

OPERATION & MAINTENANCE MANUAL

DFI No. D00070

Facility Type: Bioslope



Prepared: June 2016

INDEX

1. IDENTIFICATION - 2 -

2. FACILITY CONTACT INFORMATION..... - 2 -

3. CONSTRUCTION - 2 -

4. BIOSLOPE OVERVIEW - 3 -

5. FACILITY HAZ MAT SPILL FEATURE - 5 -

6. OVERFLOW - 5 -

7. MAINTENANCE REQUIREMENTS - 5 -

8. WASTE MATERIAL HANDLING - 6 -

APPENDIX A: Operational Plan Drawing

APPENDIX B: ODOT Project Plan Sheets

1. Identification

Drainage Facility ID (DFI): D00070
Facility Type: Bioslope
Construction Drawings: (V-File Number) 44V-024
Location: District: 4
Highway Number: 210
Mile Post: 1.21 to 1.21
Description: Bioslope is adjacent to west side of Wolcott Road. It is 83 to 122 feet left of highway centerline at M.P. 1.21.

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 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 infiltrates into the surrounding soil. There are no subsurface drain pipes in the trenches under these bioslopes. The bioslope is shown, looking south and north respectively, in Photos 1 and 2. A plan view, profile view, and cross section of the bioslope is shown in Appendix A. The bioslope construction drawings are shown in Appendix B.

A. Maintenance equipment access:

The bioslope is easily reached from the Wolcott 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: Looking south



Photo 2: Looking north

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. 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 Requirements

The bioslopes are near the pavement edge and they are 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**

Appendix B

Content:

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

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

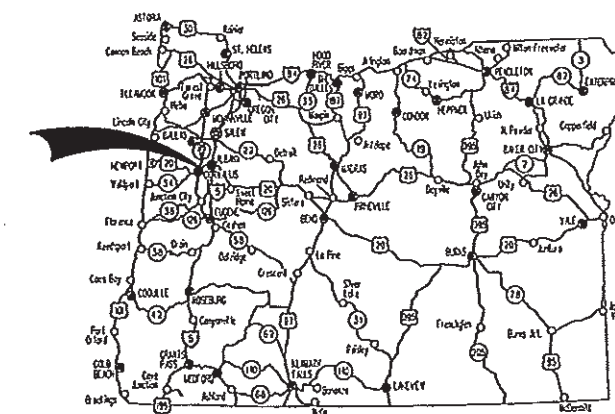
PLANS FOR PROPOSED PROJECT

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

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

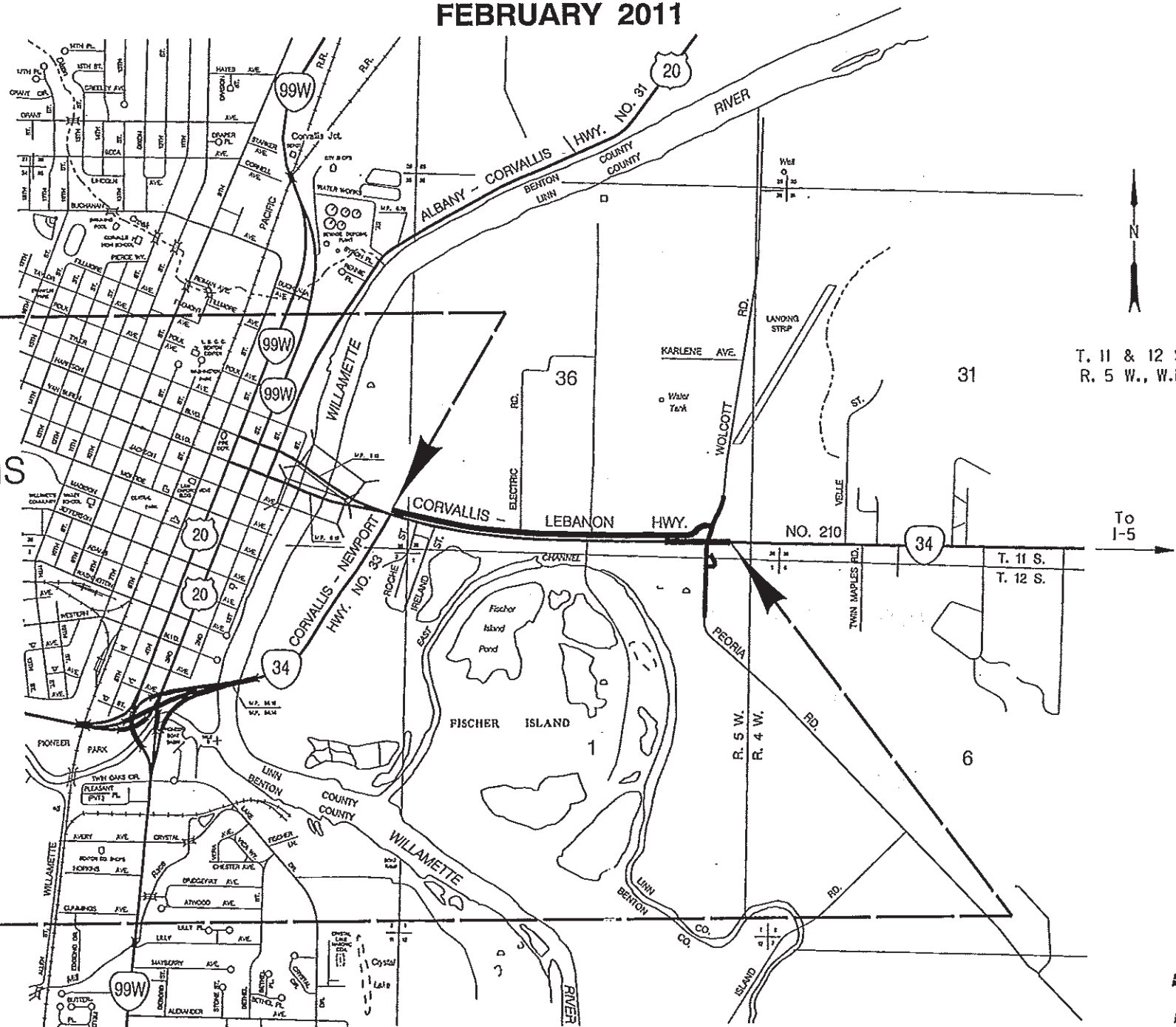
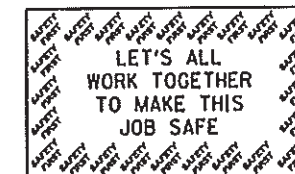
LINN COUNTY
FEBRUARY 2011

OR34: Roche Street - Wolcott Rd
Corvallis-Lebanon Hwy 210 Linn
C14326 CON03172 K#12580
X_HPP-S210(013)
BI Note Est Date



Overall Length Of Project - 0.92 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.)



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

ORIGINAL CORVALLIS

NOT REVISED AS CONSTRUCTED

Ray Cranston
RAY CRANSTON, P.L.S.

DATE 2-14-2012

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

OREGON TRANSPORTATION COMMISSION
Gail Achtermon CHAIR
Michael Nelson VICE-CHAIR
Mary F. Olson COMMISSIONER
Alan Brown COMMISSIONER
David Lohmon 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

[Signature]
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

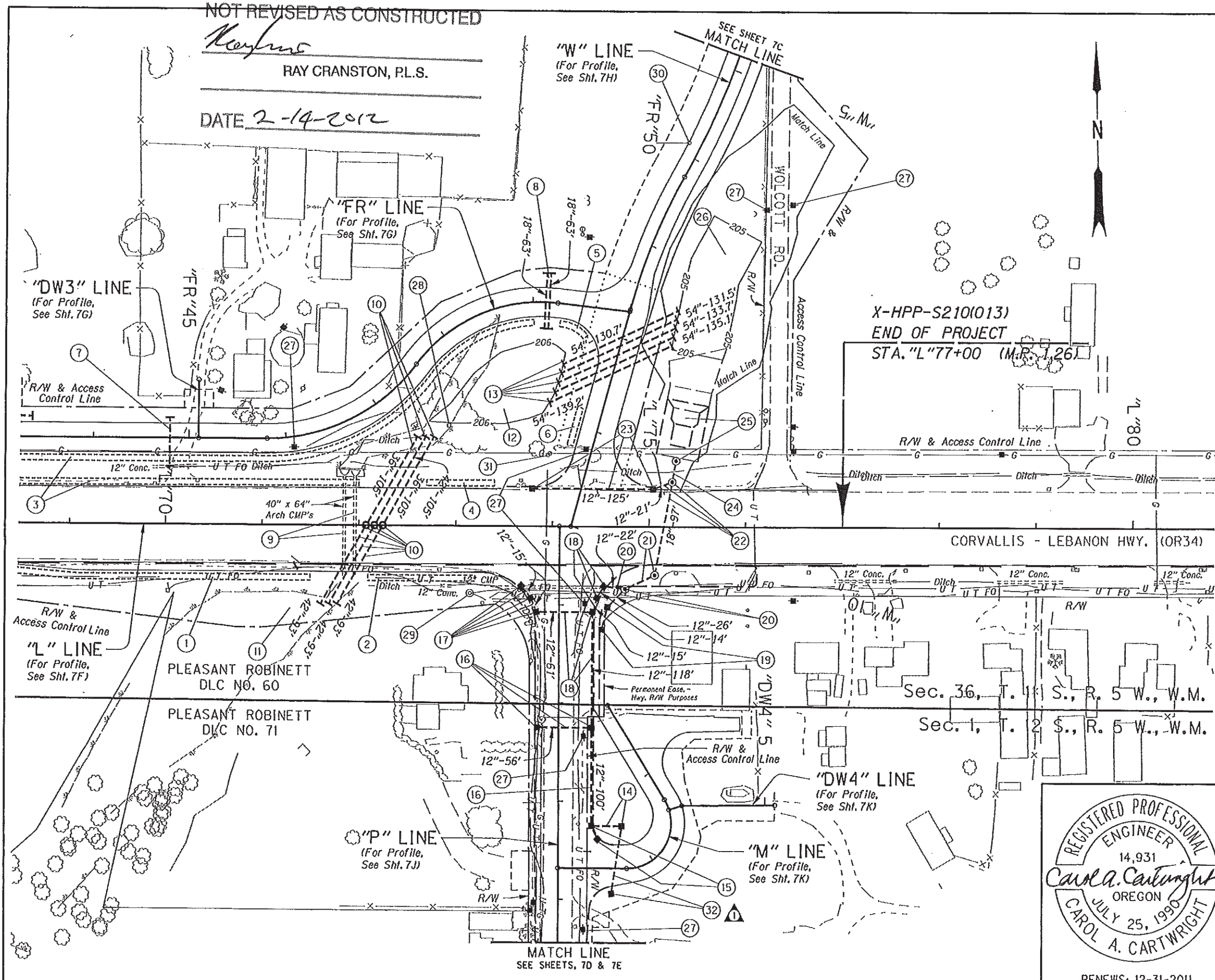
PE000743

NOT REVISED AS CONSTRUCTED

Kathy Fry

RAY CRANSTON, P.L.S.

DATE 2-14-2012



X-HPP-S210(013)
END OF PROJECT
STA. "L" 77+00 (M.R. 1,26)

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



RENEWS: 12-31-2011

DRAINAGE & UTILITIES

SHEET NO.
7B

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

REVISED AS CONSTRUCTED

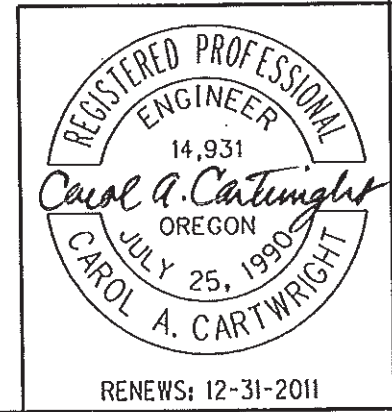
Ray Cranston

RAY CRANSTON, P.L.S.

DATE 2-14-2012

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Not Necessary

No.	DATE	REVISIONS	BY
⚠	02-14-11	Added Note	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

NOTES

SHEET NO. 7B-2

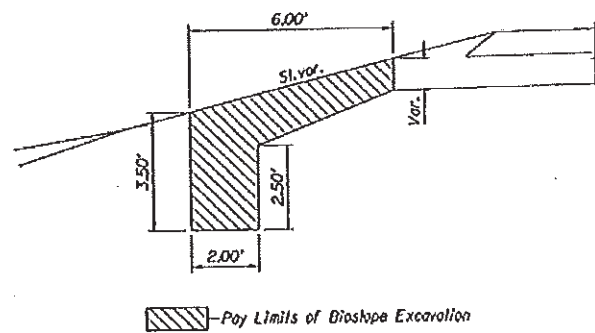
REVISED/AS CONSTRUCTED

Ray Cranston

RAY CRANSTON, P.L.S.

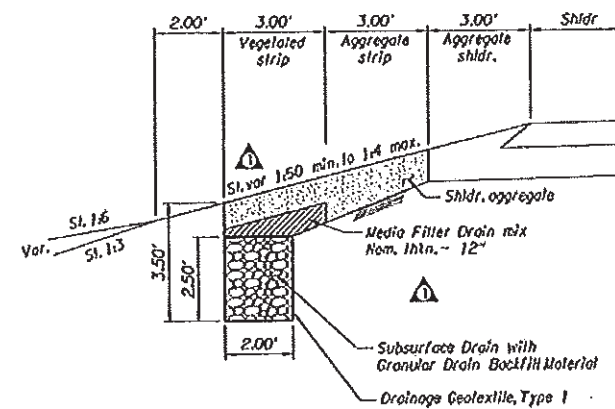
DATE 2-21-12

44V-024



—Pay Limits of Bioslope Excavation

BIOSLOPE EXCAVATION



BIOSLOPE SECTION
1:50 MIN. SLOPE

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

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
Linn County

Revised By - Bruce Cornicheo, P.E.
Designed By - Bo Miller, P.E.
Drafted By - Sandra Gish

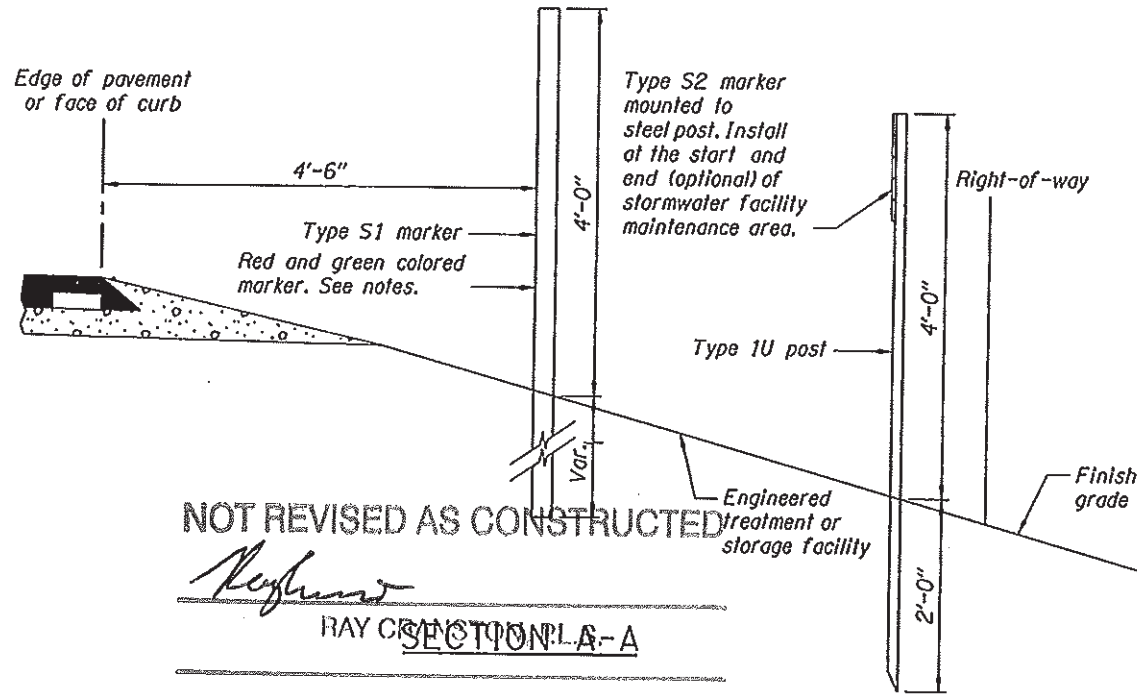
**STORMWATER
BIOSLOPE DETAILS**

SHEET NO. GJ

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

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

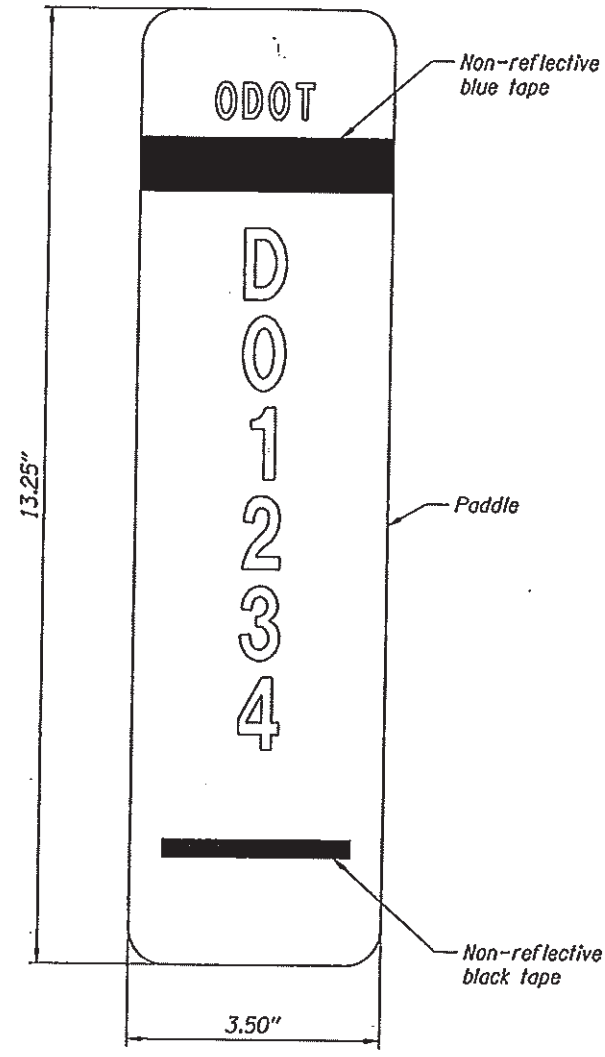
Attachment 1
OR34: Roche Street - Wolcott Road
C14326, CCO 01
Page 4 of 6



NOT REVISED AS CONSTRUCTED

RAY CRONIN
SECTION: A-A

DATE 2-14-2012



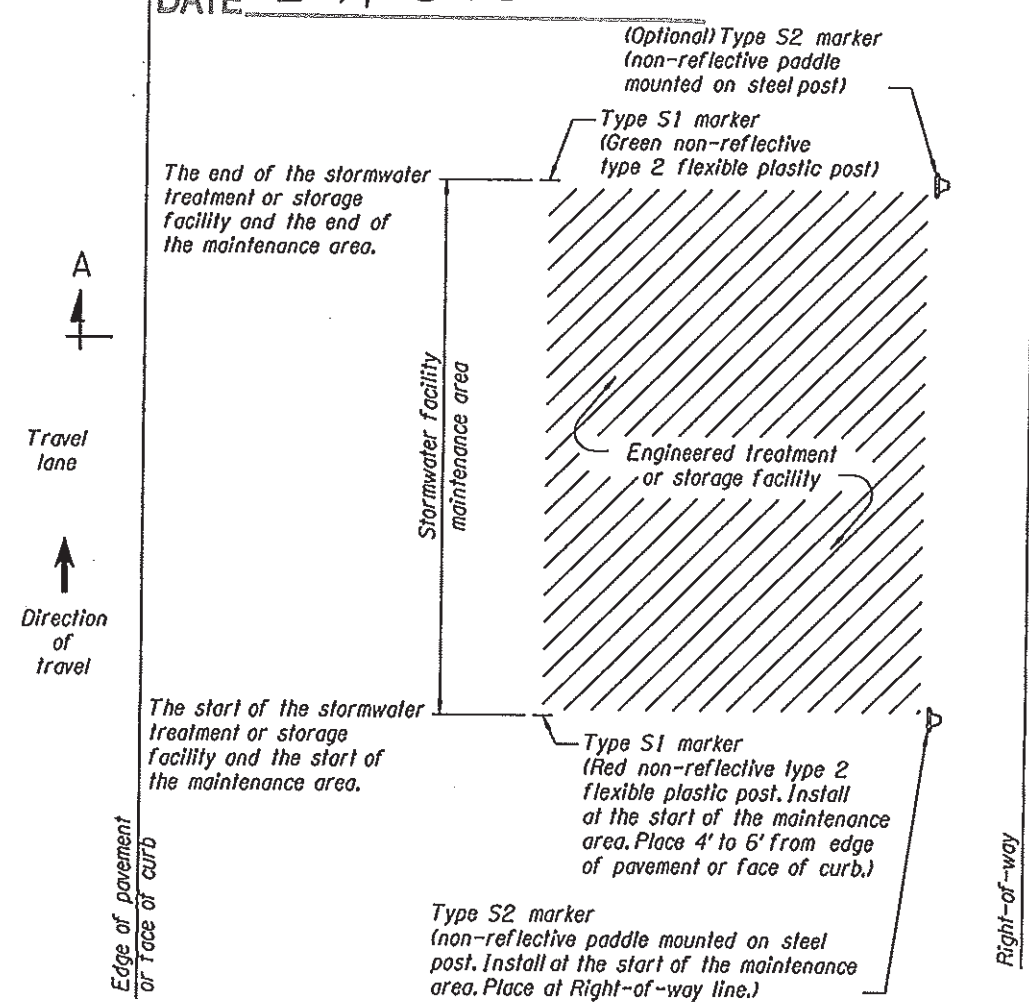
TYPE S2 MARKER
(STATE SUPPLIED ITEM)

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' LI	D00062	✓		✓		
"FR"49+00	1.20, 209.17' LI	D00062		✓		✓	
"FR"49+30	1.20, 207.96' LI	D00063	✓		✓		
"FR"49+60	1.21, 191.63' LI	D00063		✓		✓	
"L"65+00	1.03, 41.85' LI	D00064	✓		✓		
"L"72+00	1.17, 43.49' LI	D00064		✓		✓	
"L"67+75	1.08, 42.67' RI	D00065	✓		✓		
"L"71+50	1.15, 53.79' RI	D00065		✓		✓	
"L"72+10	1.17, 53.78' RI	D00066	✓		✓		
"L"73+20	1.19, 53.28' RI	D00066		✓		✓	
"L"72+70	1.18, 43.55' LI	D00067	✓		✓		
"L"73+40	1.19, 43.81' LI	D00067		✓		✓	
"L"75+28	1.23, 67.16' LI	D00068					✓
"P"9+20	1.19, 900.65' RI	D00069					✓
"W"8+80	1.21, 121.87' LI	D00070	✓		✓		
"W"9+20	1.21, 83.25' LI	D00070		✓		✓	

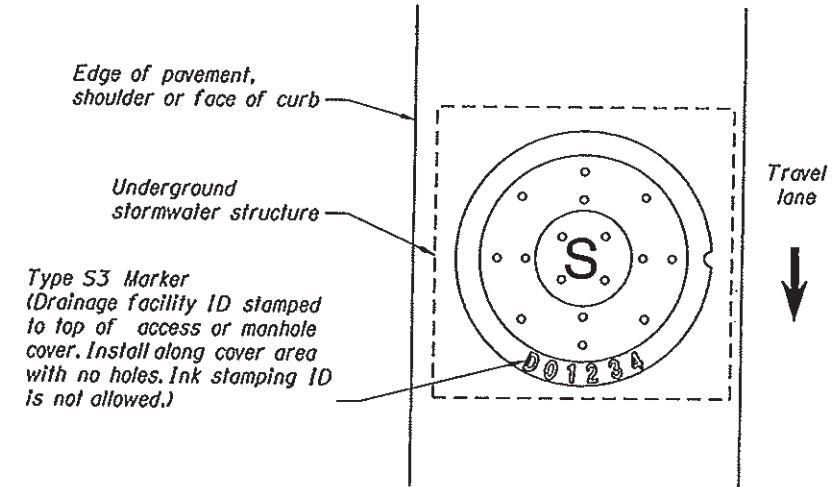
✓ Check where appropriate
Red = Beginning of facility
Green = End of facility

NOTES:

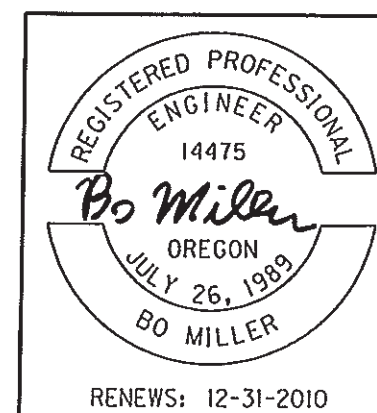
- Stormwater Facility Field Marker Type S1:**
- See Standard Drawing TM570 for Type 2 flexible plastic post dimensions. Do not mount reflective sheathing to flexible plastic post.
 - A red Type S1 marker is used to mark the start of a stormwater facility maintenance area. A green Type S1 marker is used to mark the end of a stormwater facility maintenance area.
 - Place 4 to 6 feet from edge of pavement or face of curb.
 - See marker table for installation locations.
- Stormwater Facility Field Marker Type S2:**
- 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
 - Steel Posts:
 - See Standard Drawing TM571 for Type 1U steel post dimensions
- Stormwater Facility Field Marker Type S3:**
- The top of access or manhole cover shall be stamped with the drainage facility ID. Ink stamping ID is not allowed.



TYPE S1 & S2 MARKERS INSTALLATION DETAIL



TYPE S3 MARKER INSTALLATION DETAIL



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 - Tundra Mortensen Drafted By - Jeff Larson	
STORMWATER DETAILS	SHEET NO. GJ-9