

OPERATION & MAINTENANCE MANUAL

DFI No. : D00897

**Facility Type: Water Quality
Biofiltration Swale**



Figure 1: Looking south at the bioswale located along west side of Pacific Highway West (99W)

[July, 2016]

INDEX

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1. Identification

Drainage Facility ID (DFI): **D00897**

Facility Type: Water Quality Biofiltration Swale

Construction Drawings: (V-File Number) 49V-107

Location: District: 4

Highway No.: 091

Mile Post: 103.69 to 103.71, Left

Description:

The swale is located 150 feet south of Lake Slough on the east side of Pacific Highway West. The facility can be accessed via the shoulder of southbound 99W.

2. Facility Contact Information

Contact the Engineer of Record (see section 3), Region Technical Center, or Geo-Environmental's Senior Hydraulics Engineer for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

Engineering Contacts:

Chris Carman, ODOT Hydraulics Engineer (503) 986-2691.

Or

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

3. Construction

Engineer of Record: ODOT Designer – Region 2 Tech. Center,
Chris Carman, (503) 986-2691

Facility construction: 2017

4. Storm Drain System and Facility Overview

The swale is located 150 feet south of Lake Slough on the east side of Pacific Highway West. Treatment of pollutants from the highway are achieved through sedimentation and infiltration through the water quality mix shown in section B-B in the operational plan.

A. Maintenance equipment access:

Maintenance crews and equipment can access the facility by parking on the shoulder of southbound 99W.



Heavy equipment access into facility:

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

Heavy equipment access is allowed with limitations. Access is allowed for light to mid weight equipment such as mowers and small excavators.

B. Special Features:

- Amended Soils
- Porous Pavers
- Liners
- Underdrains

5. Facility Haz Mat Spill Feature(s)

This facility has no Haz Mat spill features.

6. The swale can be used to store a volume of liquid by blocking the outlet of the swale. A barrier such as a temporary berm made of sandbags could be used to prevent liquid from draining from the swale.

7. 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

This facility does not contain an auxiliary outlet feature. The facility was designed to receive runoff from the road and discharge into cross pipes.

8. 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:

[https://www.oregon.gov/ODOT/HWY/OOM/mg/02/act125_waterqualityfacil
andtables.pdf](https://www.oregon.gov/ODOT/HWY/OOM/mg/02/act125_waterqualityfacil
andtables.pdf)

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:

9. 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:

https://www.oregon.gov/ODOT/HWY/OOM/EMSdoc/ems_manual.pdf

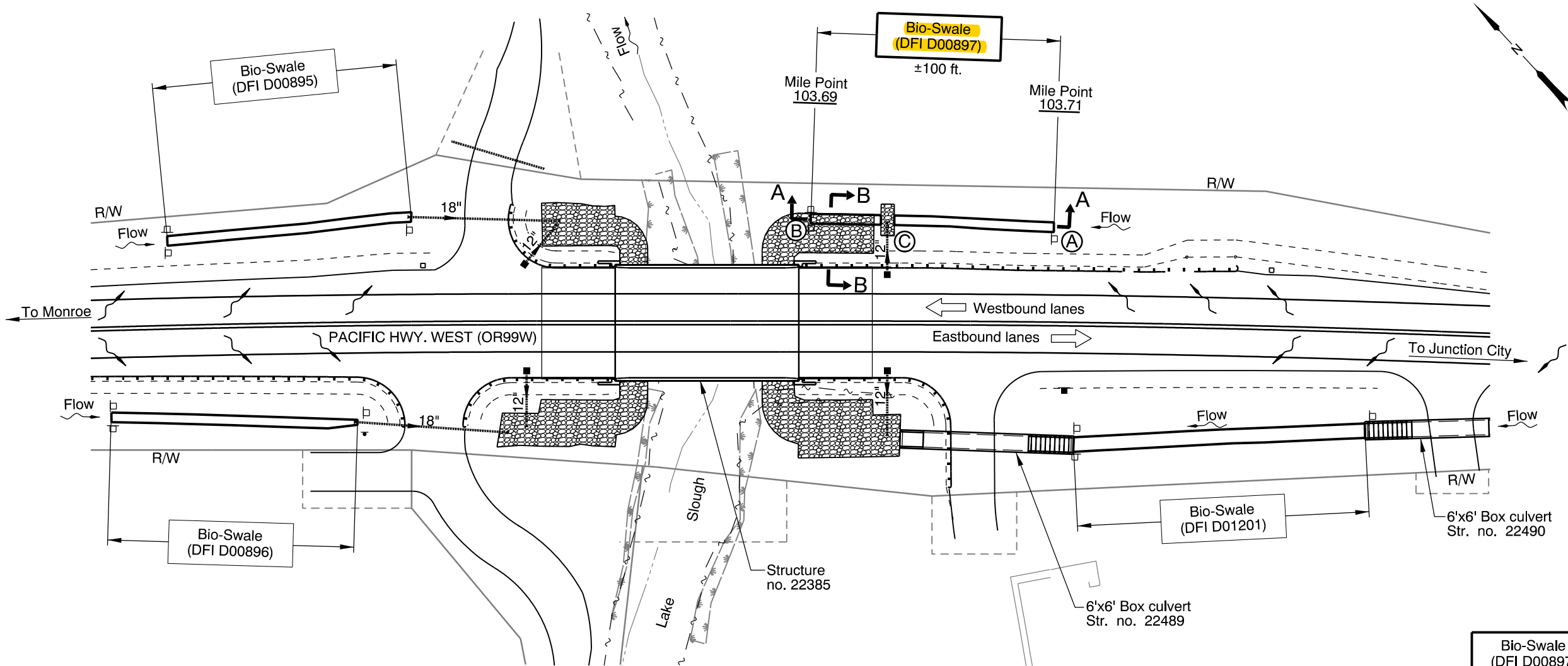
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region Hazmat Coordinator	(503) 731-8290
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

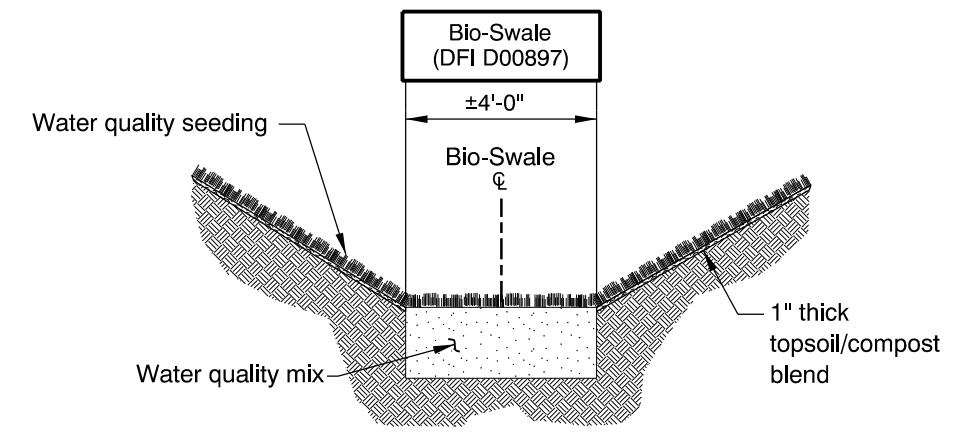
Content:

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

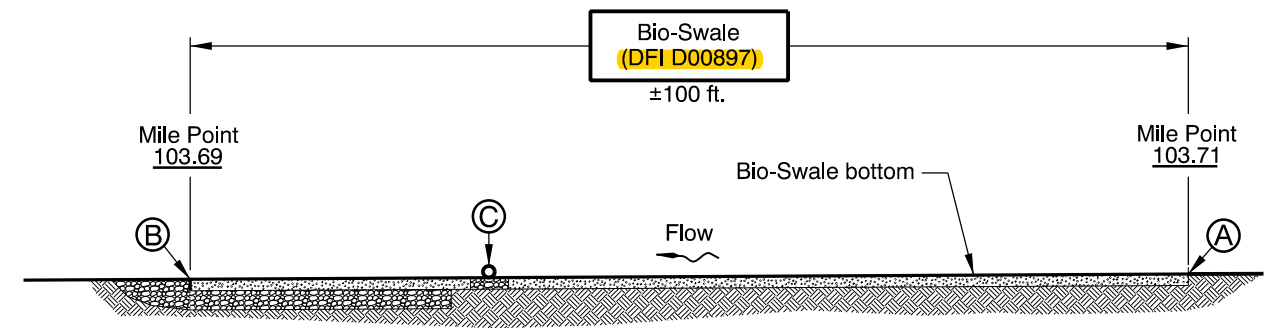


- LEGEND:**
- Photo Location / Direction
 - Swale Inlet
 - Swale Outlet
 - 12" Storm drain pipes outfalls into WQ Swale
 - Storm Pipe (Facility)
 - Swale Boundary
 - Pavement / Facility Flow Path
 - Inlet

PLAN
N.T.S.



SECTION B-B
N.T.S.



SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Chris Carman
 Drafted By: Sergy Chernishoff

DFI D00897
MAINTENANCE DISTRICT 4 HWY 091
WATER QUALITY BIOFILTRATION SWALE
 PACIFIC HIGHWAY WEST MP 103.69-103.71
 BENTON COUNTY

Appendix B

Content:

- **ODOT Project Plan Sheets**

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Contd.
1A-2	Std. Drg. Nos.

STATE OF OREGON
 DEPARTMENT OF TRANSPORTATION
 PLANS FOR PROPOSED PROJECT

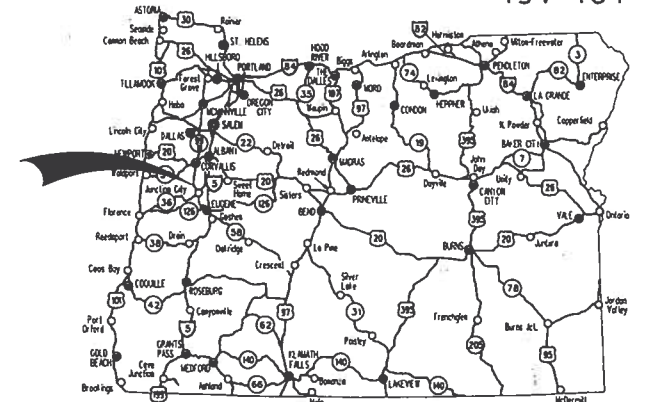
GRADING, STRUCTURES & PAVING

OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.

PACIFIC HIGHWAY WEST

BENTON COUNTY

OCTOBER 2016



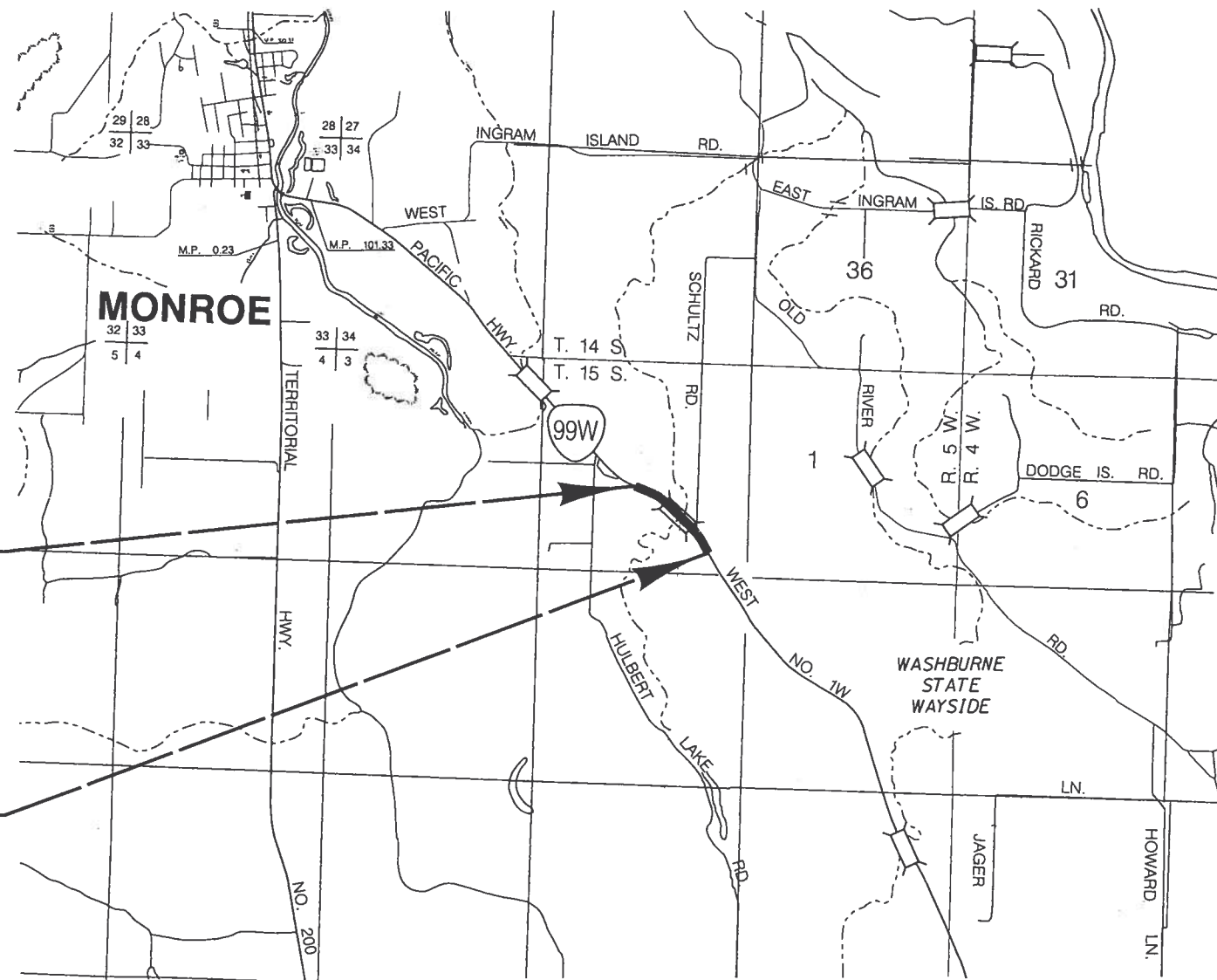
Overall Length Of Project - 0.17 Miles

NOT REVISED AS CONSTRUCTED
 STEVEN SCHULTZ, PE

SS

DATE 01/22/18

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.)



STP-S091(071)
 BEGINNING OF PROJECT
 STA. "C" 30+66.46 (M.P. 103.59)

STP-S091(071)
 END OF PROJECT
 STA. "C" 39+43.62 (M.P. 103.76)

OREGON TRANSPORTATION COMMISSION

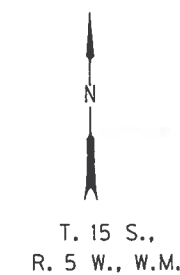
- Tammy Boney CHAIR
- David Lohman COMMISSIONER
- Susan Morgan COMMISSIONER
- Alando Simpson COMMISSIONER
- Sean O'Hollaren COMMISSIONER
- Matthew L. Corrett DIRECTOR OF TRANSPORTATION

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.

By: *James E. West* 9.28.16
 Signature & date

James E. West - R2 Tech. Center Manager
 Print name and title

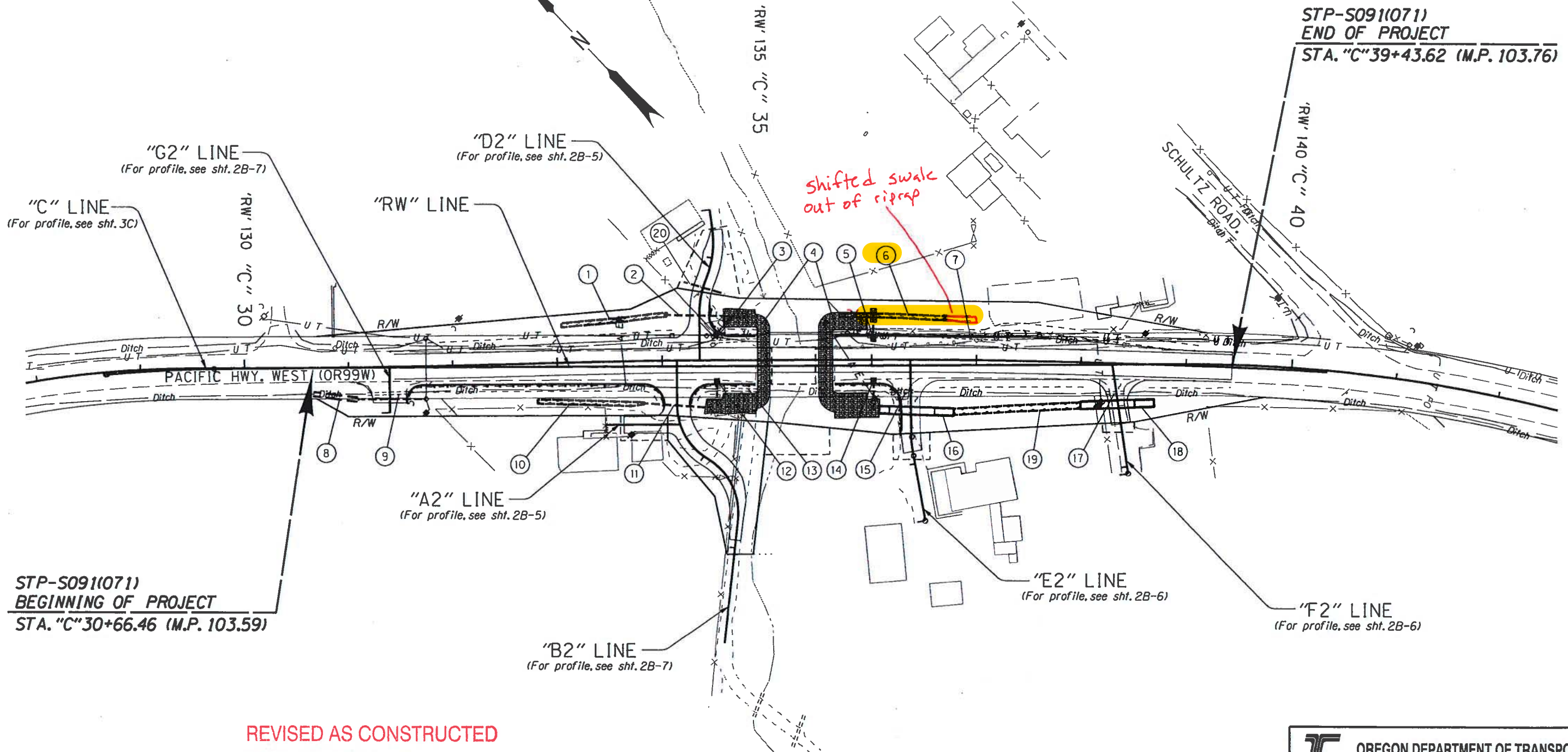
Robert J. Lawrence
 Concurrence by ODOT Chief Engineer



OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
 PACIFIC HIGHWAY WEST
 BENTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STP-S091(071)	1

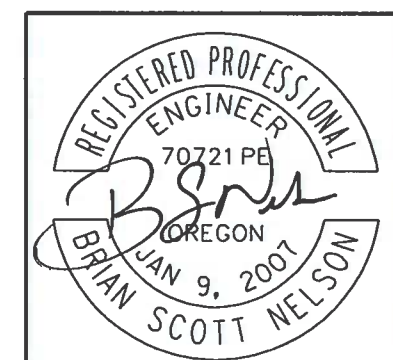




STP-S091(071)
 BEGINNING OF PROJECT
 STA. "C" 30+66.46 (M.P. 103.59)

STP-S091(071)
 END OF PROJECT
 STA. "C" 39+43.62 (M.P. 103.76)


REVISED AS CONSTRUCTED
 STEVEN SCHULTZ, PE
 [Signature]
 DATE 01/22/13

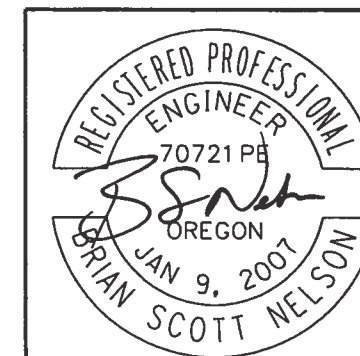


RENEWS: 12-31-2016


OREGON DEPARTMENT OF TRANSPORTATION	
REGION 2 TECH CENTER	
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC. PACIFIC HIGHWAY WEST BENTON COUNTY	
Design Team Leader - B. Scott Nelson Designed By - John Lucas Drafted By - Rick Krekeler	
DRAINAGE & UTILITIES	SHEET NO. 3B

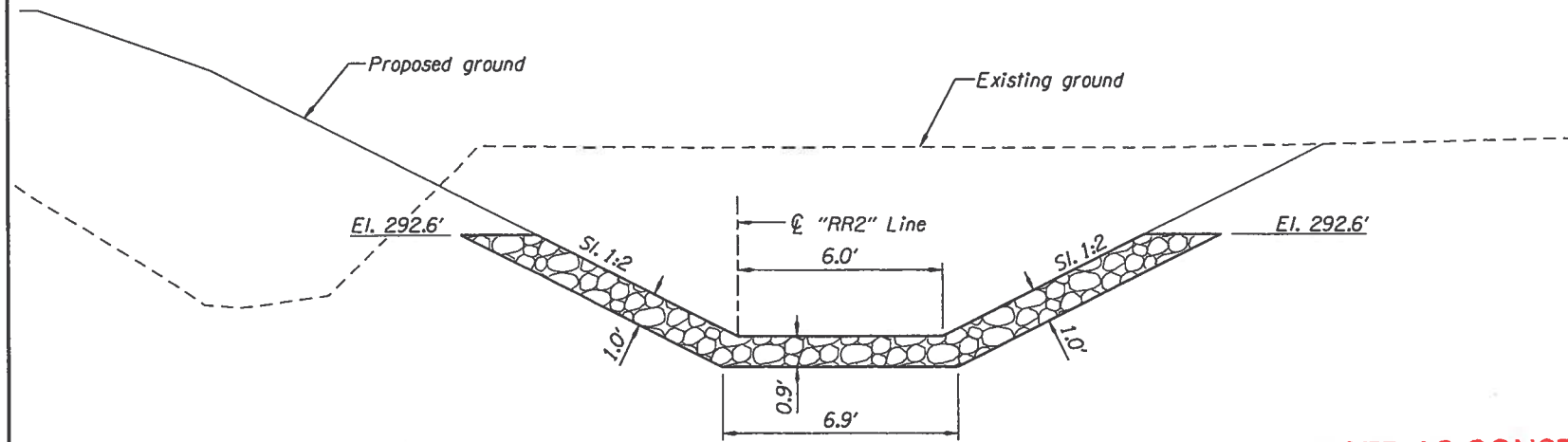
- ① Const. water quality biofiltration swale
(For details, see sht. GJ)
- ② Sta. "C"34+05.3 to Sta. "C"34+65.1, Lt.
Remove extg. pipe - 36.5'
Inst. 18" culv. pipe - 60.0'
5' depth
Const. paved end slopes
(See drg. nos. RD300, RD316, RD318, RD320,
RD325, RD327, RD380, RD386, RD388,
RD390 & RD393)
(For details, see sht. 2B-5)
- ③ Sta. "C"34+52.7 to Sta. "C"34+64.4, Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 18.5'
5' depth
Const. paved end slope
Inst. culv. ID marker, Type 1
Inst. culv. ID marker, Type 2
DFI no. D042431
MP 103.66
(See drg. nos. RD319, RD364 & RD398)
- ④ Const. loose riprap (Class 50) (Bank protection)
(For details, see sht. GH)
- ⑤ Sta. "C"36+01.6, Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 19.1'
5' depth
Const. paved end slope
Inst. culv. ID marker, Type 1
Inst. culv. ID marker, Type 2
DFI no. D042432
MP 103.69
- ⑥ Const. water quality biofiltration swale
(For details, see sht. GJ)
- ⑦ Remove extg. pipe - 65'
- ⑧ Const. ditch
"V" bottom, 1:2 slopes
Ditch exc. - 20 Cu. Yd.
- ⑨ Sta. "C"31+11.4 to Sta. "C"31+70.6, Rt.
Remove extg. pipe - 40'
Inst. 18" culv. pipe - 59.5'
5' depth
Const. paved end slopes
(For details, see sht. 2B-7)
(See drg. nos. RD302)
- ⑩ Const. water quality biofiltration swale
(For details, see sht. GJ)
- ⑪ Sta. "C"33+82.2 to Sta. "C"34+43.5, Rt.
Inst. 18" culv. pipe - 61.0'
5' depth
Const. paved end slopes
Inst. culv. ID marker, Type 1
Inst. culv. ID marker, Type 2
DFI no. D042433
MP 103.65
(For details, see sht. 2B-7)
- ⑫ Sta. "C"34+52.6, Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 20.3'
5' depth
Const. paved end slope
Inst. culv. ID marker, Type 1
Inst. culv. ID marker, Type 2
DFI no. D042434
MP 103.66
- ⑬ Remove extg. pipe - 44.9'
- ⑭ Sta. "C"36+01.6, Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 24.1'
5' Depth
Const. paved end slope
Inst. culv. ID marker, Type 1
Inst. culv. ID marker, Type 2
DFI no. D042435
MP 103.69
- ⑮ Remove extg. pipe - 22.7'
- ⑯ Structure no. 22489
Const. 6' X 6' R.C.B.C.
(For details, see shts. GE, GE-3 & GE-4)
- ⑰ Remove extg. pipe - 20.7'
- ⑱ Structure no. 22490
Const. 6' X 6' R.C.B.C.
(For details, see shts. GE-2 & GE-3)
- ⑲ Const. water quality biofiltration swale
(For details, see sht GJ)
- ⑳ Sta. "D2"10+70, 19.00' Lt., I.E. 290.7'
Sta. "D2"10+70, 21.00' Rt., I.E. 290.0'
Inst. 4" Elec. conduit pipe - 40'
5' depth
Cap both ends (Glued)
(Install with a Min. of 30" of cover as directed)

REVISED AS CONSTRUCTED
 STEVEN SCHULTZ, PE

 DATE 01/22/13

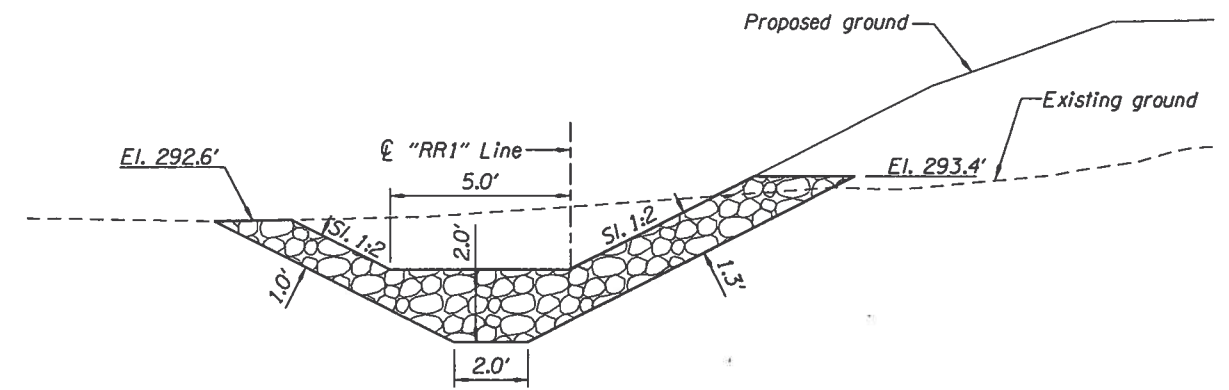


RENEWS: 12-31-2016

 OREGON DEPARTMENT OF TRANSPORTATION	
REGION 2 TECH CENTER	
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC. PACIFIC HIGHWAY WEST BENTON COUNTY	
Design Team Leader - B. Scott Nelson Designed By - John Lucas Drafted By - Rick Krekeler	
DRAINAGE NOTES	SHEET NO. 3B-2



SECTION A-A



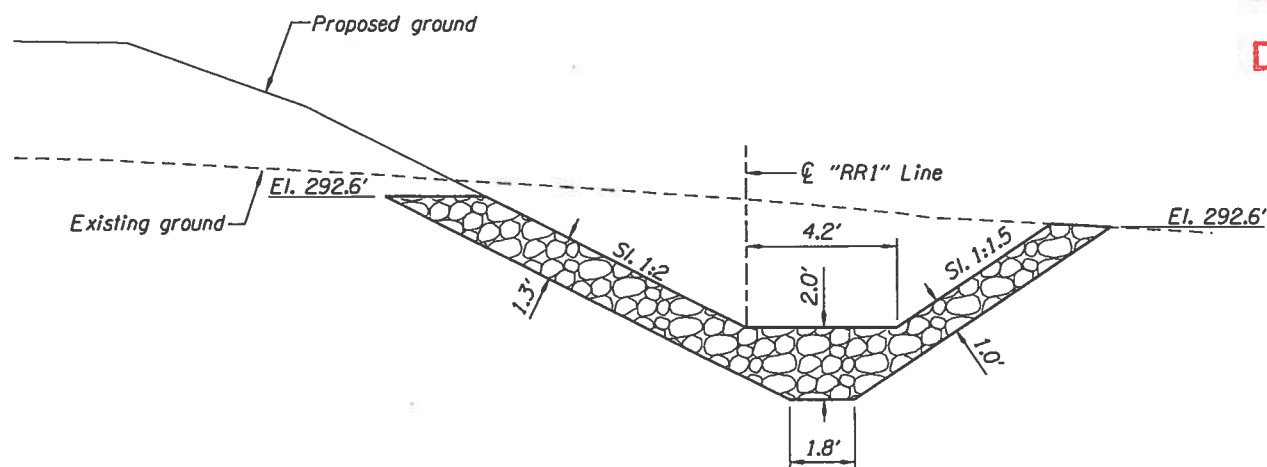
SECTION B-B

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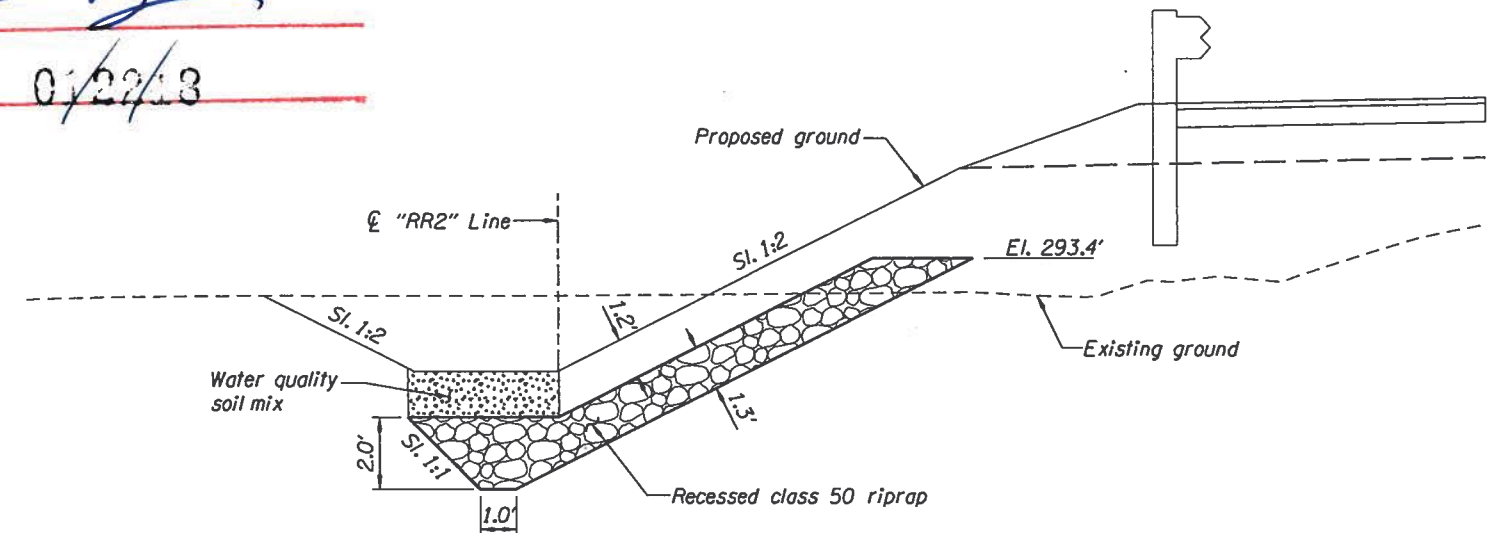
STEVEN SCHULTZ, PE

[Signature]

DATE 01/22/13

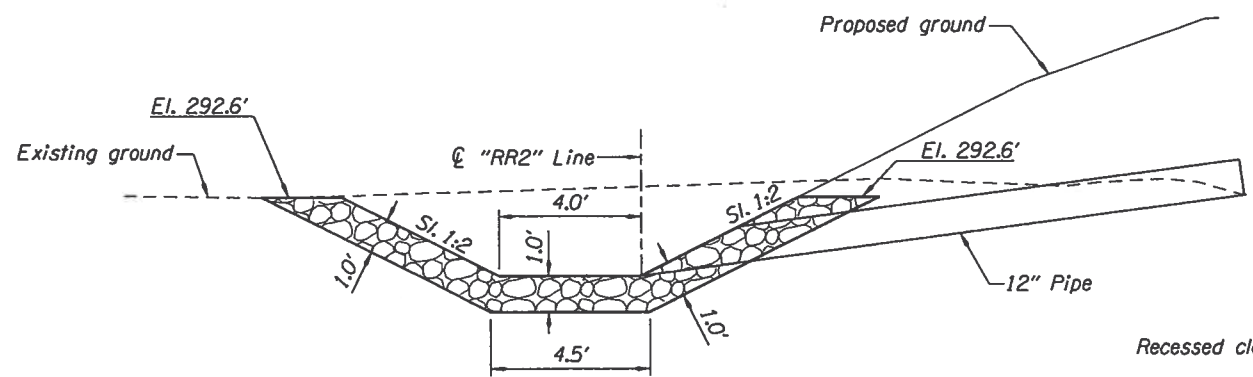


SECTION C-C

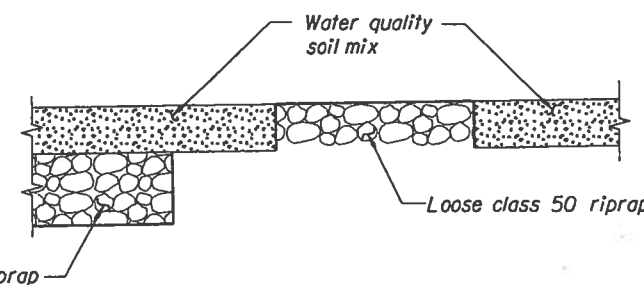


SECTION D-D

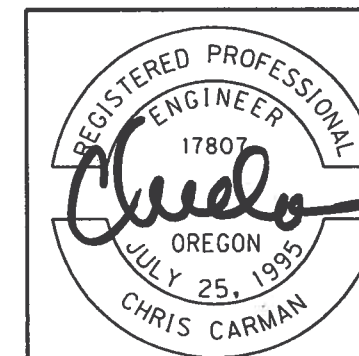
STA. "C"35+70.00 To STA. "C"35+96.19



SECTION E-E

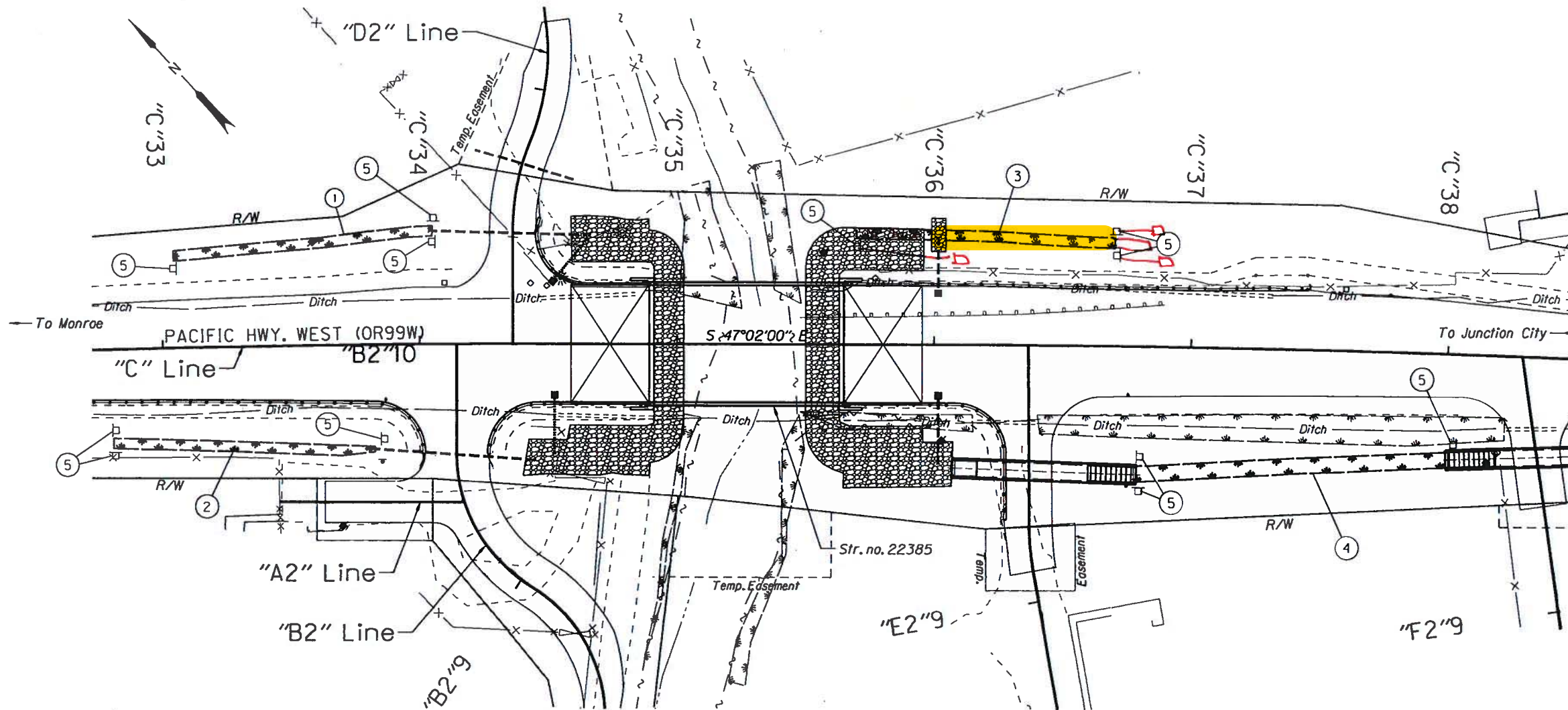


SECTION F-F



RENEWS: 12-31-2017

OREGON DEPARTMENT OF TRANSPORTATION	
REGION 2 TECH CENTER	
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC. PACIFIC HIGHWAY WEST BENTON COUNTY	
Reviewed By - Bruce Carmichael Designed By - Chris Carman Drafted By - Serge Chernishoff	
BANK PROTECTION	SHEET NO. GH-4



- ① Sta. "C" 33+05.00 to Sta. "C" 34+05.00 Lt.
Const. Water Quality Biofiltration Swale no.00895
Gen. exc. - 22 cu.yd.
Water quality soil mix - 22 cu.yd.
- ② Sta. "C" 32+80.00 to Sta. "C" 33+80.00 Rt.
Const. Water Quality Biofiltration Swale no.00896
Gen. exc. - 22 cu.yd.
Water quality soil mix - 22 cu.yd.
- ③ Sta. "C" 35+70.00 to Sta. "C" 36+70.00 Lt.
Const. Water Quality Biofiltration Swale no.00897
Gen. exc. - 22 cu.yd.
Water quality soil mix - 22 cu.yd.
- ④ Sta. "C" 36+79.85 to Sta. "C" 37+99.84 Lt.
Const. Water Quality Biofiltration Swale no.01201
Gen. exc. - 43 cu.yd.
Water quality soil mix - 43 cu.yd.
- ⑤ Inst. stormwater facility marker
(See dwg. RD399)

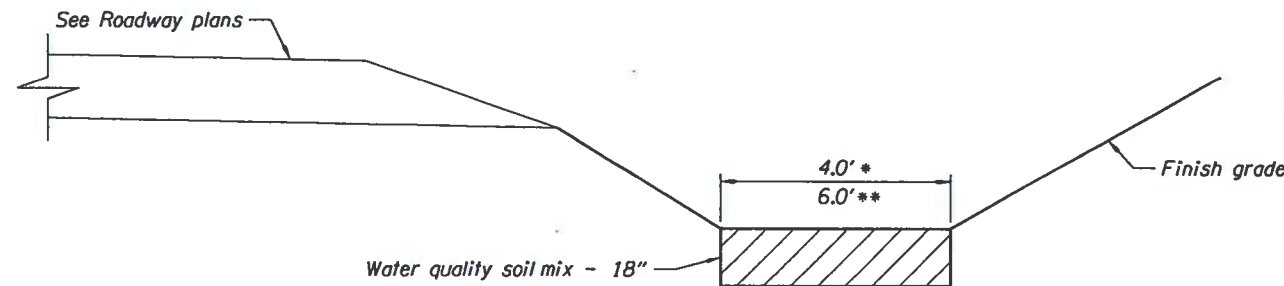
PLAN

REVISED AS CONSTRUCTED

STEVEN SCHULTZ, PE

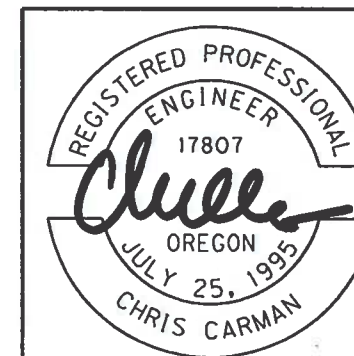
[Signature]

DATE 01/27/13



Pay Limits of Water Quality Biofiltration Swale General Excavation

* Sta. "C"33+05.00 To Sta. "C"34+05.00
 "C"32+80.00 To "C"33+80.00
 "C"35+70.00 To "C"36+70.00
 ** "C"36+79.85 To "C"37+99.84



RENEWS: 12-31-2017

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

Reviewed By - Bruce Carmichael
 Designed By - Chris Carman
 Drafted By - Julie Rentz

STORMWATER
PLAN

SHEET
NO.

GJ