OPERATION & MAINTENANCE MANUAL

DFI No. : D00765
Facility Type: Water Quality Biofiltration Swale

September, 2017

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00765**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	46V-113
Location:	District: 08
	Highway No.: 001
	Mile Post: 24.25; 24.27 (beg./end)
	Description: This facility is located on the east side of northbound I-5 offramp. Access to the facility can be obtained along the eastern shoulder of the I-5 northbound off-ramp.

2. Facility Contact Information

Contact the Engineer of Record, Region Technical Center, or 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:	Hamilton Construction Co.

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 northbound off-ramp of I-5 (No. 001). Access for this facility is available from the eastern shoulder of the northbound I-5 off-ramp. Stormwater enters the facility via roadway runoff and a drainage ditch located along the eastern side of northbound I-5. As the water flows north it is treated as it slows and spreads out within the swale before outfalling into an existing stormwater culvert.

A. Maintenance equipment access:
   This facility can be accessed from the northbound I-5 (Hwy 001) off-ramp shoulder.

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 Environment 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

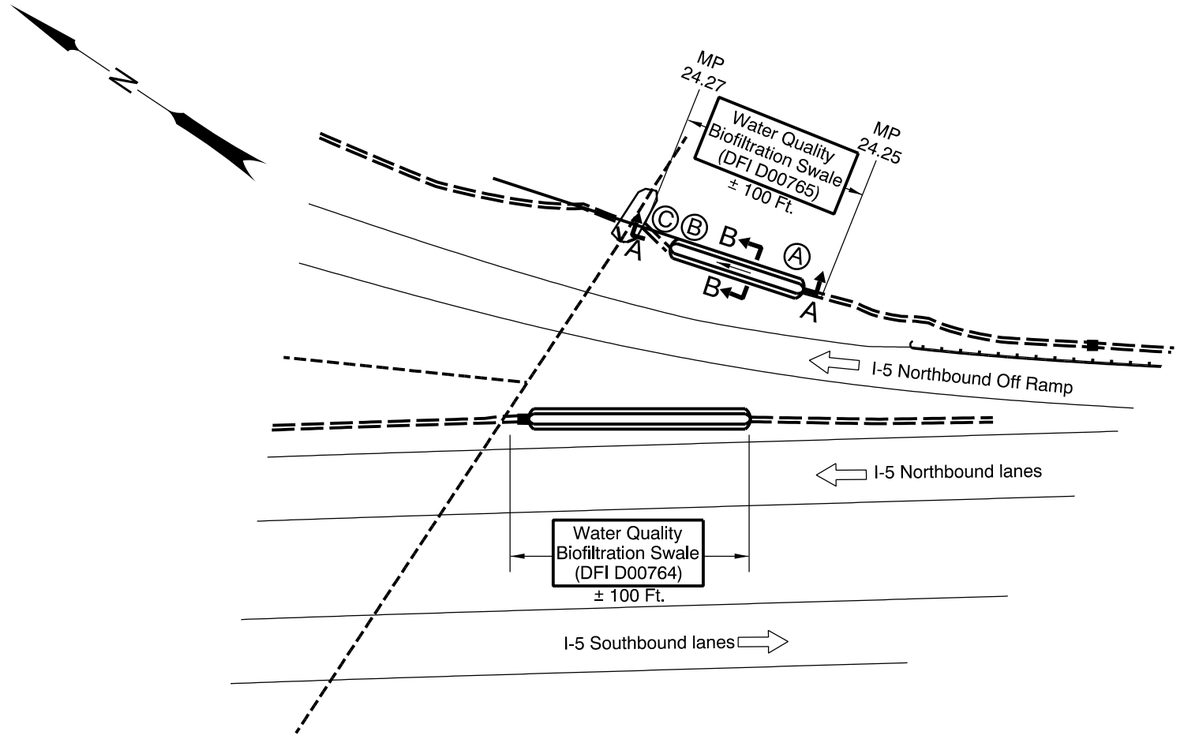
Contact any of the following for more detailed information about management of waste materials found on site:

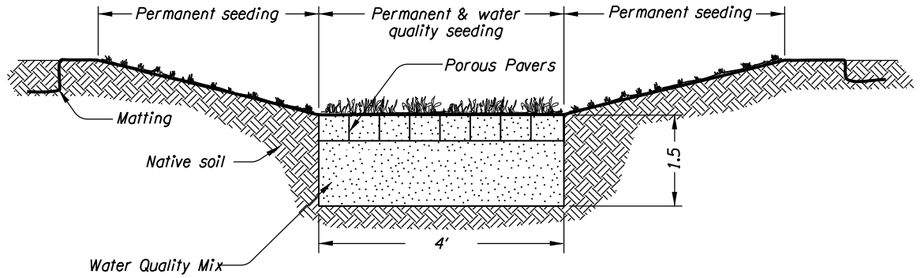
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator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

Appendix A

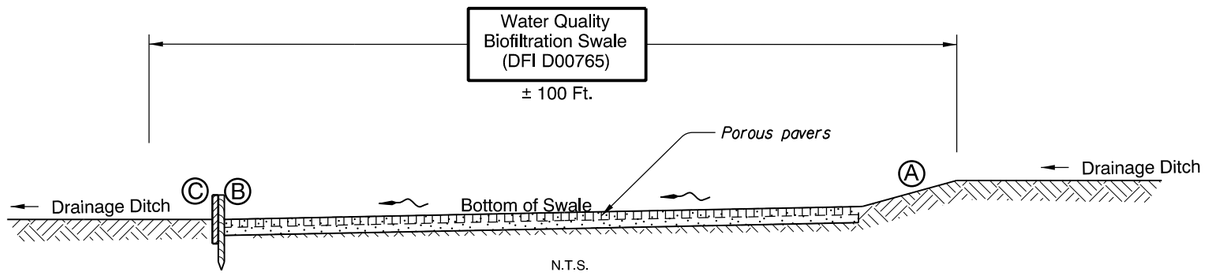
Content:

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



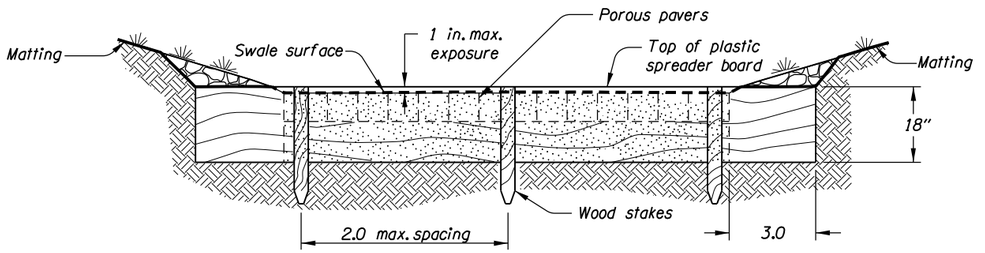


SECTION B-B
N.T.S.



N.T.S.

SECTION A-A
N.T.S.



FLOW BOARD SPREADER DETAIL
N.T.S.

LEGEND:

- Ⓐ Swale Inlet w/Flow Spreader Inlet
- Ⓑ Swale Outlet
- Ⓒ 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 D00765
MAINTENANCE DISTRICT 8 HWY 001
WATER QUALITY BIOFILTRATION SWALE
HIGHWAY MP 24.25 TO 24.27
JACKSON COUNTY

DFI_D00000.dgn

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.*
1A-2, 1A-3	*Standard Dwg. Nos.*
1A-4	*Layout Sheet*

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

PAVING, GRADING, DRAINAGE, STRUCTURES, SIGNING & ROADSIDE DEVELOPMENT

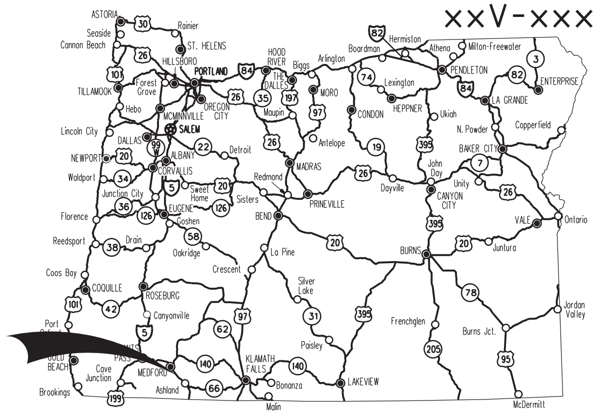
FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2

PACIFIC HIGHWAY

JACKSON COUNTY

2013

xxV-xxx



Overall Length Of Project - 1.02 Miles

ATTENTION:

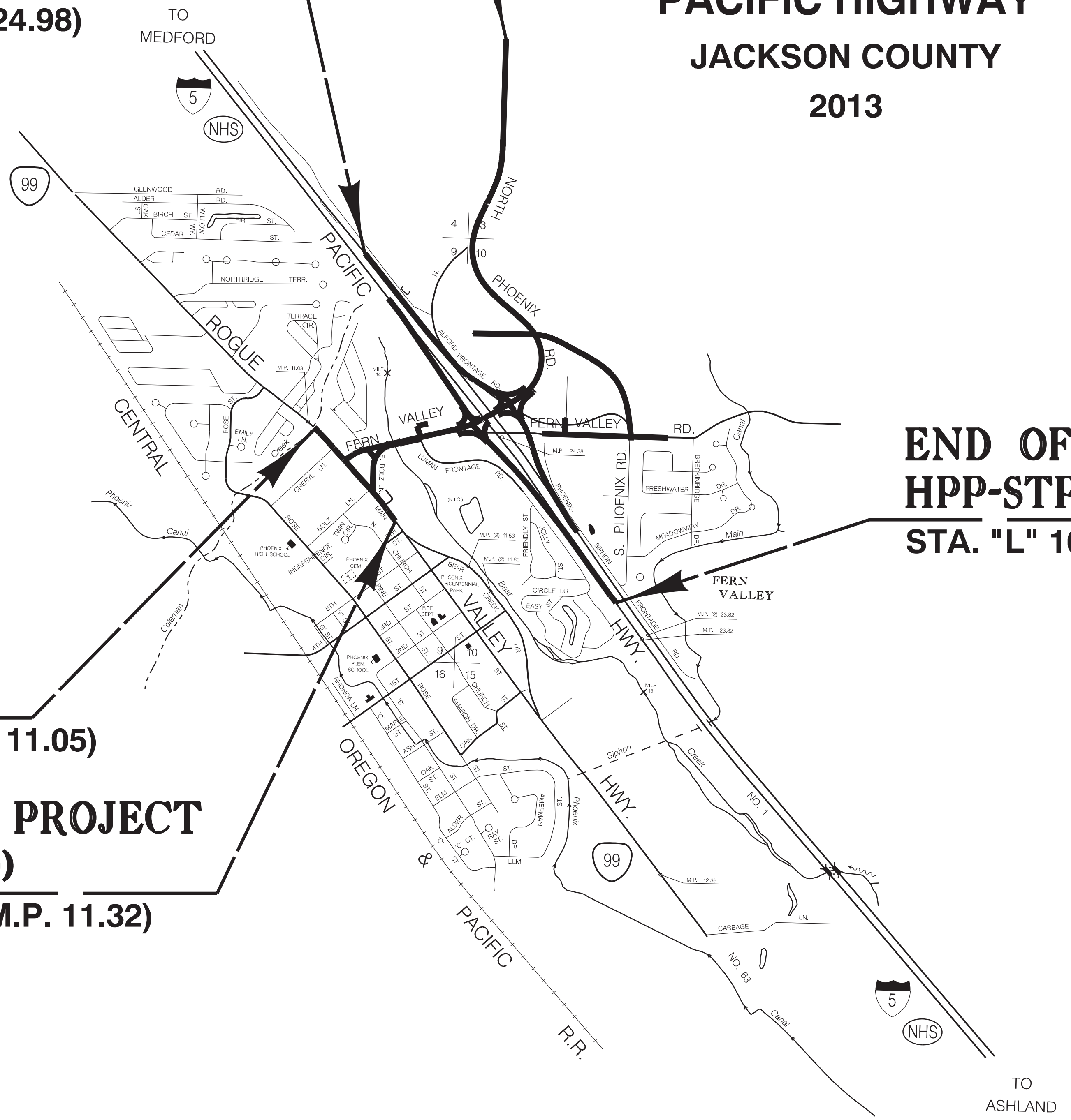
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules By Calling The Center. (Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

SAFETY FIRST

END OF PROJECT
HPP-STP-S001(410)
STA. "NP" 74+00 (M.P. 1.21)

BEGINNING OF PROJECT
HPP-STP-S001(410)
STA. "L" 1002+00 (M.P. 24.98)



END OF PROJECT
HPP-STP-S001(410)
STA. "L" 1055+00 (M.P. 23.96)

END OF PROJECT
HPP-STP-S001(410)
STA. "RVH" 381+27 (M.P. 11.05)

BEGINNING OF PROJECT
HPP-STP-S001(410)
STA. "RVH" 366+25 (M.P. 11.32)

N

Sec. 03, T.38S, R. 1W, W.M.
Sec. 09, T.38S, R. 1W, W.M.
Sec. 10, T.38S, R. 1W, W.M.
Sec. 15, T.38S, R. 1W, W.M.

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
David Lohman	COMMISSIONER
Mary F. Olson	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tammy Baney	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: ____________________
Signature & date

____
Print name and title

____
Concurrence by ODOT Chief Engineer

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HPP-STP-S001(410)	1

INDEX OF SHEETS, CONT'D.

SHEET NO.	DESCRIPTION
1B	Prospective Staging Area
1B-2	Right of Way Hold-Outs
1C, 1C-2	Survey Control Sheet
2 thru 2A-41	Typical Sections
2B thru 2B-39	Details
2C thru 2C-13E	Traffic Control Plans
2D thru 2D-8	Pipe Data Sheet
2E thru 2E-5	Concrete Joint Layout
3 thru 15*	Alignment
3A thru 15A*	General Construction
3B thru 15B-2*	Drainage & Utilities
3C thru 15C-2*	Profiles
W1 thru W13	Waterline Plans
D1 thru D10	Waterline Details

*For a detailed list of sheets, see Plan Sheet Index on see sht. 1A-4

SHEET NO.	DESCRIPTION
	GEO/HYDRO
GA	Erosion Control Notes
GA-2 thru GA-7	Erosion Control Details
GA-8 thru GA-64	Erosion Control Plan
GH, GH-2	Bank Protection
GJ thru GJ-9	Stormwater

SHEET NO.	DESCRIPTION
	LANDSCAPE
GN thru GN-15	Planting Plan

SHEET NO.	DESCRIPTION
	AESTHETIC
2F thru 2F-25	Bridge Aesthetic Details

DRAWING NO.	DESCRIPTION
	BRIDGE
GP-1	General Layout and Index
	BEAR CREEK BRIDGE #21382
BC-1	Plan and Elevation
BC-2	General Notes
BC-3 thru BC-5	Foundation Data Sheet
BC-6	Stage Construction
BC-7	Footing Plan
BC-8	Deck Plan
BC-9	Typical Deck Section
BC-10	Bulb I Girder Schedules
BC-11	Deck Elevations
BC-12 thru BC-15	Bent Layout and Details
BC-16	Bearings
BC-17	Shearlug & Misc.
BC-18	Wingwalls
BC-19	Sign Support at Bent 2
BC-20	Barrier Notes and Misc. Details
BC-21	Temporary Precast Barriers
BC-22	Bridge End Pylon
BC-23	Bridge Monument
BC-24	Utility Hanger Detail
BC-25 thru BC-27	Avista Gas Hangers/Details (L-37325)
BCW-1 thru BCW-3	MSE Retaining Walls
	RETAINING WALL #21728
GWL-1	Gravity Wall - Plan and Elevation
	RETAINING WALL #21919
GWR-1	Gravity Wall - Plan and Elevation
	MSE WALL 1 #21729
M1-1	Plan and Elevation
M1-2	Foundation Data
M1-3	Details
M1-4	Barrier Coping Detail
M1-5	Barrier Mount Sign Support
	MSE WALL 2 #21730
M2-1	Plan and Elevation
M2-2	Foundation Data
M2-3	Details
M2-4	Barrier Mount Sign Support

DRAWING NO.	DESCRIPTION
	BRIDGE (cont'd)
	I-5 INTERCHANGE BRIDGE #21383
I5-1	Plan and Elevation
I5-2	General Notes
I5-3 thru I5-6	Foundation Data Sheet
I5-7	Footing Plan
I5-8	Deck Plan
I5-9	Typical Deck Section
I5-10	Deck Elevations
I5-11, I5-12	Prestressed Box Girder Details
I5-13 thru I5-16	Bent Layout and Details
I5-17	Drilled Shaft Detail
I5-18	Bearing Pad
I5-19	Wingwalls
RM1	Rail Monument Layout
RM2, RM3	Pedestrian Corridor Monuments
RM4	Bridge Rail Monuments
PS-1	Protective Screening Layout
PS-2	Post Details (Protective Screening)
I5W-1 thru I5W-3	MSE Retaining Walls
	MSE WALL 3 #21731
M3-1	Plan and Elevation
M3-2	Foundation Data
M3-3	Details
	SIGN STRUCTURE #21718
SS-1	Cantilever Sign Support
	SIGN STRUCTURE #21719
SS-2	Cantilever Sign Support
	SIGN STRUCTURE #21720
SS-3	Cantilever Sign Support
	SIGN STRUCTURE #21721
SS-4	Cantilever Sign Support
	SIGN STRUCTURE #21722
SS-5	Cantilever Sign Support
	SIGN STRUCTURE #21723
SS-6	Truss Type Sign Bridge
	SIGN STRUCTURE #21724
SS-7	Truss Type Sign Bridge
	SIGN STRUCTURE #21725
SS-8	Cantilever Sign Support
	SIGN STRUCTURE #21729 & 21730
SS-9	Rail Mount Sign Support
	RETAINING WALL #22074
RVH-1	Plan & Elevation

SHEET NO.	DESCRIPTION
	PERMANENT PAVEMENT MARKINGS
ST & ST-2	Striping Details
ST-3 thru ST-16	Striping Plan

SHEET NO.	DESCRIPTION
	PERMANENT SIGNING
SN-1 thru SN-50	Signing Plans

SHEET NO.	DESCRIPTION
	ILLUMINATION
I-02138 thru I-02151	Illumination Plans

SHEET NO.	DESCRIPTION
	TRAFFIC SIGNALS
16976 thru 17037, 17326	Signal Plans
17053	Din Rail Section and Details
17054	Din Rail Assembly
ITS-1410, ITS-1411	Fiber Optic Cable Splice Diagram
ITS-1412	Handhole and Traffic Cabinet Details
ITS-1413	Camera Cabinet Details
ITS-1414 thru ITS-1416	Traffic Camera Pole (3 sheets)

For List Standard Dwg. Nos., see shts. 1A-2 & 1A-3

Standard Drawings located on the web at:
http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard_drawings_home.shtml

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HPP-STP-S001(410)	1A

Standard Dwg. Nos.

RD100	- Mailbox Support
RD101	- Mailbox Installation
RD300	- Trench Backfill, Bedding, Pipe Zone
RD312	- Subsurface Drain
RD326	- Coupling Bands
RD380, RD382, RD384, RD386	- Pipe Fill Height Tables
RD400, RD405, RD410, RD415, RD420, RD425, RD430, RD435, RD440, RD445, RD450, RD470	- Guardrail
RD500	- Precast Concrete Barrier Pin and Loop Assembly
RD505	- Concrete Barrier Cast-In-Place
RD516	- Securing Concrete Barrier to Roadway
RD530	- Guardrail Transition to Concrete Barrier
RD550	- Cast-In-Place Tall Concrete Barrier Transition to Bridge Rail Type "F"
RD610	- Asphalt Pavement Details
RD700, RD701	- Curbs
RD705	- Islands
RD706	- Traffic Separators And Transitions
RD710	- Accessible Route Islands
RD715	- Approaches And Non-Sidewalk Driveways
RD720	- Sidewalks
RD735	- Curb Line Sidewalk Driveways or Alleys
RD740	- Separated Sidewalk Driveways - Local Jurisdictions
RD755	- Sidewalk Ramp Details
RD770	- Pedestrian Handrail
RD771	- Pedestrian Handrail Details
RD810	- Barbed and Woven Wire Fences
RD1000	- Construction Entrances
RD1005	- Check Dams
RD1010	- Inlet Protection (Type 1, 2 and 3)
RD1020	- Inlet Protection (Type 5) Masonary/Aggregate
RD1025	- Sediment Barrier (Type 1)
RD1040	- Sediment Fence
RD1055	- Matting
RD1060	- Tire Wash Facility (Type 1)
BR139	- Expansion Joint with Preformed Compression Seals
BR165	- Bridge End Panel
BR200	- Concrete Bridge Rail Type F
BR203	- Transition Concrete Bridge Rail to Guardrail
BR216	- Combination Bridge Rail
BR223	
BR290	- 3'-6" Type "F" Rail
BR300	- Bulb-I Girders
BR425	- 33" Precast Prestressed Box
BR445	- Precast Prestressed Boxes and Slabs Details
BR720	- Standard Gravity Retaining Wall Details
BR760	- Moment Slab on MSE Wall
TM200	- Sign Installation Details
TM201	- Miscellaneous Sign Placement Details
TM211, TM212	- Signing Details
TM220	- Multi-Post Installations with Auxiliary Signs
TM221	- Signing Details Milepost Markers
TM222	- Installation Details Milepost Marker Posts
TM223	- Conventional Roads Directional Sign Layout Street Name Signs
TM225	- Exit Number & Gore Signing Details
TM230, TM231, TM232, TM233	- Mounting Details For Removable Legend
TM450	- Mast Arm Pole Details
TM452	- Strain Pole Details
TM453	- Stabilizer Details
TM455	- Temporary Signal Details
TM457	- Vehicle, Ped. Signal & Push Button Mounting Details
TM458	- Pedestrian Ramp Placement Details
TM460	- Vehicle Signal Details
TM462	- Adjustable Signal Head Mounting Details
TM463	- Spanwire Mounting Details
TM465	- Overhead Sign, Fire Preemption & Photoelectronic Details
TM467	- Ped. Signal And Ped. Push Button Details
TM470	- Color Code Charts
TM472	- Traffic Signal Junction Boxes
TM475, TM478	- Loop Details
TM480	- Loop Entrance Details
TM482	- Controller Cabinet And Foundation Details
TM485	- Service Cabinets And Service Cabinet Wiring Details
TM488	- Terminal Cabinet Detail
TM500, TM501, TM502, TM503	- Pavement Marking Standard Details
TM521	- Durable Pavement Markings Method "B" Extruded & Method "F" Spray
TM524	- Durable Pavement Markings Method "E" Non-Profile Wet Weather
TM530	- Intersection Pavement Markings
TM531	- Turn Arrow Marking Details
TM539	- Median And Left Turn Channelization Details
TM547	- Freeway Entrance Ramp Pavement Markings
TM551	- Freeway Exit Ramp Pavement Markings
TM560, TM561	- Alignment Layout
TM570	- Traffic Delineators
TM571	- Traffic Delineators Steel Post Details
TM575	- Traffic Delineator Installation For Freeways
TM577	- Traffic Delineator Installation For Special Applications
TM600, TM601	- Multi-Post Breakaway Sign Supports
TM602	- Triangular Base Breakaway Multi-Direction Slip Base
TM629, TM630	- Slip Base & Fixed Base Luminaire Supports
TM650, TM651, TM652, TM653	- Traffic Signal Supports
TM670	- Wood Post Sign Supports
TM671	- 3 Second Gust Wind Speed Isotach
TM675	- Extruded Aluminum Panels
TM676	- Sign Attachments
TM677	- Sign Mounts
TM678	- Secondary Sign Mounting Details
TM679	- Signal Mast Arm Street Name Sign Mounts
TM680	- Signal Pole Mounts
TM681	- Perforated Steel Square Tube (PSST) Sign Support Installation
TM687	- Perforated Steel Square Tube (PSST) Anchor Foundation
TM688	- Perforated Steel Square Tube (PSST) Slip Base Foundation

Cont'd., see next sht.

Standard Drawings located on the web at:
http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard_drawings_home.shtml

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HPP-STP-S001(410)	1A-2

Standard Dwg. Nos. cont'd.:

TM800	*- Tables, Abrupt Edge And PCMS Details*
TM810	*- Temporary Reflective Pavement Markers*
TM830	*- Temporary Concrete Barrier And Rumble Strips*
TM841	*- Intersection Work Zone Details*
TM850	*- 2-Lane, 2 Way Roadways*
TM851, TM852	*- Non-Freeway Multi-Lane Sections*
TM860, TM861, TM862	*- Freeway Sections*
TM870	*- Bridge Construction*
TM871	*- Blasting Zones*

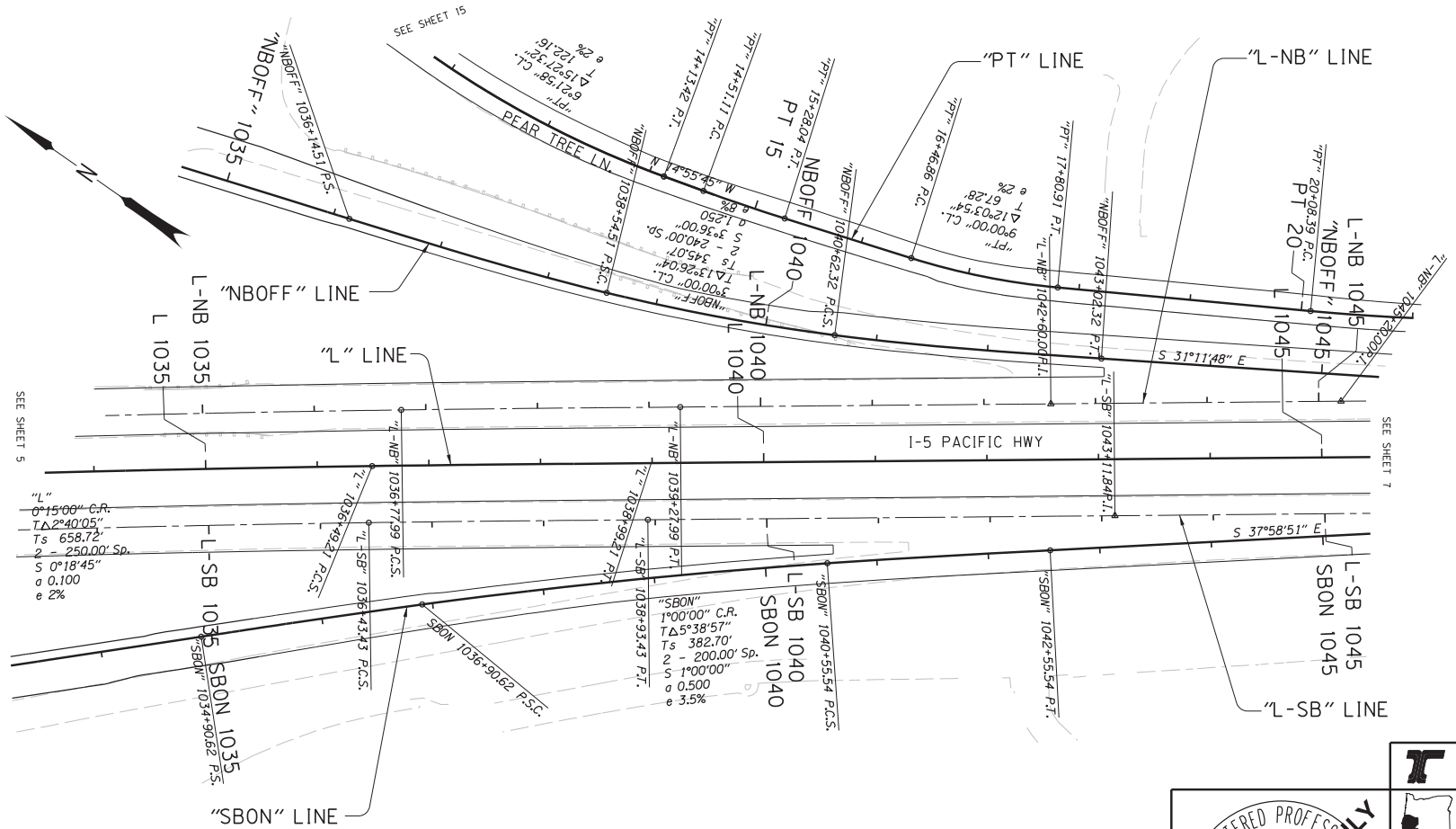
Standard Drawings located on the web at:
http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard_drawings_home.shtml

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HPP-STP-S001(410)	1A-3

Sec. 10, T.38S, R. 1, W.M.

xxV-xxx



OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

Designed By - Roy Blower
Reviewed By - Rich Coffel
Drafted By - David Knox

ALIGNMENT

SHEET NO. 6

REGISTERED PROFESSIONAL ENGINEER
63241
OREGON
JULY 9, 2001
CHRIS R. ZELMER
EXPIRES: JUNE 30, 2014

REVIEW COPY ONLY

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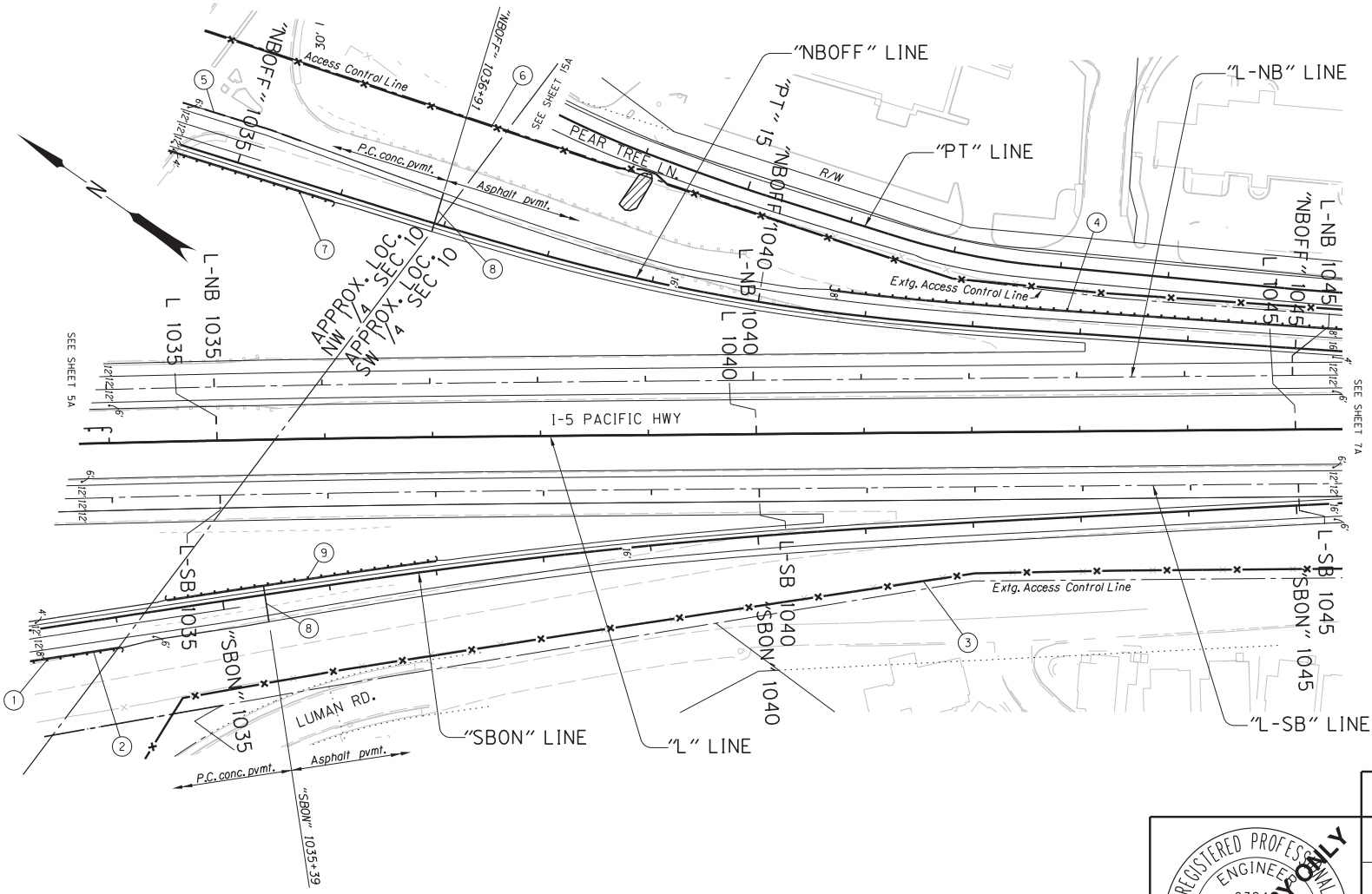
Sec. 10, T. 38S, R. 1, W.M.

xxV-xxx



1. See sht. 10A-2, note 14
   Const. guardrail (Type 2A)
   Const. guardrail terminal, non-flared - 37.5'
   Flare rate=0, W=1', E=2'
   Test level 3
2. See sht. 5A-2, note 17
   Const. P.C. conc. drainage curb
3. See sht. 10A-2, note 9
   Const. Type 2 fence
4. Sta. "NBOFF" 1040+66.67, Lt. to
   Sta. "NBOFF" 1047+94.00, Lt.
   Const. guardrail - 687.5' (Type 2A)
   Inst. end piece (Type B)
   Const. anchor - 2 (Type 1 mod.)
5. See sht. 5A-2, note 35
   Const. low profile mountable curb
6. See sht. 5A-2, note 36
   Const. Type 2 fence
7. See sht. 5A-2, note 34
   Sta. "NP" 30+32.63, Rt. to
   Sta. "NBOFF" 1035+94.42, Rt.
   Const. guardrail (Type 2A)
   Const. guardrail terminal, non-flared - 37.5'
   Flare rate=0, W=1', E=0'
   Test level 3
8. Const. P.C. conc. to HMAC transition panel
   (For details, see sht. 2B-19)
9. Sta. "SBON" 1034+50.00, Lt. to
   Sta. "SBON" 1036+99.90, Lt.
   Const. guardrail - 212.5' (Type 2A)
   Inst. end piece (Type B)
   Const. anchor - 2 (Type 1 mod.)
   Const. guardrail terminal, non-flared - 37.5'
   Flare rate=0, W=1', E=2'
   Test level 3

No Work Area shown thus:

REGISTERED PROFESSIONAL ENGINEER
6324
OREGON
JULY 9, 2001
CHRIS R. ZELMER
EXPIRES: JUNE 30, 2014

REVIEW COPY ONLY

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

Designed By - Roy Blower
Reviewed by - Rich Coffel
Drafted By - Judy Hardin

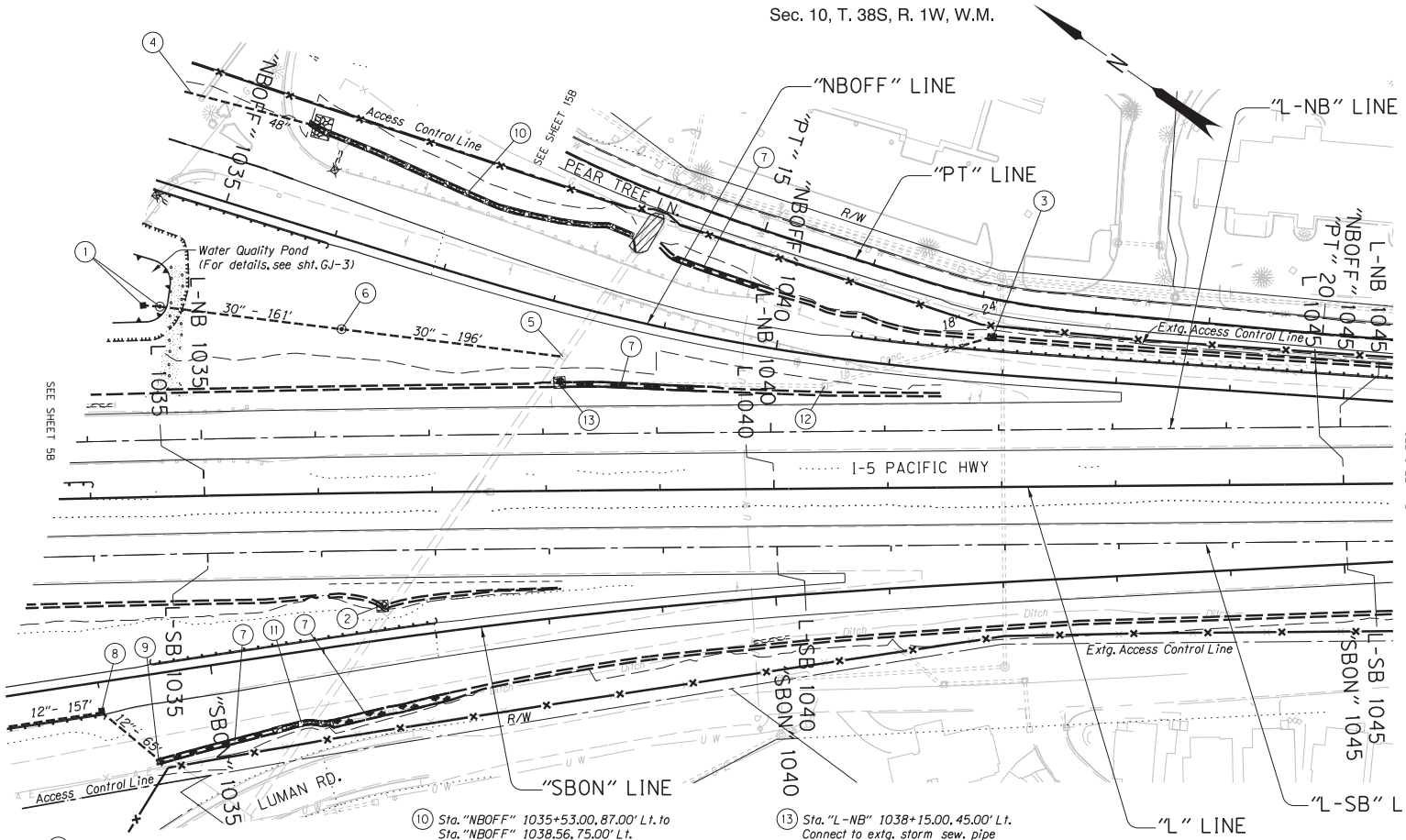
GENERAL CONSTRUCTION

SHEET NO. 6A

F:\ODOT_DATA\Projects\12723_Fern_Valley_Interchange\01_Working\Sheets_General Construction\12723.pl1 :: Default 4/30/2013 11:52:24 AM hwye33g

Sec. 10, T. 38S, R. 1W, W.M.

xxV-xxx



(1) Sta. "L-NB" 1034+66.24, 117.15' Lt.
Detention/WQ pond outlet
F.L.=1476.41
(For details, see sht. GJ-3)

(2) Sta. "L-SB" 1036+56.45, 54.30' Rt.
Const. loose riprap (Class 50) - 9 cu. yd.
Riprap geotextile - 11 sq. yd.

(3) Sta. "NBOFF" 1041+85.63, 31.7' Lt.
Connect to extg. culv. pipe
Const. conc. collar
Const. sloped end section
Inst. 18" storm sew. pipe - 24'
5' depth
S=1.00%
Const. loose riprap (Class 50) - 6 cu. yd.
(Loose riprap pad)
Riprap geotextile - 12 sq. yd.
Gr.=1476.50
F.L.=1474.04 Lt.
F.L.=1473.82 Rt.
(For details, see sht. 2B)

(4) See sht. 5B-3, note 29

(5) Sta. "L-NB" 1038+18.29, 67.63' Lt.
Connect to extg. structure
Adjust inlet
Inst. 30" storm sew. pipe - 196'
10' depth
S=0.49%
F.L.=1474.00
(See dwg. no. RD376)

(6) Sta. "L-NB" 1036+24.65, 94.24' Lt.
Const. manhole 60" dia.
Inst. 30" storm sew. pipe - 161'
10' depth
S=0.88%
Rim=1480.94
F.L.=1474.97 (30" thru)

(7) Const. bioswale
(For details, see sht. GJ-8)

(8) Sta. "SBON" 1033+99.50, 28.00' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 157'
5' depth
S=3.94%
Gr.=1484.45
F.L.=1479.66 (12" thru)

(9) Sta. "SBON" 1034+42.50, 75.00' Rt.
Inst. 12" storm sew. pipe - 65'
5' depth
S=6.75%
Const. sloped end section, Rt.
Const. paved end slope, Rt.
Const. loose riprap (Class 50) - 5 cu. yd.
(Loose riprap pad)
Riprap geotextile - 10 sq. yd.
F.L.=1475.31
(For details, see sht. 2B)

(10) Sta. "NBOFF" 1035+53.00, 87.00' Lt. to
Sta. "NBOFF" 1038.56, 75.00' Lt.
Const. loose riprap (Class 50) - 130 cu. yd.
(Riprap lined channel)
Riprap geotextile - 170 sq. yd.
(For details, see sht. 2B-4)

(11) Sta. "SBON" 1035+45.40, 65.4' Rt. to
Sta. "SBON" 035+99.10, 66.75' Rt.
Const. loose riprap (Class 50) - 25 cu. yd.
(Riprap lined channel)
Riprap geotextile - 32 sq. yd.
(For details, see sht. 2B-4)

(12) Sta. "L-NB" 1040+48.00, 40.00' Lt.
Adjust inlet to finish grade and cap

(13) Sta. "L-NB" 1038+15.00, 45.00' Lt.
Connect to extg. storm sew. pipe
Const. type "G-2MA" inlet
Const. loose riprap (Class 50) - 9 cu. yd.
(Loose riprap pad)
Riprap geotextile - 11 sq. yd.
Gr.=1476.30
F.L.=1472.82
(For details, see sht. 2B)

Notes:
1. Station/Offset callouts for type "G-1," "G-2" and "CG-3" inlets are to face of curb.
2. Top of curb (T.C.) and Top of Grate (Gr.) elevations are approximate. (T.C.) and (Gr.) elevations shall match finish grade surface at inlet.

Remove or abandon extg. pipe shown thus:

Remove extg. inlet shown thus:

Remove extg. manhole shown thus:

No Work Area shown thus:

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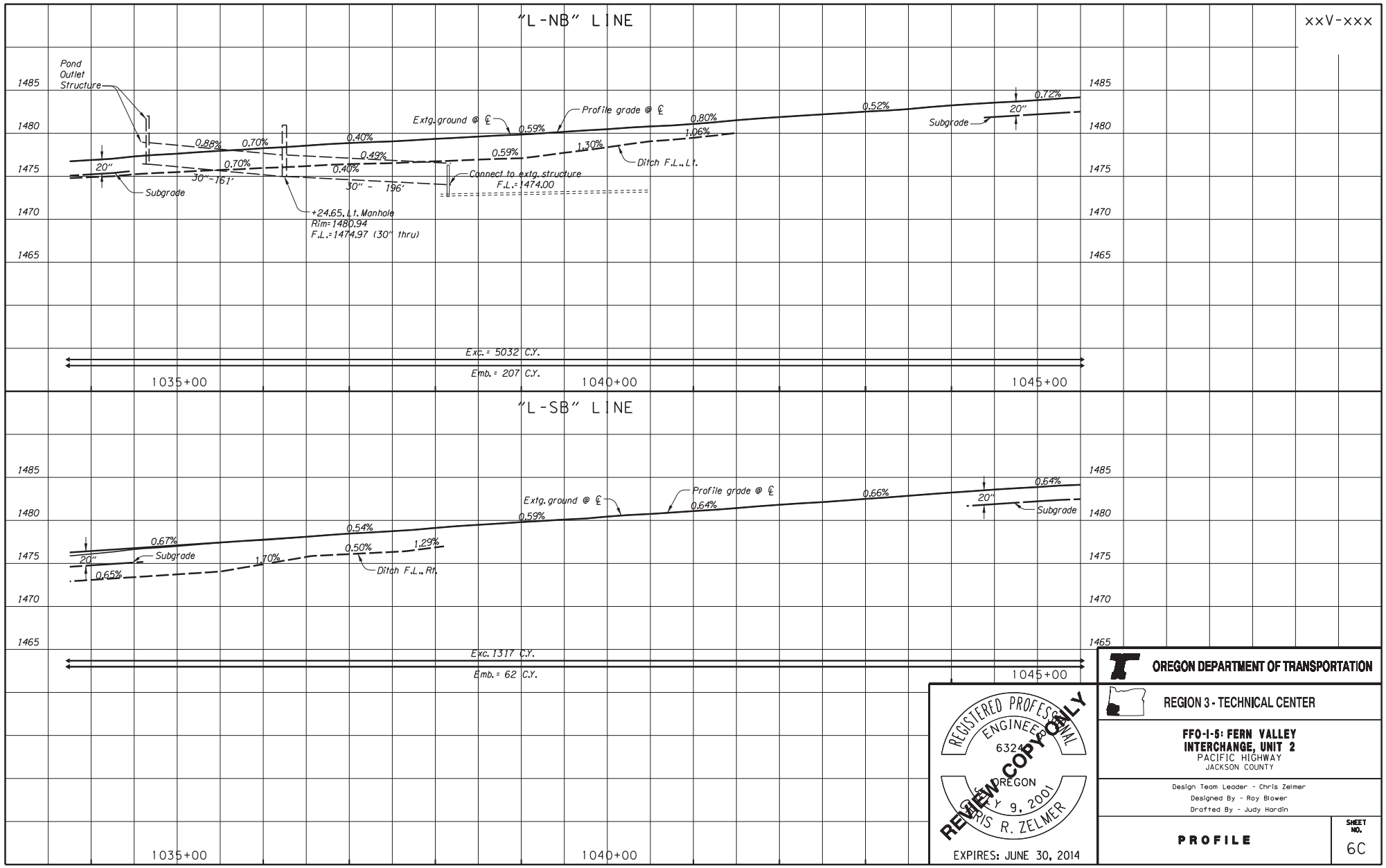
REGION 3 - TECHNICAL CENTER

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

Designed By - Roy Blower
Reviewed by - Rich Coffel
Drafted By - Judy Hardin

DRAINAGE & UTILITIES

SHEET NO. 6B



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REGION 3 - TECHNICAL CENTER

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

Design Team Leader - Chris Zelmer
Designed By - Roy Blower
Drafted By - Judy Hardin

PROFILE

SHEET NO. 6C

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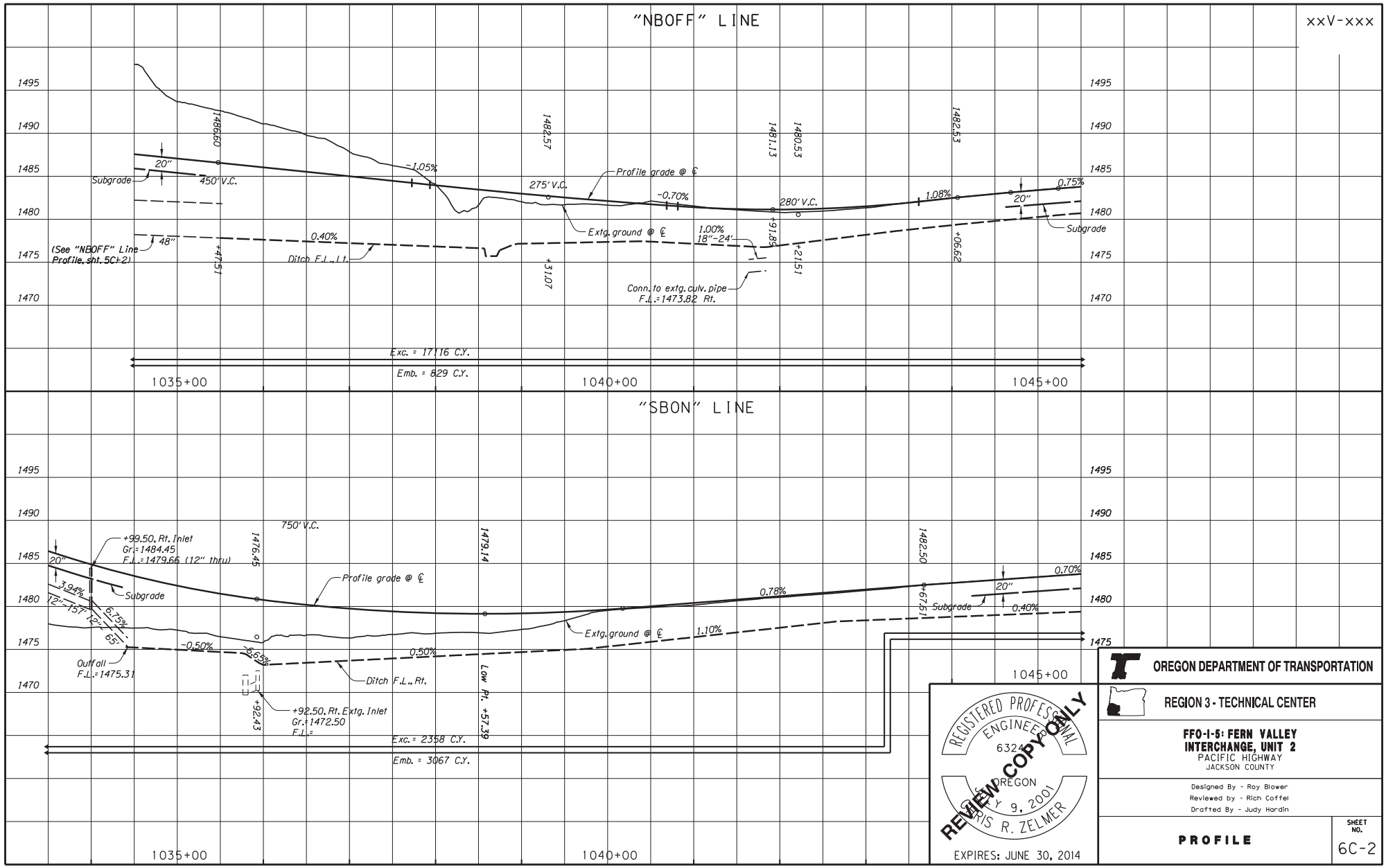

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REGION 3 - TECHNICAL CENTER

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

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PROFILE

SHEET NO. 6C-2

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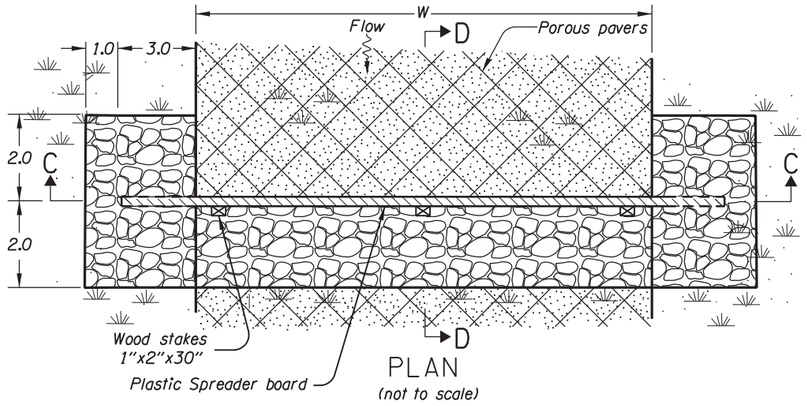
BIOFILTRATION SWALE DETAILS

FINAL REVIEW PLANS



PLAN
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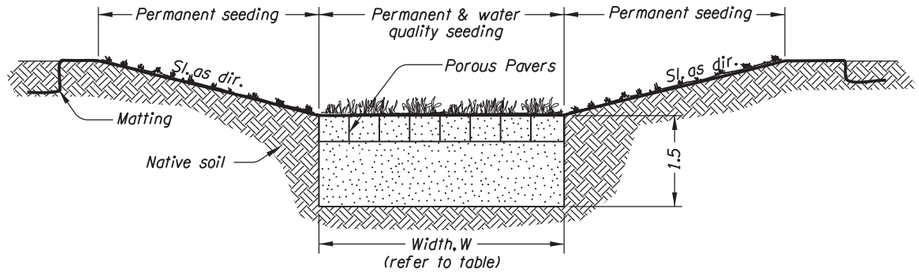
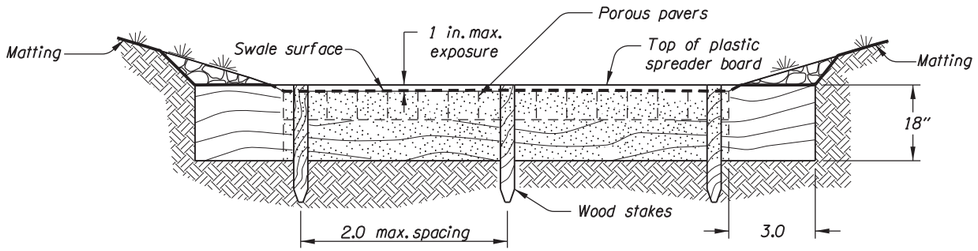


BIOFILTRATION SWALE
(Typical Section, not to scale)



SECTION C-C
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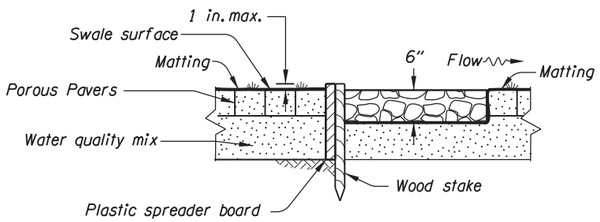

SECTION D-D
(not to scale)

PLASTIC BOARD FLOW SPREADER DETAIL

BIOFILTRATION SWALE DATA		
Sta. to Sta.	W (ft.)	Longitudingl Slope (ft./ft.)
"NP" 72+82.0 to "NP" 73+82.0, Lt.	4.0	.006
"NP" 72+80.0 to "NP" 73+80.0, Rt.	4.0	.002
"NP" 58+65.0 to "NP" 59+65.0, Rt.	4.0	.009
"NP" 55+00.0 to "NP" 56+50.0, Rt.	4.0	.04
"L" 1010+08.0 to "L" 1011+60.0, Rt.	13.0	.005
"L" 1008+35.0 to "L" 1009+35.0, Lt.	10.0	.005
"NBOFF" 1038+85.0 to "NBOFF" 1039+85.0, Rt.	4.0	.005
"SBON" 1036+00.0 to "SBON" 1037+05.0, Rt.	6.5	.005
"SBON" 1034+45.0 to "SBON" 1035+45.0, Rt.	4.0	.01
"L" 1038+30.0 to "L" 1039+30.0, Lt.	4.0	.01
"GR" 412+68.0 to "GR" 413+99.0, Rt.	2.0	0.06

NOTES:
1. Construct spreader board level.
2. Extend spreader board a minimum of 3 feet into side slopes.
3. Reinforce side slopes at flow spreader locally with 1½"-¾" granular drain backfill material..
4. Fasten wood stakes to spreader board with 2½" galvanized wood screws every 3" (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. Omit check slots.
7. Install Type S2 markers at beginning and end of biofiltration swale. See sheet GJ-9 for details.

1½"-¾" Granular Drain Backfill Material

Water quality mix

Note: All dimensions are in feet unless otherwise noted.

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REGION 3 - TECHNICAL CENTER

FFO-I-5: FERN VALLEY INTERCHANGE, UNIT 2
PACIFIC HIGHWAY
JACKSON COUNTY

Designed By - DeLanie Cutsforth
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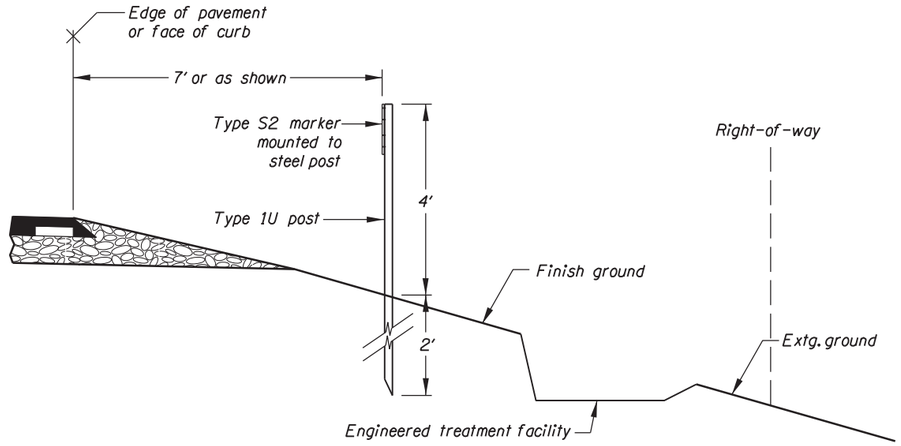
Drafted By - DeLanie Cutsforth

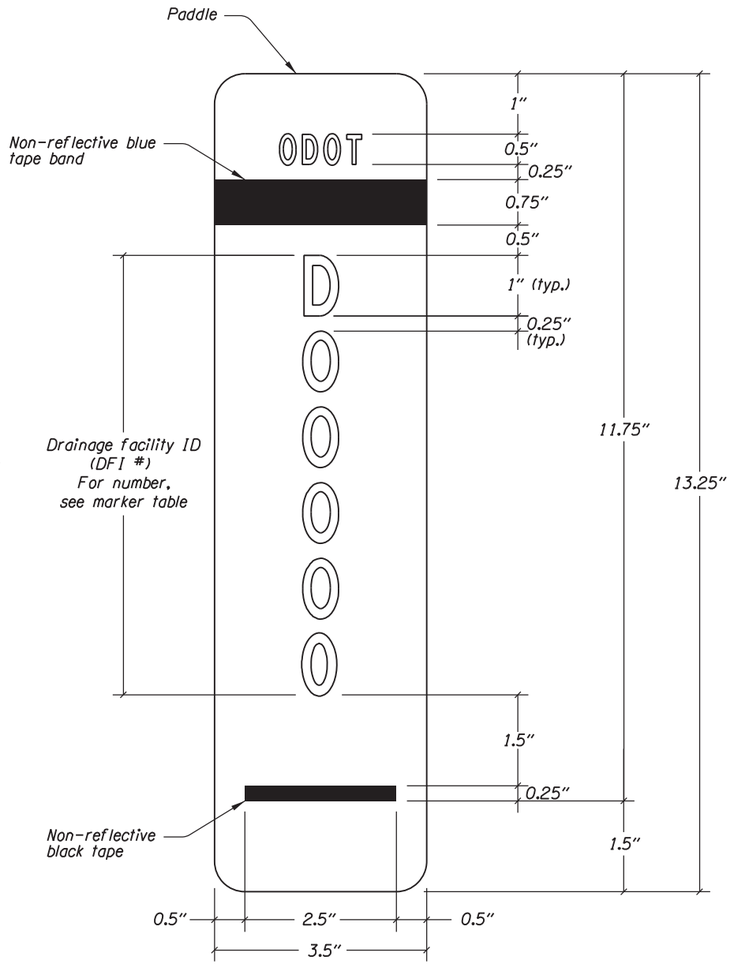
STORMWATER DETAILS

SHEET NO. GJ-8

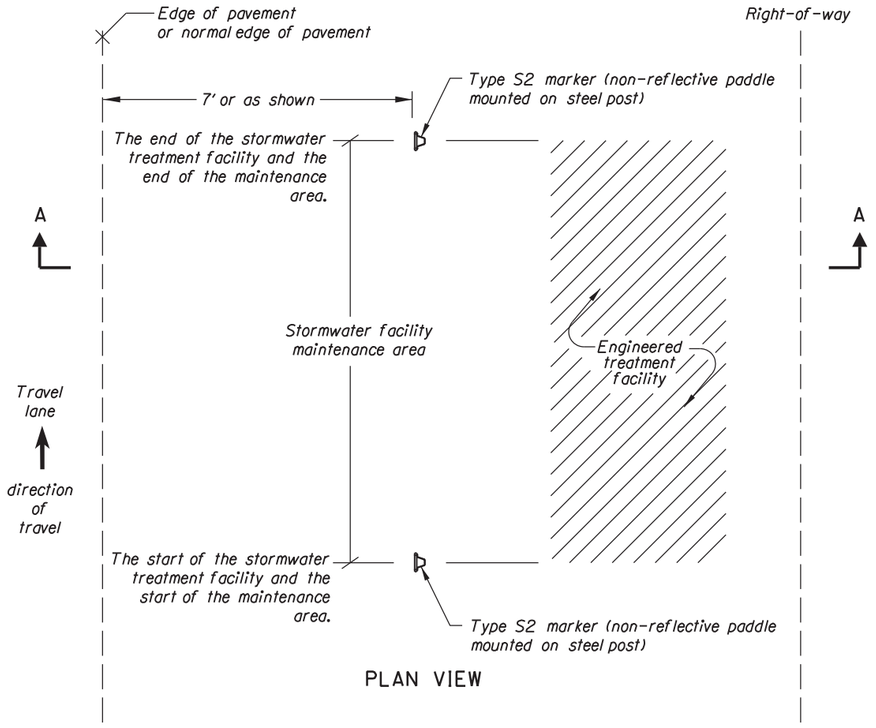
STORMWATER DRAINAGE FACILITY IDENTIFICATION



SECTION A-A



TYPE S2 MARKER



PLAN VIEW

INSTALLATION DETAIL

MARKER TABLE

FACILITY LOCATION	DFI #	TYPE S2 MARKER	
STATION		BEGIN	END
"NBOFF" 1038+85.0, Rt.	D00765		✓
"NBOFF" 1039+85.0, Rt.	D00765	✓	
"SBON" 1034+45.0, Rt.	D00767	✓	
"SBON" 1035+45.0, Rt.	D00767		✓
"SBON" 1036+00.0, Rt.	D00768	✓	
"SBON" 1037+05.0, Rt.	D00768		✓
"L" 1010+08.0, Rt.	D00763	✓	
"L" 1011+60.0, Rt.	D00763		✓
"L" 1008+35.0, Lt.	D00762		✓
"L" 1009+35.0, Lt.	D00762	✓	
"L" 1026+44.0, Lt.	D00760		✓
"L" 1029+17.0, Lt.	D00760	✓	
"L" 1031+65.0, Lt.	D00761		✓
"L" 1034+60.0, Lt.	D00761	✓	
"L" 1038+30.0, Lt.	D00764		✓
"L" 1039+30.0, Lt.	D00764	✓	
"B" 53+67.0, Rt.	D00770	✓	
"B" 55+22.0, Rt.	D00770		✓
"LU" 167+24.0, Rt.	D00766	✓	
"LU" 168+94.0, Rt.	D00766		✓
"GR" 412+68.0, Rt.	D00769	✓	
"GR" 413+99.0, Rt.	D00769		✓

FINAL REVIEW PLANS

Notes:

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 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*
2. *Steel Posts:*
   - *See dwg. no. TM571 for type 1U steel post dimensions*
3. *Place 7 feet from edge of pavement or as directed.*
4. *See marker table for installation locations.*

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STORMWATER DETAILS

SHEET NO. GJ-9