

# **OPERATION & MAINTENANCE MANUAL**

**DFI No. : D00848**  
**Facility Type: Water Quality**  
**Biofiltration Swale**



**December, 2017**

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**APPENDIX A:** Operational Plan and Profile Drawing(s)

**APPENDIX B:** ODOT Project Plan Sheets

## 1. Identification

Drainage Facility ID (DFI): **D00848**  
Facility Type: Water Quality Biofiltration Swale  
Construction Drawings: 47V-127  
Location: District: 08  
Highway No.: 270  
Mile Post: 0.14/0.16  
Description: This facility is located along the shoulder of Lake of the Woods Highway.

## 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: DeLanie Cutsforth – Region 3 Tech Center, White City, (541) 774-6326

Facility construction: 2016  
Contractor: N/A

## 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.

This facility is located along the shoulder of Lake of the Woods Highway (No. 270). Access for this facility is available from the shoulder. Stormwater enters the facility via roadway runoff and a series of inlets. As the water flows through the swale it is treated as it slows and spreads out within the swale before outfalling into north jack creek.

A. Maintenance equipment access:

This facility can be accessed from the shoulder of Lake of the Woods Highway.

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 water quality biofiltration swale can be used to store a volume of liquid by blocking the facility outlet through use of sandbags.

**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

There are no auxiliary outlets built into this facility. In the event that flows exceed design flows the water will overtop the swale.

## 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 the Department of Environmental Quality (DEQ). Refer to the roadwaste section of the

ODOT Maintenance Yard Environmental Management System (EMS)  
Policy and Procedures Manual for disposal options:

[http://www.oregon.gov/ODOT/Maintenance/Documents/ems\\_manual.pdf](http://www.oregon.gov/ODOT/Maintenance/Documents/ems_manual.pdf)

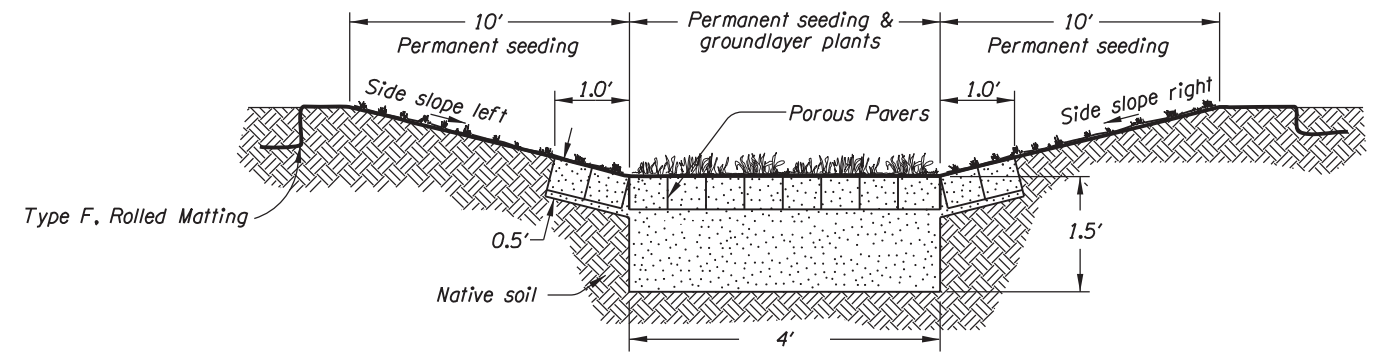
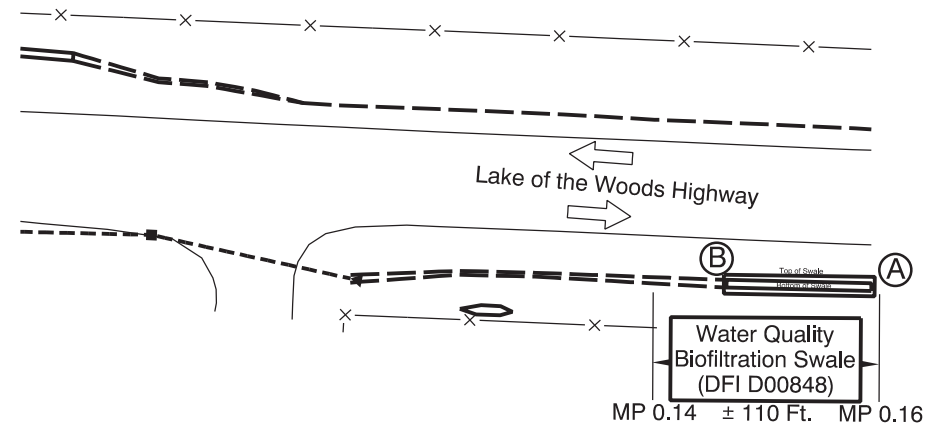
Contact any of the following for more detailed information about  
management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator	(541) 963-1590
ODEQ Northwest Region Office	(503) 229-5263

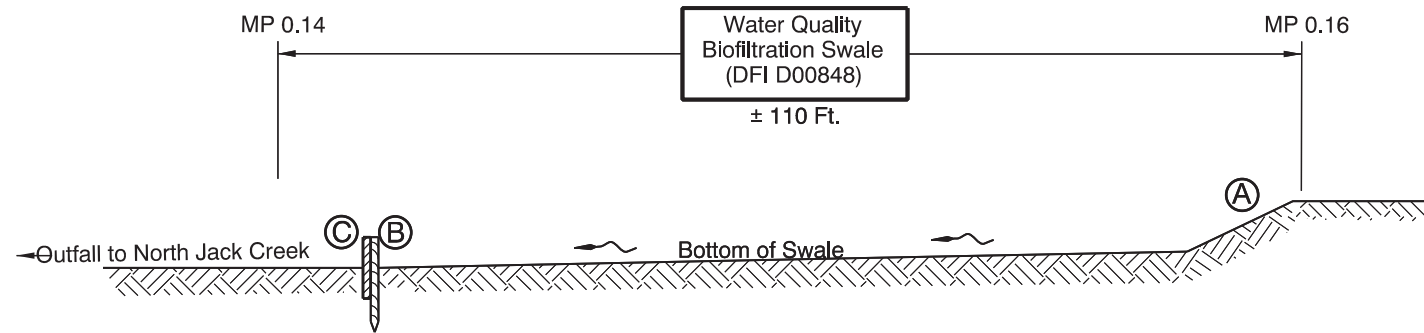
# Appendix A

## Content:

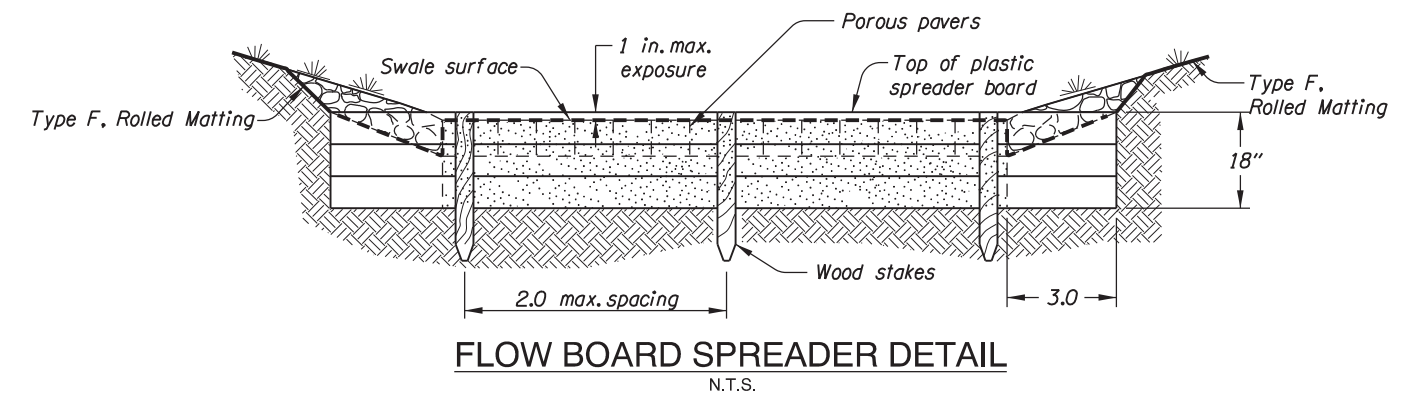
- **Operational Plan and Profile Drawing(s)**



**SECTION B-B**  
N.T.S.



**SECTION A-A**  
N.T.S.



**FLOW BOARD SPREADER DETAIL**  
N.T.S.

- LEGEND:**
- (A) Swale Inlet w/Flow Spreader Inlet
  - (B) Swale Outlet
  - (C) Flow Board Spreader
  - and/or ○ Manhole
  - and/or □
  - Storm Pipe (Facility)
  - Storm Pipe
  - ← Conveyance Direction
  - ~ Pavement / Facility Flow Path

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: T. BURRIER  
 Drafted By: T. BURRIER

**DFI D00848**  
**MAINTENANCE DISTRICT 8 HWY 270**  
**WQ BIOFILTRATION SWALE**  
 HIGHWAY MP .14 TO .16  
 COUNTY



# Appendix B

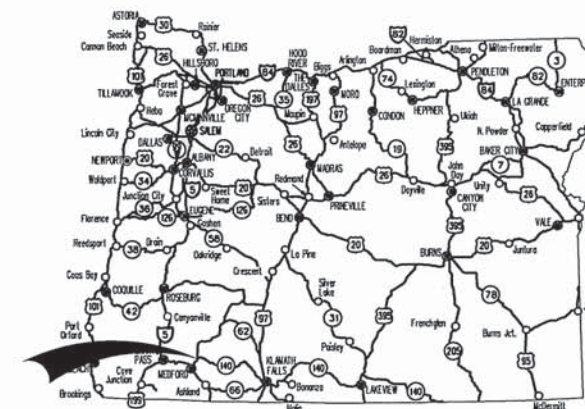
## Content:

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

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

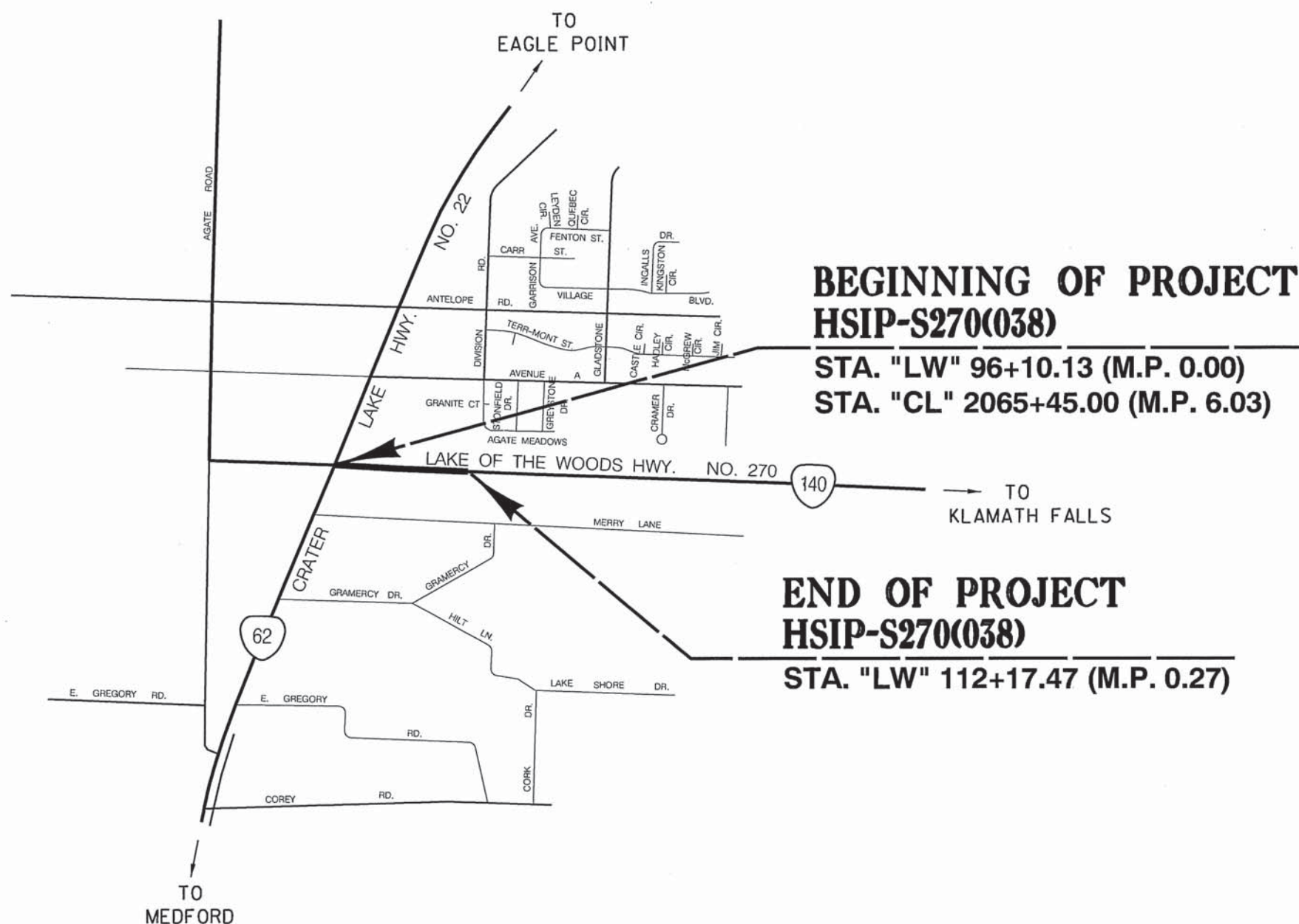
STATE OF OREGON  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT  
**PAVING & SIGNAL MODIFICATION**  
**OR62 & OR140**  
**INTERSECTION**  
**CRATER LAKE & LAKE OF THE WOODS HIGHWAY**  
JACKSON COUNTY  
DECEMBER 2014



Overall Length Of Project - 0.27 Mile

**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.)



T. 36S., R. 1W., W.M.



OREGON TRANSPORTATION COMMISSION

Catherine Mator	CHAIR
Tammy Baney	COMMISSIONER
David Lohman	COMMISSIONER
Susan Morgan	COMMISSIONER
Alando Simpson	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: *M. Thompson*  
Signature & date 10-13-2014

MARK THOMPSON, TECH. CENTER MGR.  
Print name and title

*Thomas Jones*  
Concurrence by ODOT Chief Engineer

**OR62 & OR140 INTERSECTION**  
CRATER LAKE & LAKE OF THE WOODS HIGHWAY  
JACKSON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HSIP-S270(038)	1

Standard Drg. Nos.

- RD300 - Trench Backfill, Bedding, Pipe Zone And Mult. Installations
- RD302 - Street cut
- RD316 - Sloped Ends For Metal Pipe
- RD317 - Culvert Embankment Protection
- RD318 - Sloped Ends For Concrete Pipe
- RD319 - Miscellaneous Culvert Details
- RD320 - Paved End Slope For Culverts 60" Maximum Pipe Size
- RD326 - Coupling Bands For Corrugated Metal Pipe Types A, B, D, & E
- RD327 - Coupling Bands For Corrugated Metal Pipe Types F, J, & K
- RD336 - Standard Storm Sewer Manhole
- RD346 - Large Precast Manhole
- RD354 - Carry Through Manhole-Storm
- RD356 - Manhole Covers And Frames
- RD364 - Concrete Inlets Type G-1, G-2, G-2M, & G-2MA
- RD365 - Frames & Grates For Concrete Inlets
- RD371 - Concrete Inlet Base Type CG-3
- RD372 - Concrete Inlet Top, Option 1, Type CG-3
- RD380 - Fill Height Tables For Aluminum & Steel Corrugated Pipe
- RD384 - Fill Height Tables For Aluminum & Steel Spiral Rib Pipe
- RD386 - Fill Height Tables For Circular Concrete Pipe
- RD388 - Fill Height Tables For PVC Pipe
- RD390 - Fill Height Tables For Corrugated HDPE Pipe
- RD393 - Fill Height Tables For Polypropylene Pipe
  
- RD610 - Asphalt Pavement Details
  
- RD700 - Curbs
- RD715 - Approaches And Non-Sidewalk Driveways
- RD720 - Sidewalks
- RD755 - Sidewalk Ramp Details
- RD756 - Sidewalk Ramp Placement Options Curb Radii  $\leq 15'$
- RD757 - Sidewalk Ramp Placement Options Curb Radii  $> 15'$
- RD759 - Truncated Dome Detectable Warning Surface Details & Locations
- RD770 - Pedestrian Handrail
- RD771 - Pedestrian Handrail Details
  
- RD1005 - Check Dams
- RD1010 - Inlet Protection (Type 1, 2 & 3)
- RD1035 - Sediment Barrier (Type 3)
- RD1040 - Sediment Fence, Supported; Sediment Fence, Unsupported
- RD1055 - Matting
  
- TM200 - Sign Installation Details
- TM201 - Miscellaneous Sign Placement Details
- TM211 - Sign Details US & Interstate Route Shields
- TM212 - Signing Details Oregon Route Signs
- TM221 - Signing Details Milepost Markers
- TM222 - Installation Details Milepost Markers Posts
- TM223 - Conventional Roads Directional Sign Layout Street Name Signs
- TM230 - Mounting Details For Removable Legend (4" Through 8" Letters/Numbers)
- TM233 - Mounting Details For Removable Legend (Various Arrow Sizes)

- TM450 - Mast Arm Pole Details
- TM455 - Temporary Signal Details
- TM457 - Vehicle, Pedestrian Signal And Push Button Mounting Option Details
- TM458 - Pedestrian Ramp Placement Details
- TM460 - Vehicle Signal Details
- TM462 - Adjustable Signal Head Mounting Details
- TM465 - Overhead Sign, Fire Preemption And Photoelectronic Control Details
- TM467 - Pedestrian Signal And Pedestrian Push Button Details
- TM470 - Color Code Charts
- TM472 - Traffic Signal Junction Boxes/Hand Holes
- TM482 - Controller Cabinet And Foundation Details
- TM485 - Service Cabinets And Service Cabinet Wiring Details
- TM488 - Terminal Cabinet Detail
  
- TM500 - Pavement Marking Standard Detail Blocks
- TM501 - Pavement Marking Standard Detail Blocks
- TM502 - Pavement Marking Standard Detail Blocks
- TM503 - Pavement Marking Standard Detail Blocks
- TM515 - Pavement Markers
- TM517 - Recessed Pavement Markers
- TM521 - Durable Pavement Markings Method "A" & Method "B" Surface & Groove Installed Non-Profiled
- TM530 - Intersection Pavement Markings (Crosswalk, Stop Bar & Bike Lane Stencil)
- TM531 - Turn Arrow Marking Details
- TM539 - Median and Left Turn Channelization Details
- TM560 - Alignment Layout: General
- TM570 - Traffic Delineators
- TM571 - Traffic Delineators Steel Post Details
- TM576 - Traffic Delineator Installation For Non-Freeways
  
- TM602 - Triangular Base Breakaway Sign Support (Multi-Directional Slip Base Design)
- TM629 - Slip Base & Fixed Base Luminaire Supports (Details & Design Criteria)
- TM635 - Breakaway Sign and Luminaire Supports (Location Guidelines)
- TM650 - Traffic Signal Supports (Details & Design Criteria)
- TM651 - Traffic Signal Supports (Notes And Reactions)
- TM652 - Traffic Signal Supports (Steel Details)
- TM653 - Traffic Signal Supports (Foundation Requirements)
- TM670 - Wood Post Sign Supports
- TM671 - 3 Second Gust Wind Speed Map
- TM675 - Extruded Aluminum Panels
- TM676 - Sign Attachments
- TM677 - Sign Mounts
- TM678 - Secondary Sign Mounting Details
- TM680 - Signal Pole Mounts
  
- TM800 - Tables, Abrupt Edge And PCMS Details
- TM810 - Temporary Pavement Markings
- TM820 - Temporary Barricades
- TM821 - Temporary Sign Supports
- TM841 - Intersection Work Zone Details
- TM842 - Signalized Intersection Details
- TM843 - Multi-Lane Signalized Intersection Details

No R/W Map

INDEX OF SHEETS, CONT.	
SHEET NO.	DESCRIPTION
2, 2A	Typical Sections
2B thru 2B-3	Details
2C thru 2C-3	Traffic Control Plan
2D	Pipe Data Sheet
3, 4	General Construction
3A	General Construction Notes
3B, 3C, 4A	Profiles
<b>GEO/HYDRO</b>	
GA, GA-2	Erosion Control
GJ, GJ-2	Storm Water Details
<b>PERMANENT PAVEMENT MARKINGS</b>	
ST thru ST-3	Striping Plan
<b>PERMANENT SIGNING</b>	
S-14811 thru S-14816	Signing Plan
<b>TRAFFIC SIGNALS</b>	
17706 thru 17716 & 18076	Signal Plans



No.	DATE	REVISIONS	BY
1	12-03-14	Added 18076, TM455, TM677	JMS

Standard Drawings located on the web at:  
[http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard\\_drawings\\_home.shtml](http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard_drawings_home.shtml)

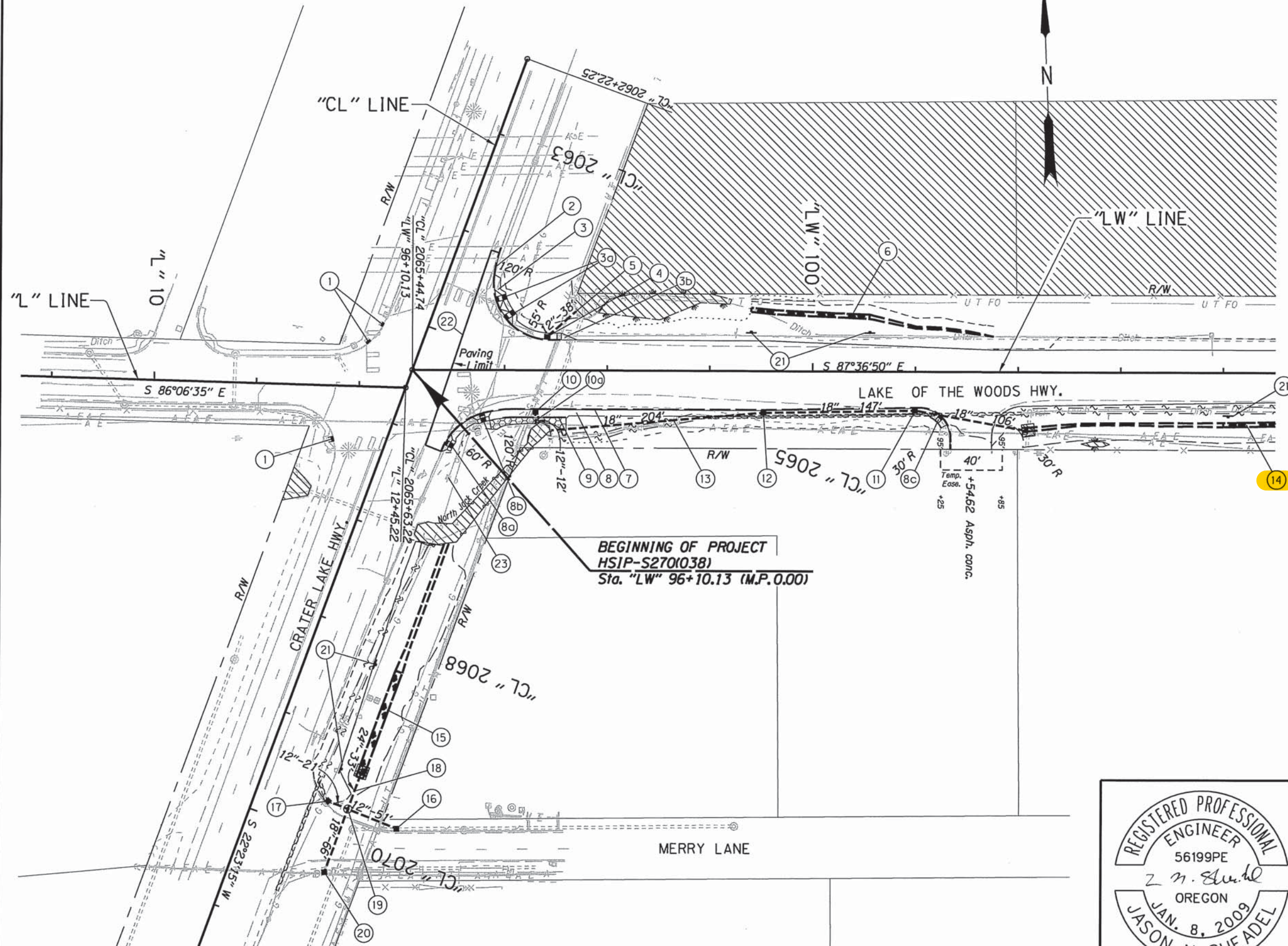
<b>OR62 &amp; OR140 INTERSECTION</b>		
CRATER LAKE & LAKE OF THE WOODS HIGHWAY JACKSON COUNTY		
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HSIP-S270(038)	1A

2/137

Sec. 20, T. 36S, R. 1W, W.M.

47V-127

See sheet 3A for General Construction Notes.  
See sheet 3B for "LW" Profile.  
See sheet 3C for "CL" Profile.



- Notes:
1. Station/Offset/Elevation callouts for type "CG-3" inlets are to top face of curb.
  2. Station/Offset/Elevation callouts for type "G2-MA" inlet and manhole are to center of structure.
  3. Station/Offset callouts for sidewalk ramps are to the center of the ramp at the back of curb.

Remove extg. pipe shown thus:

No Work/No Entry Area shown thus:

Riprap Pad shown thus:

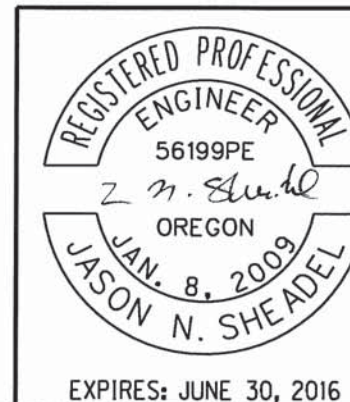
Stone Embankment shown thus:

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

**OR62 & OR140 INTERSECTION**  
CRATER LAKE & LAKE OF THE WOODS HIGHWAY  
JACKSON COUNTY

Designed By - Jason Sheadel  
Reviewed By - Brian Sheadel  
Drafted By - Judy Hardin

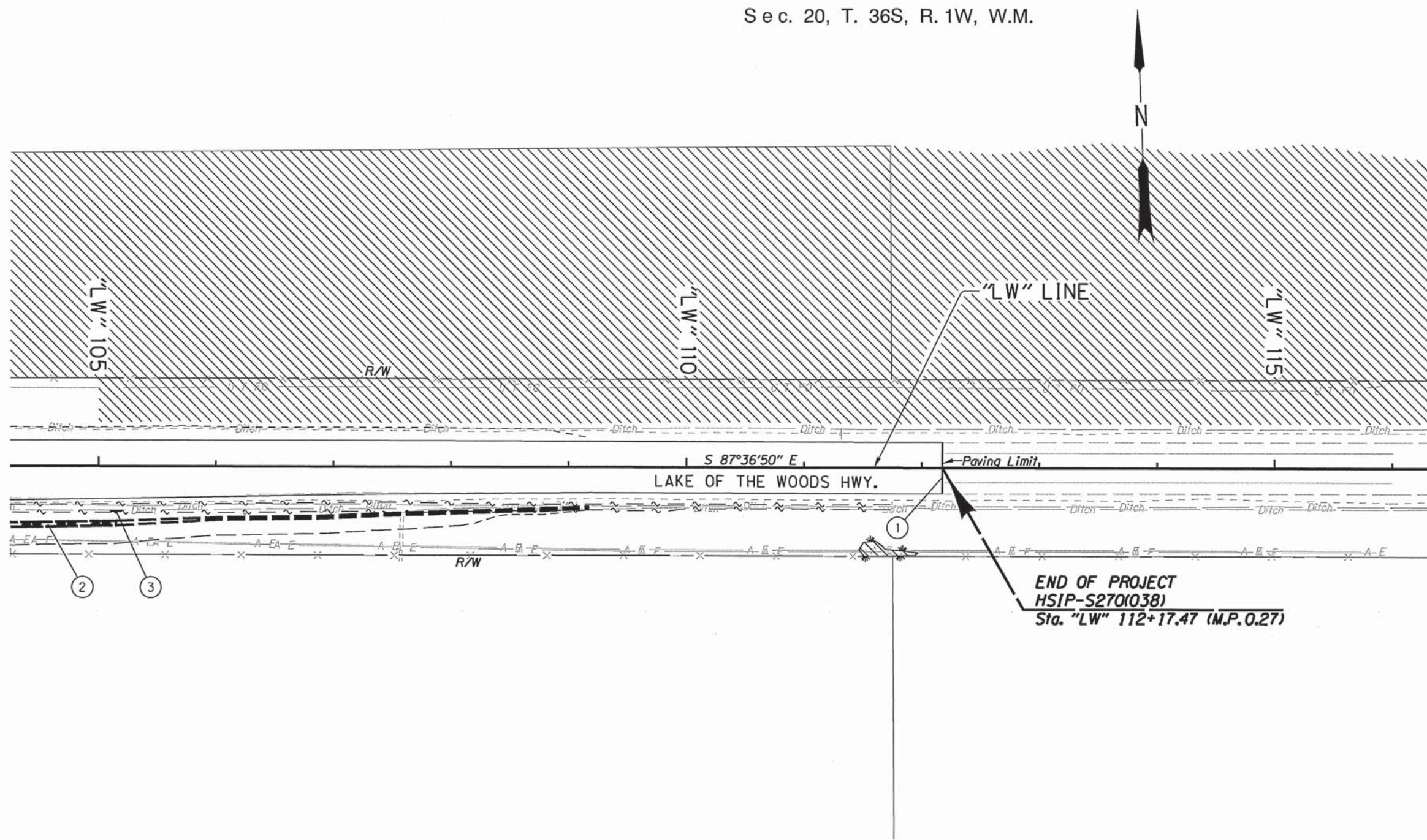


**GENERAL CONSTRUCTION** SHEET NO. **3**

Sec. 20, T. 36S, R. 1W, W.M.

47V-127

- ① Const. asphalt conc. pvmt. match
- ② Const. water quality swale "S"  
(See sh. 3a, note 14)
- ③ Inst. field facility marker, Type "S2"  
(See sh. 3A, note 21)



Note:  
No work area shown to the north of Hwy. 140  
is located just north of the extg. roadside ditch.  
No Work/No Entry Area shown thus:

OREGON DEPARTMENT OF TRANSPORTATION	
REGION 3 - TECHNICAL CENTER	
OR62 & OR140 INTERSECTION CRATER LAKE & LAKE OF THE WOODS HIGHWAY JACKSON COUNTY	
Designed By - Jason Sheadel Reviewed By - Brian Sheadel Drafted By - Judy Hardin	
<b>GENERAL CONSTRUCTION</b>	SHEET NO. <b>4</b>

REGISTERED PROFESSIONAL  
ENGINEER  
56199PE  
*Jason N. Sheadel*  
OREGON  
JAN. 8, 2009  
JASON N. SHEADEL  
EXPIRES: JUNE 30, 2016

① Remove extg. conc. sidewalk ramp landing  
Const. P.C. conc. sidewalk perpendicular ramp landing  
(See drg. nos. RD720, RD755, RD759)

② Sta. "CL" 2064+04, Lt. to Sta. "LW" 97+55, Lt.  
Const. conc. curb and gutter  
(See drg. no. RD700)

③ Sta. "CL" 2064+30, Lt. to Sta. "LW" 97+44, Lt.  
Const. P.C. conc. sidewalk

③a Sta. "CL" 2064+52, 53.4' Lt. / Sta. "LW" 97+01, 51.0' Lt.  
Const. perpendicular sidewalk ramps (Option G)  
(See drg. no. RD757)

③b Sta. "LW" 97+44, 30.0' Lt. to Sta. "LW" 97+70, 30.0' Lt.  
Const. sidewalk ramp at end of walk (Option F)  
(See drg. no. RD756)

④ Sta. "LW" 97+41, 29.6' Lt.  
Const. type "CG-3" inlet, 1309.84  
Tamperproof cover Option 1 top  
F.L. (12" out)=1304.00  
(See drg. nos. RD356, RD371, RD372, RD700)

⑤ Sta. "LW" 97+41, 32.4' Lt. to  
Sta. "LW" 97+69.3, 57.3' Lt.  
Inst. 12" storm sewer pipe - 38'  
5' depth  
Sl.=0.0774'/ft.  
F.L. (In)=1304.00  
F.L. (Out)=1301.90  
Connect to extg. box culvert wingwall  
(For details, see sht. 2B-2)  
(See drg. no. RD300)

⑥ Sta. "LW" 99+40 to Sta. "LW" 100+55, Lt.  
Const. water quality swale "N"  
(For details, see sht. GJ)

⑦ Sta. "CL" 2066+09, Lt. to Sta. "LW" 101+35, Rt.  
Const. conc. curb and gutter  
Const. curb ending at driveway  
(See drg. no. RD700)

⑧ Sta. "CL" 2066+09, Lt. to Sta. "LW" 101+31, Rt.  
Const. P.C. conc. sidewalk

⑧a Sta. "CL" 2065+99.5, 55.1' Lt.  
Const. perpendicular sidewalk ramp (Option G)

⑧b Sta. "LW" 96+78, 42.5' Rt.  
Const. perpendicular sidewalk ramp (Option G)

⑧c Sta. "LW" 101+25, 43.7' Rt.  
Const. parallel sidewalk ramp  
(See drg. no. RD755)

⑨ Sta. "LW" 96+98.5 to Sta. "LW" 97+60.0, Rt.  
Const. three rail handrail, on structure (bolt down) - 62'  
(See drg. nos. RD770, RD771)

⑩ Sta. "LW" 97+30.0, 37.5' Rt.  
Const. type "CG-3" inlet, 1309.36  
Tamperproof cover Option 1 top  
F.L. (12" out)=1304.50

⑩a Sta. "LW" 97+30.0, 40.4' Rt. to  
Sta. "LW" 97+30.7, 52.3' Rt.  
Inst. 12" storm sewer pipe - 12'  
5' depth  
Sl.=0.1667'/ft.  
F.L. (In)=1304.50  
F.L. (Out)=1302.50  
Connect to extg. box culvert wingwall  
(For details, see sht. 2B-2)

⑪ Sta. "LW" 100+99.6, 37.7' Rt. to  
Sta. "LW" 102+04.1, 56.0' Rt.  
Const. type "CG-3" inlet, 1312.04, 34.9' Rt.  
Tamperproof cover Option 1 top  
F.L. (W)=1307.0  
F.L. (E)=1307.0  
Inst. 18" storm sewer pipe - 106'  
5' depth  
Const. paved end slope (1:4) - 35 sq. ft.  
Inst. 18" sloped end section  
Inst. riprap protection pad (Class 50) - 2 C.Y.  
Sl.=0.0142'/ft.  
F.L. (In)=1308.50  
F.L. (Out)=1307.00  
(See drg. nos. RD302, RD316, RD317, RD318, RD319, RD320)  
(For details, see sht. 2B-3)

⑫ Sta. "LW" 99+52.4, 40.3' Rt. to  
Sta. "LW" 100+99.6, 37.6' Rt.  
Const. type "CG-3" inlet, 1310.66, 37.5' Rt.  
Tamperproof cover Option 1 top  
F.L. (W)=1304.90  
F.L. (E)=1304.90  
Inst. 18" storm sewer pipe - 147'  
5' depth  
Sl.=0.0142'/ft.  
F.L. (In)=1307.00  
F.L. (Out)=1304.90

⑬ Sta. "LW" 97+45.6, 58.2' Rt. to  
Sta. "LW" 99+52.4, 40.3' Rt.  
Inst. 18" storm sewer pipe - 204'  
5' depth  
Sl.=0.0142'/ft.  
F.L. (In)=1304.90  
F.L. (Out)=1302.00  
Connect to extg. box culvert wingwall  
(For details, see sht. 2B-2)

⑭ Sta. "LW" 104+00 to Sta. "LW" 105+15, Rt.  
Const. water quality swale "S"  
(For details, see sht. GJ)

⑮ Sta. "CL" 2068+25 to Sta. "CL" 2069+35, Lt.  
Const. water quality swale "CL"  
(For details, see sht. GJ)

⑯ Sta. "CL" 2069+72.0, 142.0' Lt.  
Const. type "CG-3" inlet, 1308.23 - Connect to extg. 12" pipe  
Tamperproof cover, - Option 1 top  
F.L. (In - E) - Est. 1307 (Field verify)  
F.L. (Out - W) - 1306.00  
Inst. 12" storm sewer pipe - 51'  
5' depth  
Sl.=0.0100'/ft. (to manhole note 19)

⑰ Sta. "CL" 2069+69.5, 68.2' Lt.  
Remove extg. "CG-3" inlet  
Const. type "CG-3" inlet, 1306.80 (field verify extg. curb)  
Tamperproof cover, Option 1 top  
F.L. (Out - E) - 1304.50  
Inst. 12" storm sewer pipe - 21'  
5' depth  
Sl.=0.0100'/ft. (to manhole note 19)

⑱ Sta. "CL" 2069+67.7, 90.0' Lt. to  
Sta. "CL" 2069+35, 90' Lt.  
Inst. 24" storm sewer pipe - 33'  
5' depth  
Const. paved end slope (1:4) - 35 sq. ft.  
Inst. 24" sloped end section  
Inst. riprap protection pad (Class 50) - 2 C.Y.  
Sl.=0.0050'/ft.  
F.L. (In)=1302.97  
F.L. (Out)=1302.80

⑲ Sta. "CL" 2069+67.7, 90.0' Lt. to  
Sta. "CL" 2070+33.2, 90.0' Lt.  
Const. large precast manhole, 72" - 1307.45  
Tamperproof cover  
F.L. (In - S)=1302.97  
F.L. (In - W)=1304.33  
F.L. (Out - N)=1302.97  
F.L. (In - E)=1305.49  
Inst. 18" storm sewer pipe - 66'  
5' depth  
Trench resurfacing - 23 sq. yd.  
Sl.=0.0025'/ft.  
F.L. (In)=1303.14  
F.L. (Out)=1302.97  
(See drg. nos. RD336, RD346, RD354, RD356.)

⑳ Sta. "CL" 2070+33.2, 90.0' Lt.  
Const. type "G2-MA" modified inlet, 1305.00  
w/ 12" sump  
F.L. (Out)=1303.14  
(Slope sides of G2-MA to match rock shoulder  
and ditch 1:4 side slopes)  
(See drg. nos. RD364, RD365)

㉑ Inst. field facility marker, Type "S2"  
(For location and details, see sht GJ & GJ-2)

㉒ Const. asphalt conc. pvmt. match  
(See drg. no. RD610)

㉓ Sta. "CL" 2066+31, 69' Lt.  
Remove extg. wood pole

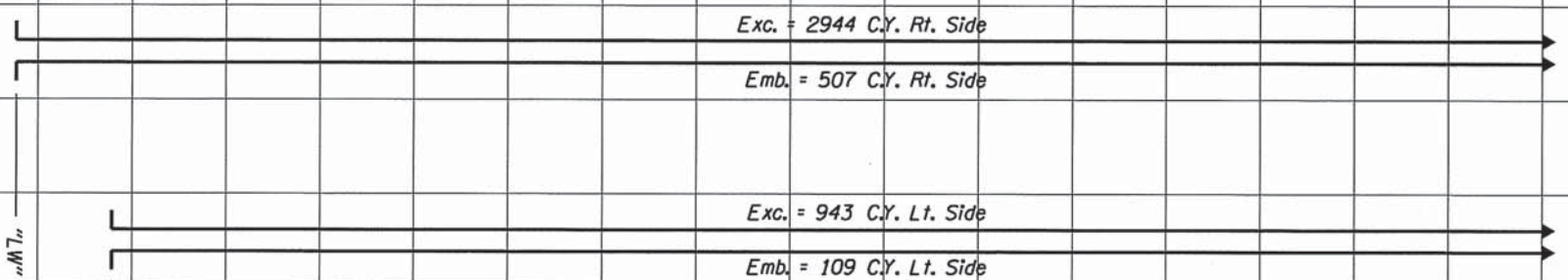
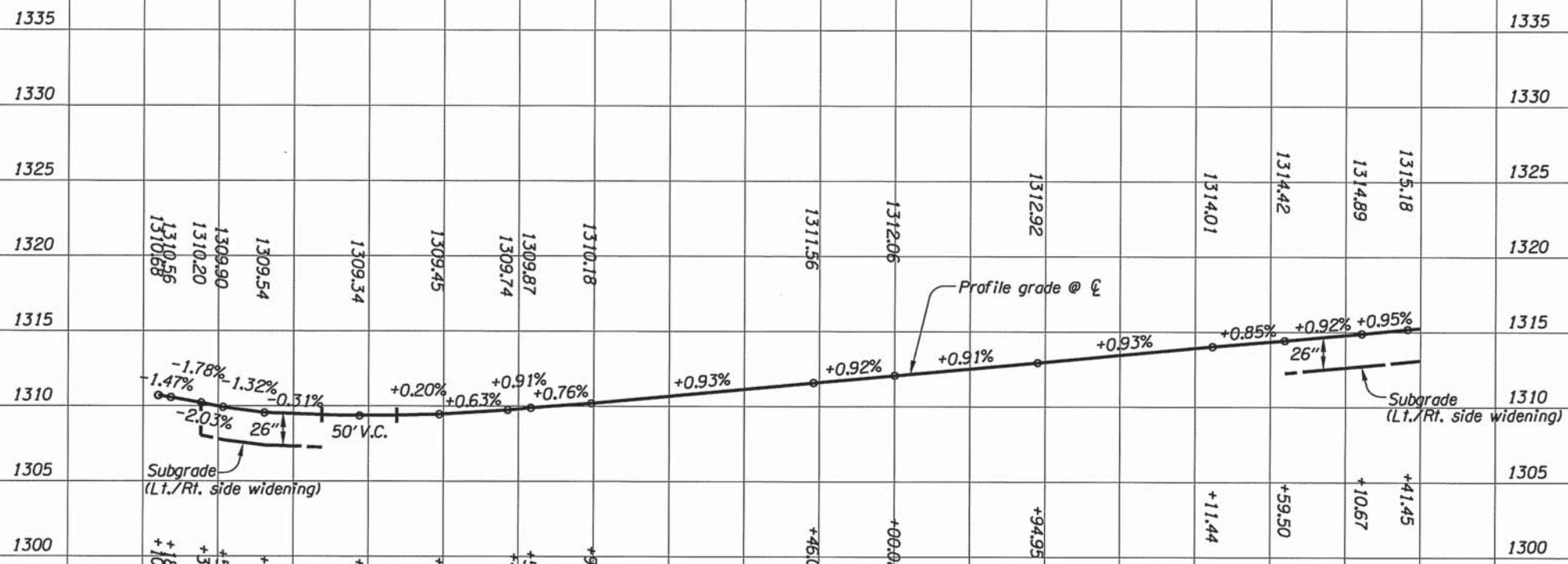


EXPIRES: JUNE 30, 2016

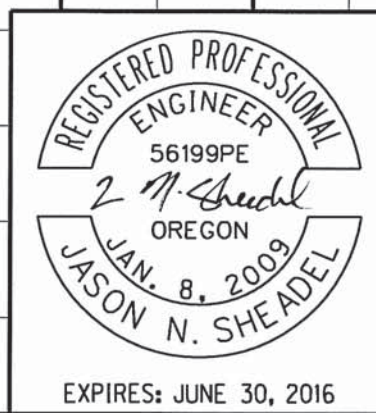
OREGON DEPARTMENT OF TRANSPORTATION	
REGION 3 - TECHNICAL CENTER	
<b>OR62 &amp; OR140 INTERSECTION</b> CRATER LAKE & LAKE OF THE WOODS HIGHWAY JACKSON COUNTY	
Designed By - Jason Sheadel Reviewed By - Brian Sheadel Drafted By - Judy Hardin	
<b>NOTES</b>	SHEET NO. <b>3A</b>

"LW" LINE

47V-127



"LW" 96+38.70 Rt.  
 "LW" 96+89.45 Lt.



**OREGON DEPARTMENT OF TRANSPORTATION**

REGION 3 - TECHNICAL CENTER

**OR62 & OR140 INTERSECTION**  
 CRATER LAKE & LAKE OF THE WOODS HIGHWAY  
 JACKSON COUNTY

Designed By - Jason Sheadel  
 Reviewed By - Brian Sheadel  
 Drafted By - Judy Hardin

**PROFILE**

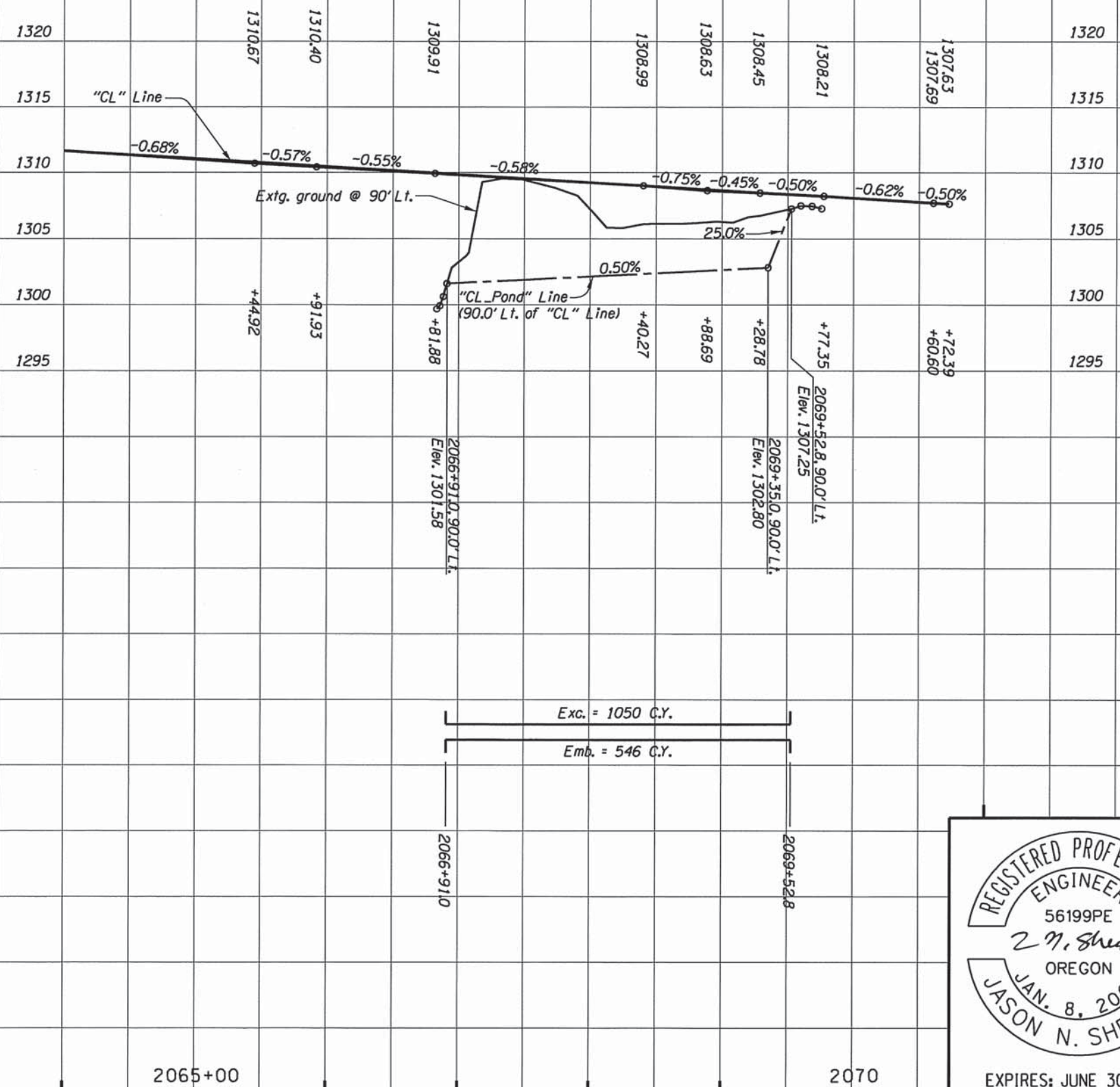
SHEET NO. **3B**

95+00

100+00

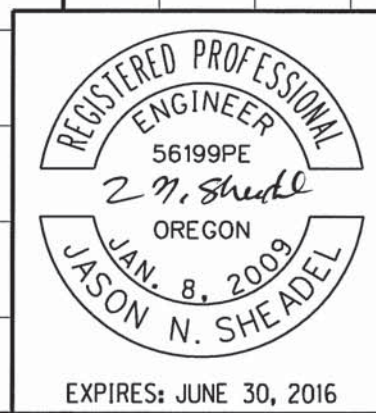
"CL" LINE

47V-127



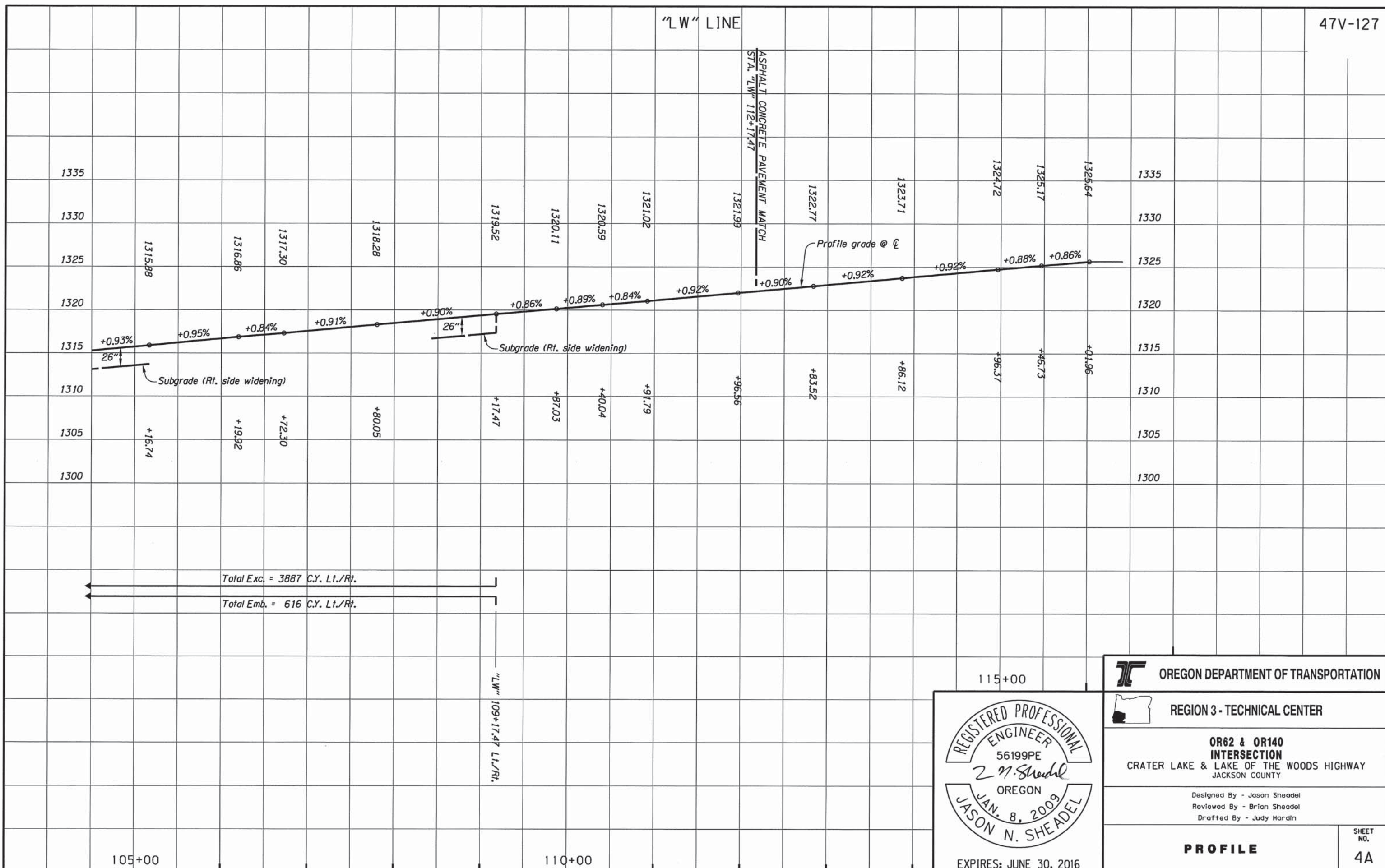
Exc. = 1050 C.Y.

Emb. = 546 C.Y.



<b>OREGON DEPARTMENT OF TRANSPORTATION</b>	
<b>REGION 3 - TECHNICAL CENTER</b>	
<b>OR62 &amp; OR140 INTERSECTION</b> CRATER LAKE & LAKE OF THE WOODS HIGHWAY JACKSON COUNTY	
Designed By - Jason Sheadel Reviewed By - Brian Sheadel Drafted By - Judy Hardin	
<b>PROFILE</b>	SHEET NO. <b>3C</b>





REGISTERED PROFESSIONAL ENGINEER  
56199PE  
2 M. Sheadel  
OREGON  
JAN. 8, 2009  
JASON N. SHEADEL  
EXPIRES: JUNE 30, 2016

**OREGON DEPARTMENT OF TRANSPORTATION**

REGION 3 - TECHNICAL CENTER

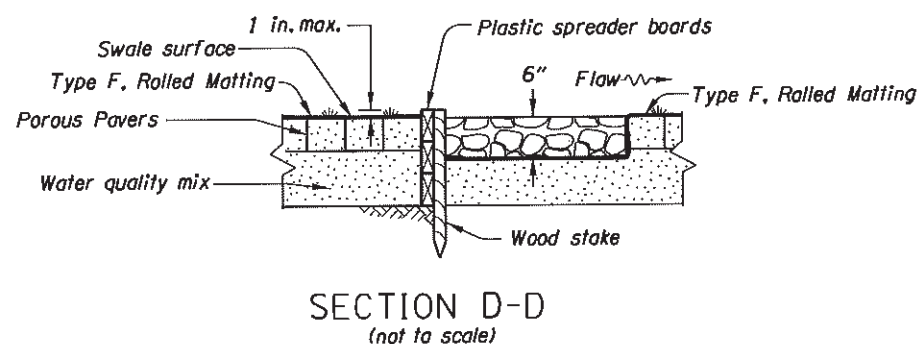
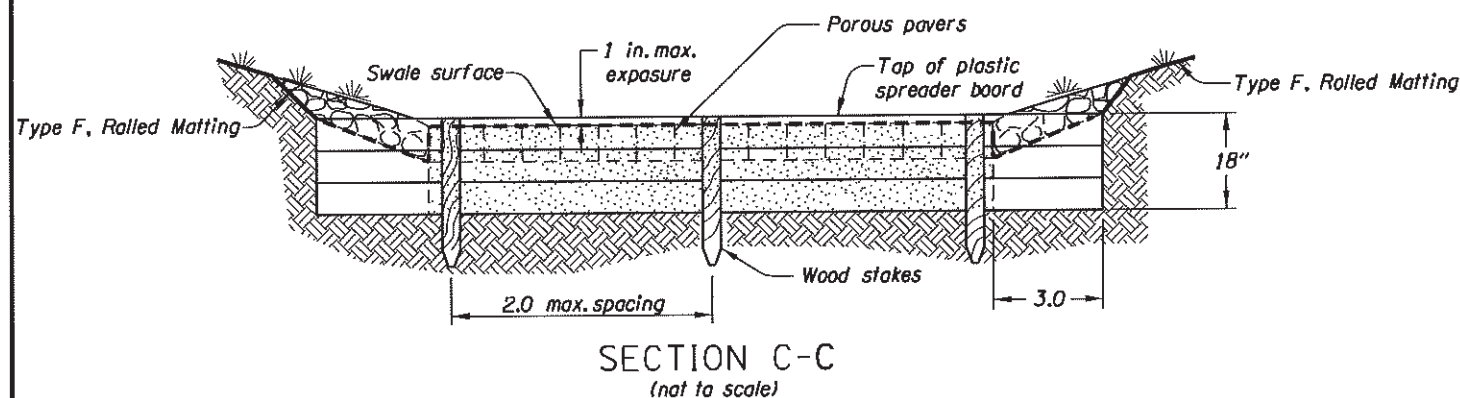
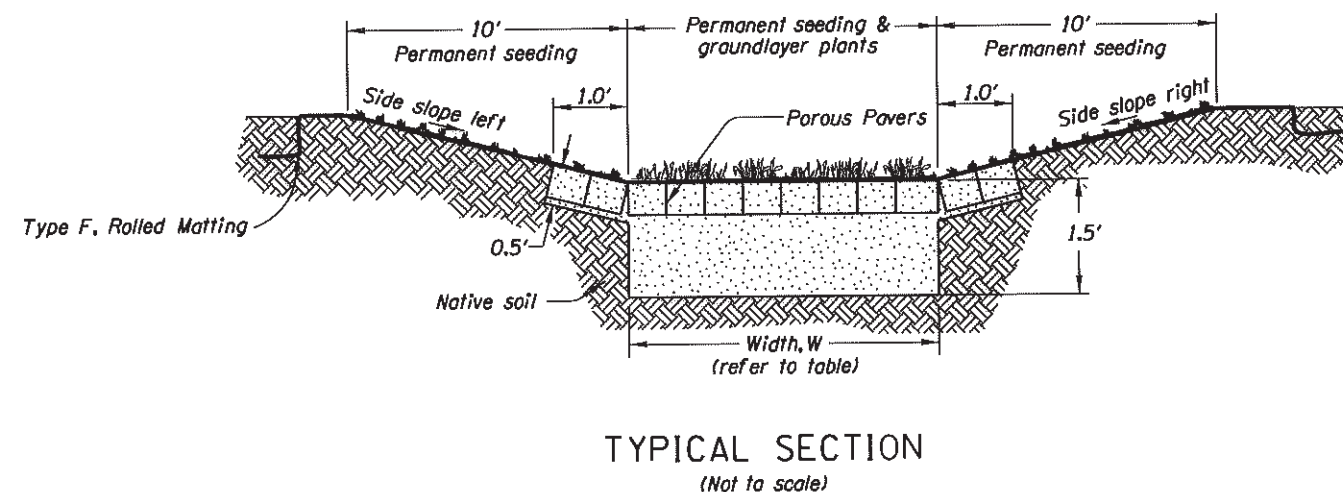
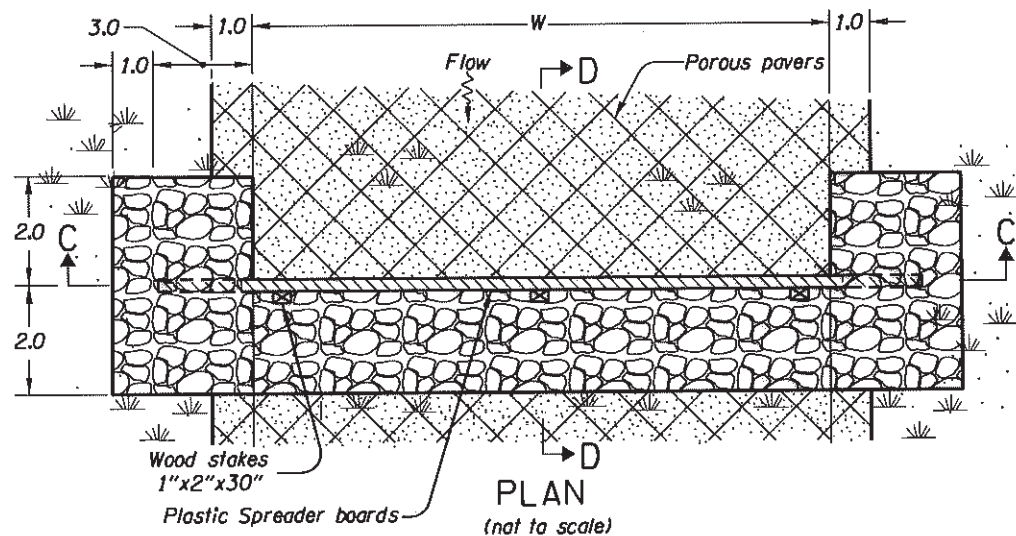
**OR62 & OR140 INTERSECTION**  
CRATER LAKE & LAKE OF THE WOODS HIGHWAY  
JACKSON COUNTY

Designed By - Jason Sheadel  
Reviewed By - Brian Sheadel  
Drafted By - Judy Hardin

**PROFILE**

SHEET NO. 4A

WATER QUALITY SWALE DETAILS

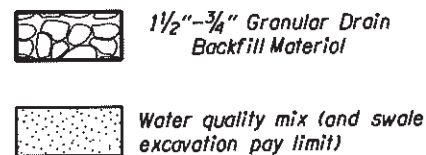


PLASTIC BOARD FLOW SPREADER DETAIL

- NOTES:
1. Construct spreader boards level.
  2. Extend spreader boards a minimum of 3 feet into side slopes.
  3. Reinforce side slopes at flow spreader locally with 1 1/2"-3/4" granular drain backfill material.
  4. Fasten wood stakes to spreader boards with 2 1/2" galvanized wood screws every 2" (minimum).
  5. Place plastic board flow spreader at beginning and end of swale and every 50 feet throughout length of biofiltration swale.
  6. Install matting according to RD1055 channel application. Omit check slats.
  7. Install Type S2 markers at beginning and end of biofiltration swale. See sheet GJ-2 for details.

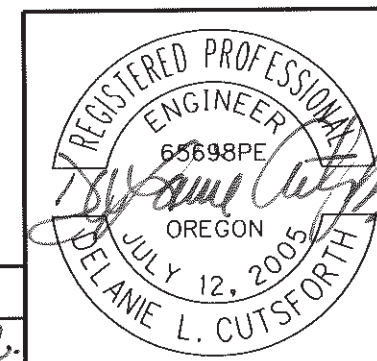
Facility Name	Plan Sheet & Note #	STA. To STA.	W (ft.)	Longitudinal Slope (ft./ft.)	Side Slope Left (V:H)	Side Slope Right (V:H)	DFI
Water quality Swale "N"	Sheet 3, note 6	"LW" 99+40.00 To "LW" 100+55.00, Lt.	4.0	0.01	1:6	1:4	DO0847
Water quality Swale "S"	Sheet 3, note 14	"LW" 104+00.00 To "LW" 105+15.00, Rt.	4.0	0.01	1:4	1:4	DO0848
Water quality Swale "CL"	Sheet 3, note 15	"CL" 2068+25.00 To "CL" 2069+35.00, Lt.	7.0	0.005	1:4	1:4	DO0846

Scientific Name	Common Name	Type	Spacing	Quantity (each)		
				Swale "N"	Swale "S"	Swale "CL"
<i>Carex Densa</i>	Dense Sedge	Plugs	1 per 2 sq. ft.	230	230	385
<i>Eleocharis Palustris</i>	Common Spikerush	Plugs	1 per 2 sq. ft.	230	230	385
<i>Juncus Tenuis</i>	Poverty Rush	Plugs	1 per 2 sq. ft.	230	230	385
<i>Mimulus Guttatus</i>	Seep Monkeyflower	Plugs	1 per 2 sq. ft.	230	230	385



Note: All dimensions are in feet unless otherwise noted.

No.	DATE	REVISIONS	BY
1	11-24-14	Changed Stationing Rt. to Lt.	DC



**OREGON DEPARTMENT OF TRANSPORTATION**

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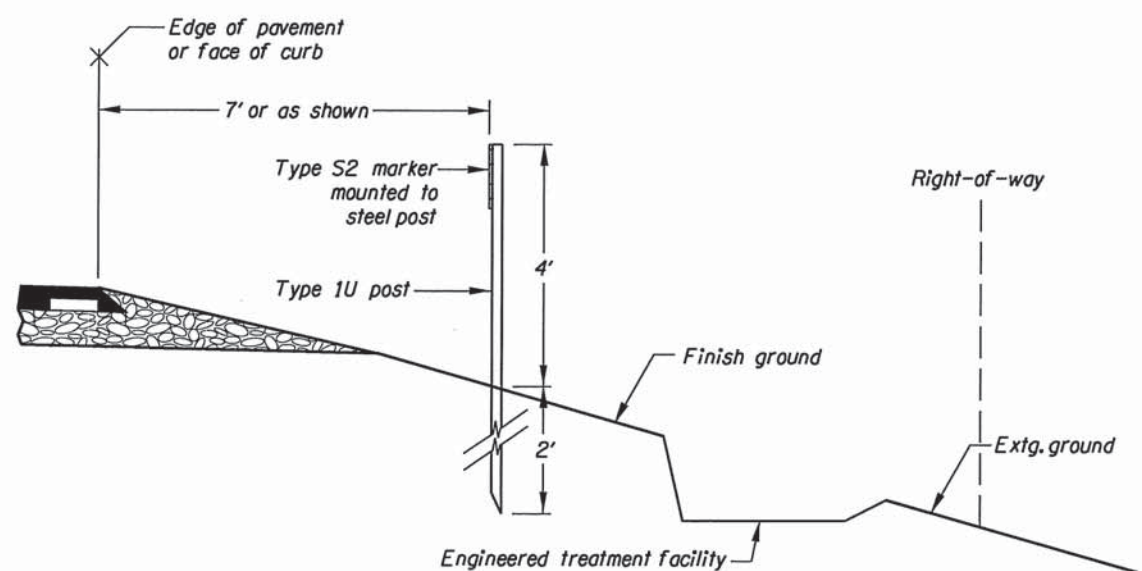
OR62 & OR140 INTERSECTION  
CRATER LAKE & LAKE OF THE WOODS HIGHWAY  
JACKSON COUNTY

Designed By - DeLone Cutsforth  
Reviewed By - Wade Haladay  
Drafted By - DeLone Cutsforth

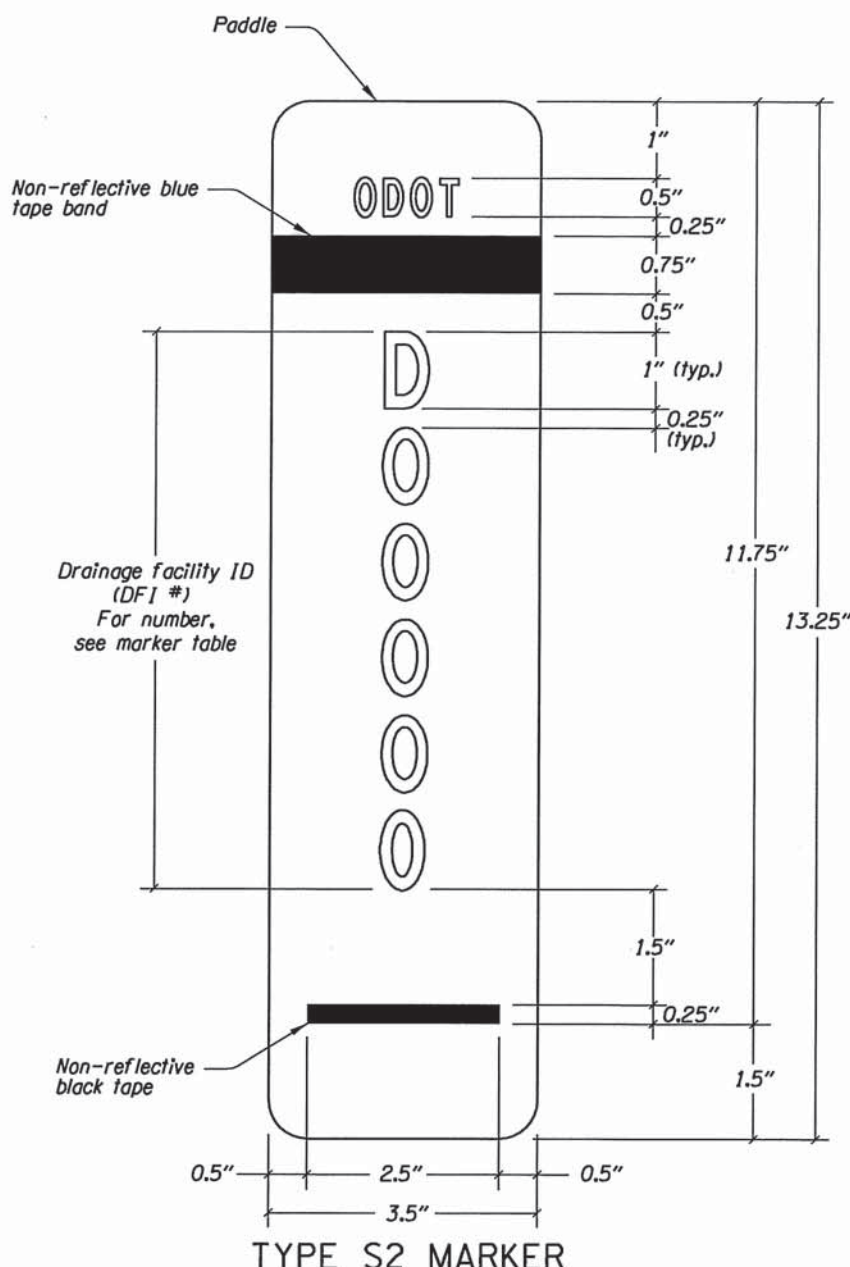
**STORMWATER DETAILS**

SHEET NO. GJ

STORMWATER DRAINAGE FACILITY IDENTIFICATION



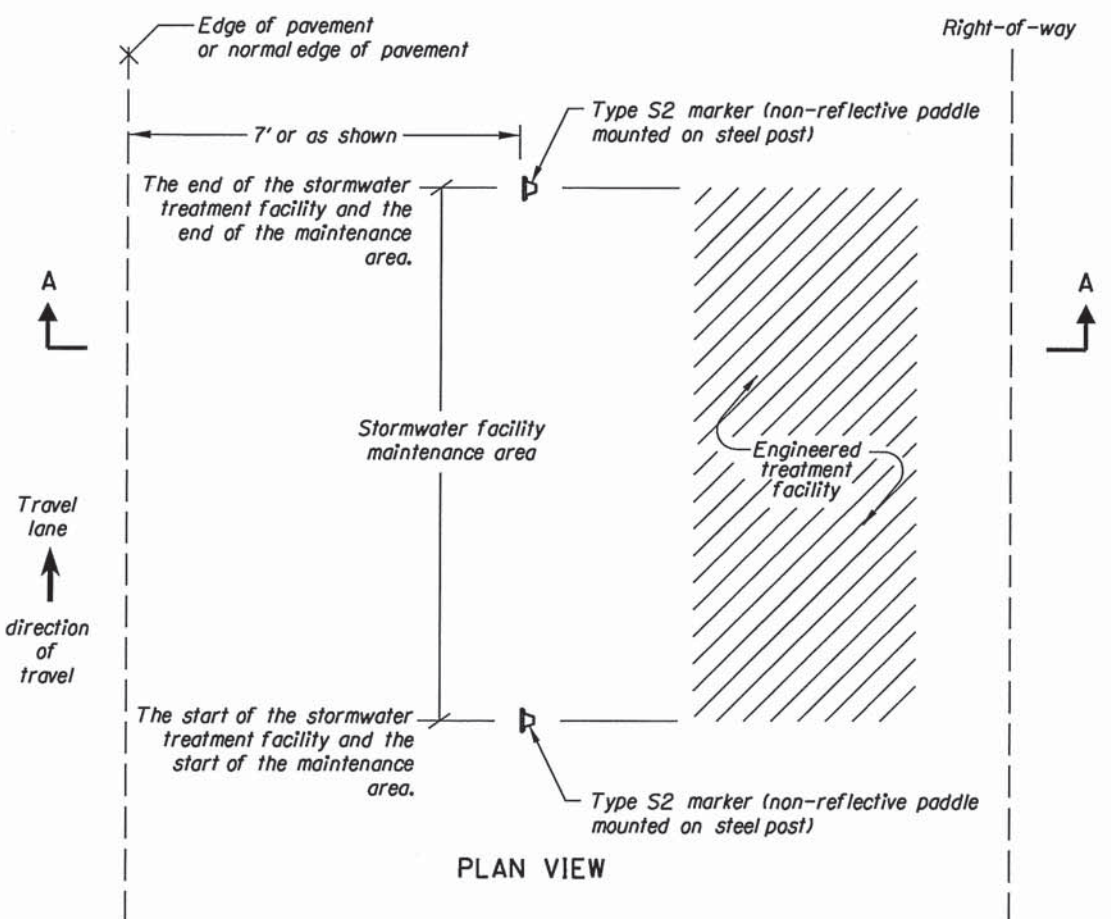
SECTION A-A



TYPE S2 MARKER

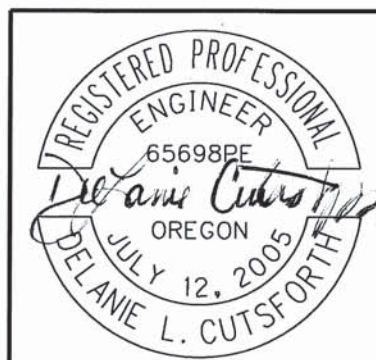
**MARKER TABLE**

FACILITY NAME	FACILITY LOCATION	DFI #	TYPE S2 MARKER	
			BEGIN	END
Water Quality Swale "N"	"LW" 99+40.00	D00847	✓	
Water Quality Swale "N"	"LW" 100+55.00	D00847		✓
Water Quality Swale "S"	"LW" 104+00.00	D00848	✓	
Water Quality Swale "S"	"LW" 105+15.00	D00848		✓
Water Quality Swale "CL"	"CL" 2068+25.00	D00846	✓	
Water Quality Swale "CL"	"CL" 2069+35.00	D00846		✓



INSTALLATION DETAIL

- Notes:**
- 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 TM570 detail labeled "Steel Posts" for mounting a traffic target. Install paddle onto Type 1U steel post using 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 drg. no. TM571 for type 1U steel post dimensions
  - Place 7 feet from edge of pavement or as directed.**
  - See marker table for installation locations.**



EXPIRES: 12-31-2015

**OREGON DEPARTMENT OF TRANSPORTATION**

**REGION 3 - TECHNICAL CENTER**

**OR62 & OR140 INTERSECTION**  
CRATER LAKE & LAKE OF THE WOODS HIGHWAY  
JACKSON COUNTY

Designed By - DeLanie Cutsforth  
Reviewed By - Wade Holaday  
Drafted By - DeLanie Cutsforth

**STORMWATER DETAILS**

SHEET NO.  
**GJ-2**