OPERATION & MAINTENANCE MANUAL

DFI No.: D00404
Facility Type: Water Quality Biofiltration Swale

OCTOBER, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00404**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 42V-095
Location:	District: 7
	Highway No.: 001
	Mile Post: 121.74 / 121.76 (beg./end)
	Description: This facility is located on the eastern side of I-5 (Hwy 001, Pacific Highway). Access can be obtained from the northbound on 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:	Consultant Designer – Quincy Engineering, Inc., Russell W. Norton, (916) 368-9181
Facility construction:	2011
Contractor:	Laskey-Clifton Corporation 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 collected by routing sheet flow from I-5 along a drainage curb. Flow along this drainage curb is diverted through a curb cut on the east side of the northbound travel lanes, and down a riprap slope where the stormwater enters the beginning of the swale. The flow then travels approximately 185 ft. through the swale and is captured in an outlet control device – a Type G-2 Inlet. The pipe leading from this outlet discharges directly into the South Umpqua River which is adjacent to the project.

A. Maintenance equipment access:

Maintenance crew can access the facility from the McLain Avenue Interchange (I-5 Exit 121). The facility is located between the northbound lanes of I-5 and the northbound on-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 north at the 185 ft. swale from the outlet. Flow into this swale is generated from I-5 on the left side of the picture and is diverted into the riprap basin shown at the swale inlet.

Photo 2: Type G2-MA inlet, considered the facility's outlet control device, is located in the area between McLain Avenue, I-5, and the northbound onramp. Flow from this outlet is diverted under the northbound on-ramp and discharged directly in the South Umpqua River located to the right of the picture shown above.

Photo 3: Photo looking south at the 185 ft. swale with inlet shown at the bottom of picture and outlet shown at the top 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 outlet pipe located at the outlet control device (Type-G2 Inlet) of the swale facility; see Photo 2. Sandbags and/or a steel plate may be considered as part of this effort.

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
There is no auxiliary outlet for this facility.

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:

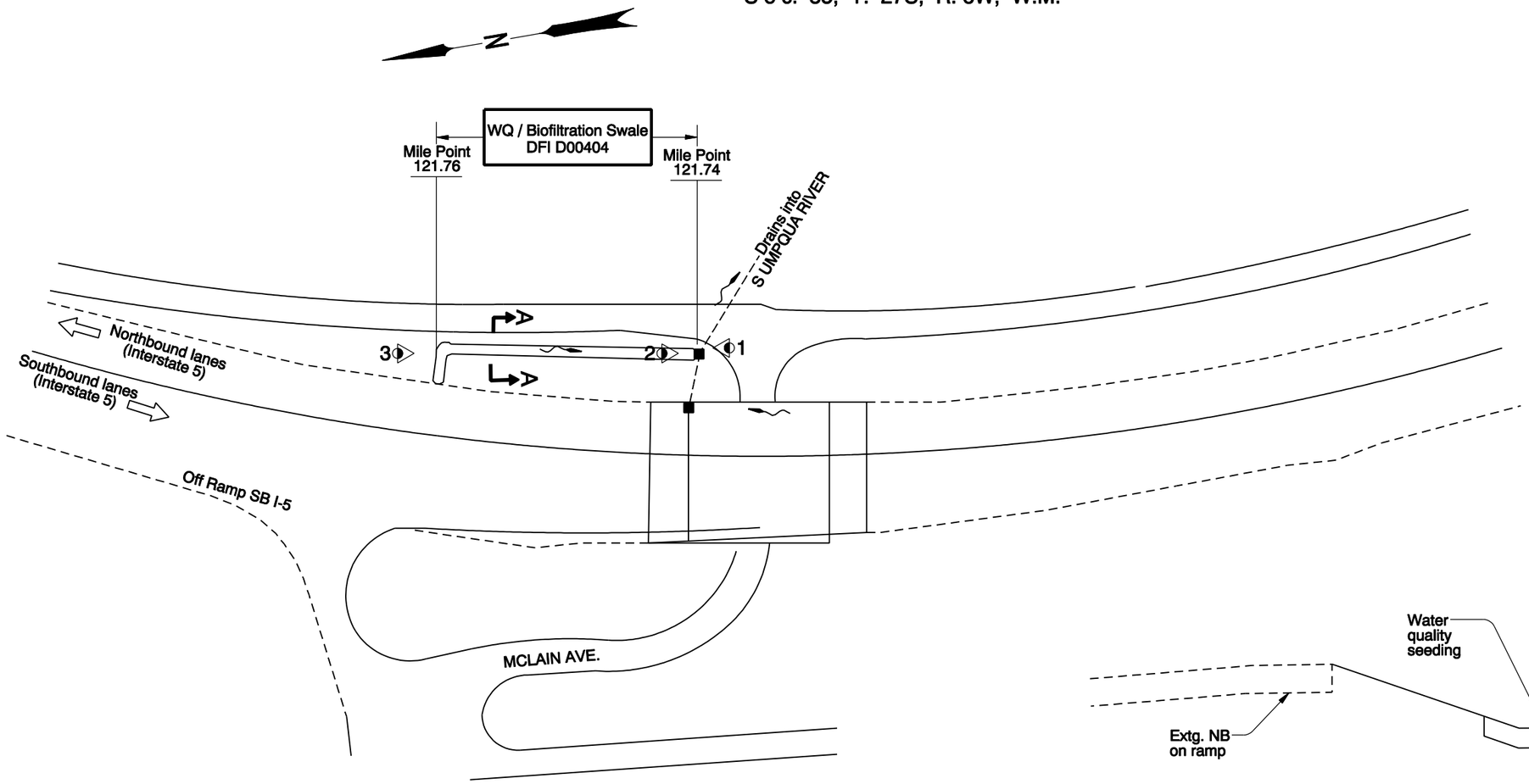
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(541) 957-3594
ODEQ Northwest Region Office	(503) 229-5263

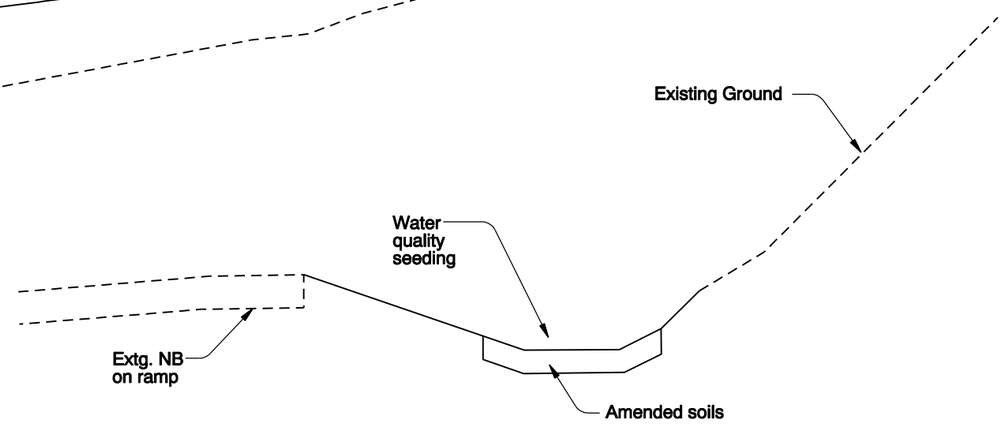
Appendix A

Content:

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

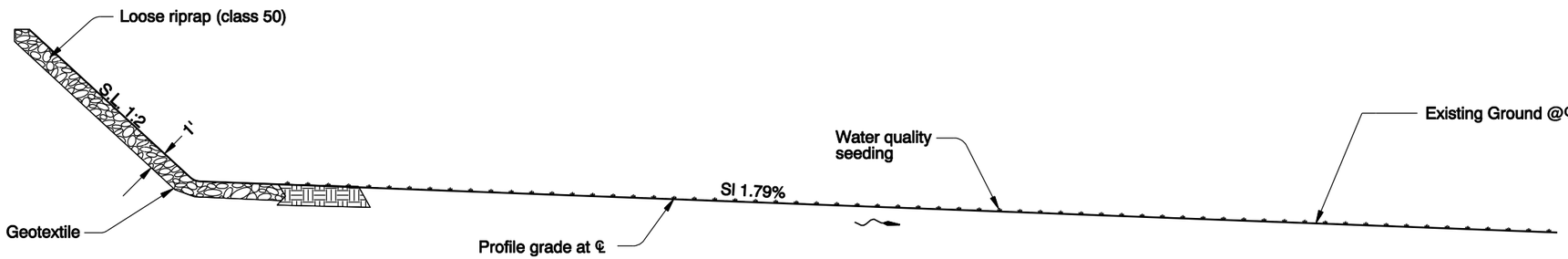
Sec. 35, T. 27S, R. 6W, W.M.





SECTION A-A

N.T.S.



SWALE PROFILE

N.T.S.

LEGEND:

- Photo Location / Direction
- ■ and/or □ 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 D00404
MAINTENANCE DISTRICT 7 HWY 1
WATER QUALITY/BIOFILTRATION SWALE
PACIFIC HIGHWAY MP 121.74 - 121.76
DOUGLAS COUNTY

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Appendix B

Content:

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

Contract Plans

42V-095

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

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

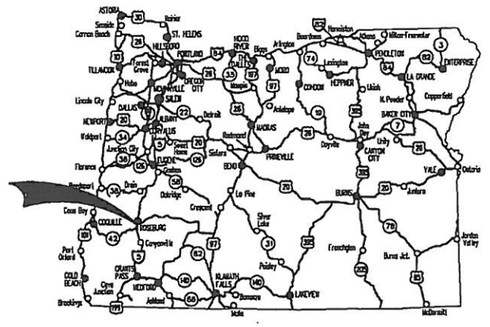
PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, STRUCTURES & PAVING

I-5/OR 42: WINSTON - MCLAIN AVE - BUNDLE 307

PACIFIC & COOS BAY - ROSEBURG HIGHWAYS

DOUGLAS COUNTY
MAY 2009



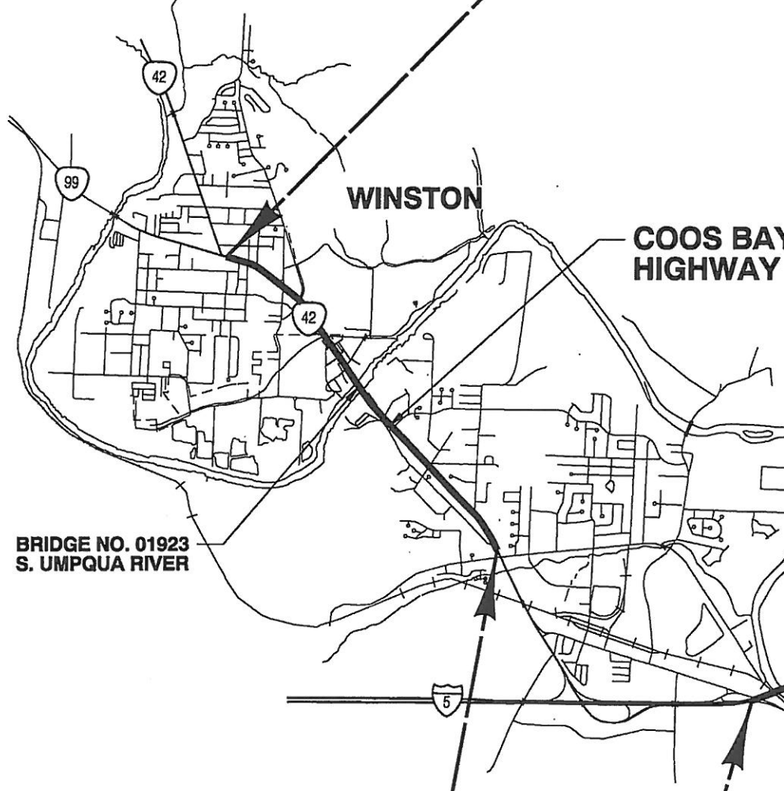
Overall Length Of Project - 5.90 Miles

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

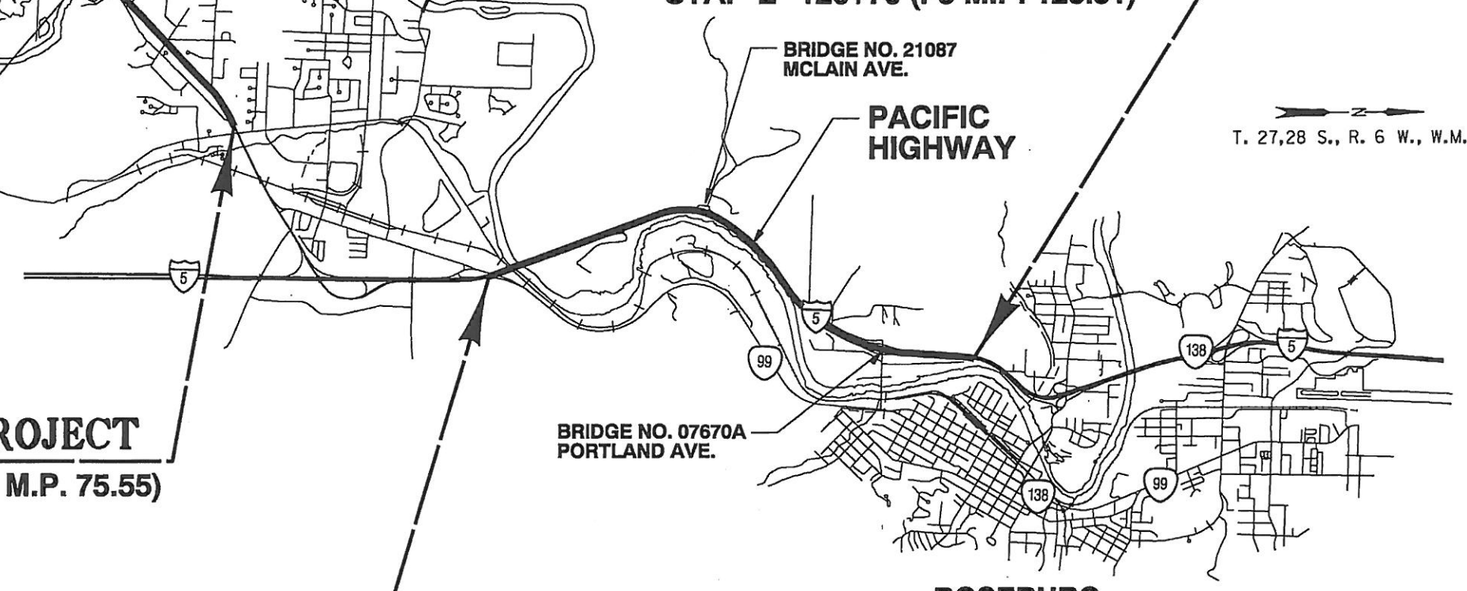
END OF PROJECT

STA. "W" 1180+00 (OR42 M.P. 73.39)



BEGINNING OF PROJECT

STA. "L" 120+70 (I-5 M.P. 123.51)



BEGINNING OF PROJECT

STA. "W" 1294+00 (OR42 M.P. 75.55)

END OF PROJECT

STA. "L" 283+70 (I-5 M.P. 120.42)

OREGON TRANSPORTATION INVESTMENT ACT

OREGON TRANSPORTATION COMMISSION

Gail Achterman	CHAIR
Michael Nelson	VICE-CHAIR
Janice Wilson	COMMISSIONER
Alan Brown	COMMISSIONER
David Lohman	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
ODOT
BY:
QUINCY ENGINEERING, INC.

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: Jeffrey W Olson 4/2/09
Signature & date
Jeffrey W Olson, Principal
Print name and title
B Johnson
Concurrence by ODOT Chief Engineer

I-5/OR 42: WINSTON - MCLAIN AVE - BUNDLE 307
PACIFIC & COOS BAY - ROSEBURG HIGHWAYS
DOUGLAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-AC-IM-OTIA-S001(321)	1

EA P_ 00000-000

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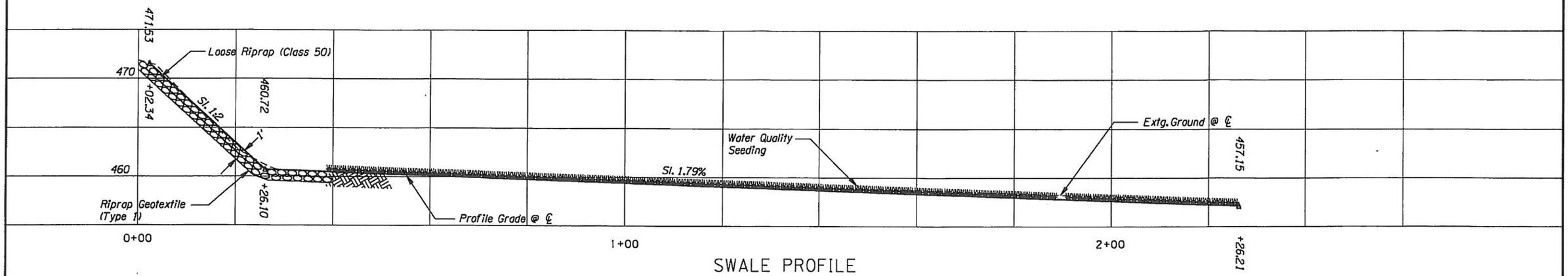
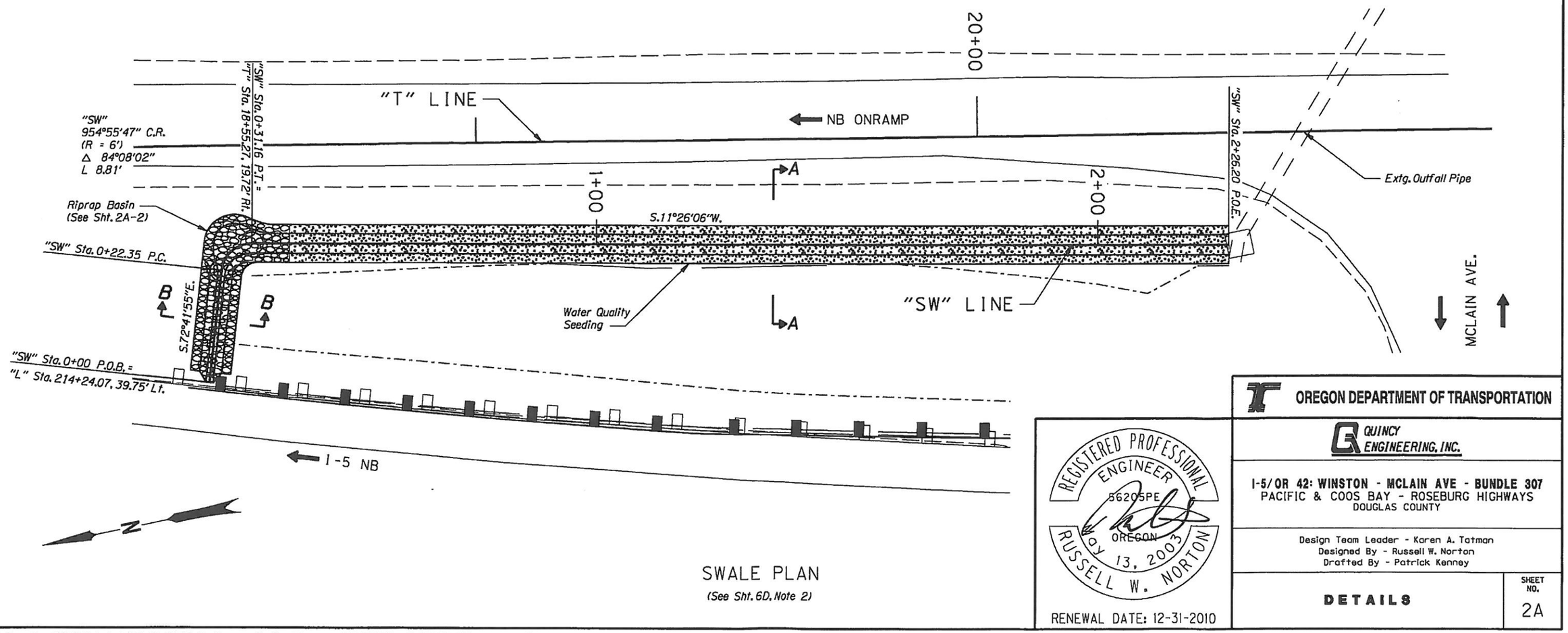


SWALE PROFILE



SWALE PLAN
(See Sht. 6D, Note 2)

REGISTERED PROFESSIONAL ENGINEER
56205PE
OREGON
May 13, 2003
RUSSELL W. NORTON

RENEWAL DATE: 12-31-2010

OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING, INC.

I-5/OR 42: WINSTON - MCLAIN AVE - BUNDLE 307
PACIFIC & COOS BAY - ROSEBURG HIGHWAYS
DOUGLAS COUNTY

Design Team Leader - Karen A. Tatman
Designed By - Russell W. Norton
Drafted By - Patrick Kenney

DETAILS

SHEET NO. 2A

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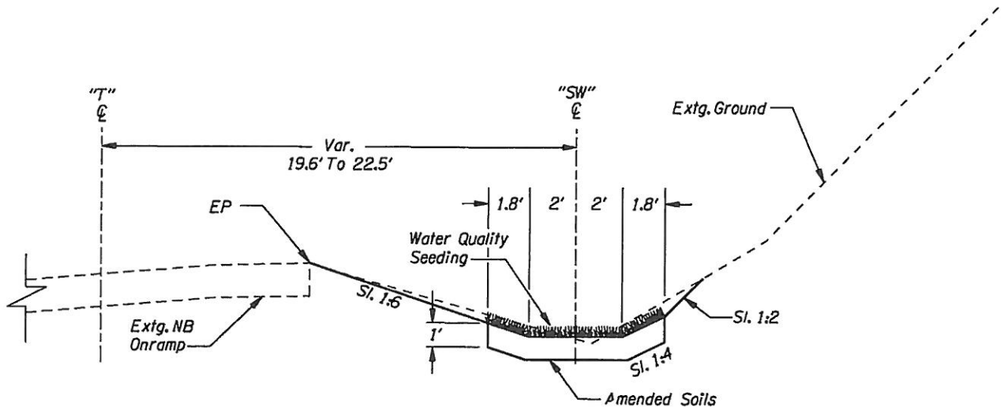
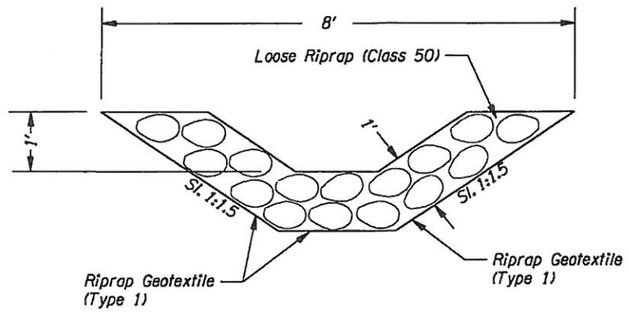


STA. "SW" 0+39 To STA. "SW" 2+26

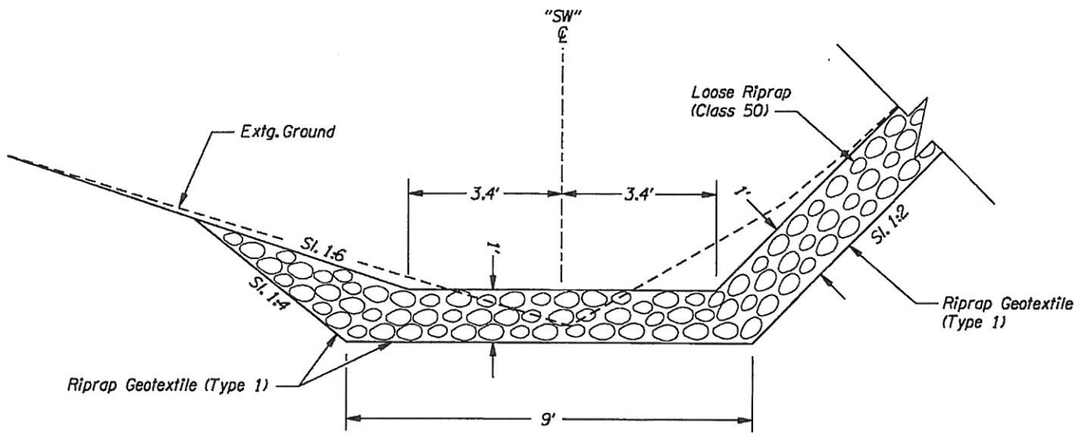
SECTION A-A

(See Sheet 6D, Note 2)



SECTION B-B

(See Sheet 6D, Note 2)



RIPRAP BASIN - SWALE

(See Sheet 6D, Note 2)

REGISTERED PROFESSIONAL ENGINEER
56205PE
OREGON
May 13, 2003
RUSSELL W. NORTON

RENEWAL DATE: 12-31-2010

OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING, INC.

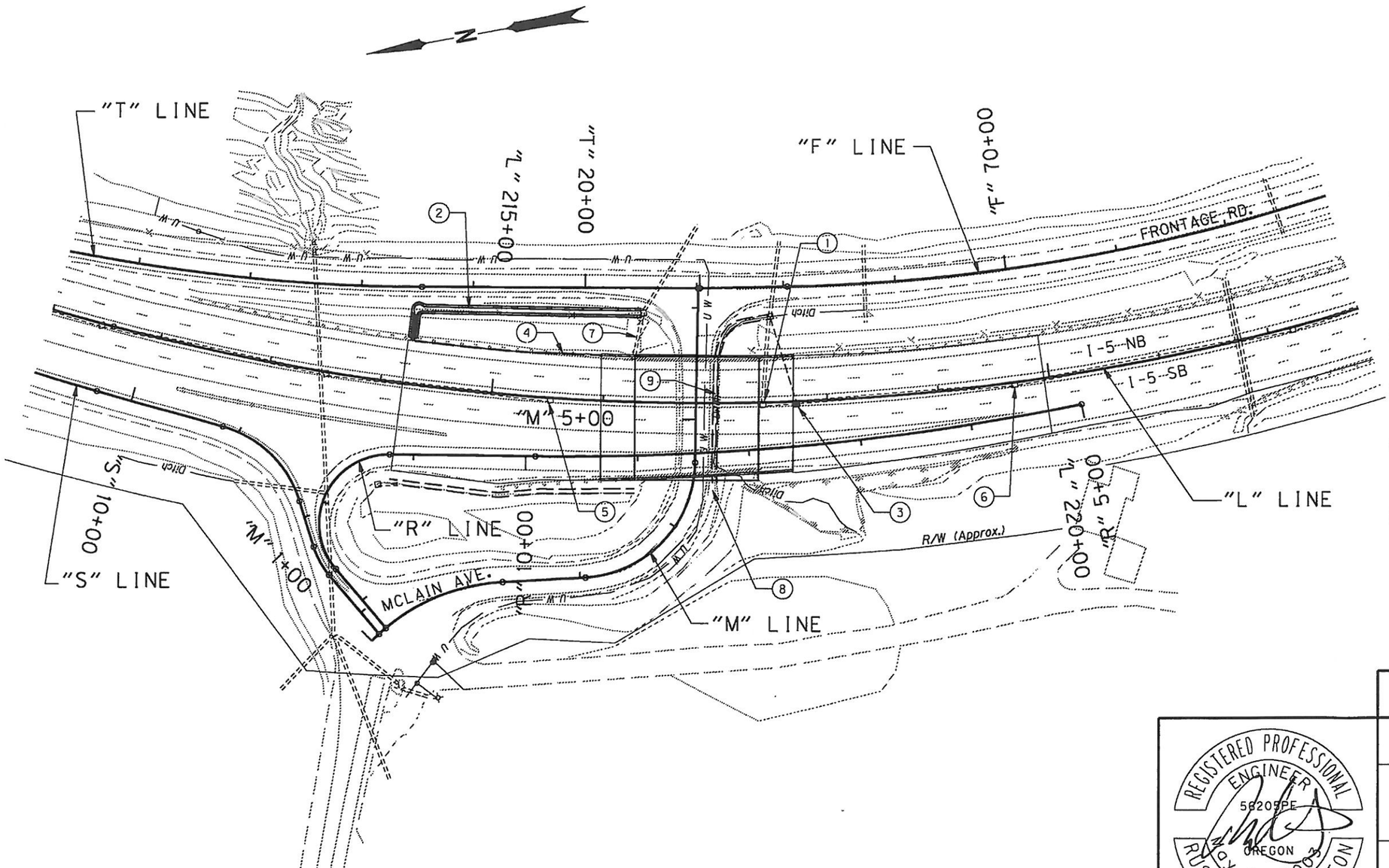
I-5/OR 42: WINSTON - MCLAIN AVE - BUNDLE 307
PACIFIC & COOS BAY - ROSEBURG HIGHWAYS
DOUGLAS COUNTY

Design Team Leader - Karen A. Tatman
Designed By - Russell W. Norton
Drafted By - Patrick Kenney

DETAILS

SHEET NO. 2A-2

Sec. 35, T. 27 S., R. 6 W., W.M.
Br. No. 21087
(MCLAIN AVE. INTERCHANGE)



(1) Sta. "L" 217+42.86, Rt.
Remove Inlet
Remove Pipe-77'

(2) Const. Swale
4' flat bottom, 1:6, 1:4 slopes
Dt. exc. 22.4 cu. yd.
Const. riprap basin-1
Const. loose riprap (Class 50)-6.2 cu. yd.
Const. riprap geotextile (Type 1)-36.3 sq. yd.
(For Details, See Sht. 2A and 2A-2)

(3) Sta. "L" 217+73, Rt.
Const. "Type G-2" inlet
Inst. 15" culv. pipe-77'
4.0' depth
Connect to extg. inlet
Const. in Stages
(See Drg. No. RD364)

(4) Sta. "L" 214+26 To Sta. 215+96.23, Lt.
Const. Asph. Conc. Drainage Curb-171'
(See Drg. No. RD700)

(5) Sta. "L" 215+52.54, Rt.
Adjust Inlet, Type "G-2"
(See Drg. No. RD376)

(6) Sta. "L" 219+68.83, Rt.
Adjust Inlet, Type "G-2"

(7) Sta. "L" 216+26.05, Lt.
Remove Pipe-41'

(8) Const. riprap basin-1
Const. riprap geotextile (Type 1)-6.5 cu. yd.
(For Details, See Sht. 2A-3)

(9) Sta. "M" 4+50.00 to 5+55.00
Const. ditch
"V" bottom, 1:4, 1:3 slopes
Dt. exc. - 3.2 cu. yd.
(For Details, See Sht. 2A-3)

REGISTERED PROFESSIONAL ENGINEER
58209PE
OREGON
May 13, 2003
RUSSELL W. NORTON

RENEWAL DATE: 12-31-2010

OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING, INC.

I-5/OR 42: WINSTON - MCLAIN AVE - BUNDLE 307
PACIFIC & COOS BAY - ROSEBURG HIGHWAYS
DOUGLAS COUNTY

Design Team Leader - Karen A. Tatman
Designed By - Russell W. Norton
Drafted By - Patrick Kenney

DRAINAGE & UTILITIES

SHEET NO. 6D

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