OPERATION & MAINTENANCE MANUAL

DFI No. : D00741
Facility Type: Water Quality Biofiltration Swale

January, 2016

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00741**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	46V-037
Location:	District: 10
	Highway No.: 015
	Mile Post: 92.94 to 92.97 LT
	Description: This facility is located on the east side of Hwy 15, just north of Whychus Creek. The swale collects runoff from the roadway and conveys it into Whychus Creek.

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:	ODOT Designer – Region 4 Tech. Center, Mike Ogden, (541) 388-6288
Facility construction:	2014
Contractor:	Knife River

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 vegetation. Treatment by trapping sedimentation occurs when stormwater runoff flows through the grass and flow spreaders.

The swale is approximately 120 feet long, with three separate 40 foot sections and a 2 foot wide bottom. There are three curb openings that allow water into the swale, one opening per each section.

There is a single outlet from the swale into the Whychus Creek. At the end of the swale is flow spreader that water will flow over when a large enough flow enters the swale. The flow follows natural drainage path down into Whychus Creek after the swale.

A. Maintenance equipment access:
Maintenance equipment c annot access the swale. Maintenance can only access the swale on foot. There is a curb and/or guardrail alongside the roadway at the location of the swale. Parking will be safest on the west side of the highway close to the intersection of Jefferson Street and Hwy. 15.

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 Biofiltration Swale cannot be used to store a volume of liquid, as there is no feature that can be used to block/plug flow. If a hazardous material enters the swale, all contaminated material should be removed and replaced, per section 8 of this report.

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, as noted below
The swale is in a drainage ditch alongside the roadway. No auxiliary outlet is required, as this is nothing blocking the drainage path.

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/GEOENVIRONMENTAL/pages/omm.aspx

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual.

☒ 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:

8. Waste Material Handling

Material removed from the facility is defined as waste by DEQ. Refer to the road waste 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

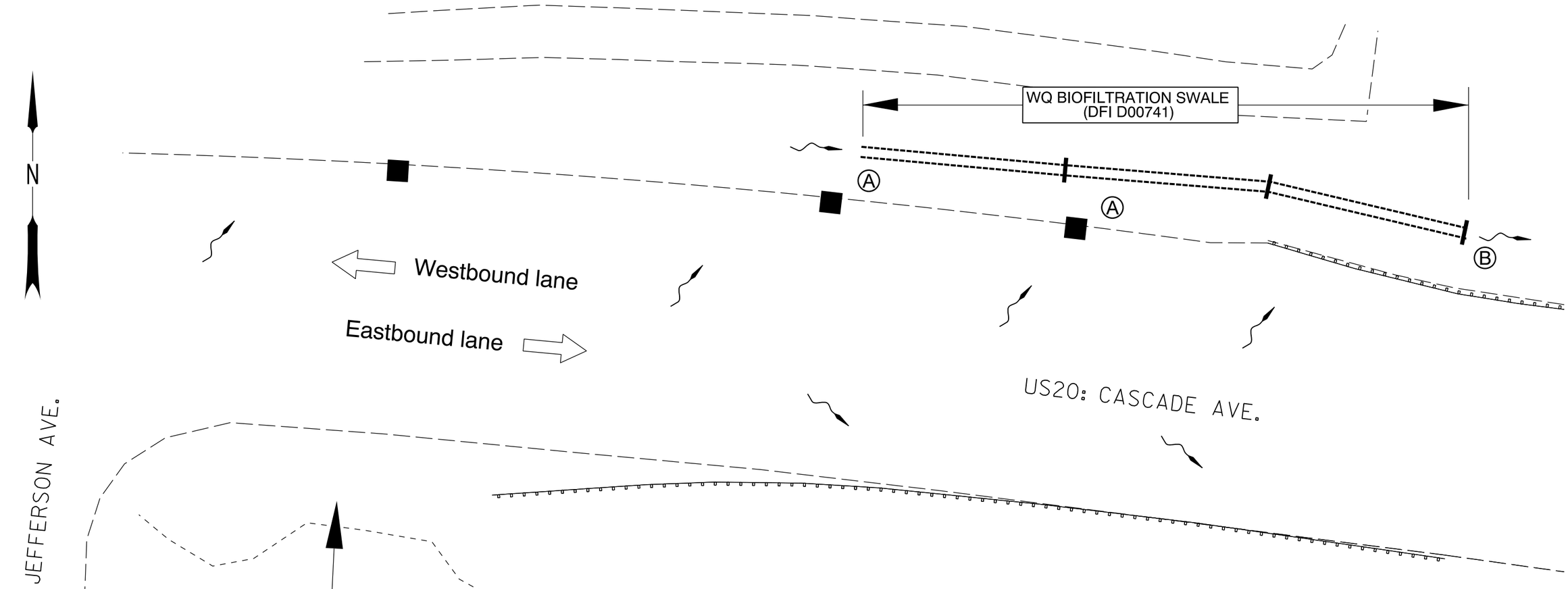
Contact any of the following for more detailed information about management of waste materials found on site:

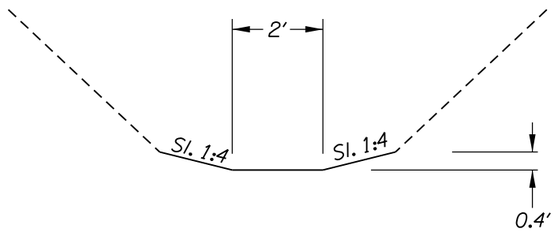
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(541) 388-6088
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

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

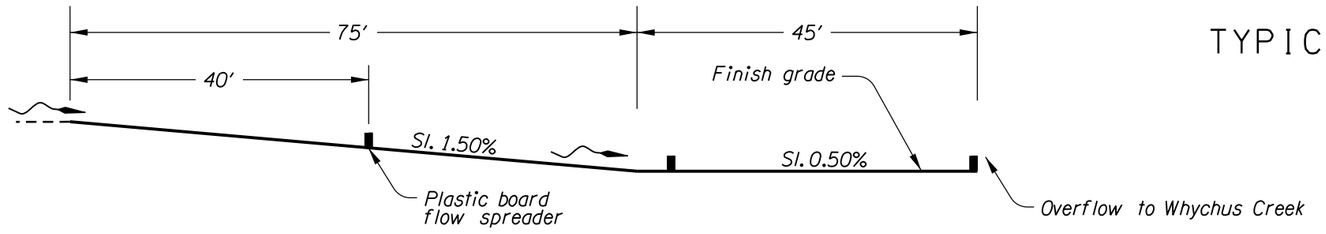




TYPICAL SECTION

LEGEND:

- (A) Curb inlet flow into swale
- (B) Swale overflow to Whychus Creek
- Plastic board flow spreader
- Curb Opening Inlet
- Pavement / Facility Flow Path



PROFILE

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wade Coatney

Drafted By: Wade Coatney

DFI D00741
MAINTENANCE DISTRICT 10 HWY 15
WQ BIOFILTRATION SWALE
MCKENZIE-BEND HWY MP 92.94 to 92.97
DESCHUTES COUNTY

DFI_D00000.dgn

Appendix B

Content:

- **ODOT Project Plan Sheets**
  - ***Cover/Title Sheet***
  - ***Detail Sheets***
  - ***Drainage and profile sheets***

46V-037

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

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

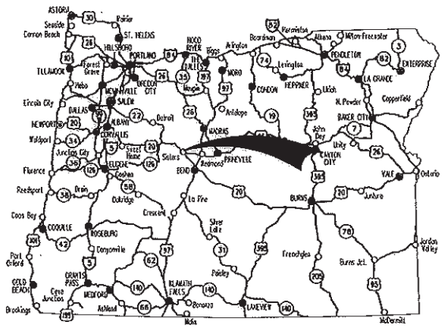
GRADING, DRAINAGE, PAVING, SIGNING & ROADSIDE DEVELOPMENT

FFO-US20: CASCADE IMPROVEMENTS (SISTERS) SEC.

McKENZIE HWY. & SANTIAM HWY.

DESCHUTES COUNTY

MAY 2013

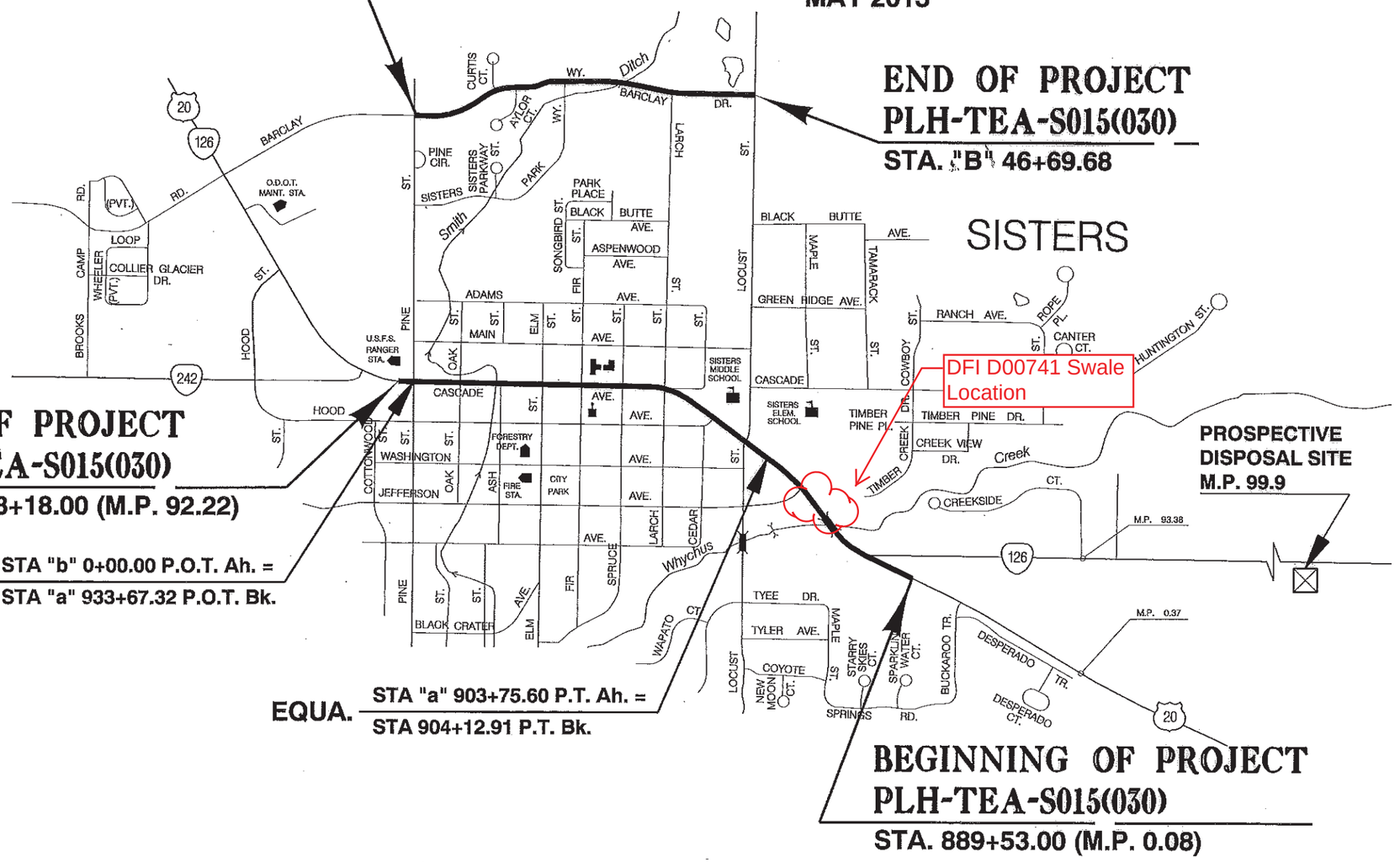


Overall Length Of Project - 1.41 Miles

T. 15 S., R. 10 E., W.M.

BEGINNING OF PROJECT
PLH-TEA-S015(030)
STA. "B" 19+85

END OF PROJECT
PLH-TEA-S015(030)
STA. "B" 46+69.68



END OF PROJECT
PLH-TEA-S015(030)
STA. "b" 3+18.00 (M.P. 92.22)

EQUA. STA "b" 0+00.00 P.O.T. Ah. = STA "a" 933+67.32 P.O.T. Bk.

EQUA. STA "a" 903+75.60 P.T. Ah. = STA 904+12.91 P.T. Bk.

BEGINNING OF PROJECT
PLH-TEA-S015(030)
STA. 889+53.00 (M.P. 0.08)

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

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
David Lohman	COMMISSIONER
Mary F. Olson	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: Jon W. Heacock 3/6/2013
Signature & date

Jon Heacock, Region 4 TCM
Print name and title

Concurrence by ODOT Chief Engineer

FFO-US20: CASCADE IMPROVEMENTS (SISTERS) SEC.
McKENZIE HWY. & SANTIAM HWY.
DESCHUTES COUNTY

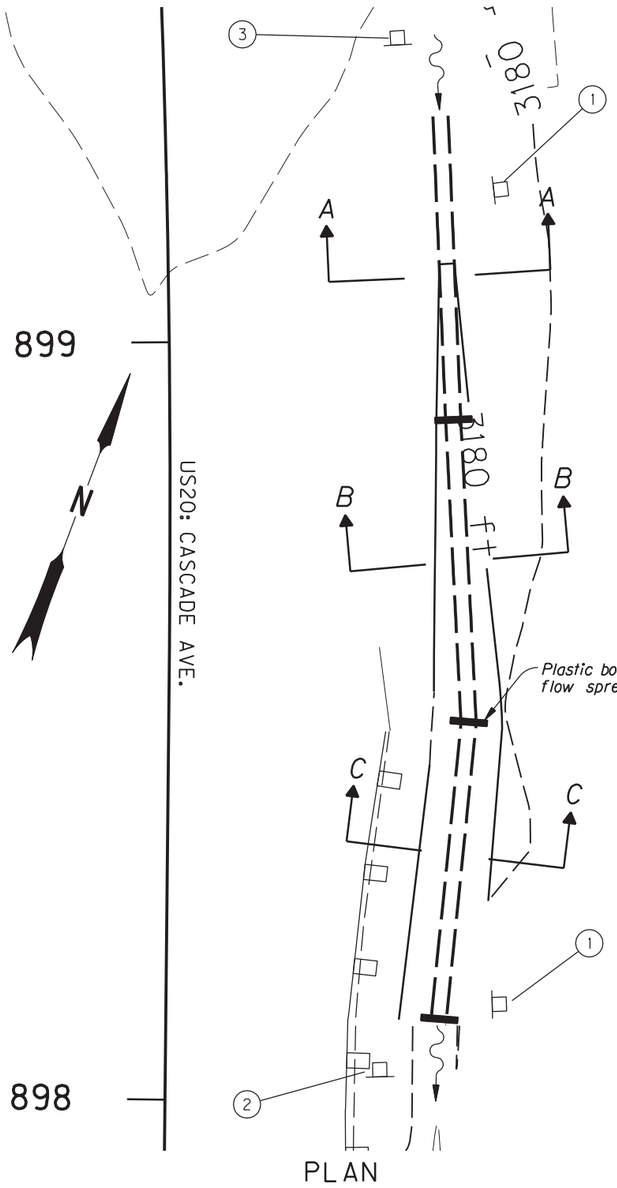
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	PLH-TEA-S015(030)	1

PE001724

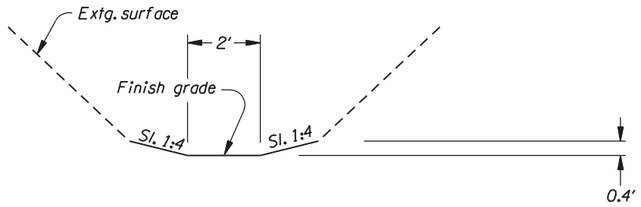
0:\Engineering\Client\ODOT\012-500 Sisters Streetscape\CAD\16833_01A-00_rTS.dgn :: Default 2/23/2013 12:00:45 PM russn

1:1200 - 001

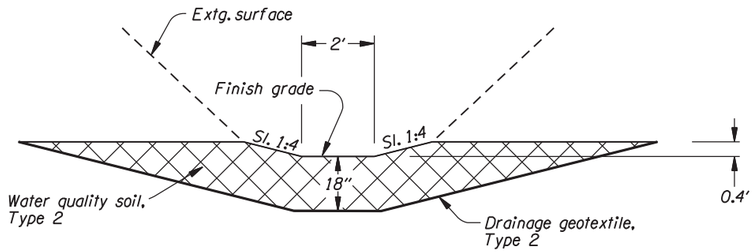
WATER QUALITY SWALE DETAIL



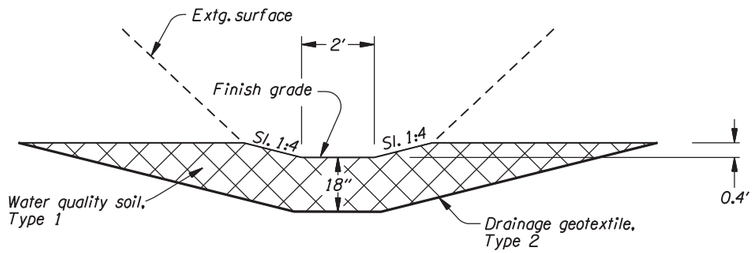
PLAN



SECTION A-A

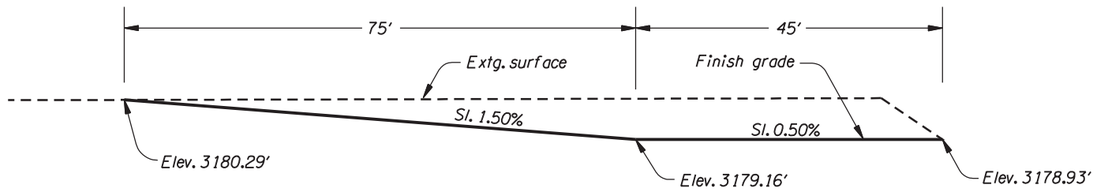


SECTION B-B



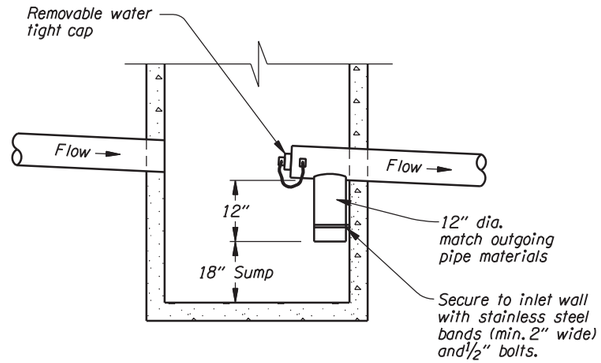
SECTION C-C

GENERAL NOTE:
Contour spacing is a 1' vertical intervals.



PROFILE

1. Inst. Type "S2" marker DFI no. D00741 (See drg. no. RD399)
2. Inst. Type "S1" marker - green (See drg. no. RD399)
3. Inst. Type "S1" marker - red



GENERAL NOTES:
1. See pipe data sheets and plan sheets for inlet locations, pipe materials and slopes.
2. Hardware, fasteners and anchors to be stainless steel

INLET W/ DOWNTURNED OUTLET

(For details not shown, see drg. nos. RD364, RD371 & RD372)

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2014

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO-US20: CASCADE IMPROVEMENTS (SISTERS) SEC.
McKENZIE HWY. & SANTIAM HWY.
DESCHUTES COUNTY

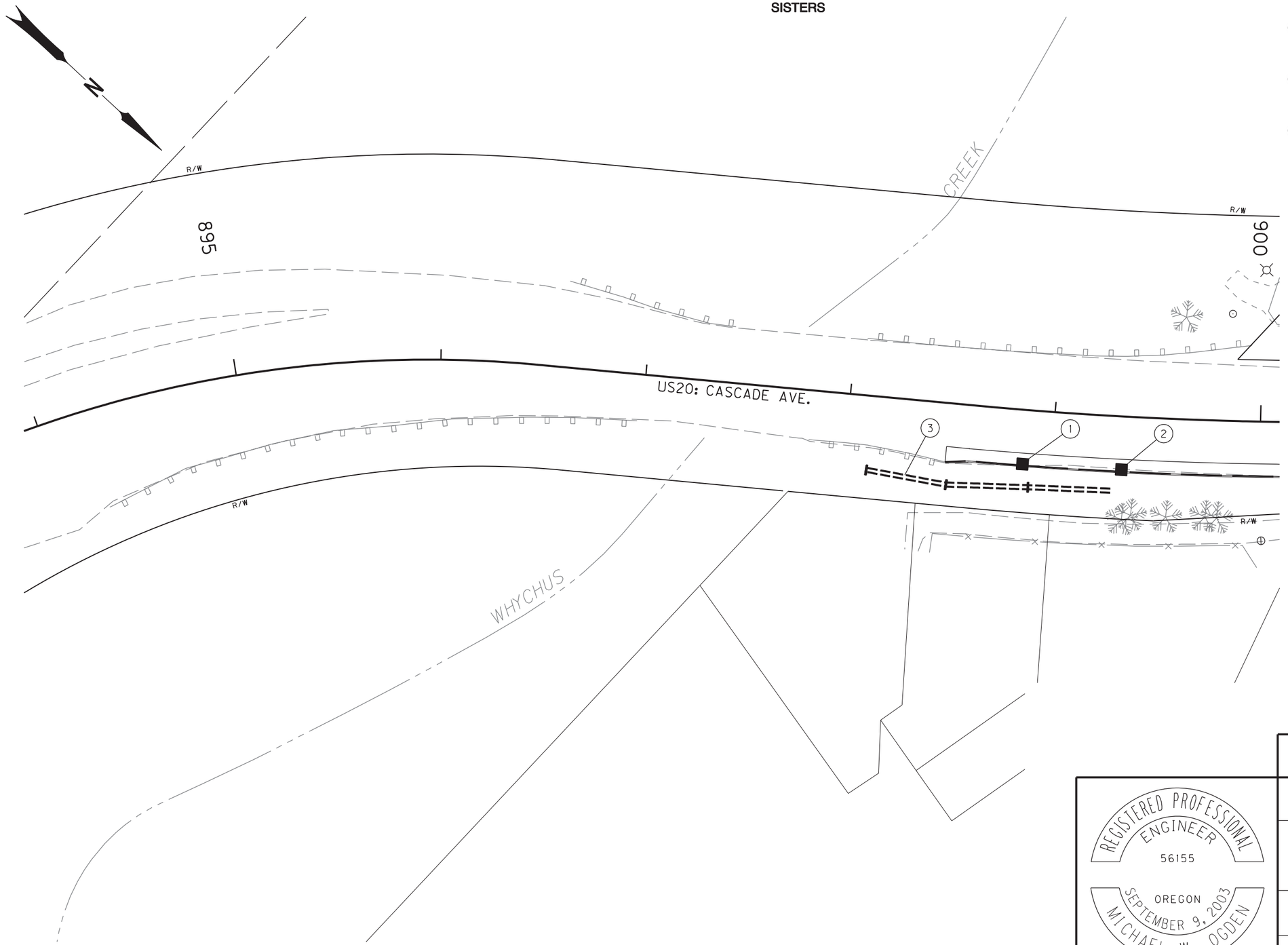
Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Greg Saurbier

DRAINAGE DETAILS

SHEET NO. 2C-5

Sec. 4, 5, 8, & 9, T. 15 S., R. 10 E., W.M.
SISTERS

46V-037



(1) Sta. 898+86.11, Rt.
Const. type "CG-3 (Modified)" inlet
(For details, see sht. 2C-2)

(2) Sta. 899+33.66, Rt.
Const. type "CG-3 (Modified)" inlet
(For details, see sht. 2C-2)

(3) Sta. 898+10.30 to Sta. 899+28.88, Rt.
Const. water quality swale
(For details, see sht. 2C-5)

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2014

OREGON DEPARTMENT OF TRANSPORTATION

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DESCHUTES COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Greg Saurbier

DRAINAGE & UTILITIES

SHEET NO. 4A