OPERATION & MAINTENANCE MANUAL

DFI No. : D00895
Facility Type: Water Quality
p
Biofiltration Swale

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

[July, 2016]

INDEX

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APPENDIX A: Operational Plan and Section Drawing(s)

APPENDIX B: ODOT Project Plan Sheets

1. Identification

Drainage Facility ID (DFI):	**D00895**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 49V-107
Location:	District: 4
	Highway No.: 091
	Mile Post: 103.64 to103.66, Left
	Description:
	The swale is located 200 feet north of Lake Slough on the east side of Pacific Highway West. The facility can be accessed via the shoulder of northbound 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

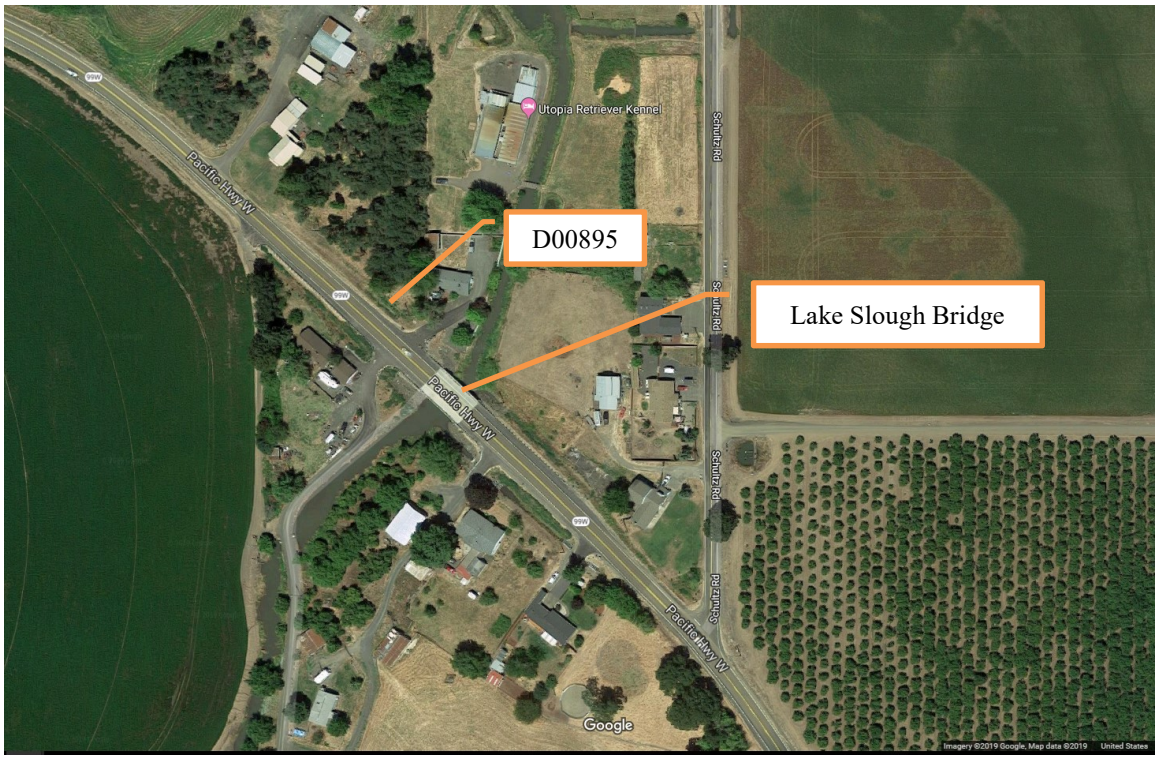
Engineer of Record:	ODOT Designer – Region 2 Tech. Center, Chris Carman, (503) 986-2691
Facility construction:	2017

4. Storm Drain System and Facility Overview

The swale is located 200 feet north 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 northbound 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_waterqualityfacilandtables.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

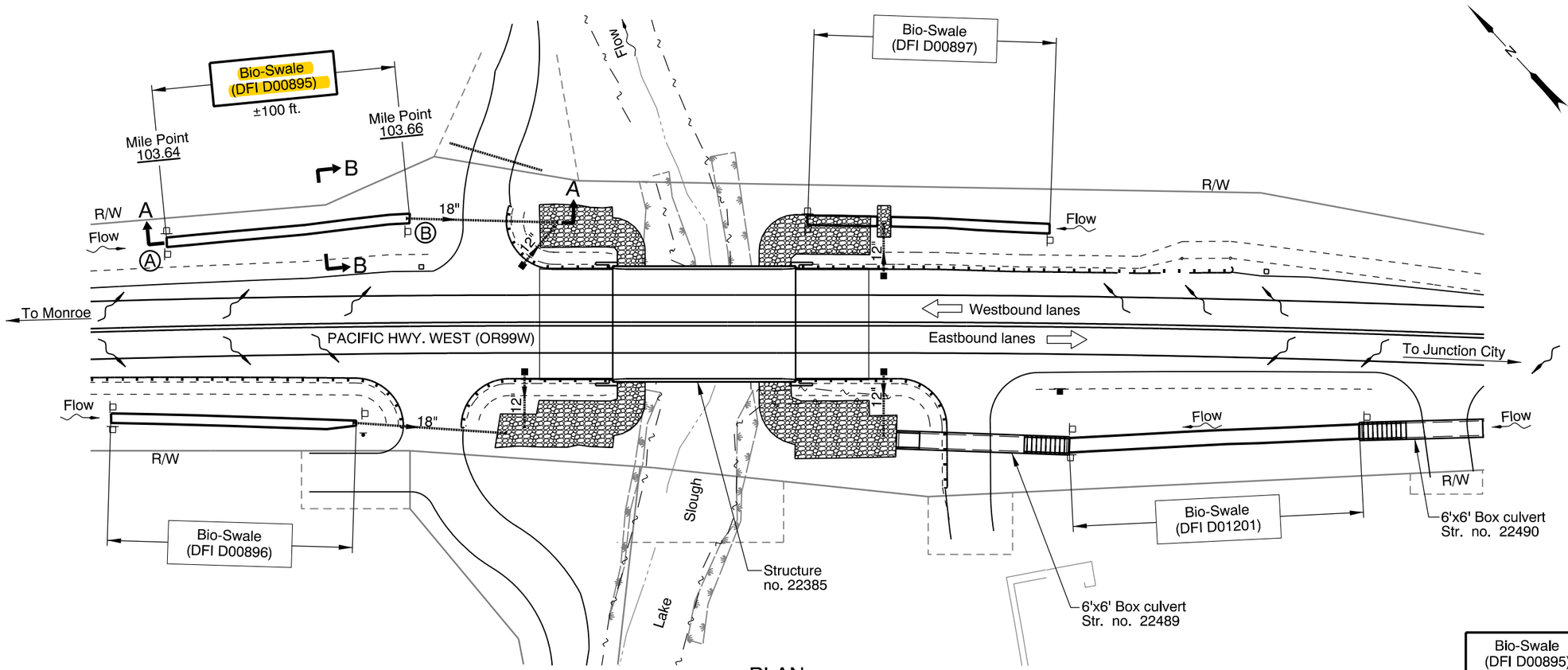
Contact any of the following for more detailed information about management of waste materials found on site:

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

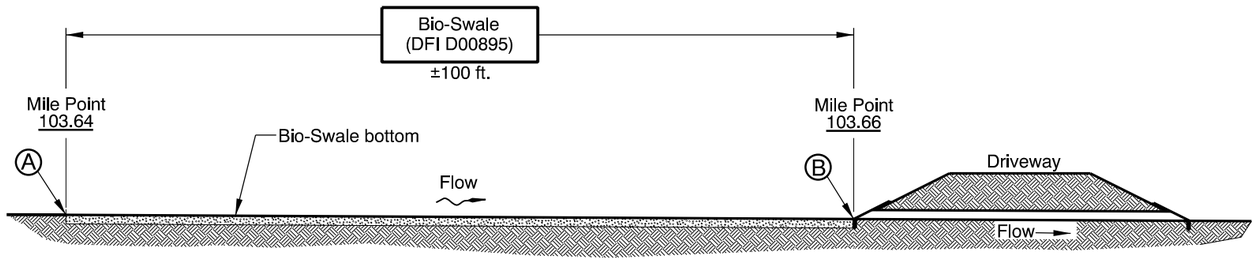
Content:

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

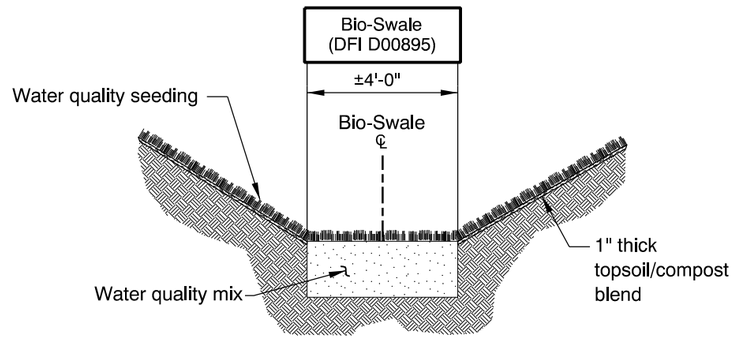


PLAN
N.T.S.

LEGEND:
- Photo Location / Direction
- Swale Inlet
- Swale Outlet
- Storm Pipe (Facility)
- Swale Boundary
- Pavement / Facility Flow Path
- Inlet



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Chris Carman

Drafted By: Sergy Chernishoff

DFI D00895
MAINTENANCE DISTRICT 4 HWY 091
WATER QUALITY BIOFILTRATION SWALE
PACIFIC HIGHWAY WEST MP 103.64-103.66
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

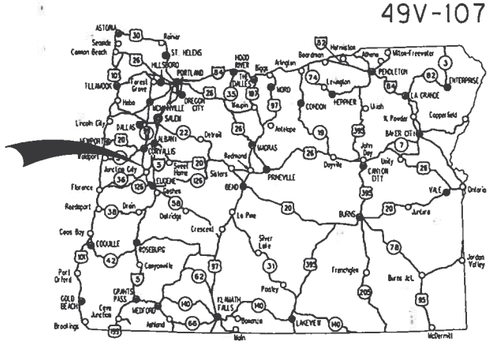
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.

PACIFIC HIGHWAY WEST

BENTON COUNTY

OCTOBER 2016

49V-107

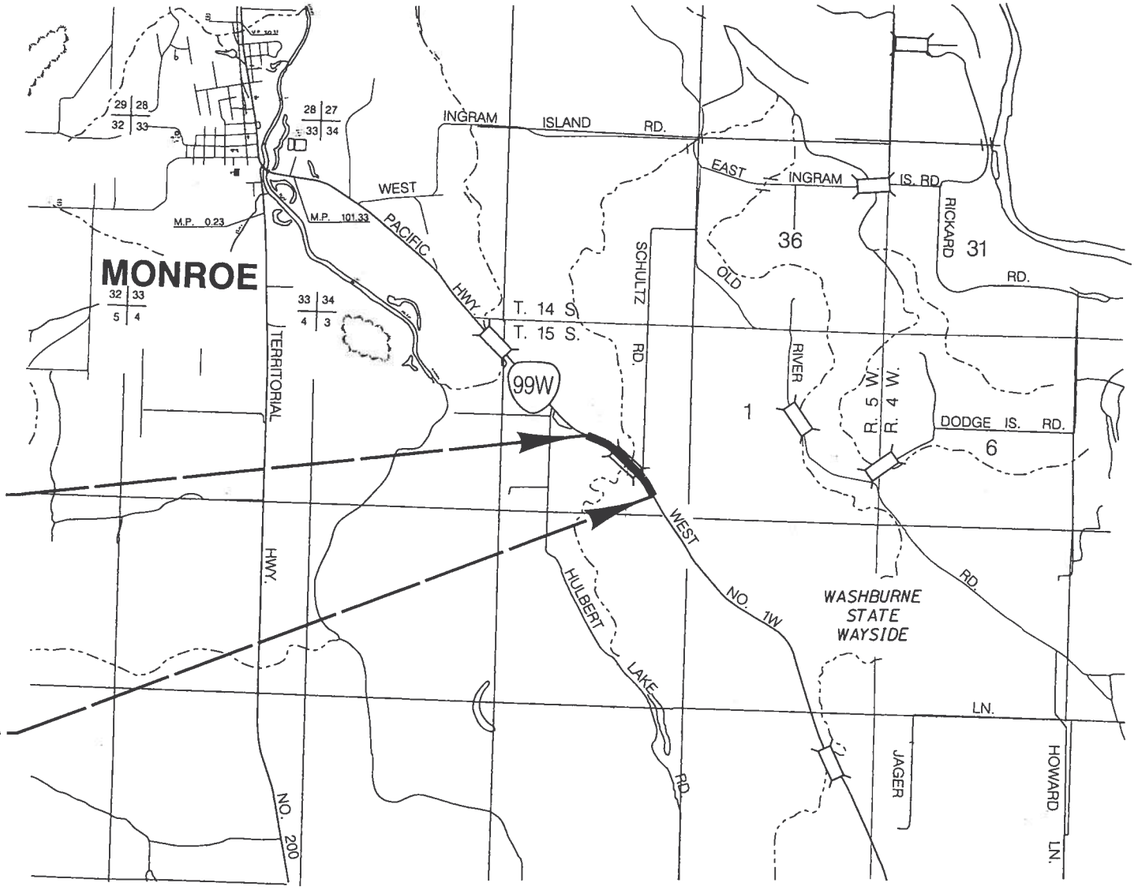


Overall Length Of Project - 0.17 Miles

NOT REVISED AS CONSTRUCTED
STEVEN SCHULTZ, PE
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.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE



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)

N

T. 15 S.,
R. 5 W., W.M.

OREGON TRANSPORTATION COMMISSION

Tammy Baney	CHAIR
David Lohman	COMMISSIONER
Susan Morgan	COMMISSIONER
Alando Simpson	COMMISSIONER
Sean O'Hollaren	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.

By: 9.28.16
Signature & date

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

Concurrence by ODOT Chief Engineer

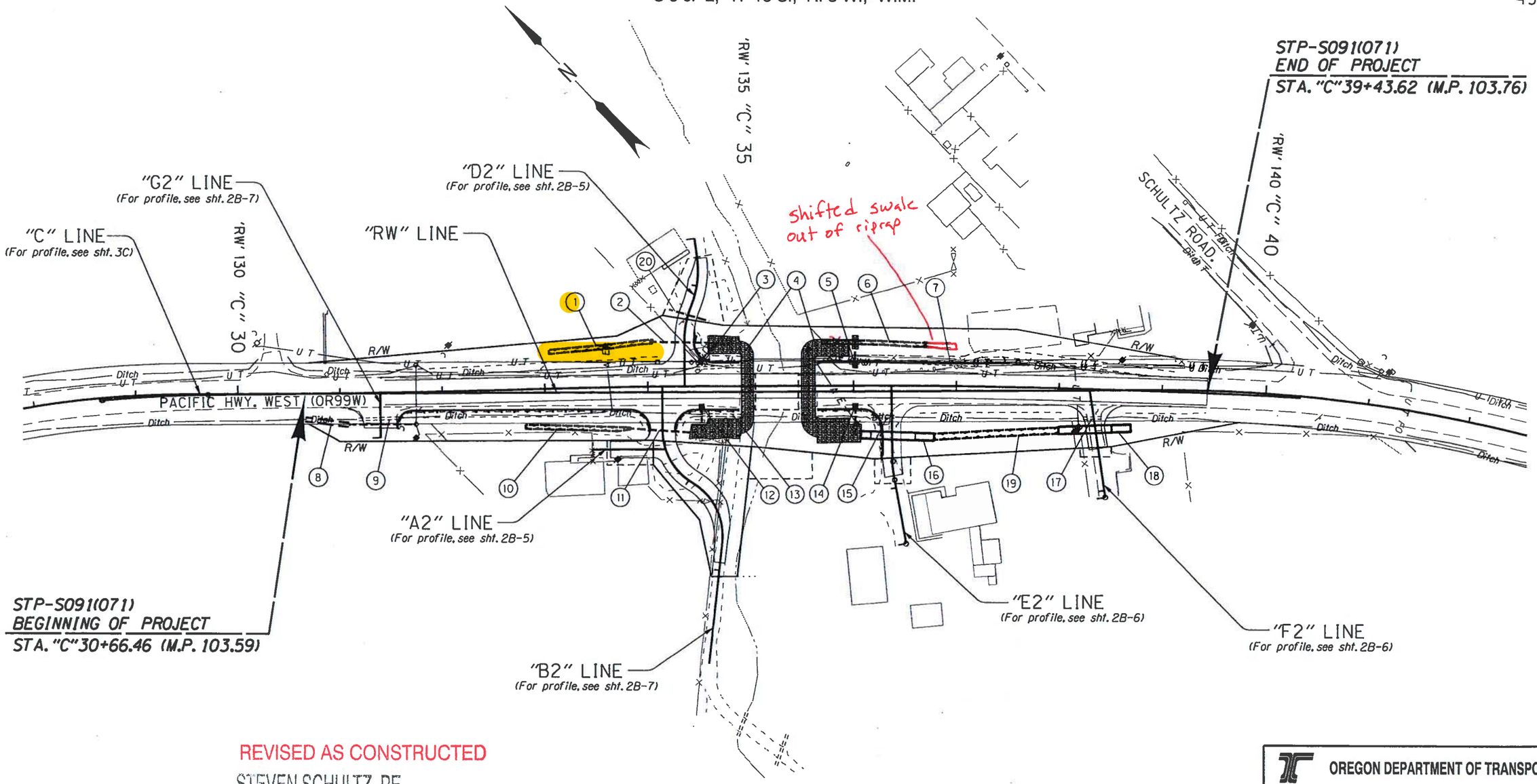
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

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

PE002314

Sec. 2, T. 15 S., R. 5 W., W.M.

49V-107



REVISED AS CONSTRUCTED

STEVEN SCHULTZ, PE

01/22/13

DATE

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

REGISTERED PROFESSIONAL ENGINEER
70721 PE
OREGON
JAN 9, 2007
BRIAN SCOTT NELSON

RENEWS: 12-31-2016

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

F:\ODOT_DATA\Projects\18565_OR99W Lake Slough Bridge\18565.dr1.dgn :: Default 8/15/2016 2:57:37 PM hwye80q

Rotation: 0° Scale: 1"=100'

(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 biofiltrtion 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

REGISTERED PROFESSIONAL ENGINEER
70721 PE
OREGON
JAN 9, 2007
BRIAN SCOTT NELSON
RENEWS: 12-31-2016

OREGON DEPARTMENT OF TRANSPORTATION

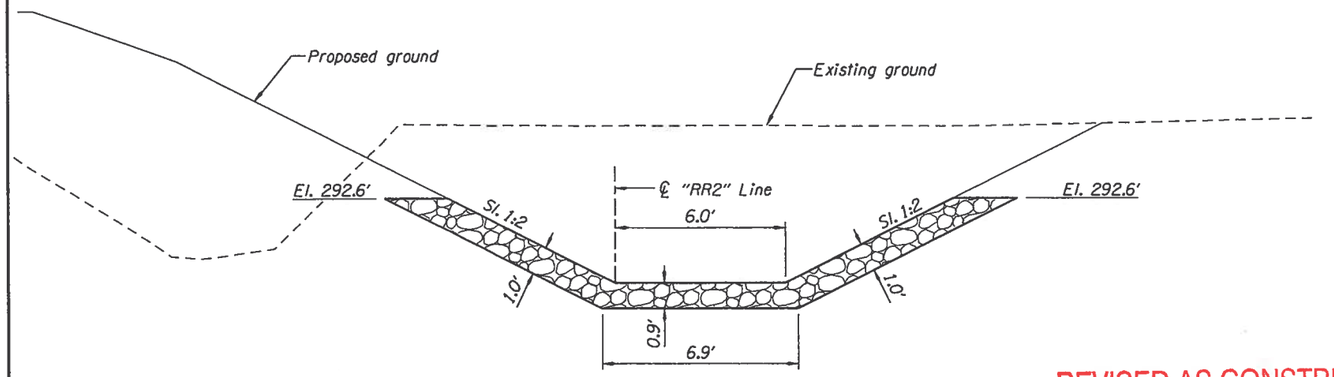
REGION 2 TECH CENTER

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

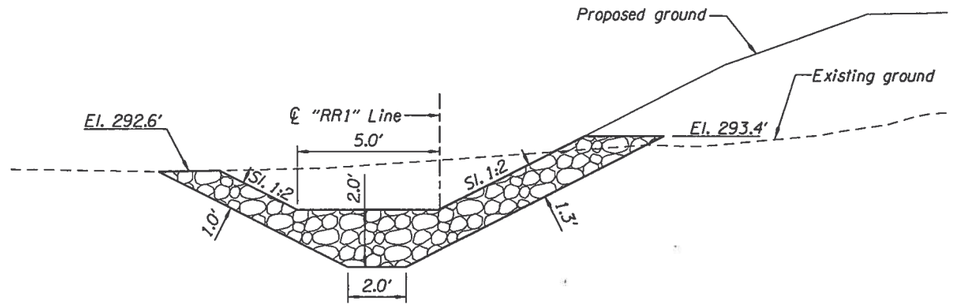
Design Team Leader - B. Scott Nelson
Designed By - John Lucas
Drafted By - Rick Krekeler

DRAINAGE NOTES

SHEET NO. 3B-2

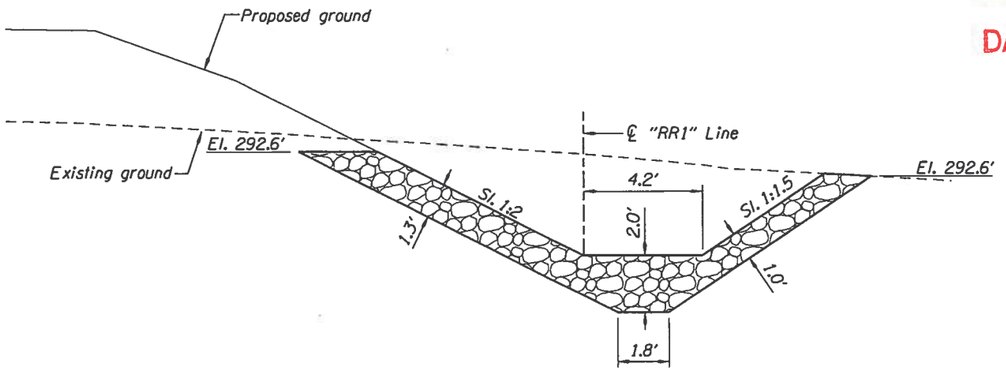


SECTION A-A

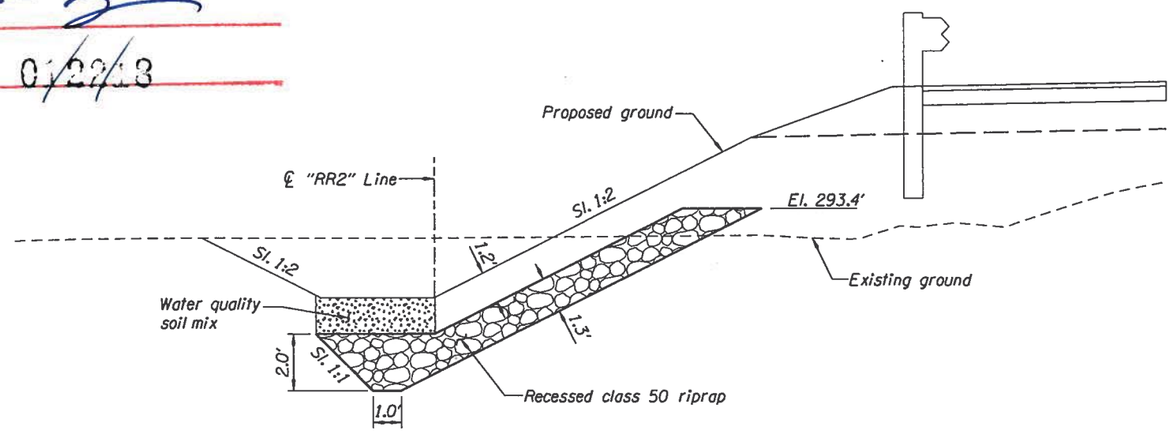


SECTION B-B

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

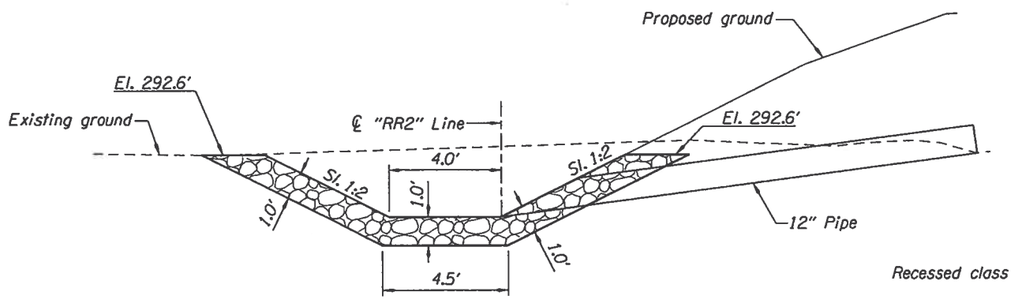


SECTION C-C

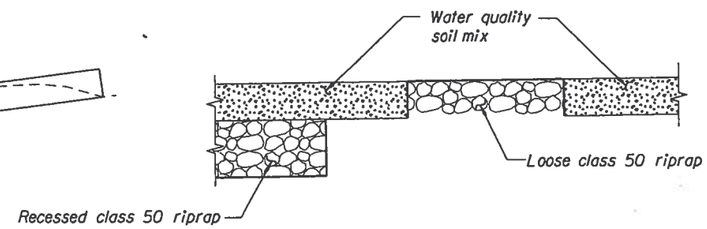


SECTION D-D

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



SECTION E-E



SECTION F-F

REGISTERED PROFESSIONAL ENGINEER
17807
OREGON
JULY 25, 1995
CHRIS CARMAN
RENEWS: 12-31-2017

OREGON DEPARTMENT OF TRANSPORTATION

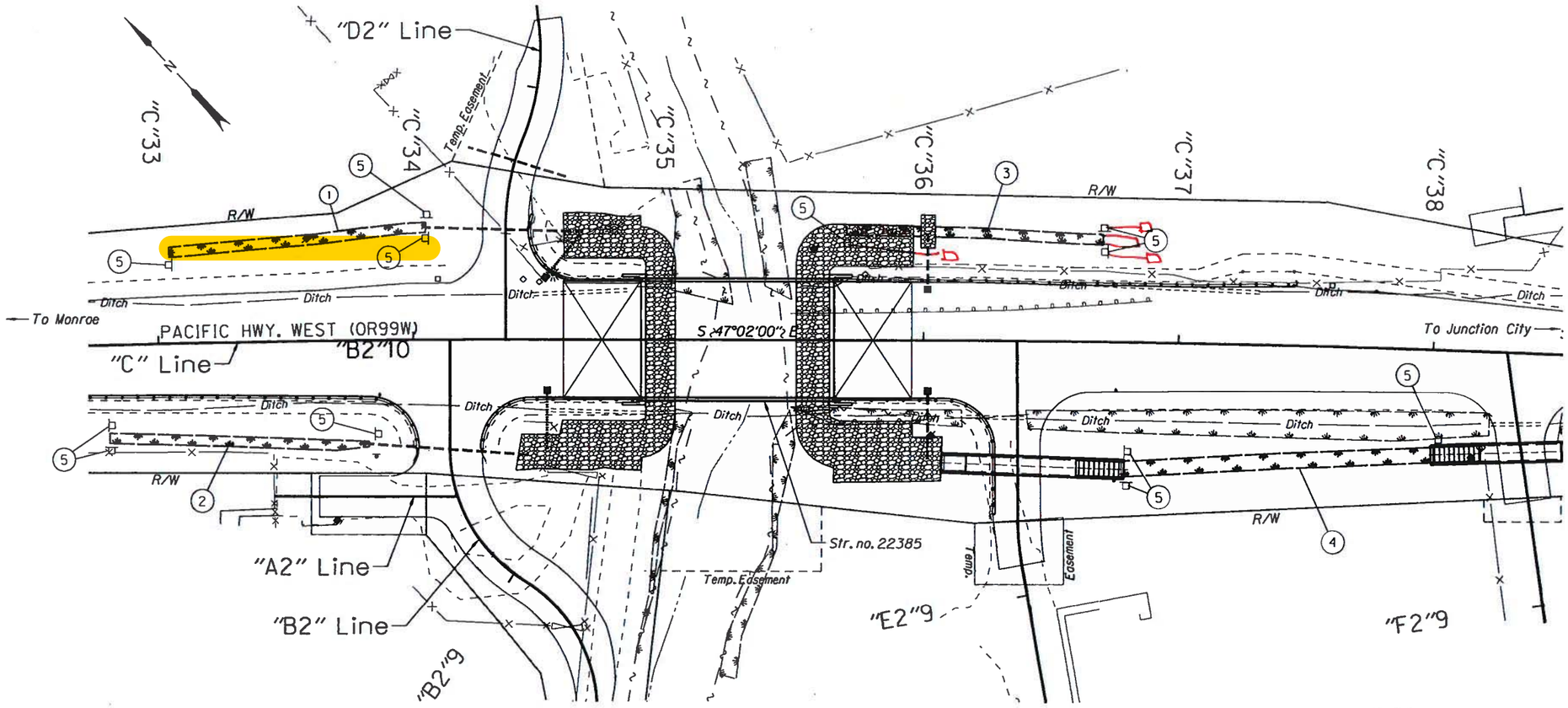
REGION 2 TECH CENTER

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



PLAN

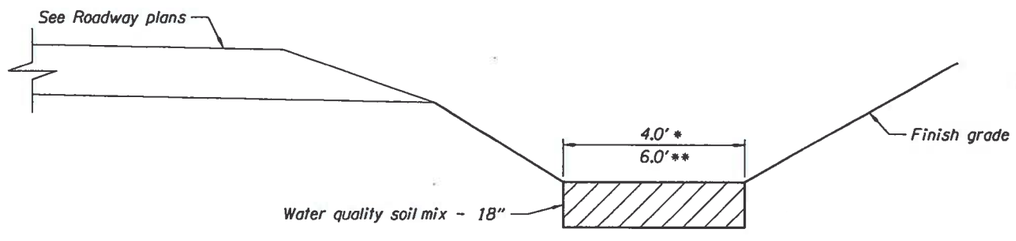
(1) *Sta. "C" 33+05.00 to Sta. "C" 34+05.00 Lt.*
Const. Water Quality Biofiltration Swale no. 00895
Gen. exc. - 22 cu. yd.
Water quality soil mix - 22 cu. yd.

(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)



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

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

REGISTERED PROFESSIONAL ENGINEER
17807
OREGON
JULY 25, 1995
CHRIS CARMAN
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