OPERATION & MAINTENANCE MANUAL

DFI No.: D00367
Facility Type: Water Quality Biofiltration Swale

MARCH, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00367**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 43V-108
Location:	District: 7
	Highway No.: 001
	Mile Post: 111.56 / 111.60 (beg./end)
	Description: This facility is located on the western side of I-5 (Hwy 001, Pacific Highway). Access can be obtained from the weigh scale.

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 Hydraulics Engineer (541) 957-3693

Or

Geo-Environmental Senior Hydraulics Engineer (503) 986-3365.

3. Construction

Engineer of Record:	ODOT Designer – Region 3 Tech. Center, James Burford, P.E., 541-957-3573
Facility construction:	2010
Contractor:	LTM, Inc. Construction Company.]

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.

Stormwater for the facility is collected by one inlet in addition to sheet flow from the adjacent weigh scale and sheet flow from the slow lane of I-5. Refer to the Operational Plan in Appendix A. Water conveyed into the swale undergoes treatment as it flows through the length of the channel. The treated water flows out of the swale through a type G2-MA inlet that is connected to an 18-inch storm pipe. This storm pipe directs the flow into the South Umpqua River.

A. Maintenance equipment access:

Maintenance crew can access the facility from the South Umpqua Weigh Scale that is located on the western side of I-5.

B. Heavy equipment access into facility:

☒ Allowed (no limitations)
☐ Allowed (with limitations)
☐ Not allowed

C. Special Features:

☒ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

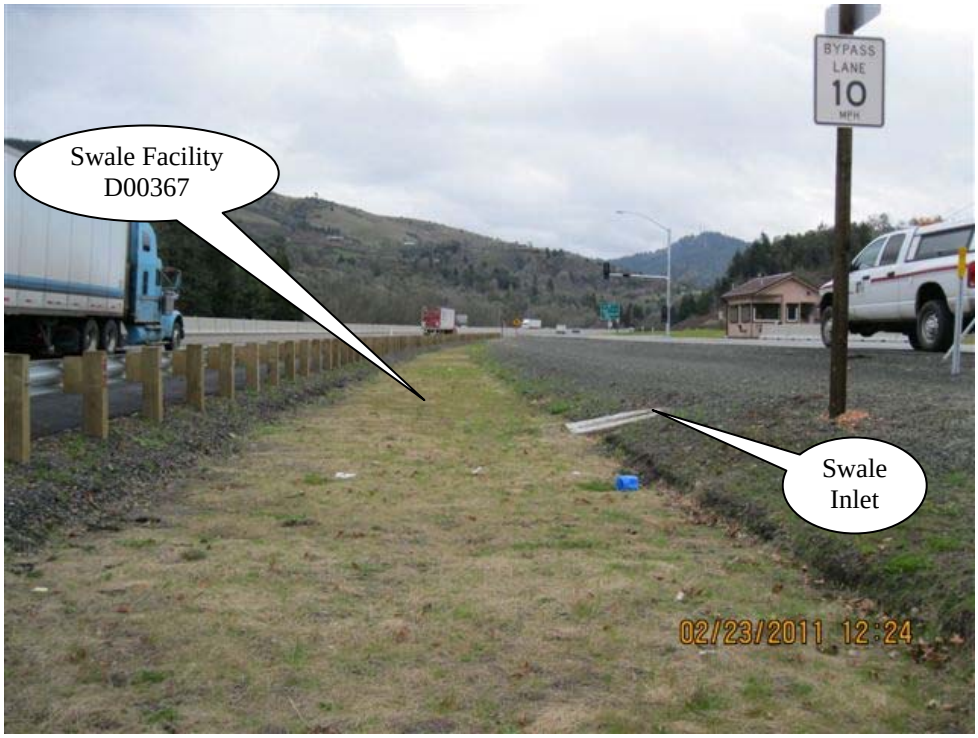


Photo 1: Looking south at the 12-inch storm pipe inlet into the swale. Flow from this culvert receives flow from a portion of the weigh scale shown in the right side of the picture above.

Photo 2: Type G2-MA swale outlet located in the gore between the weigh scale on-ramp and the southbound lanes of I-5.

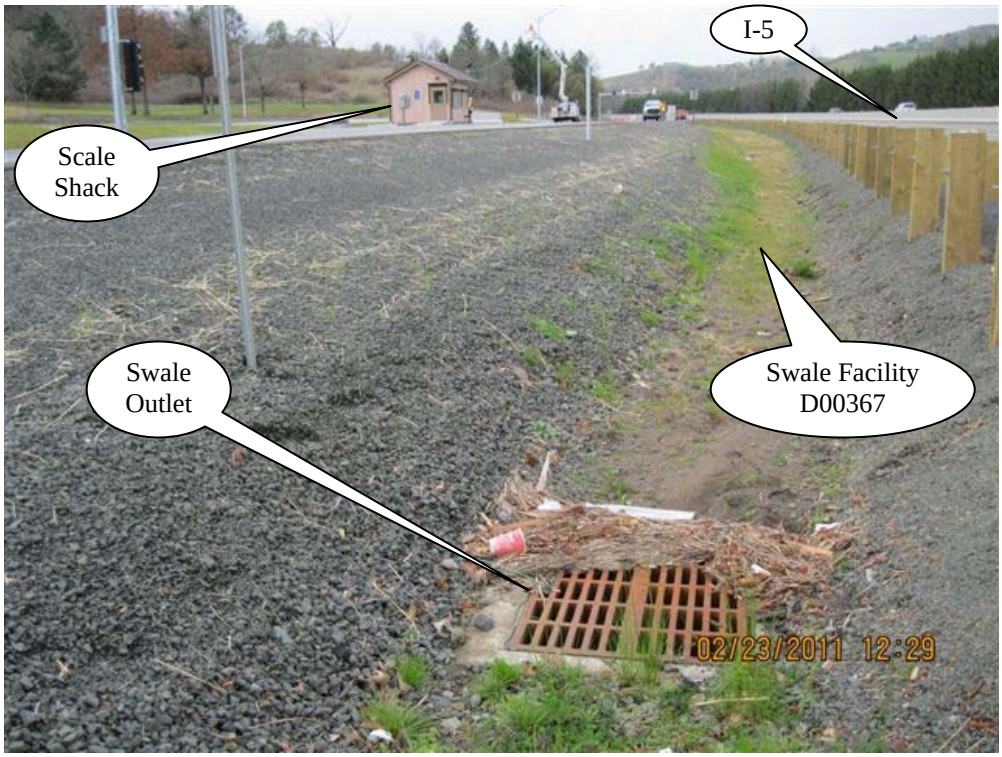


Photo 3: Photo looking north at swale with outlet shown at the bottom of picture.

5. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the 18-inch diameter outlet pipe located at the outlet of the swale facility. Refer to Photo 3 for a picture of the inlet connected to this pipe. A steel plate or sandbags may be considered when blocking the inlet itself, leading to this pipe.

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, as noted below
There is no auxiliary outlet for this facility.

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:N/A

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 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:

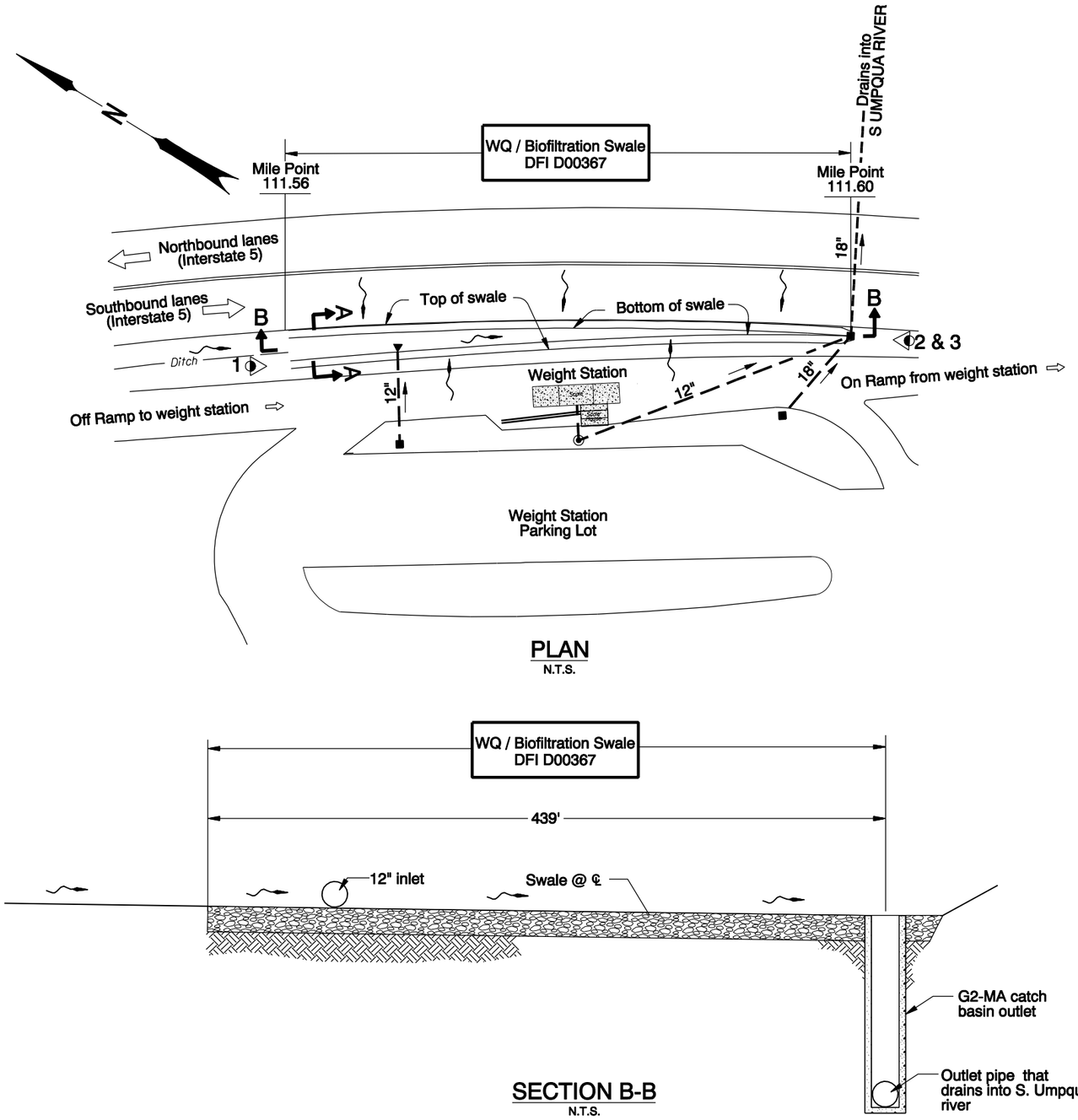
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(541) 957-3594
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

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

S e c. 7, T. 29S, R. 5W, W.M.

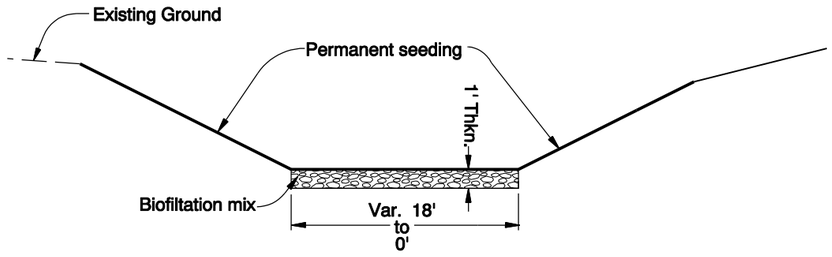


PLAN
N.T.S.

SECTION B-B
N.T.S.

LEGEND:

- Photo Location / Direction
- Manhole (and / or)
- Inlet (and / or)
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path



SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: J. Carpenter

Drafted By: B. Shafer

DFI D00367
MAINTENANCE DISTRICT 7 HWY 1
WATER QUALITY/BIOFILTRATION SWALE
PACIFIC HIGHWAY MP 111.56 - 111.60
DOUGLAS COUNTY

Appendix B

Content:

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

43V-108

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

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, PAVING, SIGNING, SIGNALS, & BUILDINGS

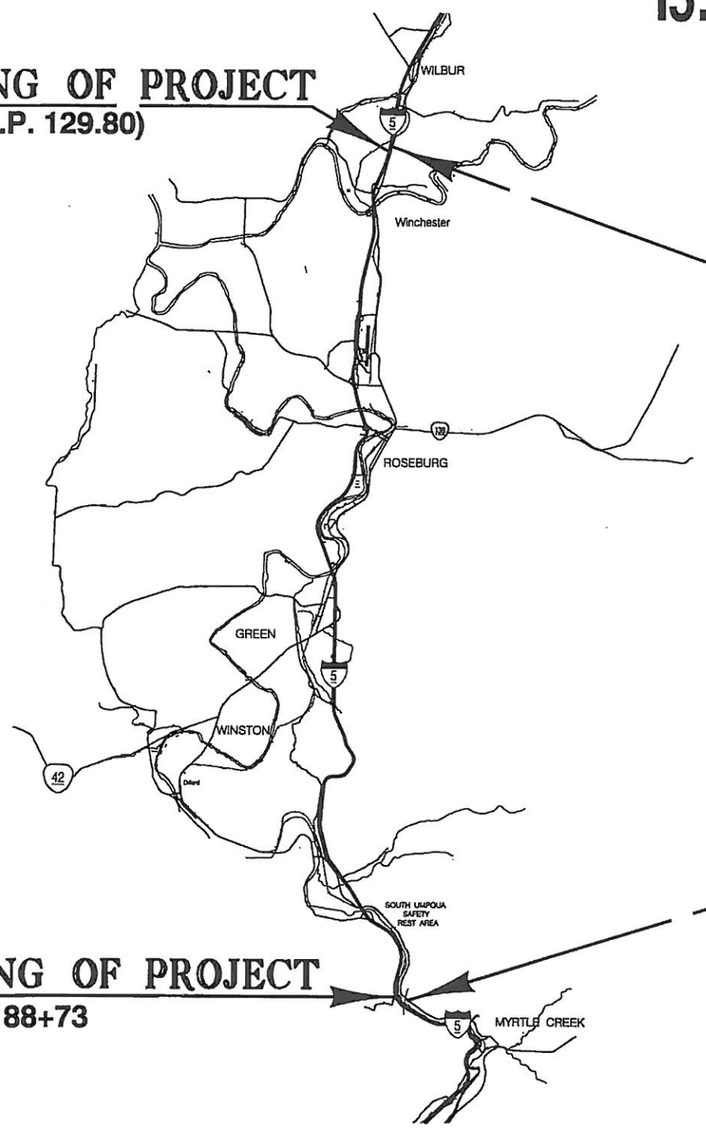
I5: SOUTH UMPQUA WIM

PACIFIC HIGHWAY

DOUGLAS COUNTY
APRIL, 2010

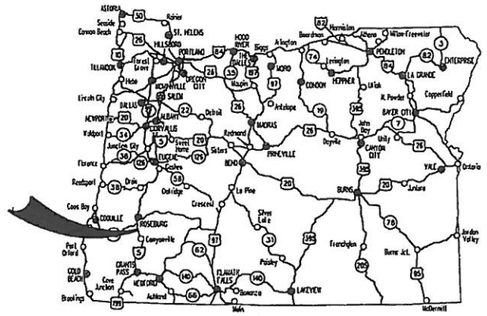
BEGINNING OF PROJECT
STA. "LS" (M.P. 129.80)

END OF PROJECT
STA. "LS" (M.P. 131.08)



END OF PROJECT
FED. AID NH-S001(326)
STA. "LS"3240+68

BEGINNING OF PROJECT
STA. "LS" 3188+73



Overall Length Of Project -2.26 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

OREGON TRANSPORTATION COMMISSION

Gail Achterman	CHAIR
Michael Nelson	VICE-CHAIR
Janice Wilson	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.

Approving Authority: M. Thom 1-26-10
Signature & date

Mark Thompson Rg.3 Tech Ctr. Mgr.

Concurrence by ODOT Chief Engineer

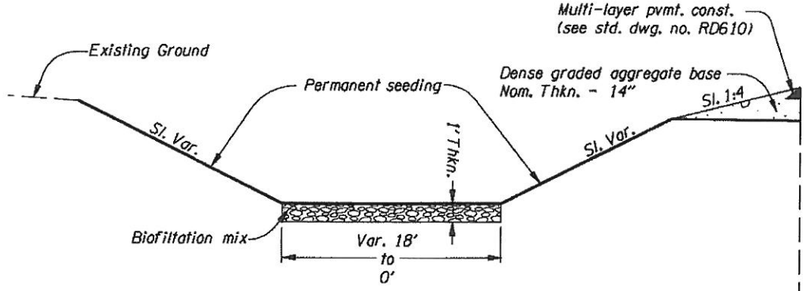
N

T. 29S., R. 5W., W.M.

I5: SOUTH UMPQUA WIM
PACIFIC HIGHWAY
DOUGLAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	NH-S001(326)	1

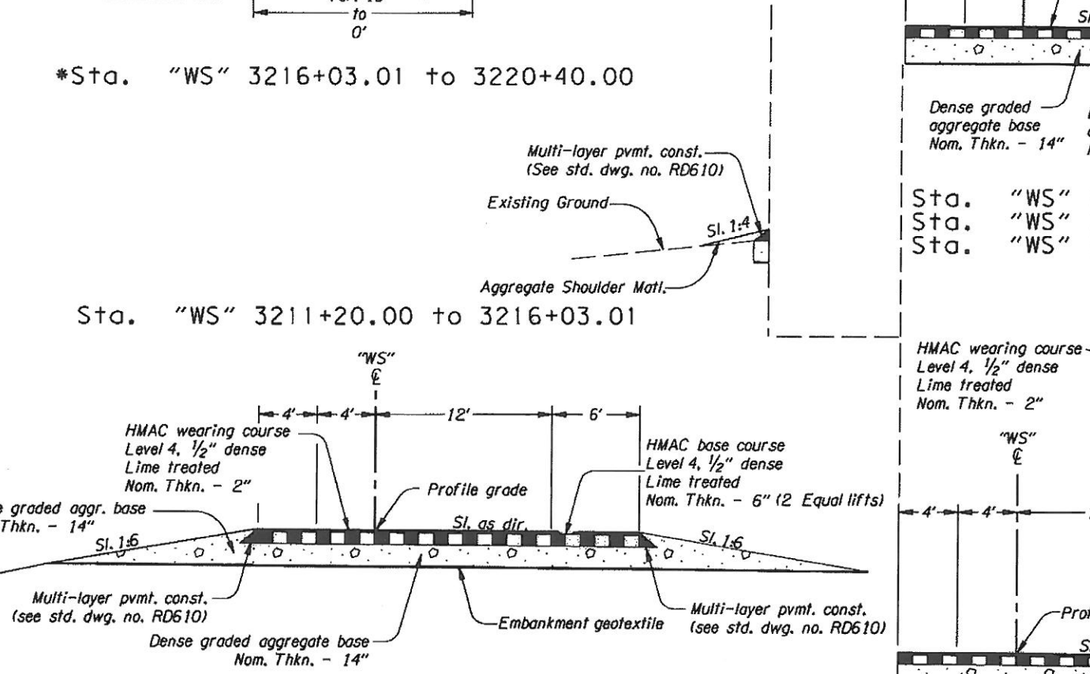
43V-108



*Sta. "WS" 3216+03.01 to 3220+40.00

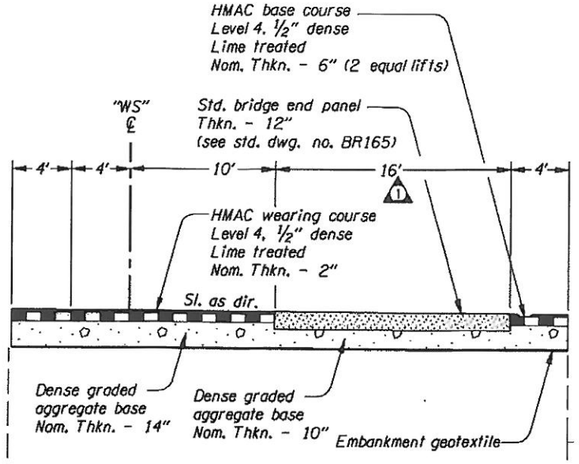
Sta. "WS" 3211+20.00 to 3216+03.01

Sta. "WS" 3222+00.00 to 3224+00.80

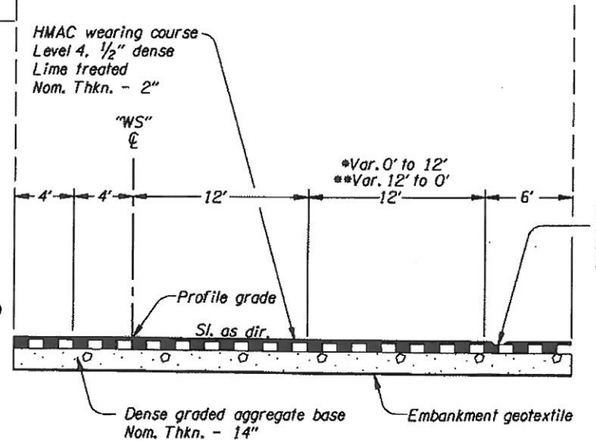


Ramp ("WS" LINE)

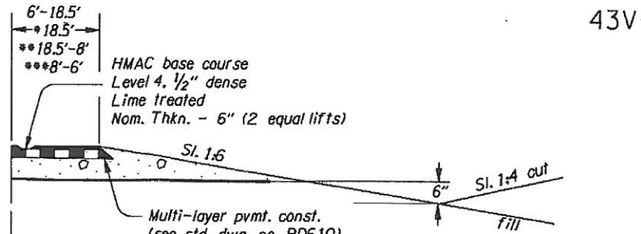
Sta. "WS" 3210+06.23 to 3211+20.00
Sta. "WS" 3220+40.00 to 3222+00.80



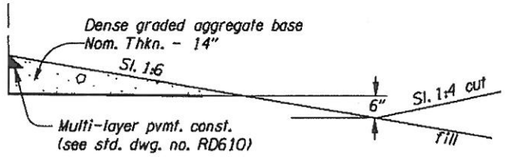
Sta. "WS" 3217+90.63 to 3218+11.05
Sta. "WS" 3218+11.05 to 3218+38.17 (Scale Pit)
Sta. "WS" 3218+38.17 to 3218+58.61



*Sta. "WS" 3211+20.00 to 3213+60.67
Sta. "WS" 3213+60.67 to 3217+90.63
**Sta. "WS" 3218+58.61 to 3220+40.00



Sta. "WS" 3217+52.51 to 3217+64.68
*Sta. "WS" 3217+64.68 to 3218+48.89
**Sta. "WS" 3218+48.89 to 3219+81.00
***Sta. "WS" 3219+81.00 to 3220+32.94



Sta. "WS" 3211+20.00 to 3217+52.51
Sta. "WS" 3220+32.94 to 3223+50.00

NOTE:
1. All Dimensions are shown in feet unless otherwise noted.
2. Side-slopes are shown as vert. to horiz.

No.	DATE	REVISIONS	BY
1	03-29-10	Change to slab width	JB

REGISTERED PROFESSIONAL ENGINEER
64309PE
OREGON
MAY 9, 2000
JAMES PATRIC BURFORD

EXPIRES: 12-31-2011

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I5: SOUTH UMPQUA WIM
PACIFIC HIGHWAY
DOUGLAS COUNTY

Design Team Leader - James P. Burford
Designed By - Jered Carpenter
Drafted By - Billy Shafer

TYPICAL SECTIONS

SHEET NO. 2

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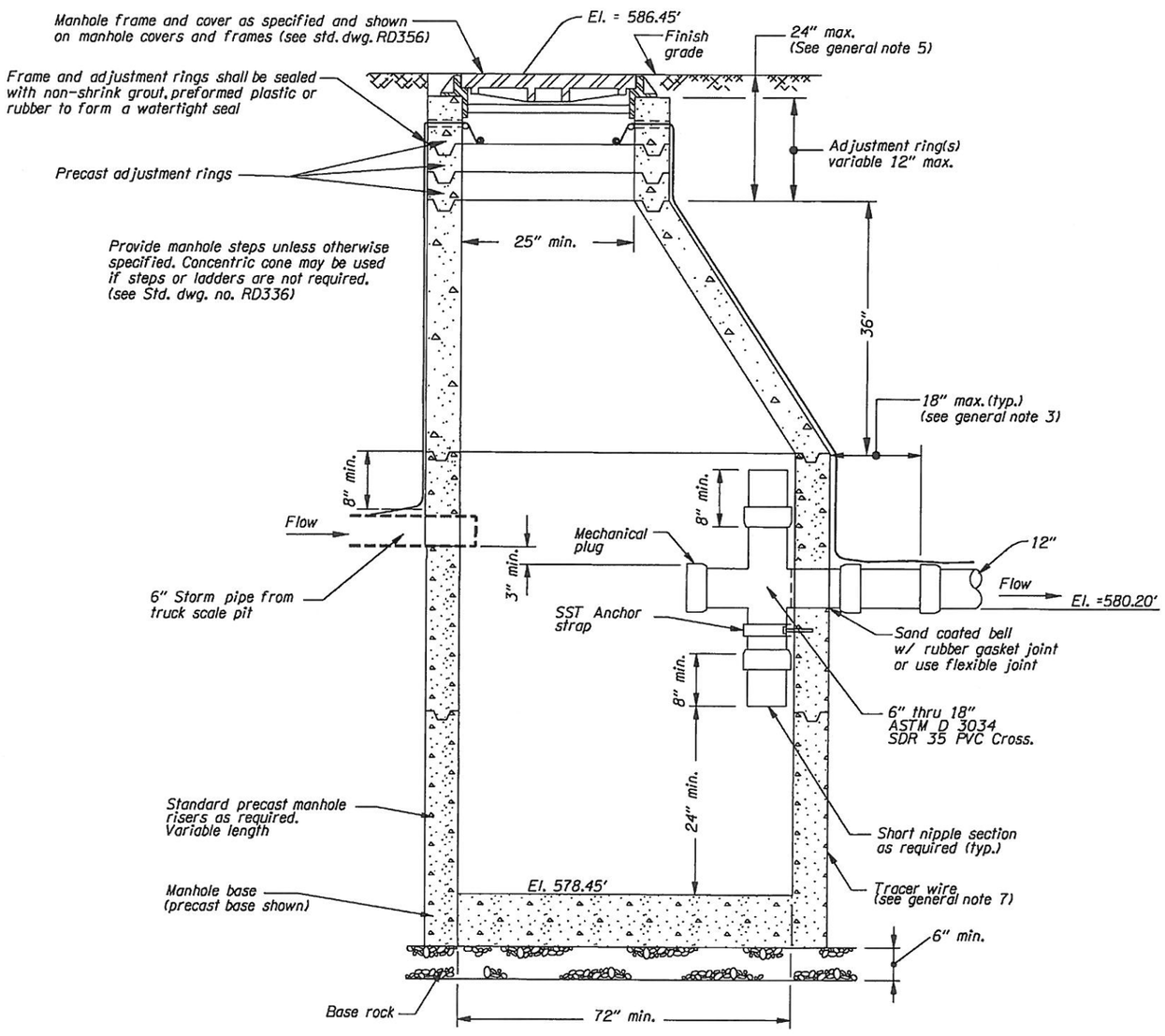
SHT 2

POLLUTION CONTROL MANHOLE

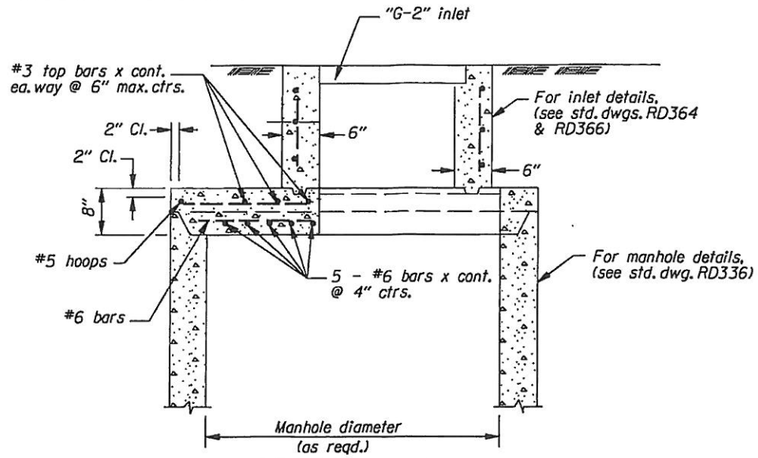


GENERAL NOTES FOR ALL DETAILS:

1. All precast sections shall conform to requirements of ASTM C478.
2. Standard precast manhole section diameter shall be 72". maximum pipe diameter 18".
3. All connecting pipes shall have a flexible, gasketted, and unrestrained joint within 18" of manhole wall.
4. See std. dwg. RD346 for manhole base section.
5. See std. dwg. RD336 for manhole steps details.
6. Adjust 24" max.
7. See std. dwg. RD336 for tracer wire details.

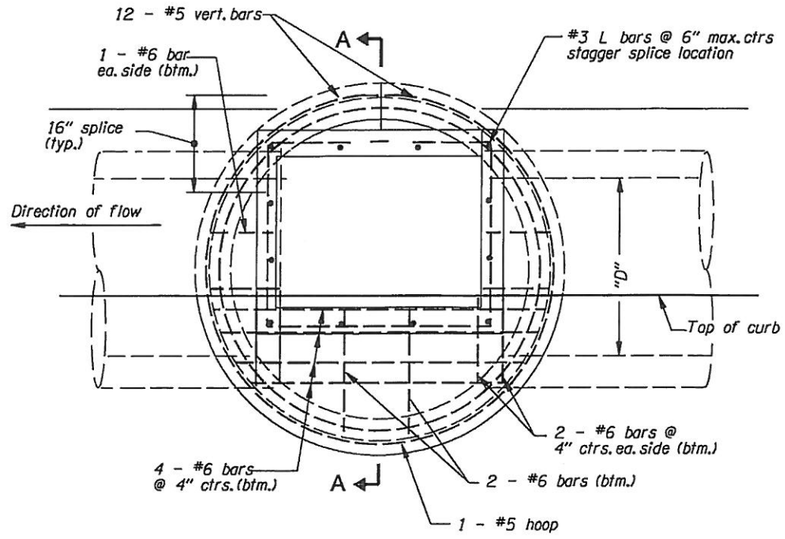
MODIFIED STORM SEWER MANHOLE

43V-108



SECTION A-A

"D" = Pipe Dia.



PLAN

REGISTERED PROFESSIONAL ENGINEER
64309PE
OREGON
MAY 9, 2000
JAMES PATRIC BURFORD

EXPIRES: DECEMBER 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I5: SOUTH UMPQUA WIM
PACIFIC HIGHWAY
DOUGLAS COUNTY

Design Team Leader - James P. Burford
Designed By - Jered Carpenter
Drafted By - Linda K. Coffel

DETAILS

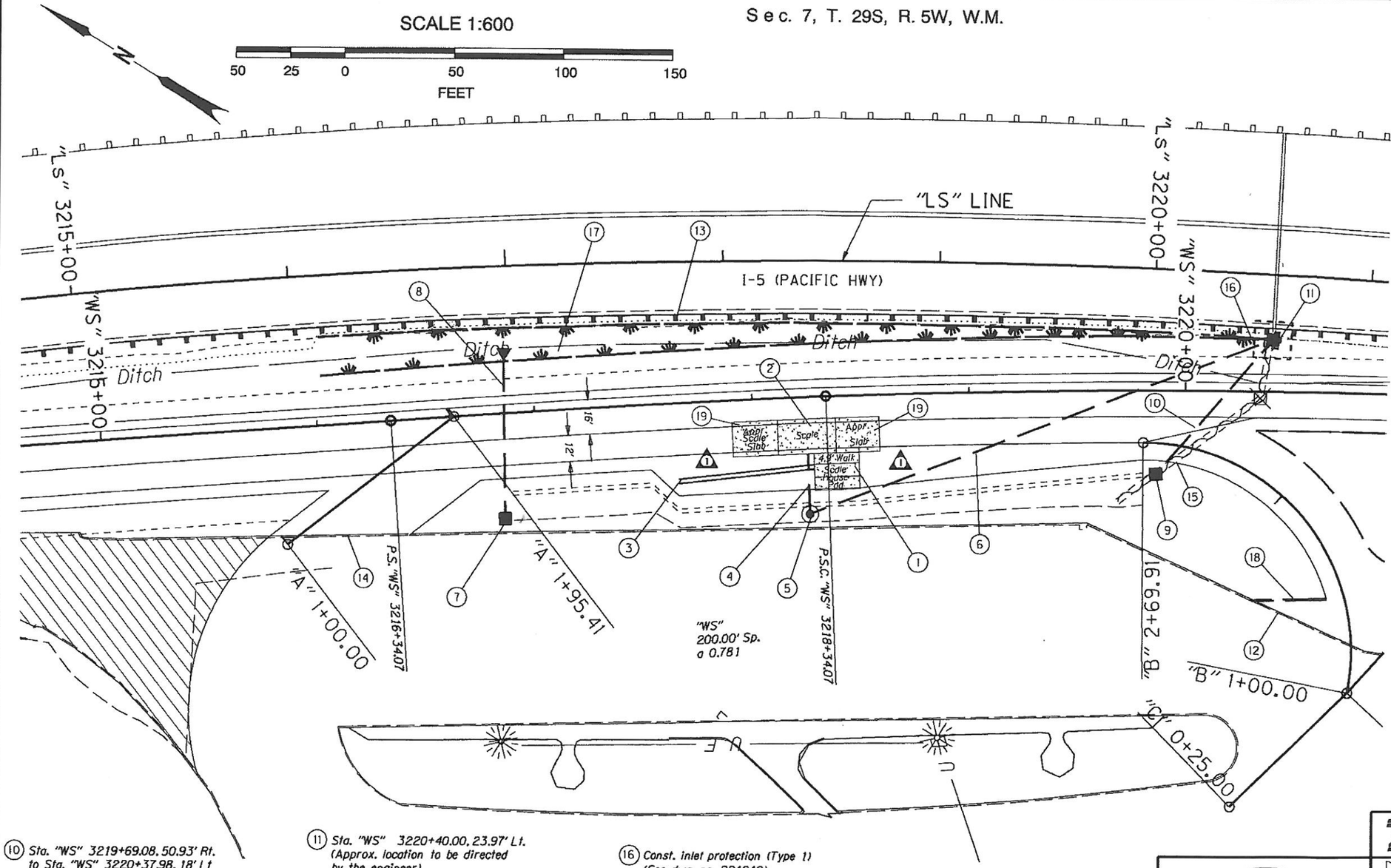
SHEET NO. 2B

SCALE 1:600

50 25 0 50 100 150
FEET

Sec. 7, T. 29S, R. 5W, W.M.

43V-108



(1) Const. scale house
(For details, see shts. S-1, S-2, A-1, & E-1)

(2) "WS" 3218+24.6, 18.15 Rt. (Ctr. Pit)
Static scale pit
Work to be done by others

(3) Sta. "WS" 3217+64.60, 35.82 Rt.
to Sta. "WS" 3218+27.65, 32.20' Rt.
Const. conc. median barrier - 62.5'
(Flare rate = 15:1)
(See dwg. no. RD500)

(4) Sta. "WS" 3218+24.85, 26.03' Rt.
to Sta. "WS" 3218+24.85, 53.72' Rt.
Inst. 6" storm sewer pipe - 27.7'
5' Depth
(For details see shts. 2B & 2D)

(5) Sta. "WS" 3218+24.85, 53.72' Rt.
Const. polution control manhole
(For details, see sht. 2B)

(6) Sta. "WS" 3218+24.85, 53.72' Rt.
to Sta. "WS" 3220+40.00, 23.97' Lt.
Inst. 12" storm sew. pipe - 228'
5' depth
(For details see sht. 2D)

(7) Sta. "WS" 3216+83.64, 47.86' Rt.
Const. type "G-2 inlet
(See dwg. no. RD364 for details)

(8) Sta. "WS" 3216+83.64, 47.86' Rt.
to Sta. "WS" 3216+87.22, 23.9' Lt
Inst. 12" storm sew. pipe - 72.3'
5' depth
Const. paved end slope, Lt. - 32 sq. ft.
(For details, see sht. 2D)

(9) Sta. "WS" 3219+69.08, 50.93' Rt.
Const. modified storm sew. manhole
Connect to extg. pipe
(For details see sht. 2B)

(10) Sta. "WS" 3219+69.08, 50.93' Rt.
to Sta. "WS" 3220+37.98, 18' Lt
Inst. 18" storm sew. pipe - 103'
5' depth

(11) Sta. "WS" 3220+40.00, 23.97' Lt.
(Approx. location to be directed by the engineer)
Const. type "G-2MA" inlet
Connect to extg. pipe

(12) Remove extg. curb - 67'

(13) See sht. 7, note 2

(14) Remove extg. curb - 66'

(15) Remove extg. pipe - 102'
Remove extg. inlet

(16) Const. inlet protection (Type 1)
(See dwg. no. RD1010)

(17) Sta. "WS" 3216+03.01,
to Sta. "WS" 3220+40.00
Const. biofiltration swale
(For details see sht. 2)

(18) Const. Std. curb - 35'
(See dwg. no. RD700)

(19) Std. bridge end panel used as approach slab. (1)
To be done by others.

Denotes remove and replace surfacings as direced by the engineer

Denotes removal of surfacings, regrade as directed by engineer, place topsoil matl. suitable for plant re-establishment.

Note: Irrigation lines exist throughout the project limits and may be abandoned or removed as required.

No.	DATE	REVISIONS	BY
1	03-29-10	Change to approach slab	B

REGISTERED PROFESSIONAL ENGINEER
64309PE
OREGON
MAY 9, 2000
JAMES PATRIC BURFORD
EXPIRES: DECEMBER 31, 2011

OREGON DEPARTMENT OF TRANSPORTATION

REGION 3 - TECHNICAL CENTER

I5: SOUTH UMPQUA WIM
PACIFIC HIGHWAY
DOUGLAS COUNTY

Design Team Leader - James Burford
Designed By - Jered Carpenter
Drafted By - Billy Shafer

GENERAL CONSTRUCTION

SHEET NO. 8

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SHT 8