OPERATION & MAINTENANCE MANUAL

DFI No. D00068
Facility Type: Bioretention Cell

June 2016

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APPENDIX A: **Operational Plan and Profile Drawing**

APPENDIX B: **ODOT Project Plan Sheets**

1. Identification

Drainage Facility ID (DFI):	D00068
Facility Type:	Bioretention Cell
Construction Drawings:	(V-File Number) 44V-024
Location:	District: 4
	Highway Number: 210
	Mile Post: 1.21
	Description: The bioretention cell is located adjacent to roadway embankment on the northeast corner of highway 210 (OR-34) and the Wolcott Road/Peoria Road intersection. The diversion manhole is located 68 feet north of the highway centerline and 91 feet east of the Wolcott Road centerline.

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:	2011
Contractor:	R & R Construction

4. Storm Drain System and Facility Overview

A bioretention facility is an above ground facility that is designed to capture stormwater runoff and infiltrate it through a water quality mix to remove pollutants through a variety of physical, biological and chemical treatment processes. Stormwater runoff is piped in by way of stormwater catch basins and piping networks. The designer may incorporate an auxiliary outlet or high flow bypass to the inlet piping but the design is typically an online system that discharges all water into the ground.

The bioretention cell is located adjacent to roadway embankment on the northeast corner of highway 210 (OR-34) and the Wolcott Road/Peoria Road intersection.

This facility is an offline facility with a built in diversion manhole which bypasses flows above the facility's capacity. Roadway, parking lot, and landscaped stormwater runoff is collected in sixteen inlets distributed at the intersection of the highway 210 (OR-34) with Peoria and Wolcott Roads. The flow is piped to the diversion manhole, as shown in the Operational Plan and Profile Drawings in Appendix A. The diversion manhole (Photo 2) directs stormwater runoff from smaller, more frequent storms and the initial runoff from larger storms to the

biofiltration cell where it infiltration through a water quality mix and into the ground. The excess stormwater runoff from less frequent, larger storms passes over a weir (Photo 3) in the diversion manhole and is directed to the facility outfall and into the adjacent roadside ditch without receiving treatment. The facility also has a built in auxiliary outlet to bypass flow past the infiltration cell and into the facility outfall. Photo 2 shows the diversion manhole. Photo 3 shows the diversion weir. The ODOT Project Plans can be found in Appendix B.

Treatment is done when the runoff percolates down through the water quality mix and into the subsurface drain. The pollutants are removed as the stormwater passes through the water quality mix, which is made up primarily of sandy soils blended with a percentage of composted material. The treated water collects in the subsurface drain which conveys the flow to the outfall. The bioretention cell is shown in Photo 3. The bioretention cell's Operational Plan and Profile are located in Appendix A.

The outfall is a sloped pipe discharging into an adjacent roadside ditch, eventually discharging into the Willamette River (Photo 5). Discharges through this outfall are shown in Appendix A.

A. Maintenance equipment access:
The facility can be accessed for maintenance from the north roadway shoulder of highway 210 (OR-34) and the east roadway shoulder of Wolcott Road. The embankment slopes between the roadways and the facility are four units horizontal to one unit vertical. Maintenance equipment can park on these slopes near the facility (Photo 5). 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 not allowed within 3 feet of cell edges. Only foot traffic is allowed within the bioretention cell and on the cell banks.

C. Special Features:
☒ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

Photo 1 Facility Footprint (a) Looking South or Upstream (taken April 2016)

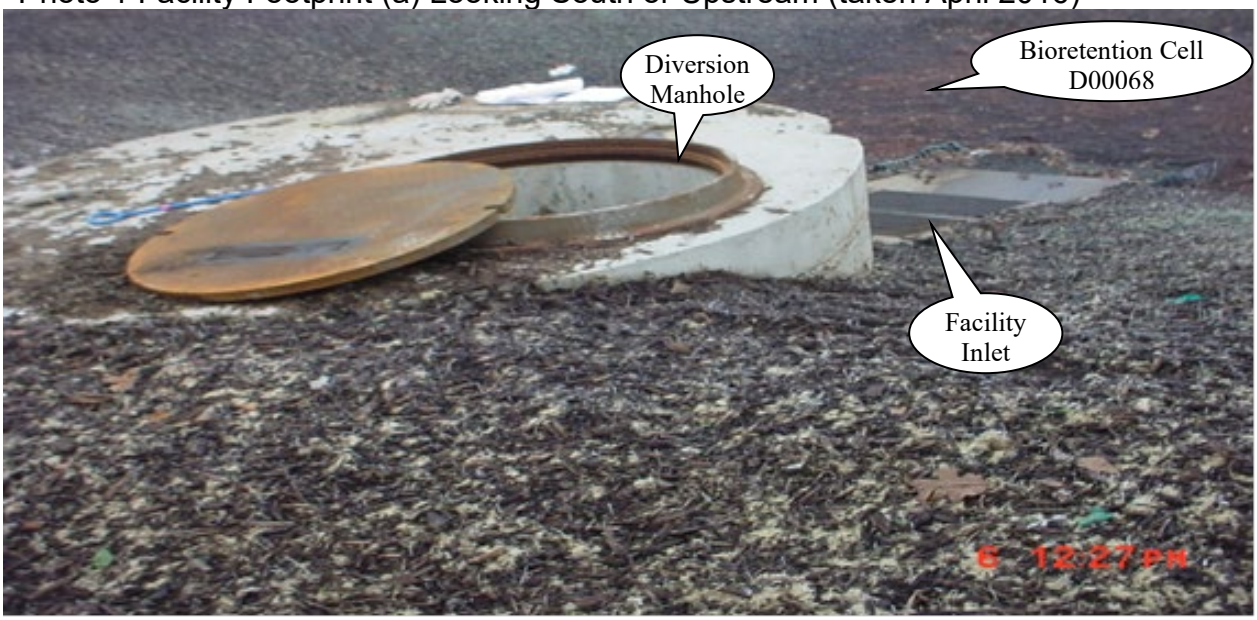


Photo 2: Diversion Manhole, Facility Inlet Looking North or Downstream (taken April 2016)

Photo 3: Diversion Manhole Weir (Taken December 2011)

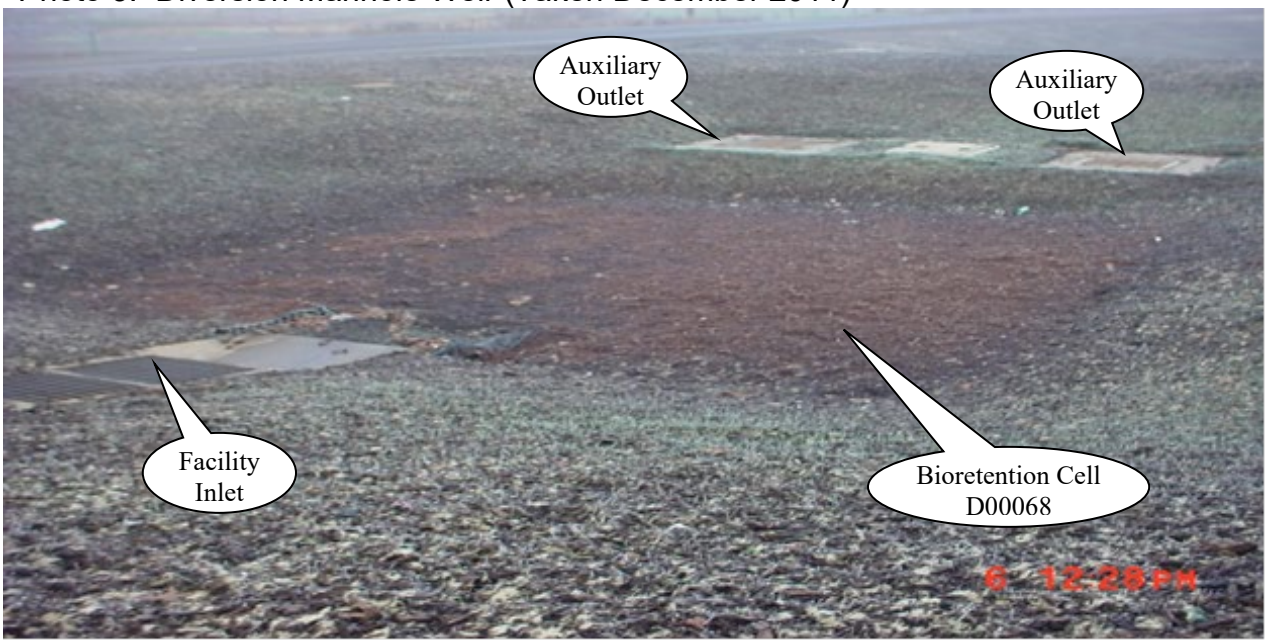


Photo 4: Facility Footprint (b) Looking North or Downstream (Taken December 2011)

Photo 5: Facility Outlet (Taken December 2011)

Photo 5: Embankment Slopes near Facility or Decreasing Mileage
(Take December 2011)

Photo 6: Looking East or Increasing Mileage (Taken Apirl 2016)

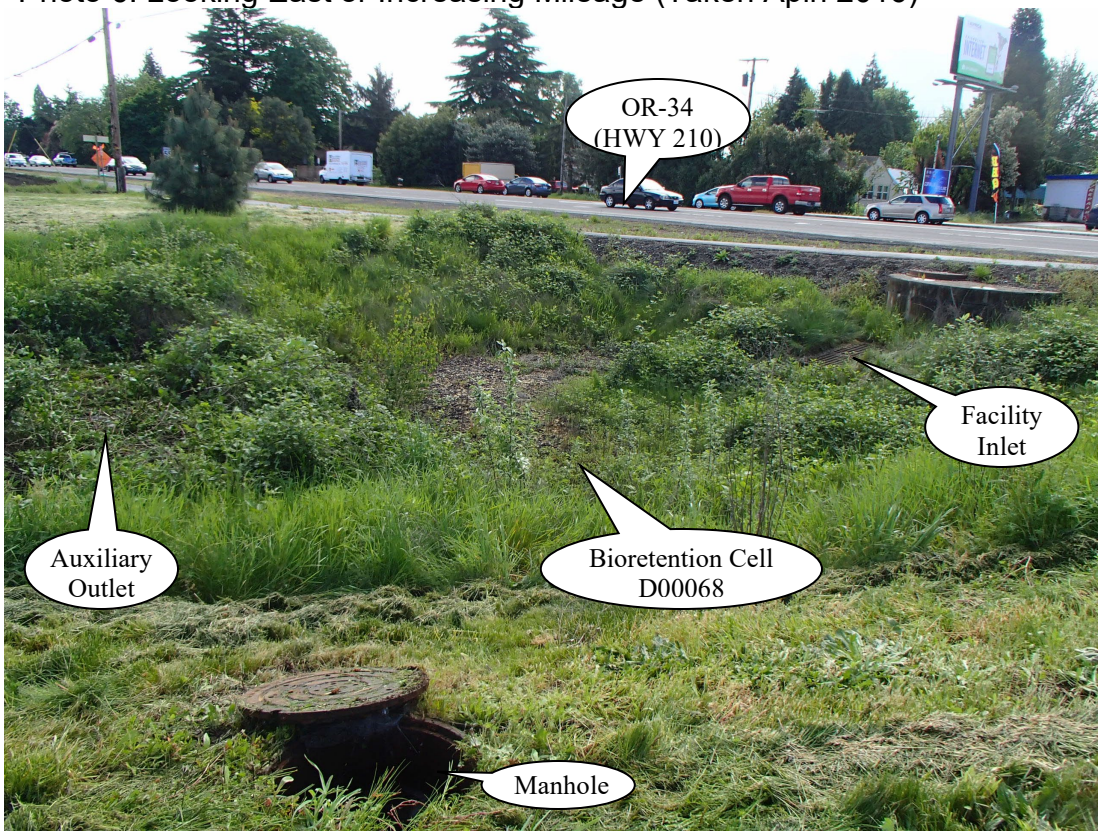


Photo 7: Facility Footprint (c) Looking Southwest

5. Facility Haz Mat Spill Feature

Spill prevention is important to the successful operation of a stormwater management system. Prevention measures shall be taken at all times when handling substances that contaminate water. Should a spill occur, immediate attention is required and corrective measures shall be enacted as part of the response to control the spill.

A small spill can be contained inside the diversion manhole before it enters the bioretention cell. The absorption or containment media is placed in the cross-hatched area shown in Appendix A. The bioretention cell can be used to contain a larger Haz Mat Spill by blocking the facilities outlets. However, the contaminated material will have to be removed and disposed of properly and the facility will have to be reconstructed as the ODOT Project Plans show in Appendix B. The outflow from the cell should be blocked at the location shown in the Operational Plan and Profile Sheets located in Appendix A.

6. Auxiliary Outlets (Cell Overflow)

Auxiliary outlets are provided if the water depth in the cell exceeds one foot. The outlets grates are shown in Appendix A and at the far edge of the cell as shown in Photo 3.

The auxiliary outlets for this facility are:

☒ Designed into facility

☐ Other, as noted below:

The facility's auxiliary outlet consists of two catch basin and sloped outfall pipe. The catch basins are placed so that water spills into them as the facility infiltration capacity is overcome by high flow volumes.

7. Maintenance Requirements

Routine maintenance tables 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

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 or biofiltration swales)**
☐ **Table 4 (water quality filter strips)**
☐ **Table 5 (water quality bioslopes)**
☐ **Table 6 (detention vault)**
☐ **Table 7 (detention tank)**
☐ **Appendix C (proprietary structure)**
☒ **Special Maintenance actions:**

The cell bottom was covered with bark mulch during construction. Local plants will colonize the cell bottom over time. This vegetation is acceptable. Any trees or bushes should be removed and the foliage should be trimmed to 6-inch height at annual or shorter intervals. Exposed water quality mix should be covered by 3 inches of bark mulch, as needed, at annual or shorter intervals.

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	(503) 986-2647
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

- **Operational Plan and Profile Drawing**

Water Quality Bioslope
DFI D00062

+/- 950'

Water Quality Bioslope
DFI D00064

+/- 634'

+/- 30'

WQ Bioslope
DFI D00063

WQ Bioretention Cell
DFI D00068

Water Quality Bioretention Cell
DFI D00068

EOP

Frontage Rd

EOP

Ditch

EOP
Westbound lanes

OR-34; HWY 210; Corvalis-Lebanon

Eastbound lanes

EOP

12" Conc.

U T FO

+/- 45'

NE Walcott St

WQ Bioslope
DFI D00070

40" x 64"
Arch CMP's

12"-125'

12"-21'

12"-22'

12"-16'

18" Pipe

Granular Backfill Material

6" Perferated Surface Drain Pipes (3)

12" Pipe

12"-26'

12"-14'

12"-15'

12"-118'

12"-56'

SE Peoria Rd

WQ Bioslope
DFI D00066

+/- 110'

Water Quality Bioslope
DFI D00065

+/- 375'

PLAN
N.T.S.

N

WQ Bioretention Cell
DFI D00068

M.P. 1.23

Ⓑ

Ⓐ

6' 6' 4' 22' 12' 3.8'

12' 20' 12'

18" of Media Filter Drain Mix
(Ecology Mix)

4" bark mulch

Facility Surface

Sl. 4:1

18"

8"

Facility Bottom
Drainage Geotexile, type 1

SECTION B-B
N.T.S.

Large Manhole Modified to
be diversion manhole

Type G-2MA

Design 150% of 2 year, 24 hour storm

Type M-O inlet at 0% grade

Do not seed area cover
with 4" bark mulch

6'x3'x3' gabion basket filled with
4" to 10" graded rock

Top of Facility

18"

Bottom of Facility

Drainage Geotexile, type 1

18" of Media Filter Dain Mix
(Ecology Mix)

6" Perferated Surface Drain Pipes (3)

Granular Drain Backfill Material

SECTION A-A
N.T.S.

LEGEND:

- Manhole
- Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Rip Rap
- Media Filter Drain Mix (Ecology Mix)
- Granular Drain Backfill Material
- Pavement / Facility Flow Path
- Shoulder Aggregate
- Existing Soil
- Vegetation
- Ⓐ Facility Inlet
- Ⓑ Facility Outlet

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Scott Sooter

Drafted By: Scott Sooter

DFI D00068
MAINTENANCE DISTRICT 04 HWY 210
WATER QUALITY BIORETENTION CELL
HIGHWAY MP 1.23
LINN COUNTY

DFI_D00068.dgn

Appendix B

Content:

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

44V-24

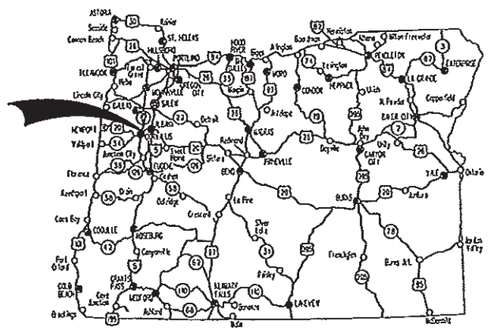
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.
1A-2	Std. Drg. Nos.

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

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

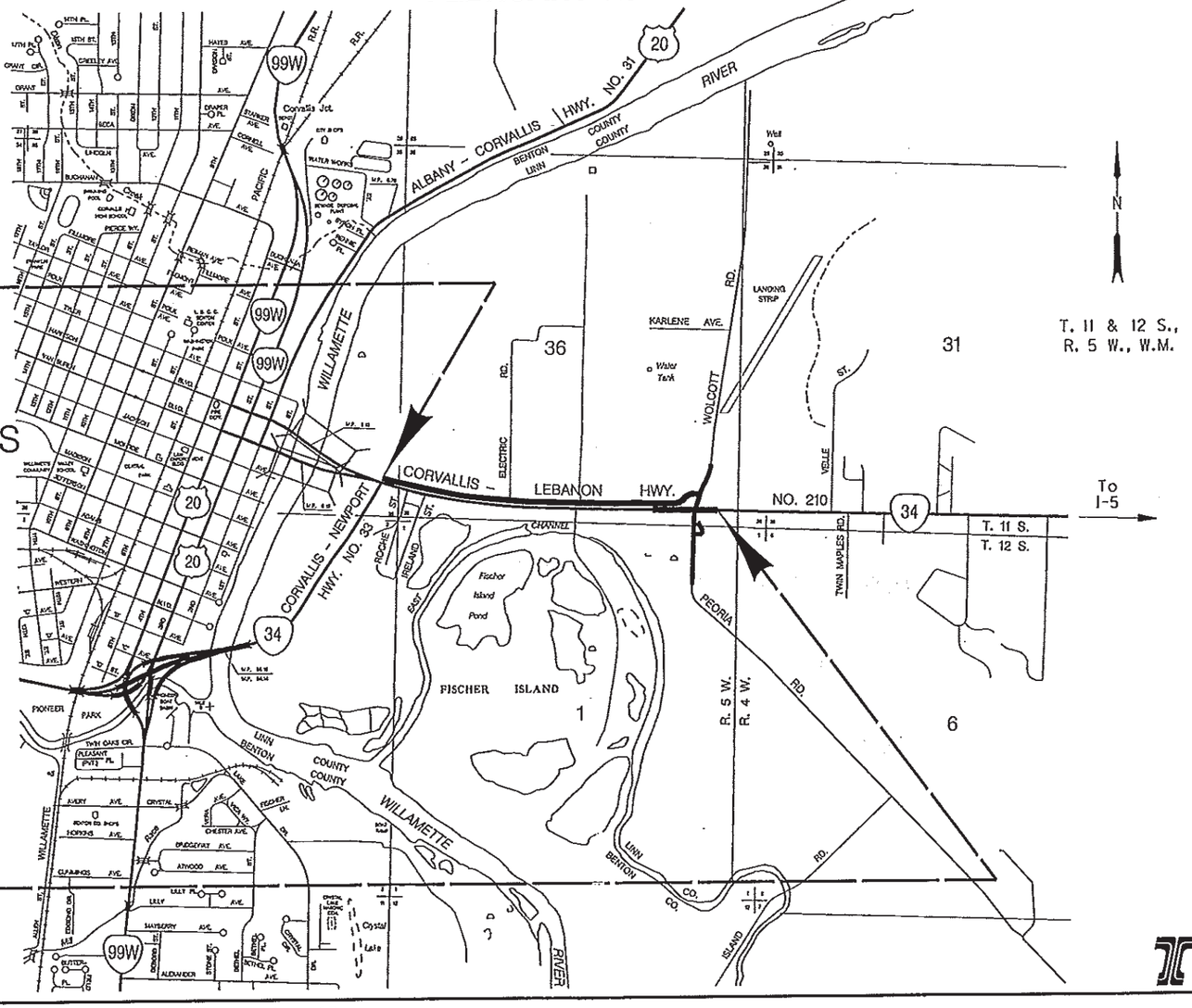


Overall Length Of Project - 0.92 Miles

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

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



T. 11 & 12 S.,
R. 5 W., W.M.

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

ORIGINAL

NOT REVISED AS CONSTRUCTED

RAY CRANSTON, P.L.S.

DATE 2-14-2012

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

PE000743

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

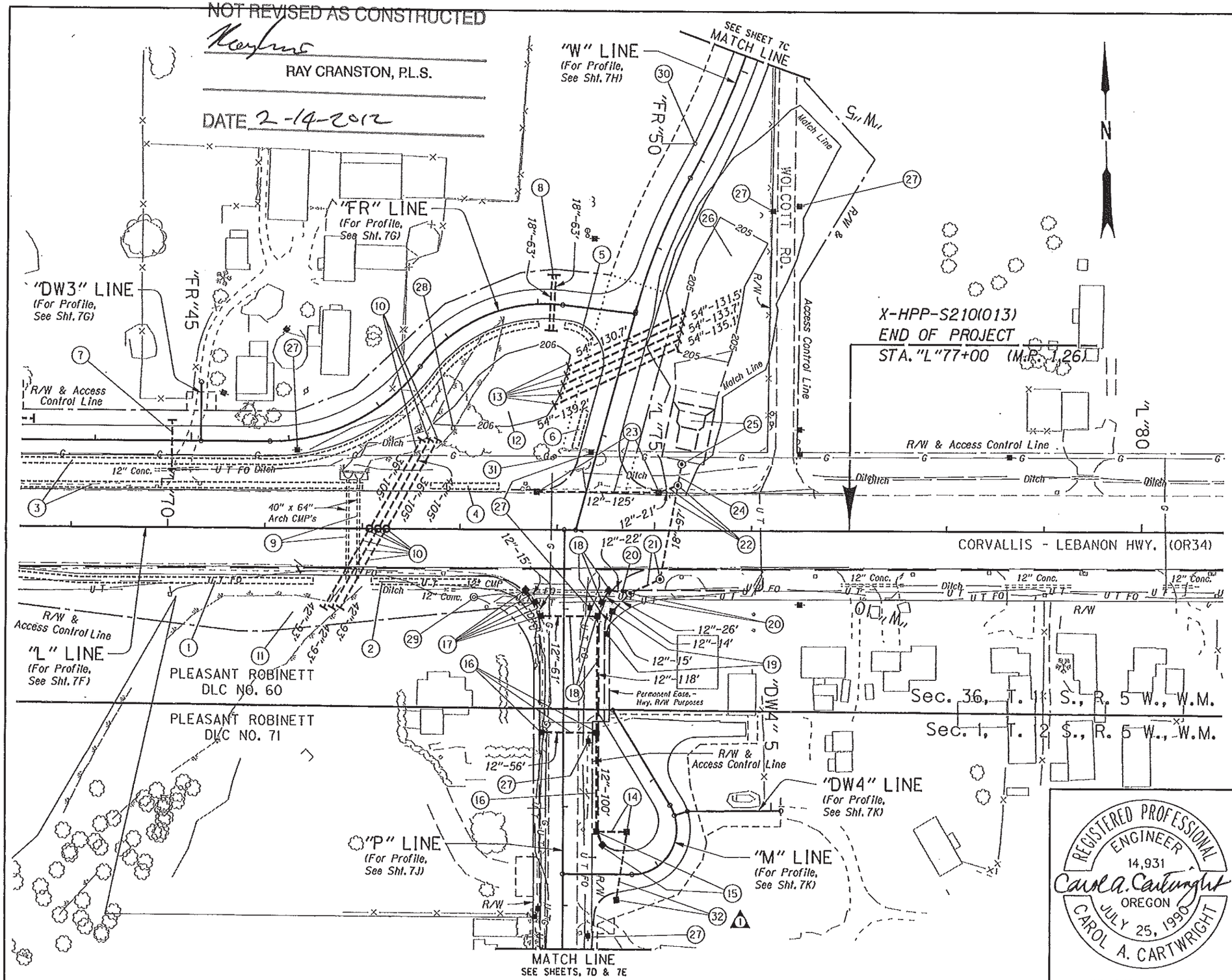
1/263

NOT REVISED AS CONSTRUCTED

Ray Cranston

RAY CRANSTON, P.L.S.

DATE 2-14-2012



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

SHEET NO. 7B

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

REVISED AS CONSTRUCTED

RAY CRANSTON, P.L.S.

DATE 2-14-2012

(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)

Left in Place
Not Necessary

(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

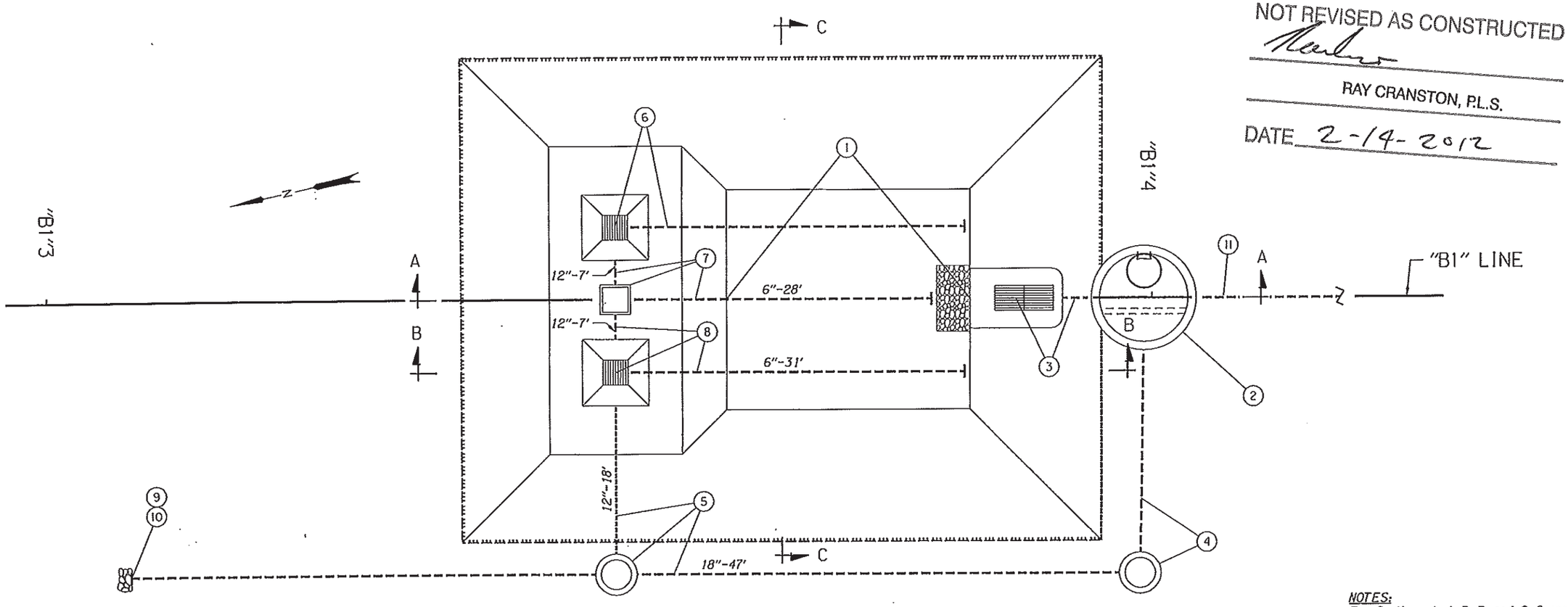
OR34: ROCHE STREET - WOLCOTT ROAD SEC.
CORVALLIS - LEBANON HIGHWAY
LINN COUNTY

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

NOTES

SHEET NO. 7B-2

NOT REVISED AS CONSTRUCTED
RAY CRANSTON, P.L.S.
DATE 2-14-2012



NORTH CELL

NOTES:
For Sections A-A, B-B and C-C, see sht. GJ-3.

For Section D-D, see sht. GJ-4.

For "B1" alignment data, see sht. GN.

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

STORMWATER BIORETENTION CELL PLAN

SHEET NO. GJ-2

NOT REVISED AS CONSTRUCTED

RAY CRANSTON, P.L.S.

DATE 2-14-2012

(1) Sta. "B1"3+61.50 to Sta. "B1"3+83.50
Const. bioretention cell
Cell bottom, south end El. 211.00
Cell bottom, north end El. 211.00
(For details, see shts. GJ-3 & GJ-8)

(2) Sta. "B1"3+99.00
Const. large manhole, modified to be diversion manhole 96" dia.
Lid El. = 216.63
18" invert S.F.L. El. = 211.05
12" invert N.F.L. El. = 211.05
18" invert W.F.L. El. = 211.05
(For details, see shts. GJ-3, GJ-4 & GJ-9)
(See dwg. nos. RD346 & RD356)

(3) Sta. "B1"3+83.50
Const. type "M-0" inlet
Const. 6' x 3' x 3' gabion
12" invert El. = 211.00
Inst. 12" storm sewer pipe - 11'
5' depth
Grade = 0.71%
(See dwg. no. RD368)

(4) Sta. "B1"3+99.00, 25.0' Rt.
Const. shallow manhole
Lid El. = 215.00
18" invert E.F.L. El. = 210.93
18" invert N.F.L. El. = 210.93
Inst. 18" storm sewer pipe - 25'
5' depth
Grade = 0.50%
(See dwg. no. RD342)

(5) Sta. "B1"3+51.50, 25.00' Rt.
Const. manhole
Lid El. = 215.00
18" invert N.F.L. El. = 207.91
12" invert E.F.L. El. = 207.91
18" invert S.F.L. El. = 210.69
Inst. 18" storm sewer pipe - 47'
5' depth
Grade = 0.50%
Inst. 12" storm sewer pipe - 18'
10' depth
Grade = 0.50%
(See dwg. no. RD336)

(6) Sta. "B1"3+51.50, 6.6' Lt.
Const. type "G-2MA" inlet
Rim El. = 212.00
Grate El. = 211.87
6" invert S.F.L. El. = 208.00
12" invert W.F.L. El. = 208.00
Inst. 6" perf. drain pipe - 31'
(See dwg. no. RD364)

(7) Sta. "B1"3+51.50
Const. type "B" inlet
Top El. = 212.00
6" invert S.F.L. El. = 208.00
12" invert W.F.L. El. = 208.00
Inst. 6" perf. drain pipe - 28'
Inst. 12" storm sewer pipe - 7'
5' depth
Grade = 0%
(See dwg. no. RD368)

(8) Sta. "B1"3+51.50, 6.6' Rt.
Const. type "G-2MA" inlet
Rim El. = 212.00
Grate El. = 211.87
6" invert S.F.L. El. = 208.00
12" invert E.F.L. El. = 208.00
12" invert W.F.L. El. = 208.00
Inst. 6" perf. drain pipe - 31'
Inst. 12" storm sewer pipe - 7'
5' depth
Grade = 0%
(See dwg. no. RD364)

(9) Sta. "B1"3+07.50, 25.00' Rt.
Inst. 18" storm sewer pipe - 44'
10' depth
Grade = 0.50%
18" invert S.F.L. El. = 207.69
Const. slope end
(See dwg. no. RD316)

(10) Const. embankment protection
loose riprap (class 50) - 1 cu. yd.
(See dwg. no. RD317)

(11) See sht. 7B-2, note 24
Inst. 18" sew. pipe

REGISTERED PROFESSIONAL ENGINEER
14475
Bo Miller
OREGON
JULY 26, 1989
BO MILLER

RENEWS: 12-31-2010

OREGON DEPARTMENT OF TRANSPORTATION

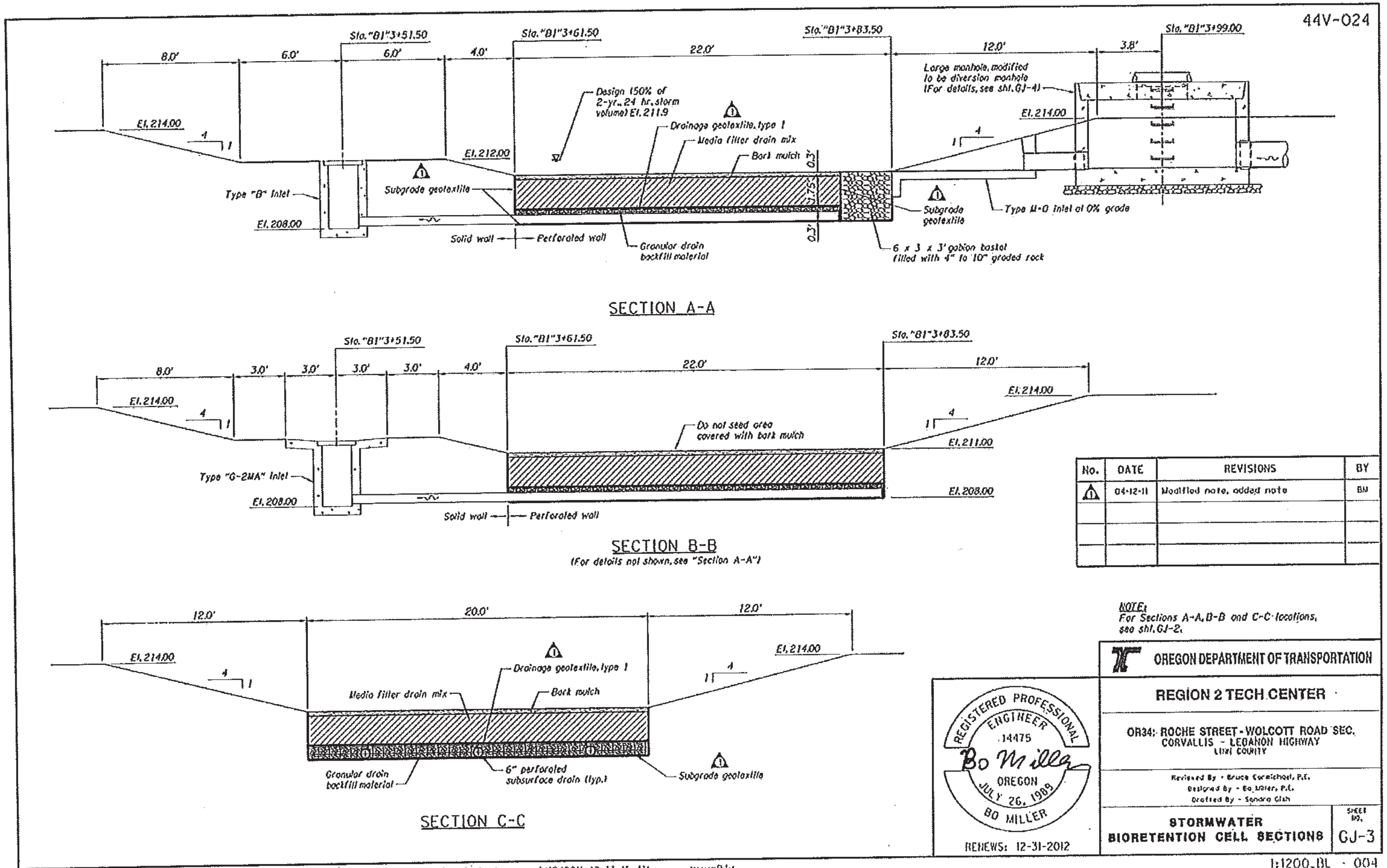
REGION 2 TECH CENTER

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

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

STORMWATER BIORETENTION CELL NOTES

SHEET NO. GJ-2A

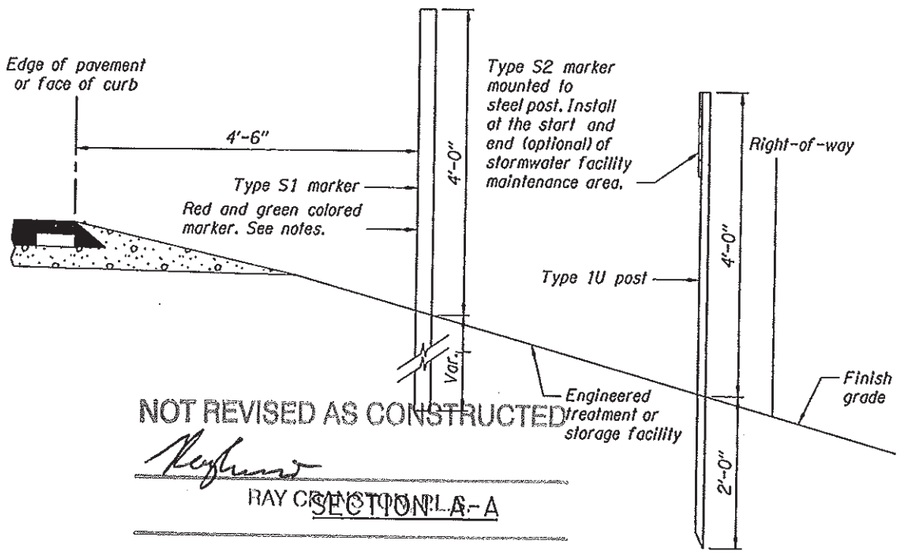

44V-024
SECTION A-A
Sta. "B1"3+51.50
Sta. "B1"3+61.50
Sta. "B1"3+83.50
Sta. "B1"3+99.00
8.0'
6.0'
6.0'
4.0'
22.0'
12.0'
3.8'
El. 214.00
El. 212.00
El. 208.00
Type "B" Inlet
Subgrade geotextile
Design (50% of 2-yr., 24 hr. storm volume) El. 211.9
Drainage geotextile, type 1
Media filter drain mix
Bark mulch
Large manhole, modified to be diversion manhole (For details, see shl. GJ-4)
Solid wall
Perforated wall
Granular drain backfill material
6 x 3 x 3' gabion basket filled with 4" to 10" graded rock
Type M-D inlet at 0% grade
SECTION B-B
(For details not shown, see "Section A-A")
Sta. "B1"3+51.50
Sta. "B1"3+61.50
Sta. "B1"3+83.50
8.0'
3.0'
3.0'
3.0'
3.0'
4.0'
22.0'
12.0'
El. 214.00
El. 211.00
El. 208.00
Type "G-2MA" Inlet
Do not seed area covered with bark mulch
Solid wall
Perforated wall
SECTION C-C
12.0'
20.0'
12.0'
El. 214.00
Drainage geotextile, type 1
Media filter drain mix
Bark mulch
Granular drain backfill material
6" perforated subsurface drain (typ.)
Subgrade geotextile
NOTE: For Sections A-A, B-B and C-C locations, see sht. GJ-2.
No. | DATE | REVISIONS | BY
1 | 04-12-11 | Modified note, added note | BM
REGISTERED PROFESSIONAL ENGINEER 14475 OREGON JULY 26, 1985 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
STORMWATER BIORETENTION CELL SECTIONS
GJ-3
1:1200_BL - 004
4/12/2011 10:43:48 AM

REVISED AS CONSTRUCTED

RAY CRANSTON, P.L.S.

DATE 2-21-12

Attachment 1
OR34: Roche Street - Wolcott Road
C14326, CCO 01
Page 5 of 6

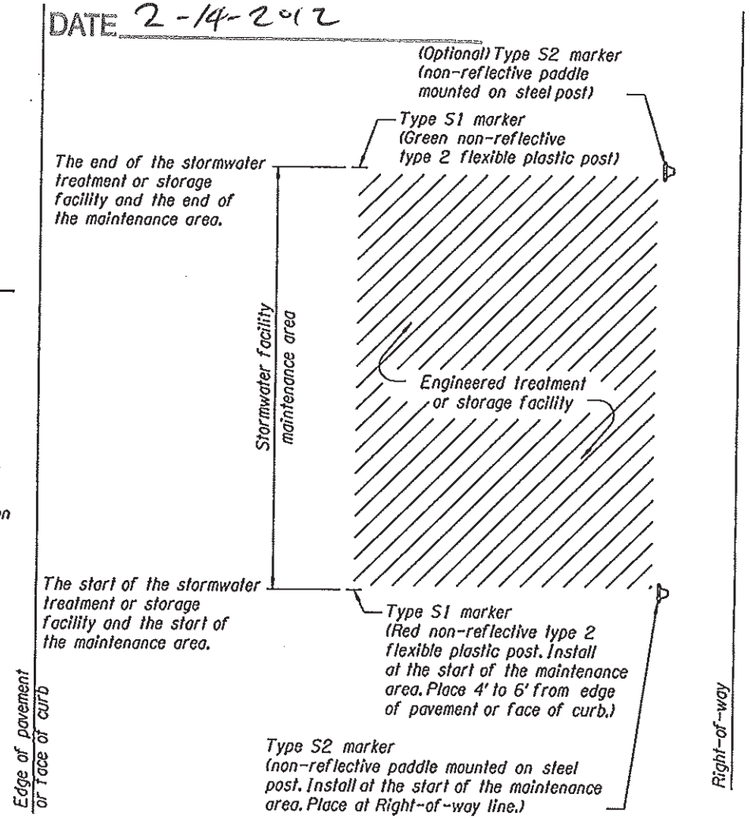


NOT REVISED AS CONSTRUCTED

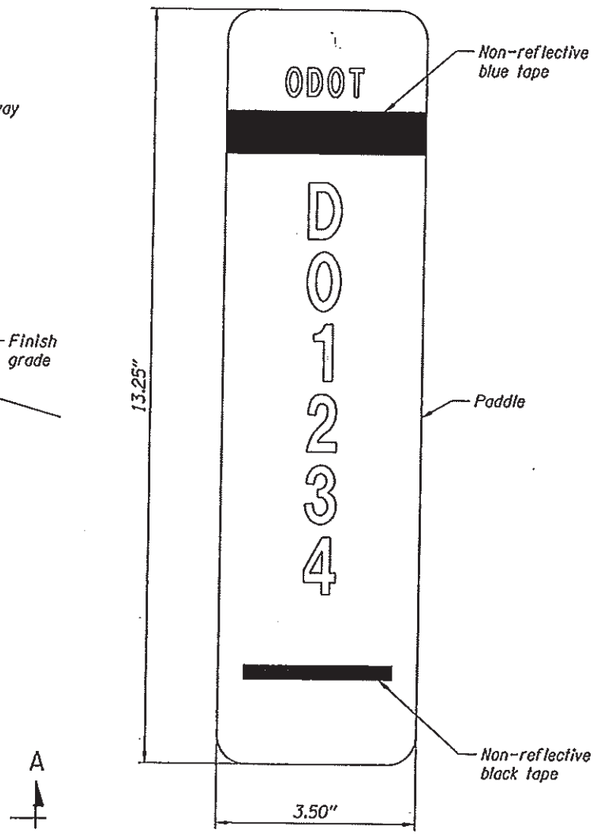
RAY CHRISTENSEN L.A.-A

SECTION

DATE 2-14-2012

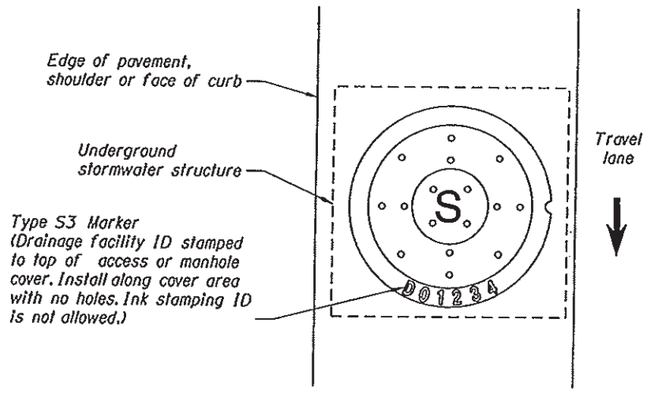


TYPE S1 & S2 MARKERS INSTALLATION DETAIL



TYPE S2 MARKER

(STATE SUPPLIED ITEM)



TYPE S3 MARKER INSTALLATION DETAIL

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	D00066	✓		✓		
"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.

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

Reviewed By - Angela J. Kargel
Designed By - Taundra Mortensen
Drafted By - Jeff Larson

STORMWATER DETAILS

SHEET NO. GJ-9