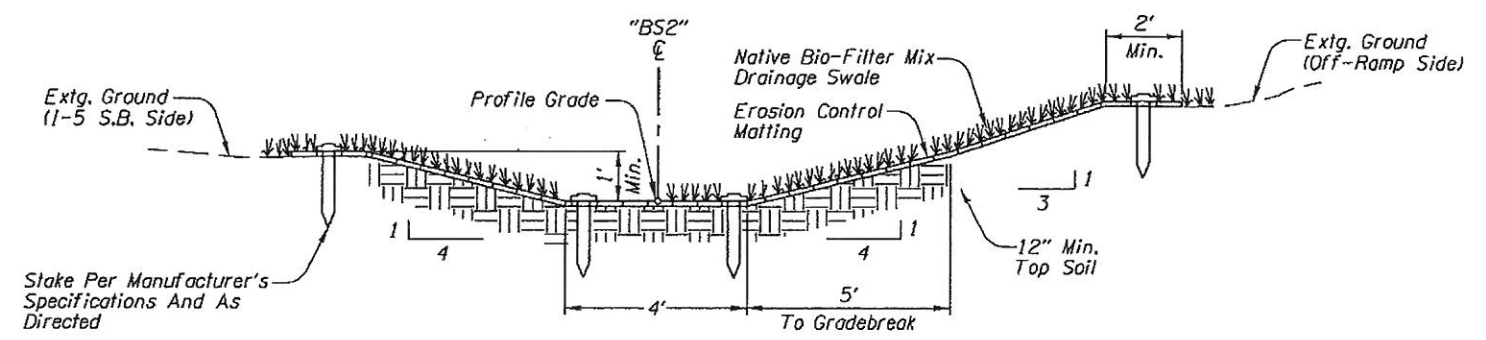
SIDE VIEW
RIPRAP PAD
(With Paved End Slope)



"V" DITCH
(See Sht. 2B-11 For Plan And Profile)

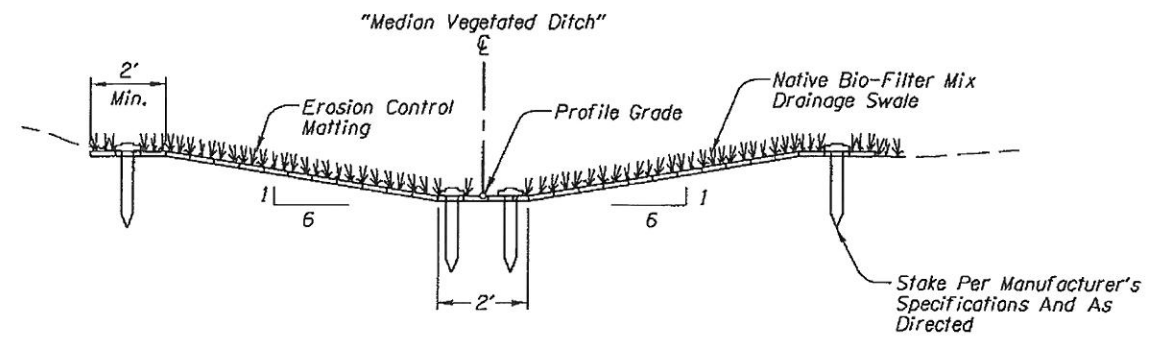


SECTION A-A
BIO-SWALE NO. 1



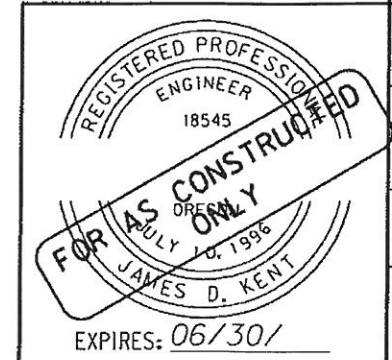
SECTION A-A
BIO-SWALE NO. 2

NOTE:
1. For Details, See Sht. 2B-11 & Sht. 3B.

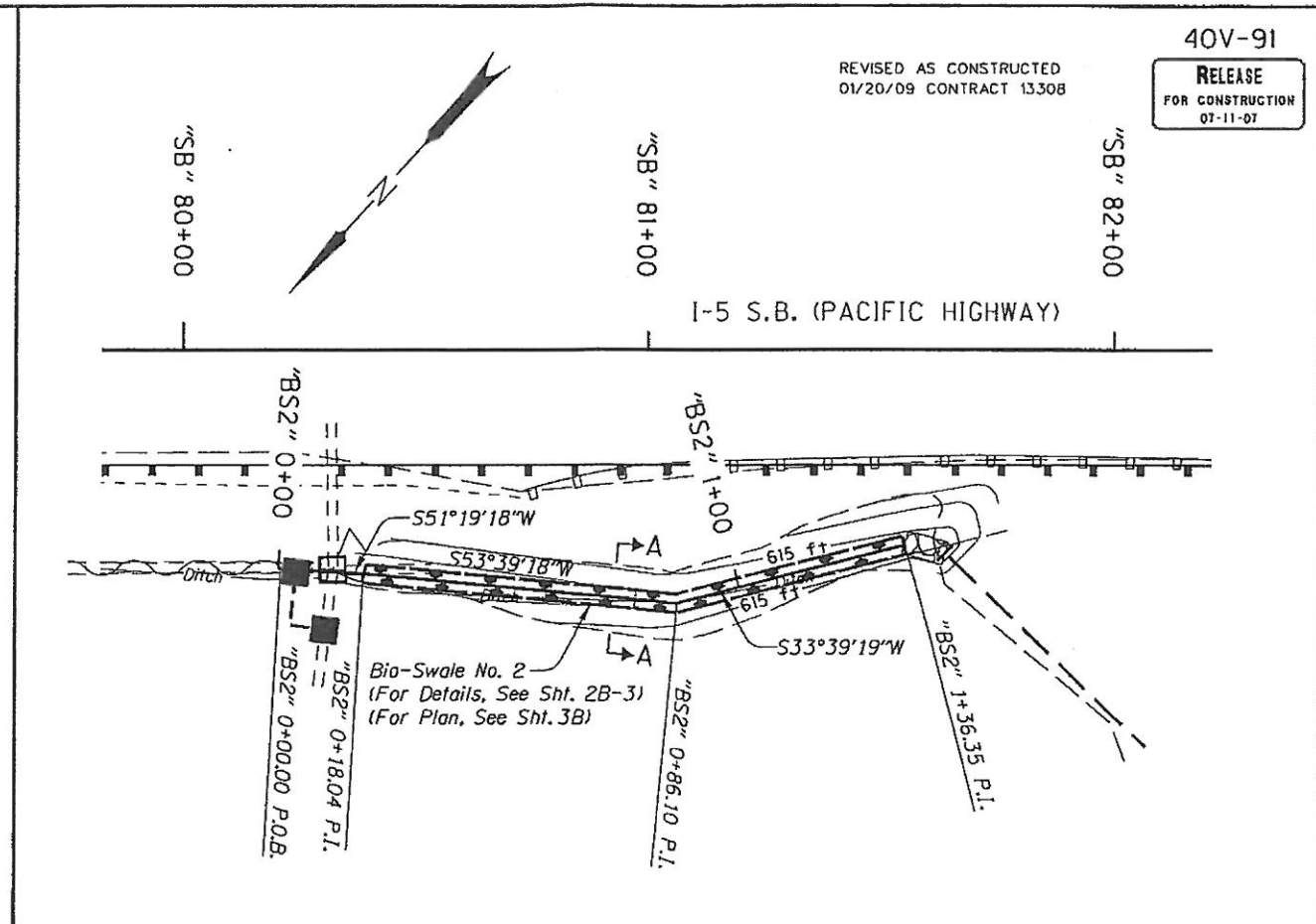
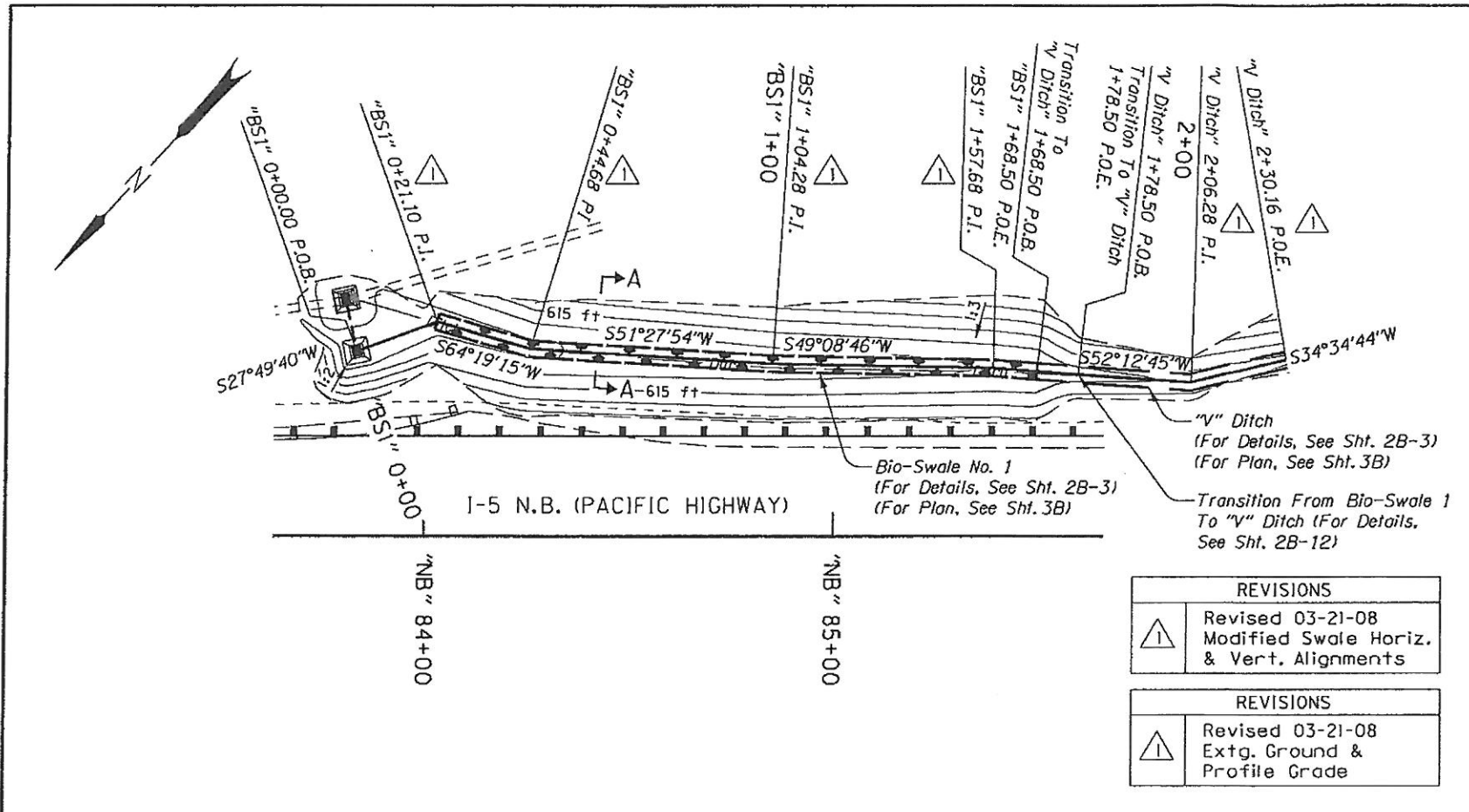


MEDIAN VEGETATED DITCH
(See Sht. 2B-13 For Plan And Profile)

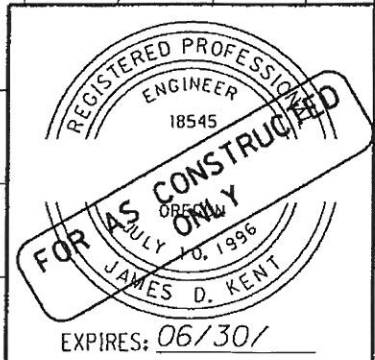
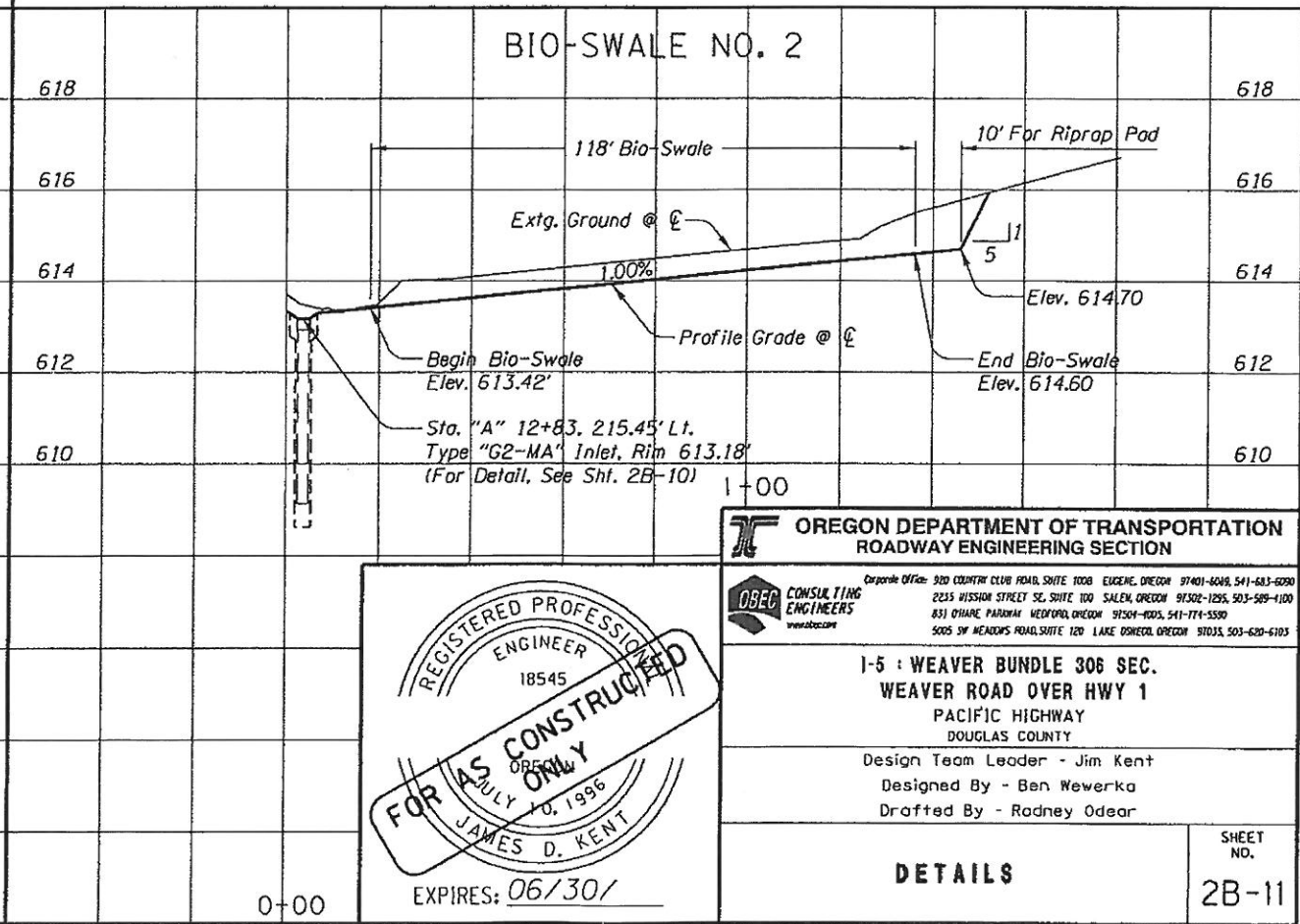
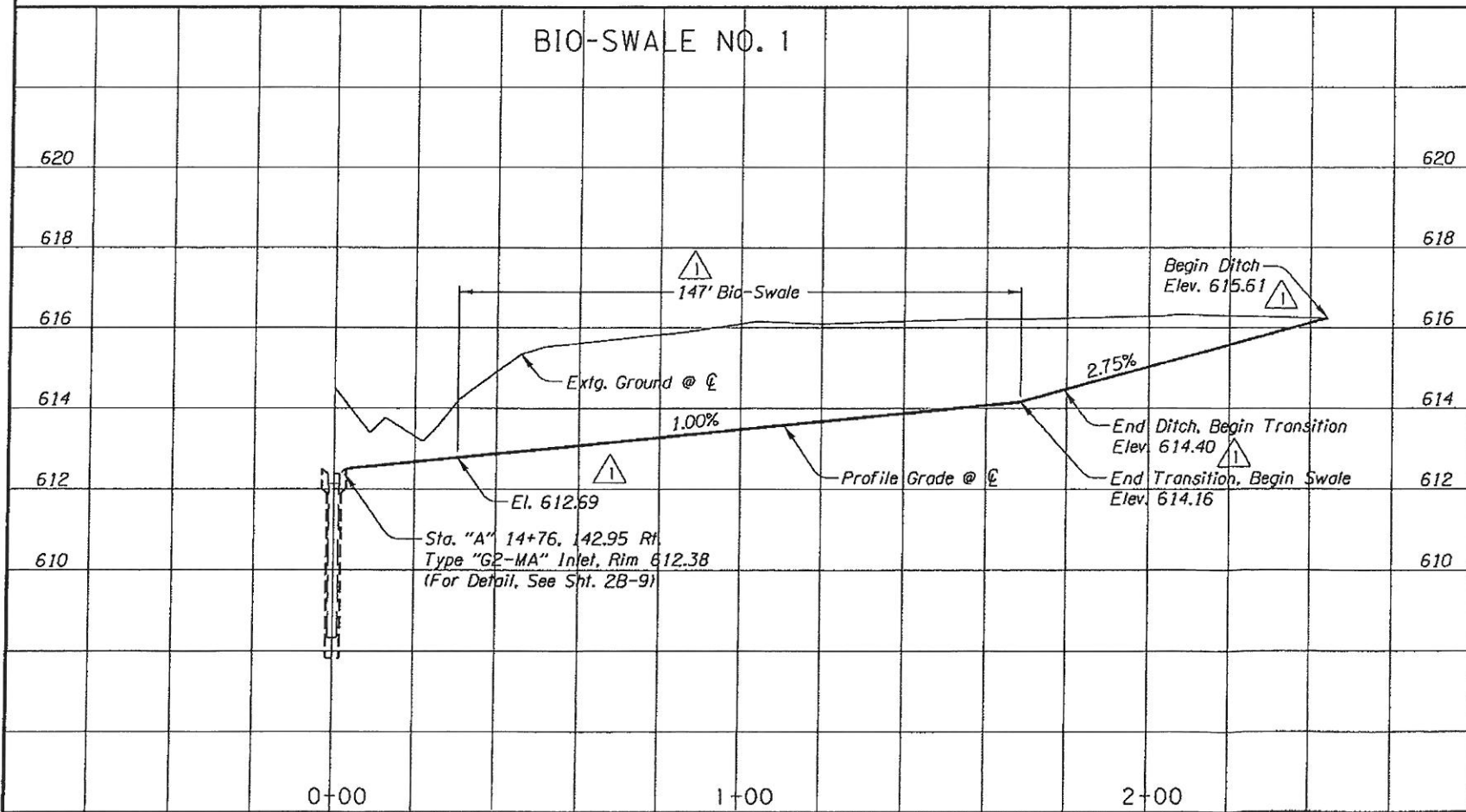
REVISIONS	
⚠	Revised 03-21-08 Modified Swale Section



<p>OREGON DEPARTMENT OF TRANSPORTATION ROADWAY ENGINEERING SECTION</p>	
<p>Corporate Office: 920 COMMERCIAL CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6004, 541-683-6200 2225 MISSION STREET SE, SUITE 100 SALEM, OREGON 97302-1295, 503-589-4100 831 O'HARE PARKWAY NE, WEDGEMOUNTAIN, OREGON 97148-0005, 541-774-5500 5005 SW WENDERS ROAD, SUITE 120 LAKE OSWEGO, OREGON 97035, 503-620-6403</p>	
<p>1-5 : WEAVER BUNDLE 306 SEC. WEAVER ROAD OVER HWY 1 PACIFIC HIGHWAY DOUGLAS COUNTY</p>	
<p>Design Team Leader - Jim Kent Designed By - Ben Wewerka Drafted By - Rodney Odear</p>	
<p>DETAILS</p>	<p>SHEET NO. 2B-3</p>



REVISIONS	
△	Revised 03-21-08 Modified Swale Horiz. & Vert. Alignments
REVISIONS	
△	Revised 03-21-08 Extg. Ground & Profile Grade



OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

Corporate Office: 900 CENTER CLUB ROAD, SUITE 1000 EUGENE, OREGON 97401-6248, 541-683-6200
2235 HISSON STREET SE, SUITE 100 SALEM, OREGON 97302-1295, 503-589-1100
431 O'HARE PARKWAY, MEDFORD, OREGON 97504-6005, 541-774-5500
5025 SW MEADOWS ROAD, SUITE 120 LAKE OSWEGO, OREGON 97035, 503-639-6105

OBEC CONSULTING ENGINEERS
www.obec.com

1-5 : WEAVER BUNDLE 306 SEC.
WEAVER ROAD OVER HWY 1
PACIFIC HIGHWAY
DOUGLAS COUNTY

Design Team Leader - Jim Kent
Designed By - Ben Wewerka
Drafted By - Rodney Odear

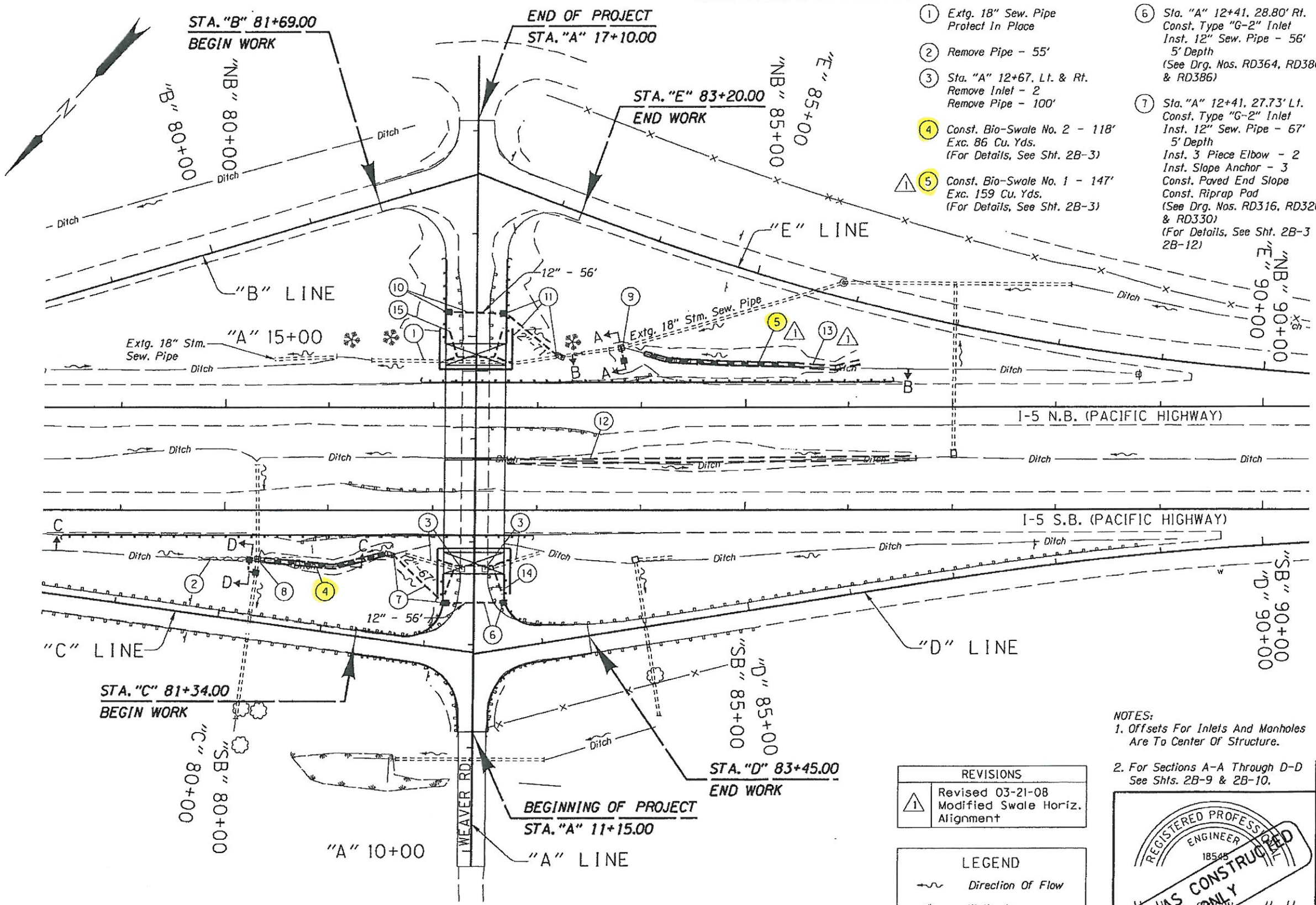
DETAILS

SHEET NO. **2B-11**

Sec. 32, T. 29 S., R. 5 W., W.M.
WEAVER ROAD OVERCROSSING

40V-91
RELEASE FOR CONSTRUCTION 01-11-07

REVISED AS CONSTRUCTED
01/20/09 CONTRACT 13308

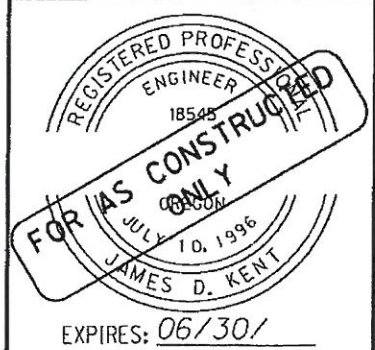


- ① Extg. 18" Sew. Pipe Protect In Place
- ② Remove Pipe - 55'
- ③ Sta. "A" 12+67, Lt. & Rt. Remove Inlet - 2 Remove Pipe - 100'
- ④ Const. Bio-Swale No. 2 - 118' Exc. 86 Cu. Yds. (For Details, See Sht. 2B-3)
- ⑤ Const. Bio-Swale No. 1 - 147' Exc. 159 Cu. Yds. (For Details, See Sht. 2B-3)
- ⑥ Sta. "A" 12+41, 28.80' Rt. Const. Type "G-2" Inlet Inst. 12" Sew. Pipe - 56' 5' Depth (See Drg. Nos. RD364, RD380 & RD386)
- ⑦ Sta. "A" 12+41, 27.73' Lt. Const. Type "G-2" Inlet Inst. 12" Sew. Pipe - 67' 5' Depth Inst. 3 Piece Elbow - 2 Inst. Slope Anchor - 3 Const. Paved End Slope Const. Riprap Pad (See Drg. Nos. RD316, RD320 & RD330) (For Details, See Sht. 2B-3 2B-12)
- ⑧ Sta. "A" 12+70, 209.12' Lt. SWM #4 Cap Inlet Const. Type "G2-MA" Inlet Const. Mod. "G2-MA" Inlet Inst. 6" Sew. Pipe - 18' 5' Depth (See Drg. No. RD376) (For Details, See Sht. 2B-10)
- ⑨ Sta. "A" 14+89, 140.20' Rt. SWM #3 Reconstruct Inlet W/ G2-MA Top Const. Type "G2-MA" Inlet Inst. 6" Sew. Pipe - 12' 5' Depth (For Details, See Sht. 2B-9)
- ⑩ Sta. "A" 15+23, 27.73' Lt. Const. Type "G-2" Inlet Inst. 12" Sew. Pipe - 56' 5' Depth
- ⑪ Sta. "A" 15+23, 27.73' Rt. Const. Type "G-2" Inlet Inst. 12" Sew. Pipe - 71' 5' Depth Inst. 3 Piece Elbow - 2 Inst. Slope Anchor - 3 Const. Paved End Slope Const. Riprap Pad (For Details, See Sht. 2B-3 & 2B-12)
- ⑫ Sta. "A" 13+78, 31.00' Rt. Const. Vegetated Ditch - 394' 2' Flat Bottom, 1:6 Slopes Dt. Exc. - 137 Cu. Yds. (For Details, See Sht. 2B-3)
- ⑬ Sta. "A" 14+75, 309' Rt. Const. Ditch - 63' "V" Bottom, 1:3 Slopes Dt. Exc. - 19 Cu. Yds. (For Details, See Sht. 2B-3)
- ⑭ Sta. "A" 12+77, Lt. & Rt. Inst. 4" Drain Pipe - 131' (For Detail See Wall Drgs.)
- ⑮ Sta. "A" 14+80, Lt. & Rt. Inst. 4" Drain Pipe - 131' (For Detail See Wall Drgs.)

NOTES:
1. Offsets For Inlets And Manholes Are To Center Of Structure.
2. For Sections A-A Through D-D See Shts. 2B-9 & 2B-10.

REVISIONS	
①	Revised 03-21-08 Modified Swale Horiz. Alignment

LEGEND	
	Direction Of Flow
	Wetlands
	Bio-Swale
	Limits Of Cut



OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION
Corporate Office: 9100 CENTURY CLUB ROAD, SUITE 1200B EUGENE, OREGON 97401-6009, 541-683-6200
 2235 MISSION STREET, SE, SUITE 100 SALEM, OREGON 97302-1255, 503-589-4100
 811 OHARE PARKWAY, MEDFORD, OREGON 97504-4005, 541-774-5300
 5005 SW WEAVER ROAD, SUITE 120 LAKE OSWEGO, OREGON 97035, 503-620-6183

I-5 : WEAVER BUNDLE 308 SEC.
WEAVER ROAD OVER HWY 1
PACIFIC HIGHWAY
DOUGLAS COUNTY
 Design Team Leader - Jim Kent
 Designed By - Ben Wewerka
 Drafted By - Rodney Odear

DRAINAGE PLAN
SHEET NO. **3B**