OPERATION & MAINTENANCE MANUAL

DFI No. D00062
Facility Type: Bioslope

Prepared: June 2016

INDEX

1. Identification

Drainage Facility ID (DFI):	D00062
Facility Type:	Bioslope
Construction Drawings:	(V-File Number) 44V-024
Location:	District: 4
	Highway Number: 210
	Mile Post: 1.03 to 1.20
	Description: Bioslope is adjacent to south side of frontage road. It is 67 and 209 feet left of highway centerline at M.P. 1.03 and M.P. 1.20, respectively.

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's Senior Hydraulics Engineer (503) 986-3365.

3. Construction

Engineer of Record: ODOT Designer -- Region 2 Hydraulics, Bo Miller, (503) 986-2738

Facility construction year: 2011
Contractor: R & R Construction

4. Bioslope Overview

Road runoff, from the frontage road, flows across the shoulder and into the bioslope where it percolates downward through the media filter drain mix. The pollutants are removed by the mix and the treated water collects in a gravel filled toe trench. It is stored in the voids within the trench gravels until it percolates into the surrounding soil. There are no subsurface drain pipes in the trenches under these bioslopes. The bioslope is shown, looking east and west respectively, in Photos 1 and 2. Since construction in 2011, a bike path that bisects the facility has been constructed. This is shown in Photos 3 and 4, along with surrounding culverts. Photos 6-9 illustrate the facility's footprint. Photo 10 indicates a pipe located below the facility that runs underneath the Frontage road from an existing ditch. A plan view, cross section, and profile view of the bioslope is shown in Appendix A. The bioslope is shown on the construction drawings in Appendix B.

A. Maintenance equipment access:

The bioslope is easily reached from the frontage road shoulder. The shoulder slopes are between four to six units horizontal to one unit vertical (4H : 1V). Maintenance equipment can park on these slopes near the facility. There are no guardrails at the road edge.

B. Heavy equipment access into facility:

☐ Allowed (no limitations)
☒ Allowed (with limitations)
☐ Not allowed
Heavy equipment is allowed along the perimeter of the facility and along the road side. Entering the facility with heavy equipment, such as a large mower while wet, may cause damage to the facility.

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

Photo 1: Photo taken in 2011, looking east

Photo 2: Taken in 2011, looking west

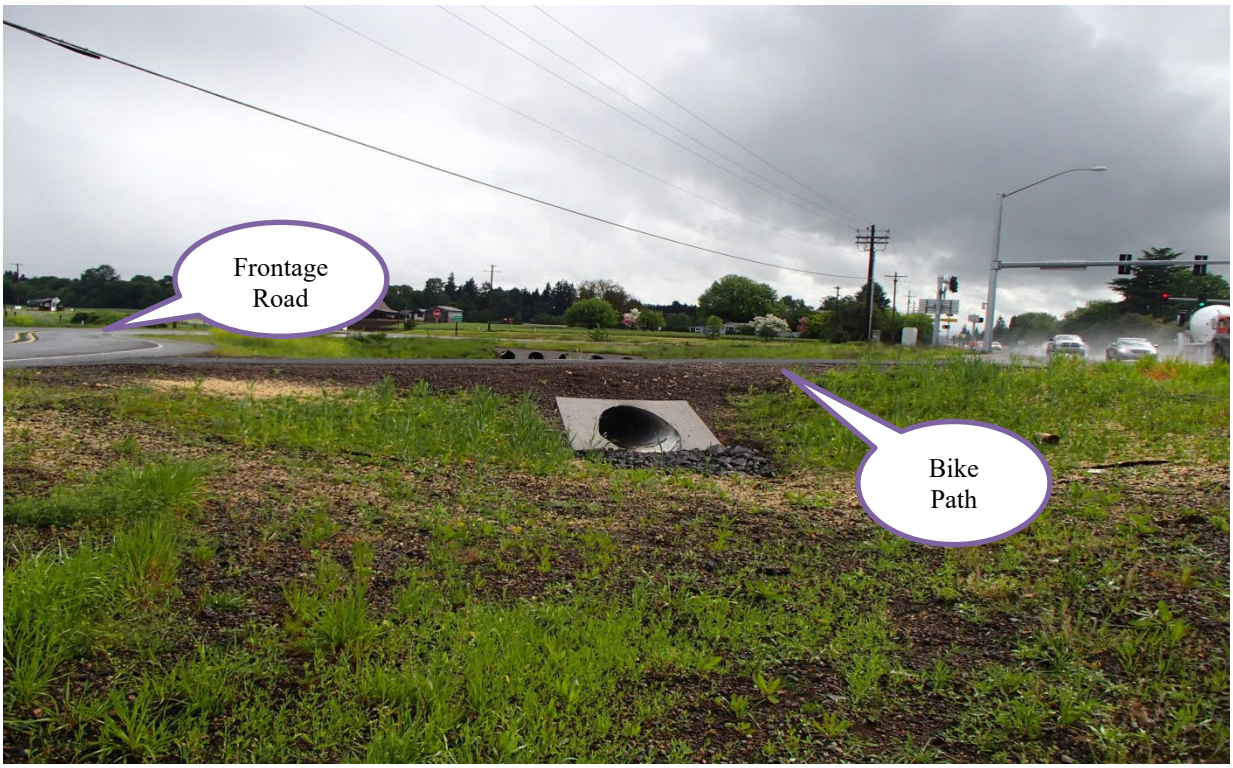


Photo 3: Bike path looking east

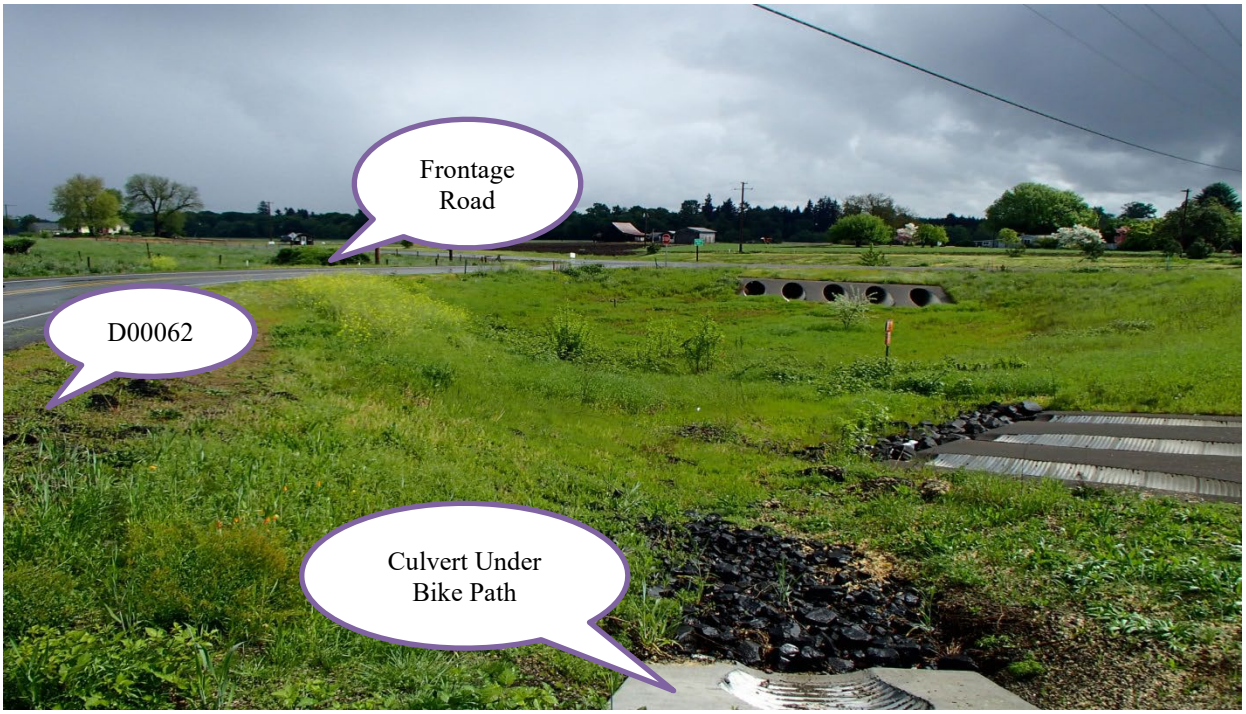


Photo 4: Surrounding culverts looking east, taken in 2016

Photo 3: Facility foot print looking east, taken in 2016

Photo 4: Facility foot print looking east, taken in 2016

Photo 5: Facility foot print looking east, taken in 2016

Photo 6: Facility foot print looking east, taken in 2016

Photo 9: Surrounding culverts looking west, taken in 2016

Photo 10: Pipe under facility looking west, take in 2016

5. Facility Haz Mat Spill Feature

The bioslope can capture small spills. The contaminated bioslope materials must be removed and the facility reconstructed as shown on the attached plans.

6. Cell Overflow

Runoff that is not captured by the bioslope flows down the roadway embankment slopes and into the roadway drainage ditches.

The overflow outlets for this facility are:

□ Designed into facility:

■Other, as noted below:

The roadside ditches.

7. Maintenance Recommendations

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 recommendations in addition to the routine recommendations 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 recommendations 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 recommendations 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:

Special Maintenance Recommendations

The bioslope is near the pavement edge and it is covered with shoulder aggregate. Vegetation will be sparse and there are no requirements for its establishment or maintenance.

8. Waste Material Handling

Contaminated 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

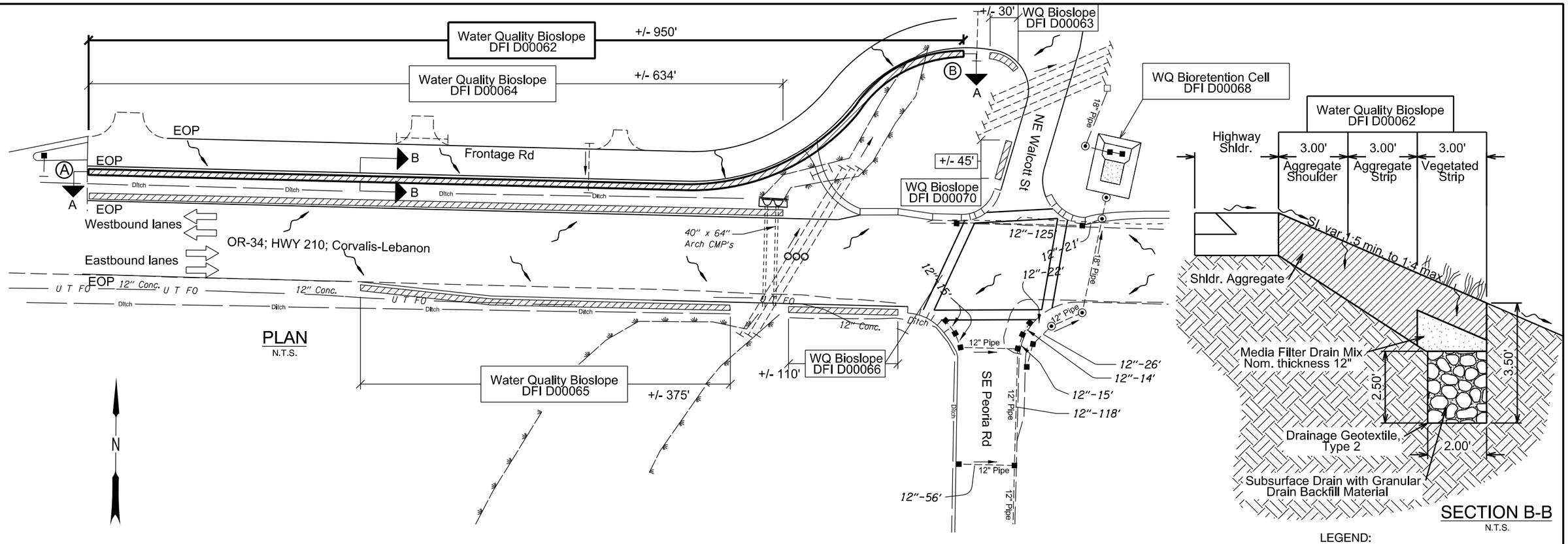
Contact any of the following for more detailed information about management of waste materials found on site:

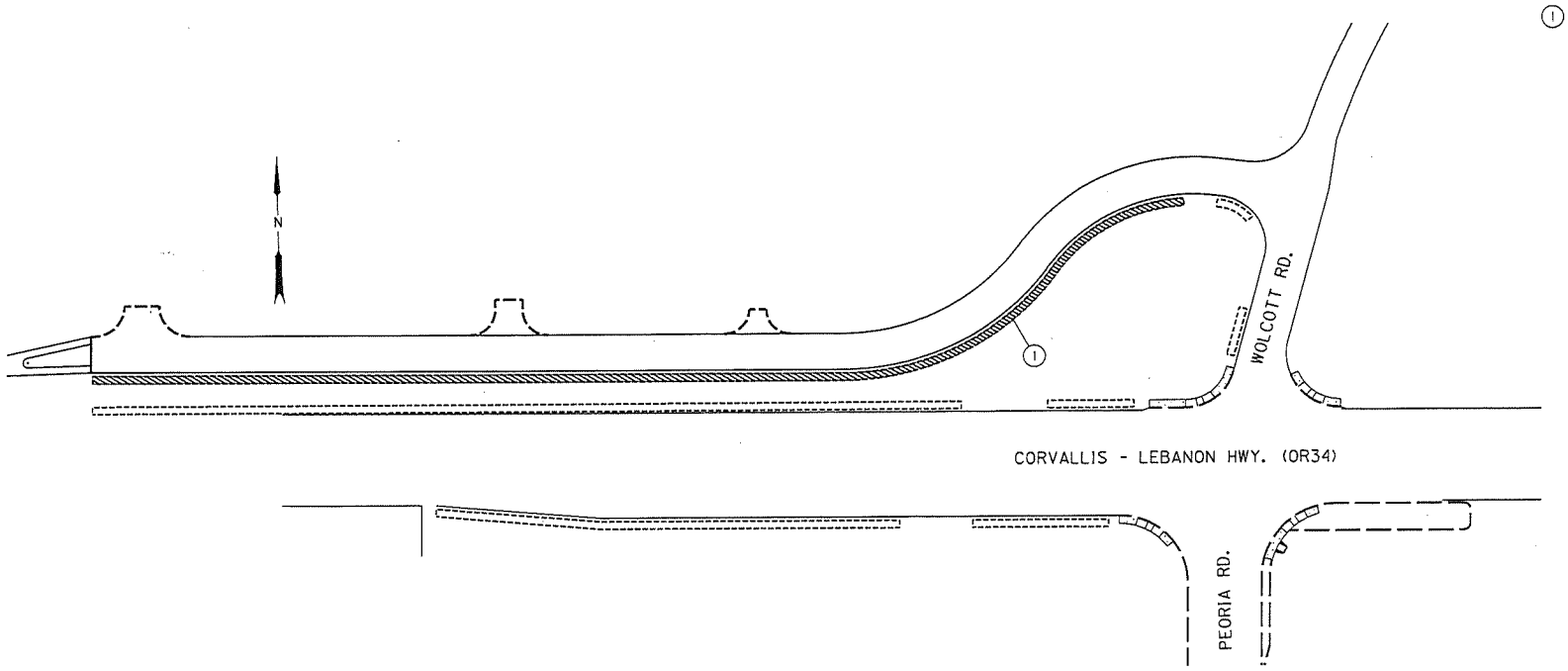
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 986-2647
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

- **Operational Plan Drawing**


Water Quality Bioslope DFI D00062
+/- 950'
Water Quality Bioslope DFI D00064
+/- 634'
+/- 30'
WQ Bioslope DFI D00063
WQ Bioretention Cell DFI D00068
EOP
Frontage Rd
A
B
Ditch
EOP
Westbound lanes
OR-34; HWY 210; Corvalis-Lebanon
Eastbound lanes
EOP
12" Conc.
U T FO
+/- 45'
WQ Bioslope DFI D00070
NE Walcott St
18" Pipe
40" x 64" Arch CMP's
12"-125'
12"-21'
12"-22'
12"-16'
12" Pipe
12"-26'
12"-14'
12"-15'
12"-118'
12"-56'
SE Peoria Rd
Water Quality Bioslope DFI D00065
+/- 375'
+/- 110'
WQ Bioslope DFI D00066
PLAN
N.T.S.
N
Water Quality Bioslope DFI D00062
Highway Shldr.
3.00' Aggregate Shoulder
3.00' Aggregate Strip
3.00' Vegetated Strip
Sl. var. 1:5 min. to 1:2 max.
Shldr. Aggregate
Media Filter Drain Mix Nom. thickness 12"
2.50'
3.50'
Drainage Geotextile, Type 2
2.00'
Subsurface Drain with Granular Drain Backfill Material
SECTION B-B
N.T.S.
LEGEND:
Manhole
Inlet
Storm Pipe (Facility)
Storm Pipe
Conveyance Direction
Pavement / Facility Flow Path
Media Filter Drain Mix (Ecology Mix)
Granular Drain Backfill Material
Shoulder Aggregate
Existing Soil
Vegetation
Facility Start
Facility End
M.P 1.03
M.P 1.20
Water Quality Bioslope DFI D00062
Exist Ground
6"-8"
4"-6"
1.0'
2.5'
Bottom of Facility
SECTION A-A
N.T.S.
OREGON DEPARTMENT OF TRANSPORTATION
Prepared By: Scott Sooter
Drafted By: Scott Sooter
DFI D00062
MAINTENANCE DISTRICT 04 HWY 210
WATER QUALITY BIOSLOPE
HIGHWAY MP 1.03-1.20
LINN COUNTY
DFI_D00062.dgn



DFI D00062

MAINTENANCE DISTRICT 4, HWY. 210

CORVALLIS-LEBANON HIGHWAY (M.P. 1.19)

LINN COUNTY

OPERATIONAL PLAN

BIOSLOPE

Appendix B

Content:

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

HYDRAULICS COPY

C14326 Contract Plans

44V-24

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

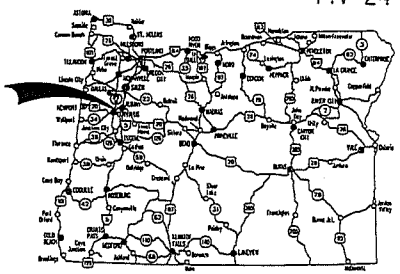
GRADING, DRAINAGE, STRUCTURE, PAVING, SIGNING, SIGNALS & ROADSIDE DEVELOPMENT

OR34: ROCHE STREET - WOLCOTT ROAD SEC.

CORVALLIS - LEBANON HIGHWAY

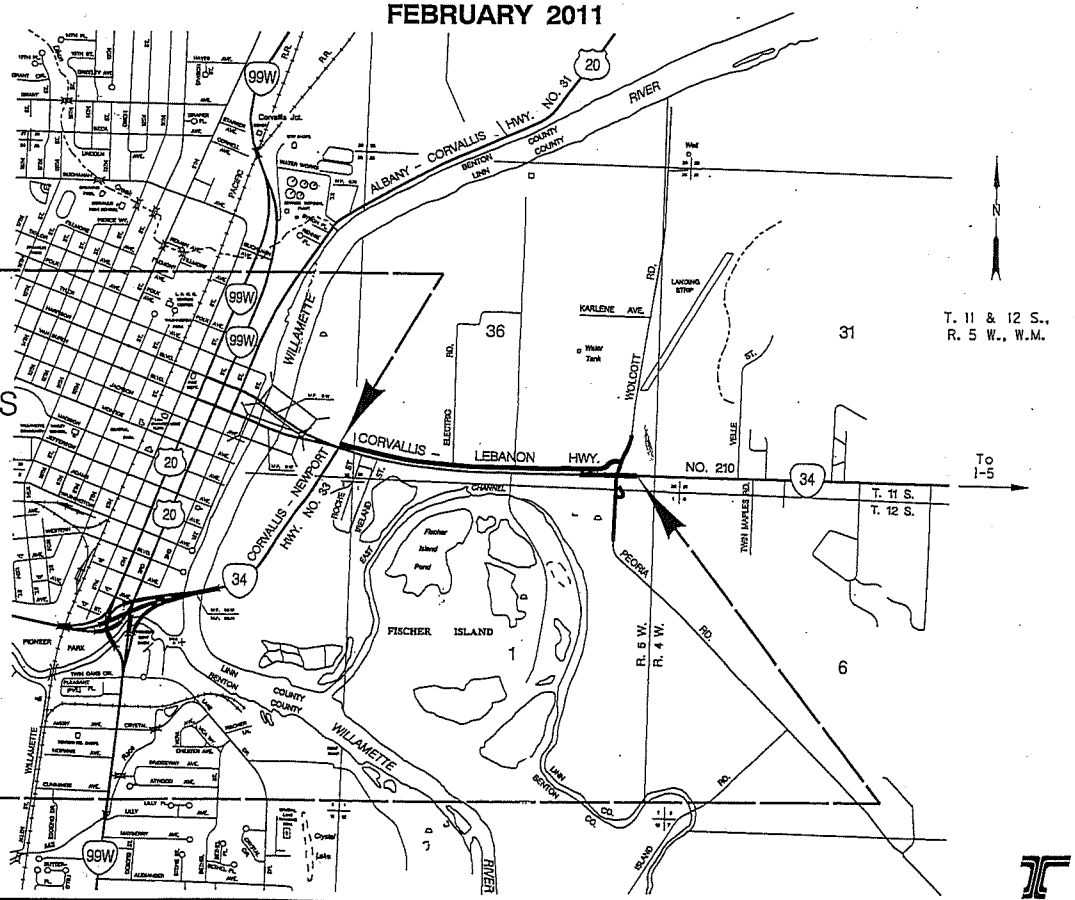
LINN COUNTY

FEBRUARY 2011



Overall Length Of Project - 0.92 Miles

X-HPP-S210(013)
BEGINNING OF PROJECT
STA. "SP" 1+20 (M.P. 0.34)



X-HPP-S210(013)
END OF PROJECT
STA. "L" 77+00 (M.P. 1.26)

ATTENTION:
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. These 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

Gail Achterman	CHAIR
Michael Nelson	VICE-CHAIR
Mary F. Olson	COMMISSIONER
Alan Brown	COMMISSIONER
David Lohman	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: Carol A. Cartwright 1/10/11
Signature & date

Carol Cartwright - R2 Tech Center Manager
Print name and title

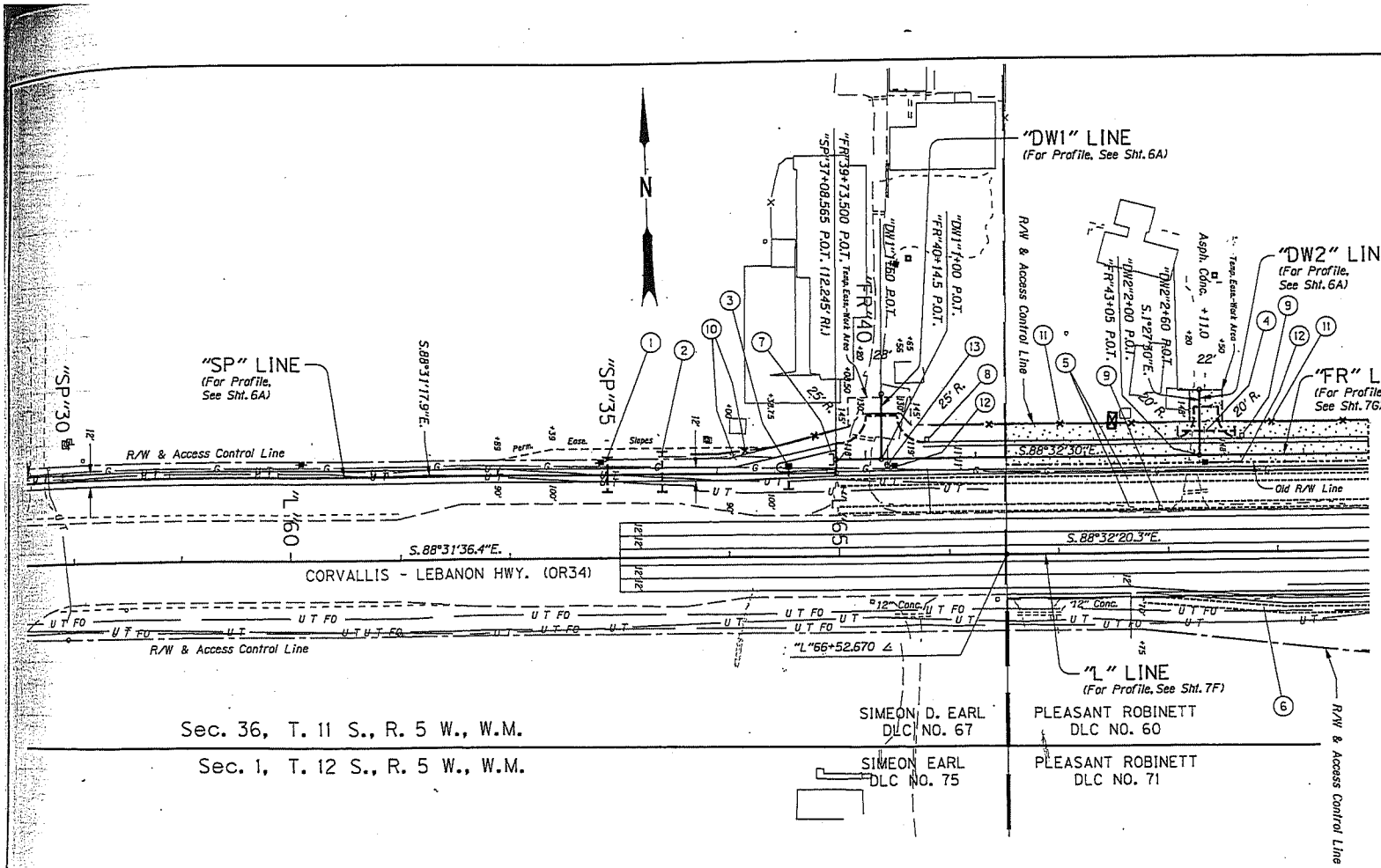
Concurrence by ODOT Chief Engineer

OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-HPP-S210(013)	1

F_000743

F:\ODOT_DATA\Projects\12580Roche\12580R2.tsl -- Default 12/29/2010 10:46:53 AM hwye07x



1. Sta. "SP" 35+00
   Inst. 12" Culv. Pipe - 32'
   5' Depth
   (For Details, See Sht. GE-5)
   (See Drg. Nos. RD300, RD316, RD318, RD326, RD380 & RD386)
2. Sta. "SP" 35+50
   Inst. 12" Culv. Pipe - 37'
   5' Depth
   (For Details, See Sht. GE-5)
3. Sta. "SP" 36+65, 6.5' Lt.
   Const. Type "G-2MA" Mod. Inlet
   Inst. Type 2 Grates
   Inst. 10" Culv. Pipe (D.I.) - 21'
   5' Depth
   (For Details, See Sht. GE-5)
   (See Drg. No. RD364)
4. Sta. "DW2" 2+21.5
   Remove Extg. Pipe
   Inst. 12" Culv. Pipe - 52'
   5' Depth
5. Sta. "FR" 39+75 To Sta. "FR" 49+00, Rt.
   "L" 65+00 To "L" 72+00, Lt.
   Const. Bioslope
   (For Details, See Sht. GJ & GJ-9)
6. Sta. "L" 67+75 To Sta. "L" 71+50, Rt.
   Const. Bioslope
   (For Details, See Sht. GJ & GJ-9)
7. Sta. "SP" 37+06, Lt.
   Inst. Barricade
   (For Details, See Sht. S-10)
8. Remove Extg. Mailbox Support
   Inst. Single Mailbox Support With Newspaper Box
   (See Drg. Nos. RD100 & RD101)
9. Remove Extg. Mailbox Support
   Inst. Multiple Mailbox Support With Newspaper Box
10. Remove Extg. Fence
    Const. Type 2 Fence
    (See Drg. No. RD810)
11. Remove Temp. Orange Plastic Mesh Fence
    Const. Temp. Orange Plastic Mesh Fence
12. Relocate Power Pole - 2
    (By Others)
13. Relocate Power Box
    (By Others)

Remove Building Shown Thus: ⊠
(By Others)

Contractor May Not Occupy Area Prior To 1 May 2011 Shown Thus: ⬚

REGISTERED PROFESSIONAL ENGINEER
14,931
Carol A. Cartwright
OREGON
JULY 25, 1990
CAROL A. CARTWRIGHT
RENEWS: 12-31-2011

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

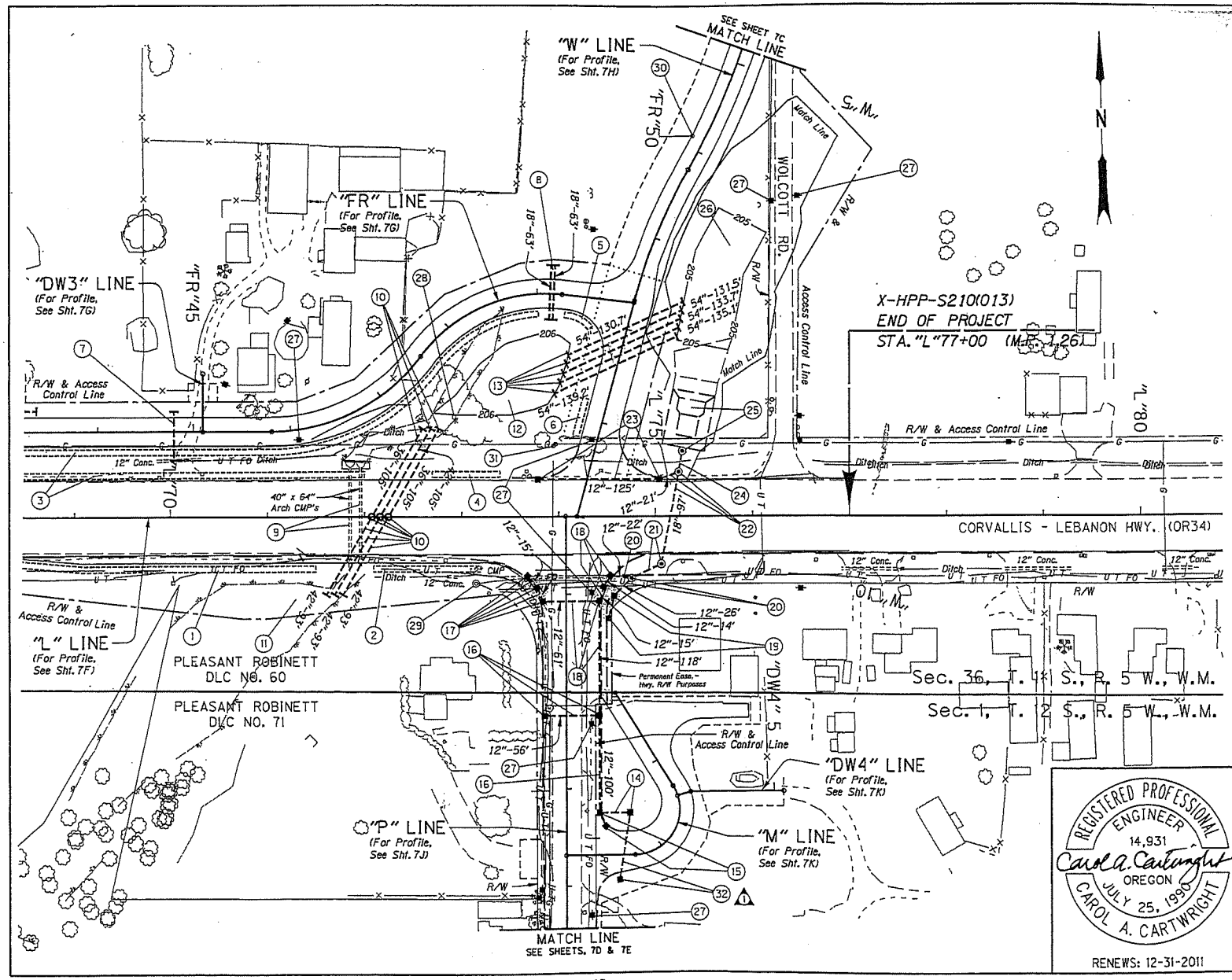
OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

Design Team Leader - Carol Cartwright
Designed By - Kathy Fry
Drafted By - Jeff Larson

GENERAL CONSTRUCTION

SHEET NO. 6

1:1200 Plot 004



No.	DATE	REVISIONS	BY
1	02-14-11	Added Pipe & Inlet	K.F.

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

Design Team Leader - Carol Cartwright
Designed By - Kathy Fry
Drafted By - Jeff Larson

DRAINAGE & UTILITIES

REGISTERED PROFESSIONAL ENGINEER
14,931
Carol A. Cartwright
OREGON
JULY 25, 1990
CAROL A. CARTWRIGHT
RENEWS: 12-31-2011

(1) See Sht. 6, Note 6

(2) Sta. "L" 72+10 To Sta. "L" 73+20, Rt.
Const. Bioslope
(For Details, See Sht. GJ & GJ-9)

(3) See Sht. 6, Note 5

(4) Sta. "L" 72+70 To Sta. "L" 73+40, Lt.
Const. Bioslope
(For Details, See Sht. GJ & GJ-9)

(5) Sta. "FR" 49+30 To Sta. "FR" 49+60, Rt.
Const. Bioslope
(For Details, See Sht. GJ & GJ-9)

(6) Sta. "W" 8+80 To Sta. "W" 9+20, Rt.
Const. Bioslope
(For Details, See Sht. GJ & GJ-9)

(7) Sta. "FR" 44+80
Inst. 10" Culv. Pipe (DI) - 50'
5' Depth
(For Details, See Sht. GE-5)

(8) Sta. "FR" 49+13 To Sta. "FR" 49+17
Inst. 18" Culv. Pipes - 126' (Total)
5' Depth
(For Details, See Sht. GE-5)
(See Drg. No. RD300)

(9) Remove Extg. Pipes - 2
Trench Resurfacing - 138 Sq. Yd.
(For Details, See Sht. 2B-8)
(See Drg. No. RD302)

(10) Sta. "L" 72+07.5
Sta. "L" 72+16
Sta. "L" 72+24.5
Const. Shallow Manhole - 3
Inst. 42" Culv. Pipe - 384' (Total)
10' Depth
Inst. 36" Culv. Pipe - 210' (Total)
5' Depth
Const. Paved End Slope - 740 Sq. Ft.
Const. Riprap (Class 100) - 10 Cu. Yd.
Inst. Riprap Geotextile (Type 1) - 21 Sq. Yd.
Trench Resurf. - 211 Sq. Yd.
(For Details, See Shts. GE, GE-5 & 2B-8)
(See Drg. Nos. RD300, RD320, RD342, RD356 RD388, RD390 & RD391)

(11) Side Slope At Pipes
Contour Grading Plan
(For Details, See Sht. GN)

(12) Loop Depression
Contour Grading Plan
(For Details, See Sht. GN)

(13) Sta. "W" 7+98 To Sta. "W" 8+37.2
Inst. 54" Culv. Pipes - 671' (Total)
10' Depth
Const. Paved End Slope - 1,770 Sq. Ft.
(For Details, See Shts. GE-3 & GE-5)
Const. Riprap (Class 100) - 15 Cu. Yd.
Inst. Riprap Geotextile (Type 1) - 38 Sq. Yd.
(See Drg. No. RD300)

(14) Sta. "P" 3+25, Lt.
Const. Type "G-2MA" Mod. Inlet
Inst. 12" Sew. Pipe - 31.5'
5' Depth
(For Details, See Sht. 2B-3)

(15) Sta. "P" 3+25, Lt.
Const. Type "CG-2" Inlet - 2
Inst. 12" Sew. Pipe - 15'
5' Depth

(16) Sta. "P" 2+25, Lt. & Rt.
Const. Type "CG-2" Inlet - 2
Inst. 12" Sew. Pipe - 156'
5' Depth
Trench Resurfacing - 9 Sq. Yd.

(17) Sta. "P" 1+07, Rt.
Const. Type "CG-2" Inlet - 3
Inst. 12" Sew. Pipe - 30'
5' Depth

(18) Sta. "P" 1+07, Lt.
Const. Type "CG-2" Inlet - 3
Inst. 12" Sew. Pipe - 208'
5' Depth

(19) Sta. "P" 1+25 To Sta. "P" 1+01.8, Lt.
Const. Type "G-2" Inlet - 2
Inst. 12" Sew. Pipe - 24'
5' Depth

(20) Sta. "P" 0+83.4, 68' Lt.
Const. Manhole With Inlet
Inst. 12" Sew. Pipe - 48'
5' Depth
(See Drg. No. RD348)

(21) Sta. "P" 0+69, Lt.
Const. Manhole
Inst. 18" Sew. Pipe - 34'
5' Depth

(22) Sta. "L" 75+23.7, Lt.
Const. Manhole
Inst. 12" Sew. Pipe - 21'
5' Depth
Inst. 18" Sew. Pipe - 97'
5' Depth
Trench Resurfacing - 30 Sq. Yd.
(For Details, See Sht. 2B-8)

(23) Sta. "P" 73+79, Lt.
Const. Type "G-2" Inlet - 2
Inst. 12" Sew. Pipe - 125'
5' Depth

(24) Sta. "L" 75+23.7 To Sta. "B1" 3+99
Inst. 18" Sew. Pipe - 22'
5' Depth

(25) Const. Bioretention Cell
Const. Diversion M.H.
(For Details, See Sht. GJ-2, Note 2)

(26) Wolcott Road Depression
Contour Grading Plan
(For Details, See Sht. GN)

(27) Relocate Power Pole - 7
(By Others)

(28) Relocate Communication Riser
(By Others)

(29) Relocate Telephone M.H.
(By Others)

(30) Relocate Water Valve
(By Others)

(31) Adjust Gas Valve Boxes - 2
(By Others)

△1 (32) Sta. "M" 1+55, Rt.
Const. Type "D" Inlet
Inst. 12" Sew. Pipe - 70'
5' Depth

No.	DATE	REVISIONS	BY
△1	02-14-11	Added Note	K.F.

REGISTERED PROFESSIONAL ENGINEER
14,931
Carol A. Cartwright
OREGON
JULY 25, 1990
CAROL A. CARTWRIGHT
RENEWS: 12-31-2011

OREGON DEPARTMENT OF TRANSPORTATION

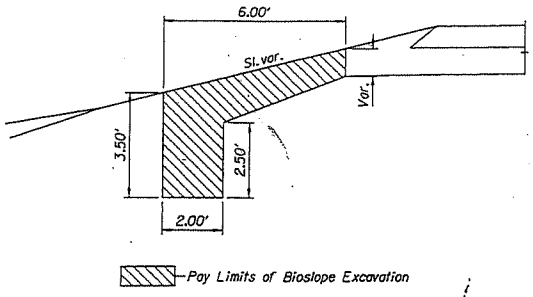
REGION 2 TECH CENTER

OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

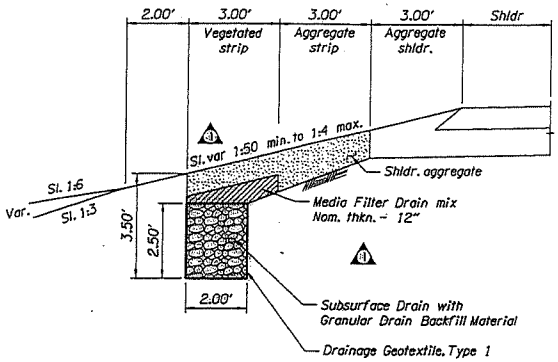
Design Team Leader - Carol Cartwright
Designed By - Kathy Fry
Drafted By - Jeff Larson

NOTES

SHEET NO. 7B-2



BIOSLOPE EXCAVATION



BIOSLOPE SECTION
1:50 MIN. SLOPE

NOTE:
Side-slopes are shown as vert. to horiz.

No.	DATE	REVISIONS	BY
1	04-12-11	Modified detail, removed note	BM

REGISTERED PROFESSIONAL ENGINEER
14475
Bo Miller
OREGON
JULY 26, 1989
BO MILLER
RENEWS: 12-31-2012

OREGON DEPARTMENT OF TRANSPORTATION

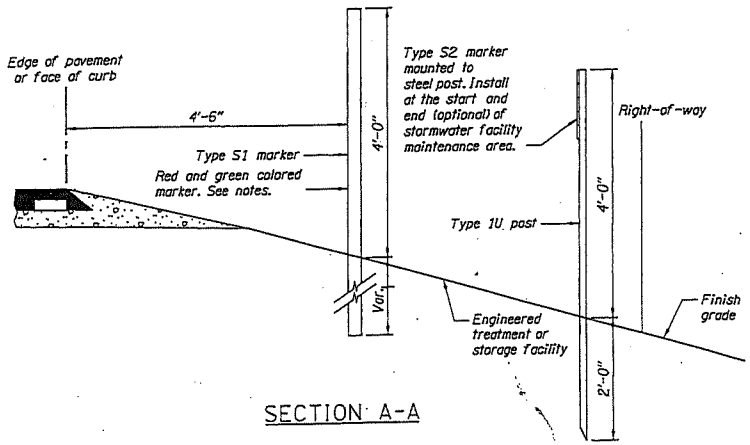
REGION 2 TECH CENTER

OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

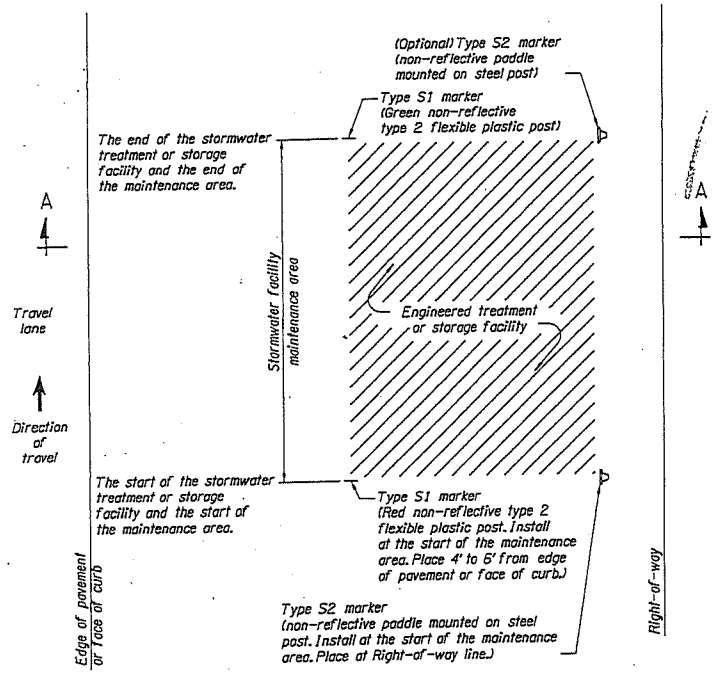
Reviewed By - Bruce Carmichael, P.E.
Designed By - Bo Miller, P.E.
Drafted By - Sandra Gish

STORMWATER
BIOSLOPE DETAILS

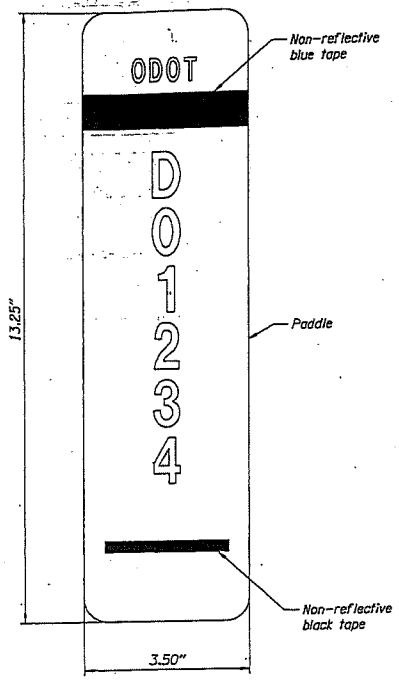
SHEET NO.
GJ



SECTION A-A



TYPE S1 & S2 MARKERS INSTALLATION DETAIL



TYPE S2 MARKER
(STATE SUPPLIED ITEM)

MARKER TABLE

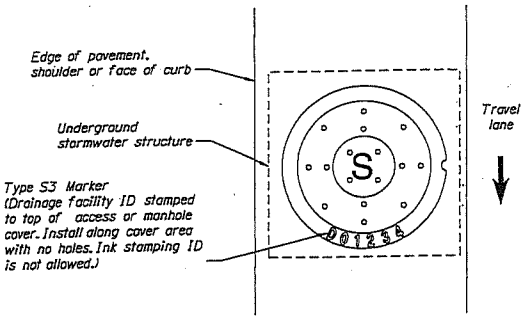
FACILITY LOCATION		DFI NO.	TYPE S2 MARKER LOCATION		TYPE S1 MARKER		TYPE S3 MARKER
STATION	HWY MP, OFFSET		BEGIN	END	RED	GREEN	
"FR"39+75	1.03, 67.15' Lt	D00062	✓		✓		
"FR"49+00	1.20, 209.17" Lt	D00062		✓		✓	
"FR"49+30	1.20, 207.96" Lt	D00063	✓		✓		
"FR"49+60	1.21, 191.63" Lt	D00063		✓		✓	
"L"65+00	1.03, 41.85' Lt	D00064	✓		✓		
"L"72+00	1.17, 43.49' Lt	D00064		✓		✓	
"L"67+75	1.08, 42.67" Rt	D00065	✓		✓		
"L"71+50	1.15, 53.79' Rt	D00065		✓		✓	
"L"72+10	1.17, 53.78' Rt	D00065	✓		✓		
"L"73+20	1.19, 53.28' Rt	D00066		✓		✓	
"L"72+70	1.18, 43.55' Lt	D00067	✓		✓		
"L"73+40	1.19, 43.81' Lt	D00067		✓		✓	
"L"75+28	1.23, 67.16' Lt	D00068					✓
"P"9+20	1.19, 900.65' Rt	D00069					✓
"W"8+80	1.21, 121.87" Lt	D00070	✓		✓		
"W"9+20	1.21, 83.25' Lt	D00070		✓		✓	

✓ Check where appropriate
Red = Beginning of facility
Green = End of facility

NOTES:
Stormwater Facility Field Marker Type S1:
1. See Standard Drawing TM570 for Type 2 flexible plastic post dimensions. Do not mount reflective sheeting to flexible plastic post.
2. A red Type S1 marker is used to mark the start of a stormwater facility maintenance area. A green Type S1 marker is used to mark the end of a stormwater facility maintenance area.
3. Place 4 to 6 feet from edge of pavement or face of curb.
4. See marker table for installation locations.

Stormwater Facility Field Marker Type S2:
1. Paddle:
   - Aluminum sheet, nominal thickness 0.050"
   - White non-reflective background
   - Mount paddle to one (1) Type 1U steel post using 3/16" diameter aluminum blind rivets and washers. See Standard Drawing TM 570 detail labeled "Steel Posts" for mounting a traffic target. Install paddle onto Type 1U steel post using the same hole pattern.
   - Text and numbers are Type C font in non-reflectorized black
   - Band is non-reflective blue tape
   - Do not mount paddle to other highway signing posts
   - Install paddle parallel to travel lane
   - Prepare paddle for each "DFI" noted in the marker table
2. Steel Posts:
   - See Standard Drawing TM571 for Type 1U steel post dimensions

Stormwater Facility Field Marker Type S3:
1. The top of access or manhole cover shall be stamped with the drainage facility ID. Ink stamping ID is not allowed.



TYPE S3 MARKER INSTALLATION DETAIL

REGISTERED PROFESSIONAL ENGINEER
14475
Bo Miller
OREGON
JULY 26, 1989
BO MILLER
RENEWS: 12-31-2010

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

Reviewed By - Angela J. Korgel
Designed By - Tsundra Mortensen
Drafted By - Jeff Larson

STORMWATER DETAILS

SHEET NO. GJ-

1:1200_BL - C