OPERATION & MAINTENANCE MANUAL

Water Quality Media Filter Drain Ditch

Manual prepared: July 2019

DFI No. D00607

Figure 1: DFI No. D00607, looking [northwest]

Identification

Drainage Facility ID (DFI):	D00607
Facility Type:	Water Quality Media Filter Drain Ditch
Construction Drawings:	(V-File Numbers) 45v-029
Location:	District: 1
	Highway No.: 47
	Mile Post: 56.96 to 57.51, [median]

1. Manual Purpose

The purpose of this manual is to outline inspection needs and summarize maintenance actions.

2. Facility Location

The location map below details the facility location. The highway, mile posts, side streets, access location, and stormwater flow directions are noted on the map.

Facility location type: Roadway shoulder

Flow direction: [east and west]

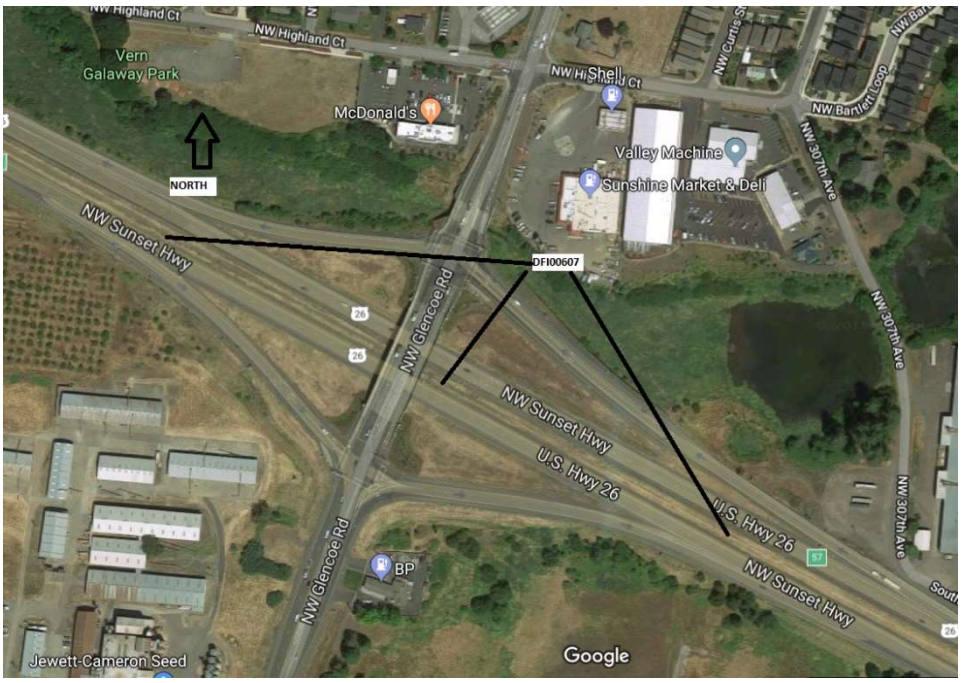


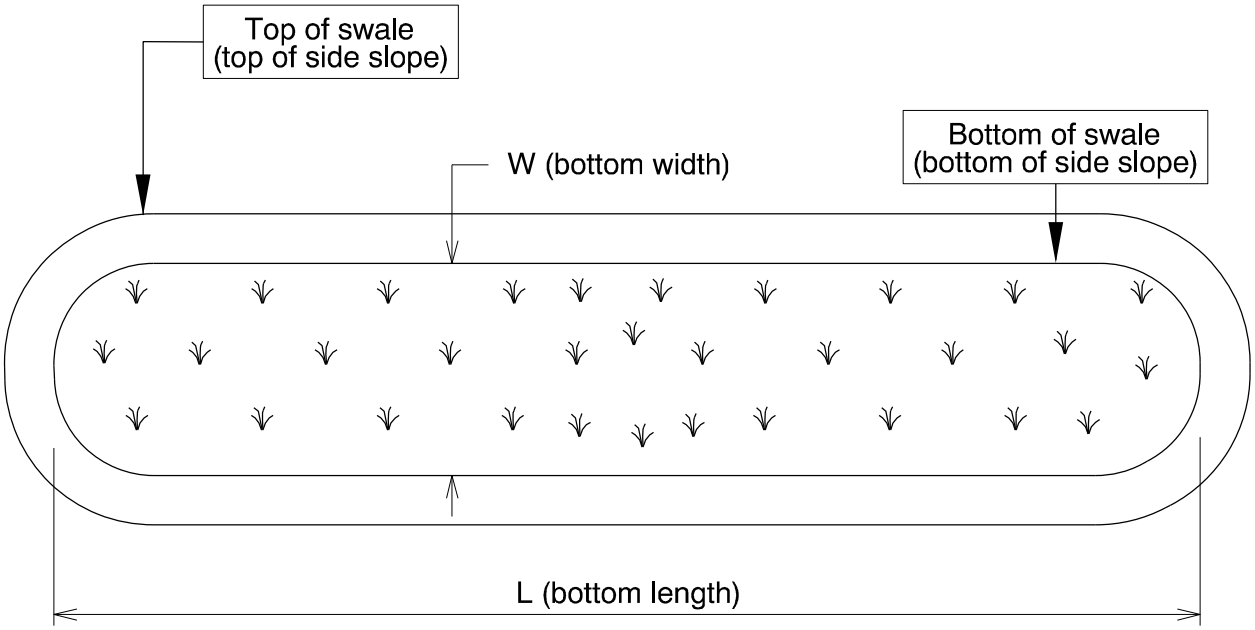
Figure 2: Facility location map

3. Facility Summary

This facility is similar to a swale geometrically. The length and width of this facility is based on the bottom dimensions.

The bottom length and bottom width of the facility is:

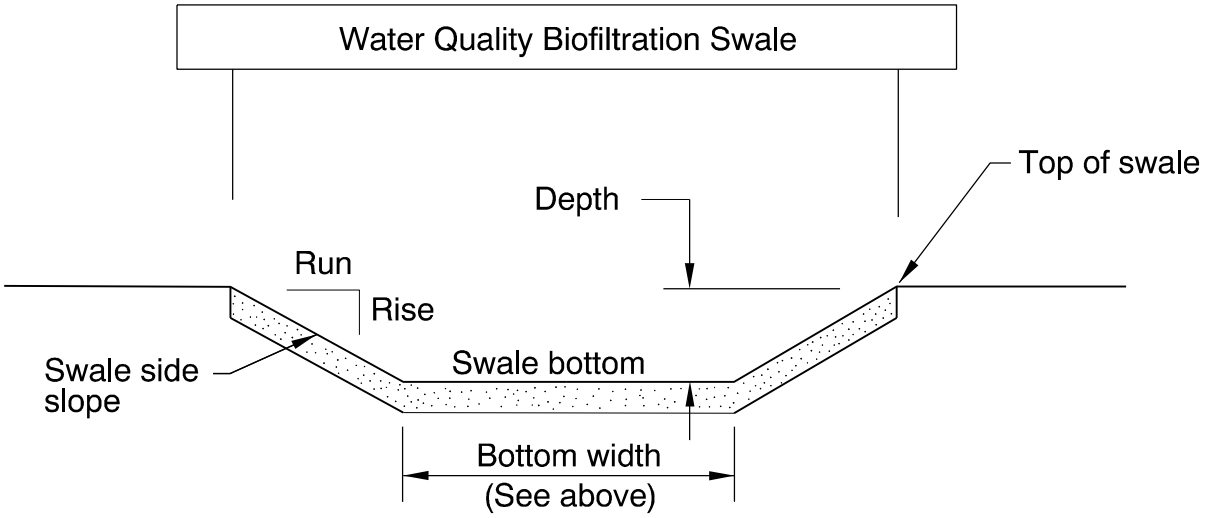
Bottom Length (feet)	Bottom Width (feet)
1037	8



The depth of the facility is the vertical distance measured from the bottom of the swale to the top. The slope of the facility sides is presented by a vertical distance (rise) followed by the horizontal distance (run).

Depth and side slopes:

Depth (feet)	Rise (feet)	Run (feet)
Varies	**1**	**4**



Site Specific Information: Water enters this facility by flowing off half of either the westbound or eastbound lanes of the Sunset highway. Water flows through the facility before exiting through two 18" diameter, north flowing pipes. The 12" diameter perforated pipes connected to the area drains are 10' long.

4. Facility Access

Maintenance access to the facility:

☐Roadside pad	☒Roadside shoulder
☐Access road with Gate	☐Access road without Gate

Figure 3: [looking northwest]

5. Operational Components / Maintenance Items

Classification

This facility is classified as an:

☒ On-line Facility	☐ Off-line Facility
A facility that does not include a high flow bypass component; flow drains into and through the facility	**A facillity that treats low/small flows and diverts high flows using a bypass component**

Bypass Component

This facility includes a high flow bypass component:

☒ No	☐ Yes
There is no bypass component. High flows drains into and through the facility	**There is a bypass component. Only low/small flows drain into the swale. High flows are diverted around the swale using a bypass component**

Operational Components

This facility has many components that assist with treatment, conveyance, and reducing flow velocity to minimize erosion. The components in use can vary depending if the facility was designed to operate on-line or off-line. The facility components table (**Table 1**) has been provided to highlight the applicable components for this facility. The component is in use when the box contains an "x" (e.g. ☒).

Operational Plan

The applicable standard operational plan for this facility is:

☒ **Operational Plan A**	☐ **Operational Plan B**	☐ **Operational Plan C**
A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A, B, C) are provided in the Standard Operation Manual.		

See Appendix A for the site specific operational plan.

Maintenance Items

Operational components marked in **Table 1** should be inspected and maintained according to Section 7. Each facility component is defined and detailed in the Standard Operation Manual using the associated ID number indicated below.

Table 1: Swale Components		**ID #**
Manholes/Structures		
Pre-treatment manhole	☐	**S1**
Weir type flow splitter/flow splitter manhole	☐	**S2**
Orifice type flow splitter/flow splitter manhole	☐	**S3**
Standard manhole	☐	**S4**
Swale Inlet		
Pavement sheet flow	☒	**S5**
Inlet Pipe (s)	☐	**S6**
Open channel inlet	☒	**S7**
Riprap pad	☐	**S8**
Ground Cover		
Grass bottom	☐	**S9**
Grass side slopes	☒	**S10**
Granular drain rock	☒	**S11**

Plantings	☐	**S12**
Underground Components		
Geotextile fabric	☒	**S13**
Water quality mix	☒	**S14**
Perforated pipe	☒	**S15**
Porous pavers (access grid)	☐	**S16**
Flow Spreader		
Rock basin (used at inlet)	☐	**S17**
Anchored board (midpoint of swale or every 50 feet along swale bottom)	☐	**S18**
Other: N/A	☐	**S19**
Swale Outlet		
Catch basin with grate	☒	**S20**
Outlet Pipe (s)	☒	**S21**
Open channel outlet	☐	**S22**
Auxiliary Outlet: N/A	☐	**S23**
Outfall Type		
Waterbody (**C**reek/**L**ake/**O**cean)	☒ **C** ☐ **L** ☐**O**	**S24**
Ditch	☐	**S25**
Storm drain system	☐	**S26**
Outfall Components		
Riprap pad	☐	**S27**
Riprap bank protection	☒	**S28**

6. Maintenance

Maintenance Frequency/Maintain Records

a. Inspect annually. Preferably prior to the rainy season.
b. Clean and maintain as necessary. Refer to Activity 125 for conditions when maintenance is needed.
c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The ODOT Routine Road Maintenance Water Quality and Habitat Guide (the *Blue Book*) outlines the standard maintenance actions for water quality facilities under Activity 125.

There are standard maintenance tables for standard ODOT designs. The maintenance tables describe the maintenance component, the defect or problem, the condition when maintenance is needed, and the recommended maintenance to correct the problem. Use the following tables to maintain ODOT swales:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 3 (Maintenance of Water Quality or Biofiltration Swales): Contains maintenance information for swales

The *Blue Book* can be viewed at the following website:
http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

7. Limitations

Access grid installed:

☒ No	☐ Yes
There are no duty porous pavers installed in this swale	

If an access grid is **NOT** installed, vehicles entering the facility can create depressions (tire ruts), damage vegetation, and damage structural components (e.g. flow spreaders). These conditions may result in poor treatment and drainage performance.

Equipment wheels should be kept on the tops and side slopes. Mower arms may be run along the facility bottom.

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

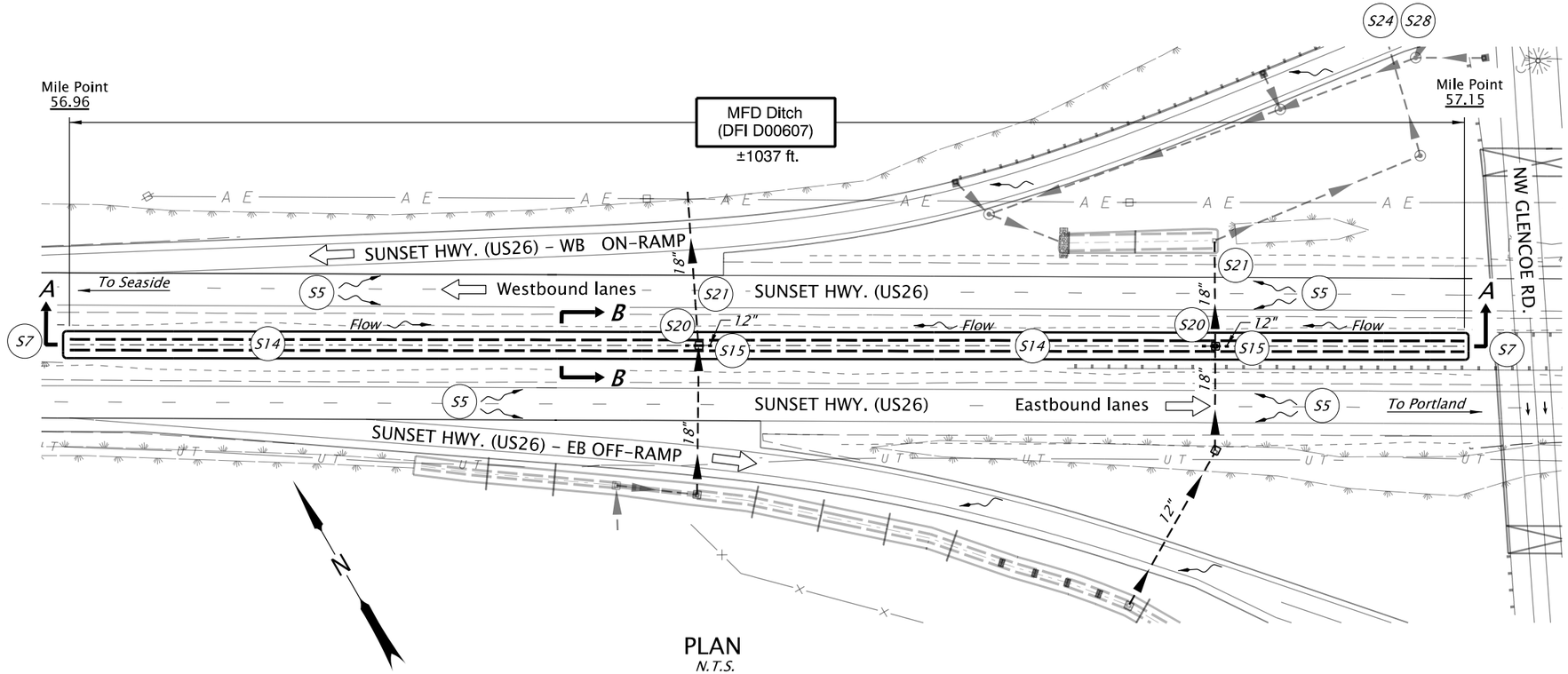
Contact any of the following for more detailed information about management of waste materials found on site:

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

A Appendix A – Site Specific Operational Plan

Contents:

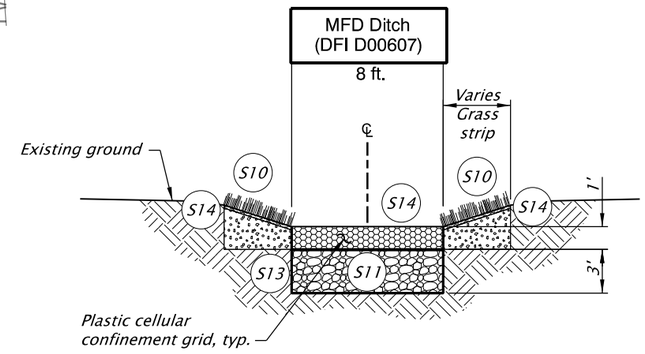
Operational Plan: DFI D00607



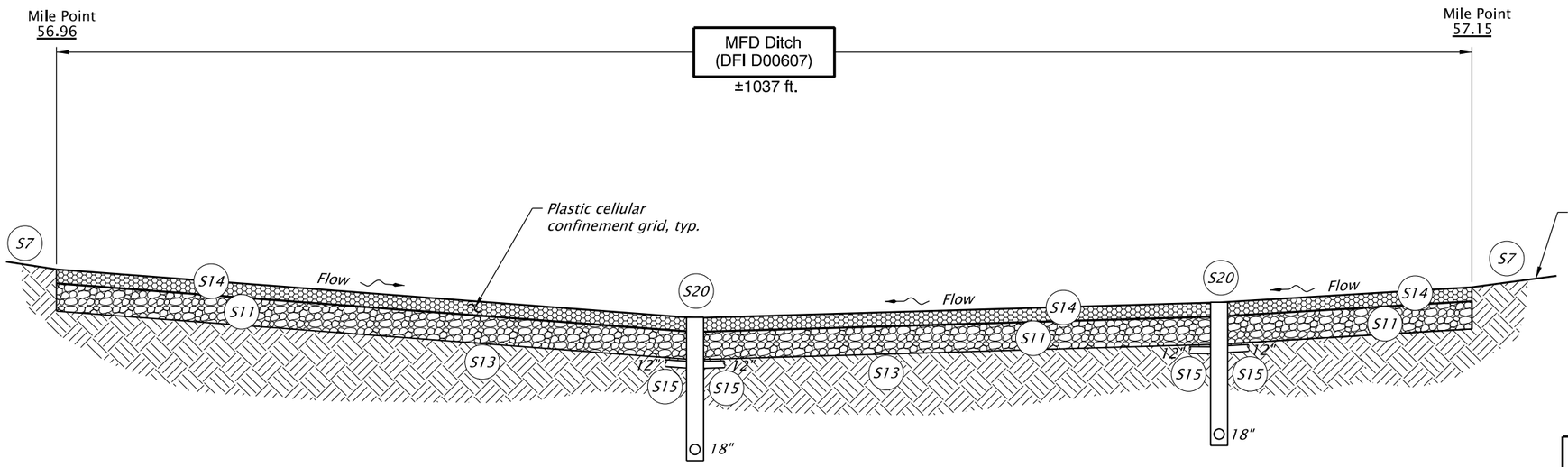
PLAN
N.T.S.

LEGEND:

- *Facility Component (see table 1 in O&M Manual)*
- *Manhole*
- *Inlet*
- *Storm Pipe (Facility)*
- *Storm Pipe*
- *Ditch Line*
- *Swale Boundary*
- *Conveyance Direction*
- *Pavement / Facility Flow Path*
- *Traffic Flow Direction*



SECTION B–B
N.T.S.



SECTION A–A
N.T.S.

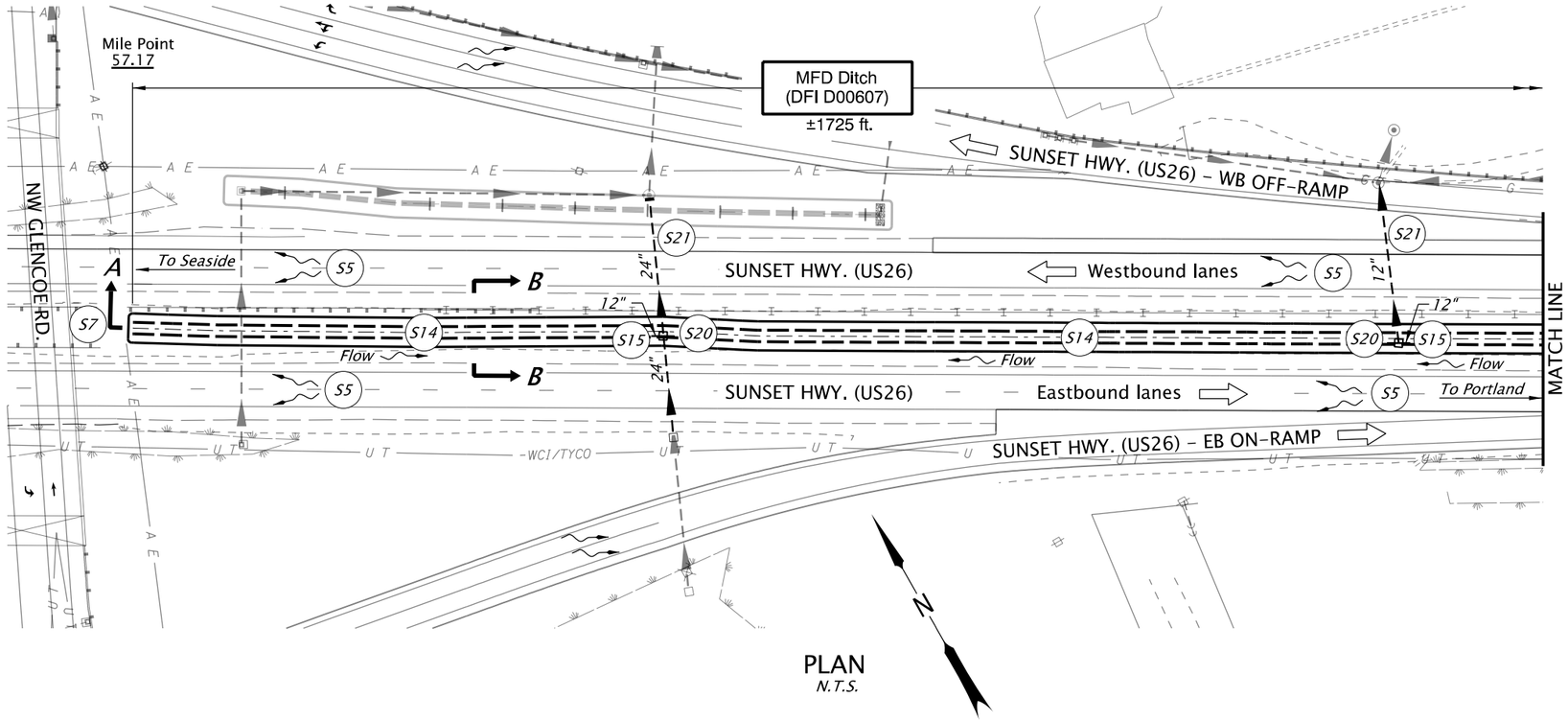
OREGON DEPARTMENT OF TRANSPORTATION

Sht. 1 of 3

Prepared By: Christopher Carman

Drafted By: Jeff Coon

DFI D00607
MAINTENANCE DISTRICT 1 HWY 47
WATER QUALITY BIOSLOPE/MEDIA FILTER
SUNSET HIGHWAY MP 56.96
WASHINGTON COUNTY

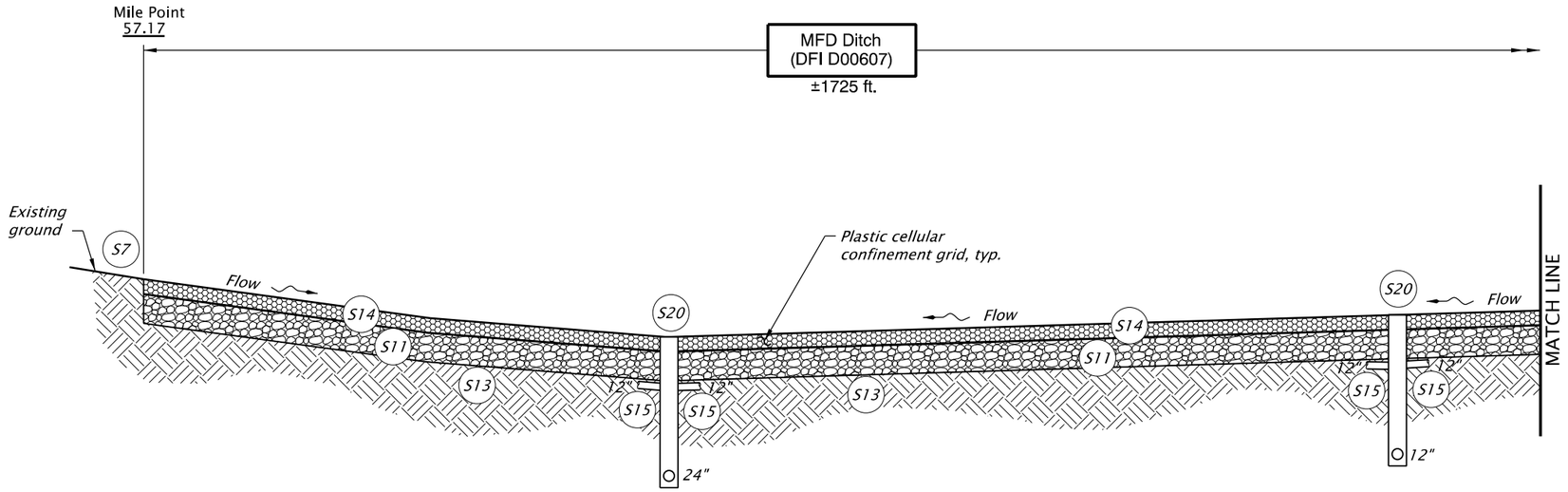


PLAN
N.T.S.

LEGEND:

- *X#* — *Facility Component (see table 1 in O&M Manual)*
- *Manhole*
- *Inlet*
- *Storm Pipe (Facility)*
- *Storm Pipe*
- *Ditch Line*
- *Swale Boundary*
- *Conveyance Direction*
- *Pavement / Facility Flow Path*
- *Traffic Flow Direction*

Note:
See Sht 1 of 3 (DFI D00607) for "SECTION B–B" detail.



SECTION A–A
N.T.S.

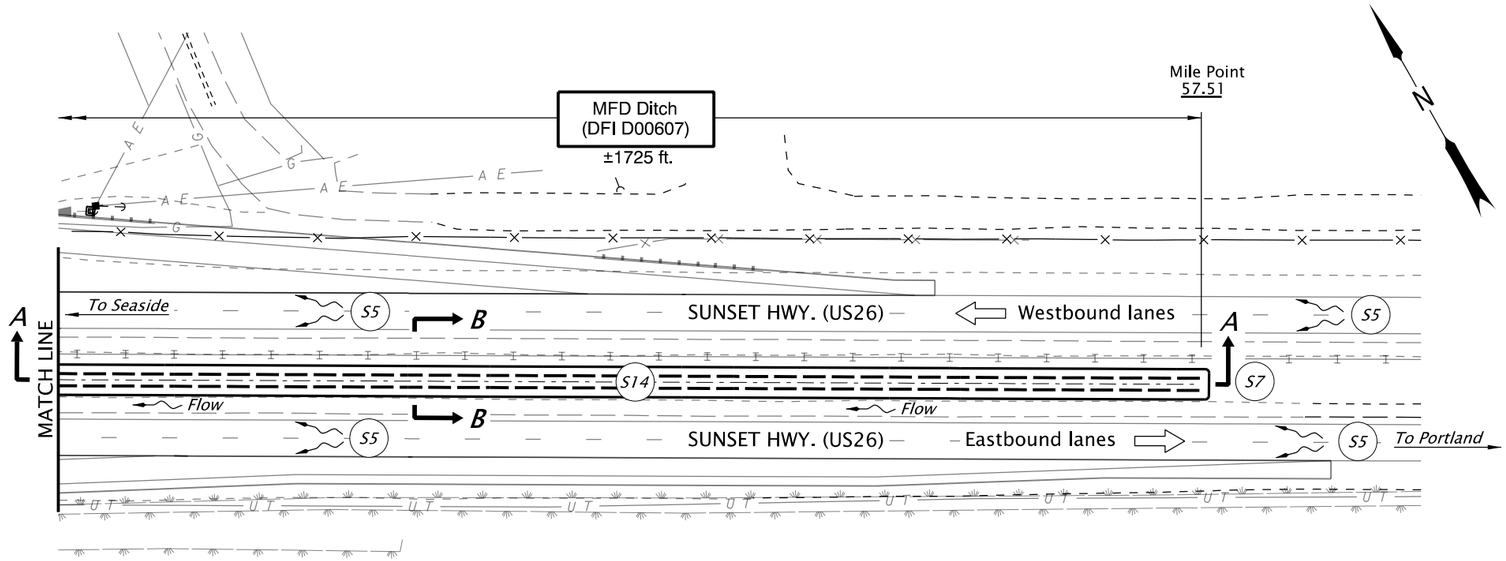
OREGON DEPARTMENT OF TRANSPORTATION

Sht. 2 of 3

Prepared By: Christopher Carman

Drafted By: Jeff Coon

DFI D00607
MAINTENANCE DISTRICT 1 HWY 47
WATER QUALITY BIOSLOPE/MEDIA FILTER
SUNSET HIGHWAY MP 56.96
WASHINGTON COUNTY

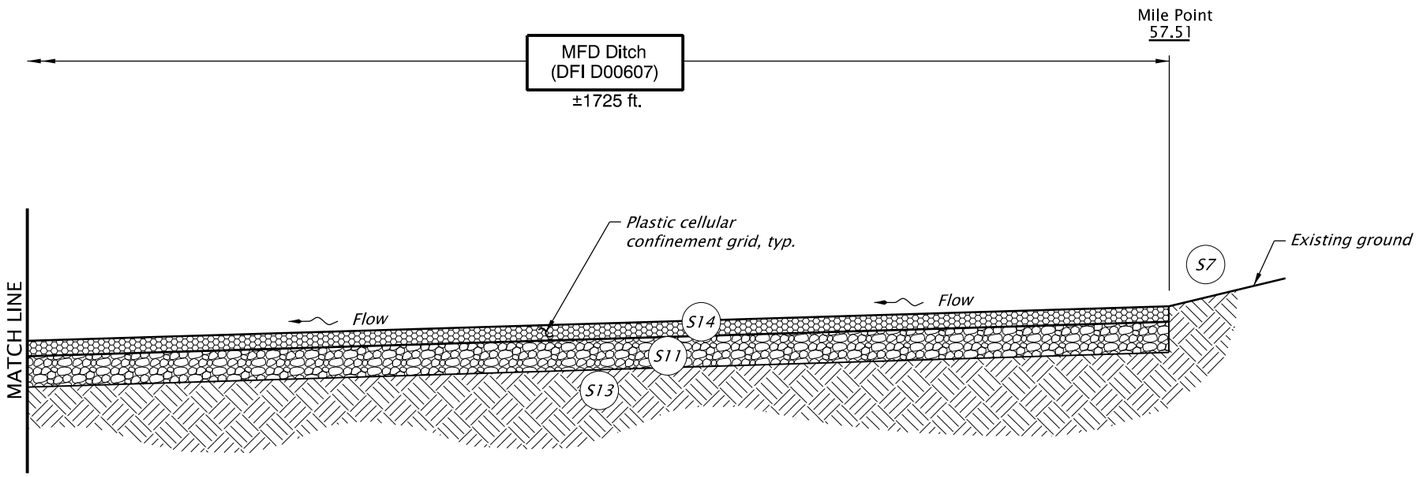


LEGEND:

- X# — Facility Component (see table 1 in O&M Manual)
- ◉ and/or ◎ — Manhole
- ■ and/or □ — Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Ditch Line
- Swale Boundary
- Conveyance Direction
- Pavement / Facility Flow Path
- Traffic Flow Direction

PLAN
N.T.S.

Note:
See Sht 1 of 3 (DFI D00607) for "SECTION B-B" detail.



SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Sht. 3 of 3

Prepared By: Christopher Carman

Drafted By: Jeff Coon

DFI D00607
MAINTENANCE DISTRICT 1 HWY 47
WATER QUALITY BIOSLOPE/MEDIA FILTER
SUNSET HIGHWAY MP 56.96
WASHINGTON COUNTY

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 45v-029

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.
1A-2	Standard Drg. nos.
1B	Sheet Layout

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

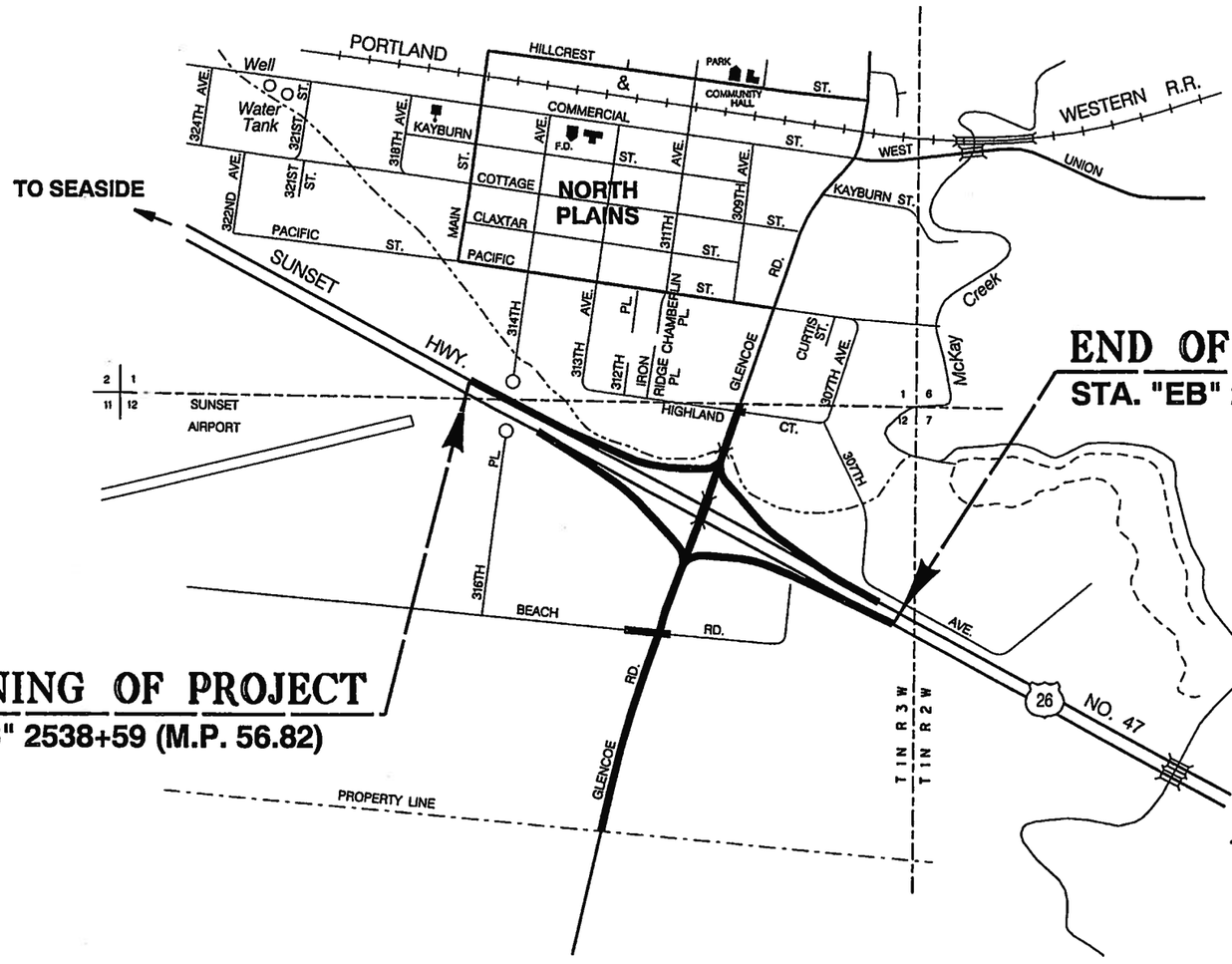
PLANS FOR PROPOSED PROJECT

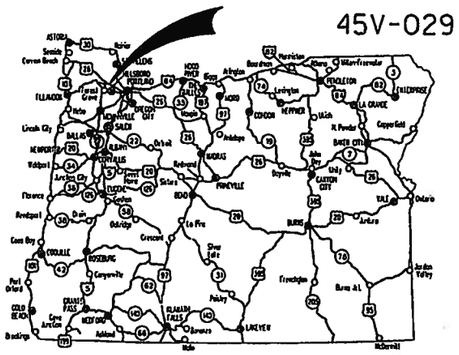
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

US 26: SUNSET HWY @ GLENCOE ROAD PROJECT

SUNSET HIGHWAY

WASHINGTON COUNTY
MAY 2012





Overall Length Of Project - 0.70 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

T. 1 N., R. 3 W., W.M.
T. 1 N., R. 2 W., W.M.

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
Mary F. Olson	COMMISSIONER
David Lohman	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: Naveen G. Chandra
Naveen G. Chandra, P.E.
Project Delivery Manager, Region 1

Concurrence by ODOT Chief Engineer

US 26: SUNSET HWY @ GLENCOE ROAD PROJECT
SUNSET HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STATE	1

PE001028-020

G:\12885_US26_Glencoe_Rd_Interchange\Final\12885RI.TSI :: Default 3/12/2012 12:56:10 PM hwye19g

45V-029

Sec. 12, T. 1N, R. 3W, W.M.

"GA" 2555+00

"WB" 2555+00

Prop. R/W

NW GLENCOE RD.

"WB" 2560+00

"GD" 2560+00

Exist. R/W

N

Retaining wall 1

12" - 104.5'

12" - 107.7'

12" - 33.2'

12" - 113.8'

12" - 115.2'

12" - 50.7'

12" - 83.0'

12" - 193.2'

12" - 175.5'
(See sht 5B for continuation of pipe)

"GA-STM1"
(See 4B-3 for profile)

12" - 230.1'

"GA" LINE

HWY 26 WB ON-RAMP

12" - 14.8'

12" - 59.1'

"GA-STM2"
(See 4B-3 for profile)

12" - 30.1'

18" - 161.5'

18" - 165.5'

"GR" LINE

"GD-STM1"
(See 4B-4 for profile)

"GD-STM2"
(See 4B-4 for profile)

HWY 26 WB OFF-RAMP

"GD" LINE

24" - 102.5'

15" - 279.4'

24" - 97.4'

DF100604

DF100605

"WB" LINE

12" - 174.6'

18" - 78.4'

SUNSET HWY (US26) WESTBOUND

12" - 10.0'
Perf.

18" - 77.4'

SUNSET HWY (US26) EASTBOUND

24" - 70.3'

INW GLENCOE RD.

"GB-STM1"
(See 4B-3 for profile)

12" - 132.4'

"GB" LINE

HWY 26 EB OFF-RAMP

DF100606

See sht 3B for plan and profile

Exist. R/W

Prop. R/W

"GB-STM2"
(See 4B-3 for profile)

12" - 106.4'

12" - 75.5'

"GC-STM1"
(See sht 5B for plan)
(See 5B-3 for profile)

"GC" LINE

HWY 26 EB ON-RAMP

Exist. R/W

Prop. R/W

"GB" 2555+00

"EB" 2555+00

"EB" 2560+00

No.	DATE	REVISIONS	BY
1	4-4-2012	PGE change	K.M.A.
2	4-4-2012	Storm sew. information added	K.M.A.
3	5-4-2012	Utility change	K.M.A.

REGISTERED PROFESSIONAL ENGINEER
19,424
OREGON
SEPT 16, 1997
KENNETH MICHAEL ACKERMAN
Expires 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS • LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

DRAINAGE & UTILITIES

SHEET NO. 4B

P:\ODT-12 (US 26 & Glencoe Interchange)\ODT12-DGN\SHEETS\12885F.dr1 5/4/2012 9:06:39 AM jefft

45V-029

(1) Sta. "GA-STM1" 6+01.43 =
Sta. "GR" 134+21.15, 38.62' Rt.
Const. type "CG-2" inlet w/ 1' sump
(For pipe profile, see sht. 4B-3)
(For detail, see drg. no. RD366)

(2) Sta. "GR" 135+15.21, 41.63' Rt. =
Const. type "CG-2" inlet w/ 1' sump
Rim = 190.96
F.L. out = 185.04
Pipe slope = 0.0744 ft/ft

(3) Sta. "GA-STM1" 4+96.86 =
Sta. "GR" 135+11.66, 92.04' Rt.
Const. manhole
Inst. 12" storm sew. pipe - 155.2'
10' depth
(For pipe profile, see sht. 4B-3)
(For detail, see drg. no. RD336)

(4) Sta. "GA-STM1" 3+85.95, 29.02' Lt. =
Sta. "GA" 2554+96.44, 16.38' Lt.
Const. "G-2" inlet w/ 1' sump
Rim = 184.53
F.L. out = 177.28
Pipe slope = 0.0203 ft/ft

(5) Sta. "GA-STM1" 3+89.15 =
Sta. "GA" 2554+98.17, 12.73' Rt.
Const. manhole
Inst. 12" storm sew. pipe - 137.8'
10' depth
(For pipe profile, see sht. 4B-3)

pre-treatment?

(6) Sta. "GA-STM1" 1+24.74, 29.50 Lt. =
Sta. "GA" 2552+51.26, 16.43' Lt.
Const. type "G-2" inlet w/ 1' sump
Rim = 173.10
F.L. out = 170.23
Pipe slope = 0.0050 ft/ft

(7) Sta. "GA-STM1" 1+59.10 =
Sta. "GA" 2552+69.53, 12.43' Lt.
Const. manhole
Inst. 12" ductile iron pipe - 34.8'
5' depth
Inst. 12" storm sew. pipe - 230.1'
10' depth
Trench resurfacing, 20 sq. yd.
(For details, see drg. no. RD302)
(For pipe profile, see sht. 4B-3)

(8) Sta. "WB" 2553+25.16, 37.11' Lt. to
Sta. "WB" 2554+36.76, 39.36' Lt.
Const. water quality swale
(For plan, see sht. GJ-5)
(For profile, see sht. GJ-5)
(For detail, see sht. GJ-9)

(9) Sta. "GA-STM2" 4+27.00 =
Sta. "WB" 2554+36.76, 39.36' Lt. =
Sta. "GB-STM1" 1+00
Const. type "D" inlet w/ 2' sump
Inst. 18" storm sew. pipe -78.4'
10' depth
(For pipe profile, see sht. 4B-3)
(For detail, see drg. no RD370)

(10) Sta. "GA-STM2" 2+61.50=
Sta. "GA" 2555+81.19, 84.21' Rt.
Remove manhole
Const. manhole
Inst. 18" storm sew. pipe - 165.5'
20' depth
(For pipe profile, see sht. 4B-3)

(11) "GD-STM1" 8+04.60=
Sta. "GR" 134+24.67, 45.98' Lt.
Const. type "G-2" inlet w/ 1' sump
(For pipe profile, see sht. 4B-4)

(12) Sta. "GR" 135+39.95, 40.61' Lt.
Const. type "G-2" inlet w/ 1' sump
Rim = 191.71
F.L. out = 187.24
Pipe slope = 0.0500 ft/ft

(13) Sta. "GD-STM1" 7+71.40=
Sta. "GR" 134+57.28, 39.89' Lt.
Const. manhole
Inst. 12" storm sew. pipe - 116.2'
5' depth
(For pipe profile, see sht. 4B-4)

(14) Sta. "GD-STM1" 6+57.60=
Sta. "GD" 2558+04.10, 26.25' Lt.
Const. type "G-2" inlet w/ 1' sump
Inst. 12" storm sew. pipe - 113.8'
5' depth
(See sht. 4B-4 for profile)

(15) Sta. "GD-STM1" 5+42.40=
Sta. "GD" 2559+20.79, 26.54' Lt.
Const. type "G-2" inlet w/ 1' sump
Inst. 12" storm sew. pipe - 115.2'
5' depth
(See sht. 4B-4 for profile)

(16) Sta. "GC-STM1" 0+00 =
Sta. "GD-STM2" 2+02.51 =
Sta. "GD" 2561+36.03, 61.59' Rt.
Const. manhole - 60" dia.
Inst. 15" storm sew. pipe - 279.4'
10' depth
Inst. 24" storm sew. pipe - 97.4'
10' depth
(For pipe profile, see sht. 4B-4)
(For detail, see drg. no. RD346)

(17) Sta. "WB" 2558+49.52, 52.43' Lt. to
Sta. "WB" 2562+89.77, 37.65' Lt.
Const. water quality swale
(For plan, see sht. GJ-4)
(For profile, see sht. GJ-4)
(For detail, see sht. GJ-9)

(18) Sta. "GD-STM2" 3+81.90 =
Sta. "WB" 2558+49.52, 52.43' Lt.
Const. type "D" inlet w/ 2' sump
Inst. 12" storm sew. pipe - 174.6'
10' depth
(For pipe profile, see sht. 4B-4)

(19) Abandon extg. manhole in-place per
spec. section 00490.44

(20) Sta. "GC-STM1" 0+97.00 =
Sta. "WB" 2561+39.79, 39.85' Rt.
Const. type "G-2" inlet w/ 2' sump
Cut casing as necessary
Inst. 12" drain pipe - 20'
5' depth
Inst. 24" storm sew. pipe - 70.3'
20' depth
(For pipe detail, see sht. GJ-9)
(For pipe profile, see sht. 5B-3)

(21) Remove extg. CSP - 169.4'

(22) Sta. "WB" 2557+75.10, 43.30' Rt. to
Sta. "WB" 2575+00.26, 49.00' Rt.
Const. MFD ditch
(For plan, see sht. GJ-2)
(For profile, see sht. GJ-3)
(For detail, see sht. GJ-9)

(23) Sta. "GB-STM2" 2+81.90 =
Sta. "GR" 139+42.93, 36.26' Lt.
Const. type "G-2" inlet w/ 1' sump
(For pipe profile, see sht. 4B-3)

(24) Sta. "GB-STM2" 2+06.40 =
Sta. "GR" 139+57.04, 36.35' Rt.
Const. type "CG-2" inlet w/ 1' sump
Inst. 12" storm sewer pipe - 75.5'
10' depth
(For pipe profile, see sht. 4B-3)

(25) Remove extg. CSP - 93'

(26) Sta. "GB" 2548+50.03, 27.61' Rt. to
Sta. "GB" 2556+72.68, 93.01' Rt.
Const. water quality swale
(For plan, see sht. GJ-6)
(For profile, see sht. GJ-6)
(For detail, see sht. GJ-9)

(27) Sta. "GB-STM1" 3+88.20 =
Sta. "GB" 2553+95.68, 46.29' Rt.
Const. type "D" inlet w/ 2' sump

(28) Sta. "GB-STM1" 2+55.80 =
Sta. "EB" 2554+38.32, 32.46' Rt.
Const. type "G-2" inlet w/ 2' sump
Inst. 12" storm sew. pipe - 132.4'
5' depth
(For pipe profile, see sht. 4B-3)

(29) Sta. "WB" Line 2545+86.46, 41.44 Rt. to
Sta. "WB" Line 2556+22.77, 38.50 Rt.
Const. MFD ditch
(For plan, see sht. GJ)
(For profile, see sht. GJ)
(For detail, see sht. GJ-9)

(30) Relocate power poles
(By others)

(31) Relocate telephone line
(By others)

(32) Relocate power line
(By others)

(33) Sta. "GB-STM1" 1+78.40 =
Sta. "WB" 2554+37.73, 39.04' Rt.
Cut casing as necessary
Const. type "G-2" inlet w/ 2' sump
Inst. 12" drain pipe - 20'
5' depth
Inst. 18" storm sew. pipe - 77.4'
10' depth
(For pipe detail, see sht. GJ-9)
(For pipe profile, see sht. 4B-3)

3

(34) Sta. "GA-STM2" 1+00.00 =
Sta. "GA" 2555+97.89, 65.42' Lt.
Const. culv. end protection- class 50 rip rap
rip rap protection to elev.- 162.50
Inst. 18" storm sew. pipe - 161.5'
20' depth
(For profile, see sht. 4B-3)
(For details, see drg. no RD316 & RD317)

(35) Remove powerlines
(By others)

3

(36) Sta. "GD-STM2" 1+00.00 =
Sta. "GD" 2561+22.79, 39.98' Lt.
Inst. 24" ductile iron pipe - 102.5'
20' depth
(For profile, see sht. 4B-4)

(37) Sta. "GB-STM2" 1+00.00 =
Sta. "GB" 2556+73.24, 94.26' Lt.
Const. storm sew. outfall with protection
Inst. 12" storm sew. pipe - 106.4'
5' depth
(For profile, see sht. 4B-3)
(For outfall protection detail, see sht. GJ-10)

(38) Sta. "GA-STM1" 1+00.00 =
Sta. "WB" 2553+25.16, 37.11' Lt.
Const. storm sew. outfall with protection
Inst. 12" storm sew. pipe - 59.1'
5' depth
(For profile, see sht. 4B-3)
(For outfall protection detail, see sht. GJ-10)

(39) Install power pole
(By others)

1

(40) Sta. "GD-STM1" 3+49.20 =
Sta. "GD" 2561+15.62, 27.22' Lt.
Const. type "G-2" inlet w/ 1' sump
Inst. 12" storm sew. pipe - 193.2'
5' depth
(See sht. 4B-4 for profile)

(41) Sta. "GD-STM2" 6+56.50 =
Sta. "EB" 2558+51.68, 38.16' Rt.
Const. type "G-2" inlet w/ 2' sump
(For pipe profile, see sht. 4B-4)

(42) Sta. "WB" 2554+35.14, 32.97' Lt.
Remove inlet

(43) Sta. "WB" 2558+50.12, 49.05' Rt.
Remove inlet

(44) Sta. "WB" 2558+48.32, 39.96' Lt.
Remove inlet

(45) Sta. "WB" 2554+33.92, 39.25' Rt.
Remove inlet

(46) Sta. "WB" 2561+39.86, 40.00' Rt.
Remove inlet

(47) Sta. "GC-STM1" 2+67.70 =
Sta. "EB" 2561+47.91, 32.15' Rt.
Const. type "G-2" inlet w/ 2' sump
Inst. 24" storm sew. pipe - 106.7'
20' depth
(For pipe profile, see sht. 5B-3)

(48) Sta. "GC" 2561+38.88, 46.00' Rt.
Remove inlet

(49) Remove extg. CSP - 109.8'

(50) Sta. "GB" 2554+03.55, 26.31' Rt.
Remove inlet

(51) Abandon pipe in-place per
spec. section 00490.43

(52) Inst. bored and jacked 18" steel casing - 174.6'
Casing shall be minimum thickness of 0.3780"
and a minimum yield strength of 35,000 psi
Casing to be filled with grout per section
00406.13 of the specifications
Inst. piping inside conduit per section 00445 of
the specifications
(For bore detail, see sht. 2B-7)

(53) Inst. bored and jacked 24" steel casing - 155.8'
Casing shall be minimum thickness of 0.5000"
and a minimum yield strength of 35,000 psi
Casing to be filled with grout per section
00406.13 of the specifications
Inst. piping inside conduit per section 00445 of
the specifications
(For bore detail, see sht. 2B-7)

(54) Inst. bored and jacked 30" steel casing - 167.7'
Casing shall be minimum thickness of 0.5000"
and a minimum yield strength of 35,000 psi
Casing to be filled with grout per section
00406.13 of the specifications
Inst. piping inside conduit per section 00445 of
the specifications
(For bore detail, see sht. 2B-7)

(55) Sta. "EB" 2554+38.32, 32.46' Rt.
Remove inlet

2

(56) Location of jacking pits
(See notes 52, 53, & 54 for construction notes)

No.	DATE	REVISIONS	BY
1	4-4-2012	PGE note change	K.M.A.
2	4-4-2012	Storm sew. note added	K.M.A.
3	4-26-2012	Storm sew. note change	K.M.A.

REGISTERED PROFESSIONAL ENGINEER
19,424
OREGON
SEPT 16, 1997
KENNETH MICHAEL ACKERMAN
Expires 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS • LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

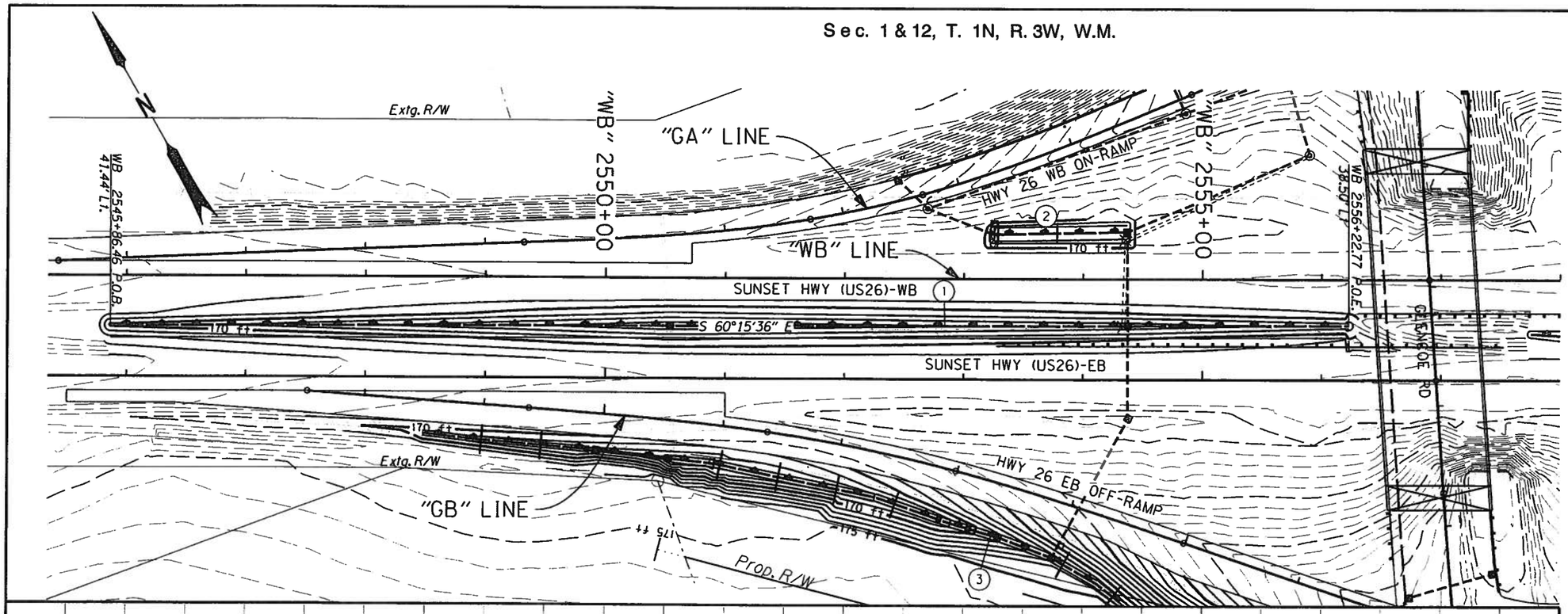
DRAINAGE & UTILITY NOTES

SHEET NO. 4B-2

P:\ODT-12 (US 26 & Glencoe Interchange)\ODT12-DGN\SHEETS\12885F.dr1 4/26/2012 2:18:31 PM peterc

Sec. 1 & 12, T. 1N, R. 3W, W.M.

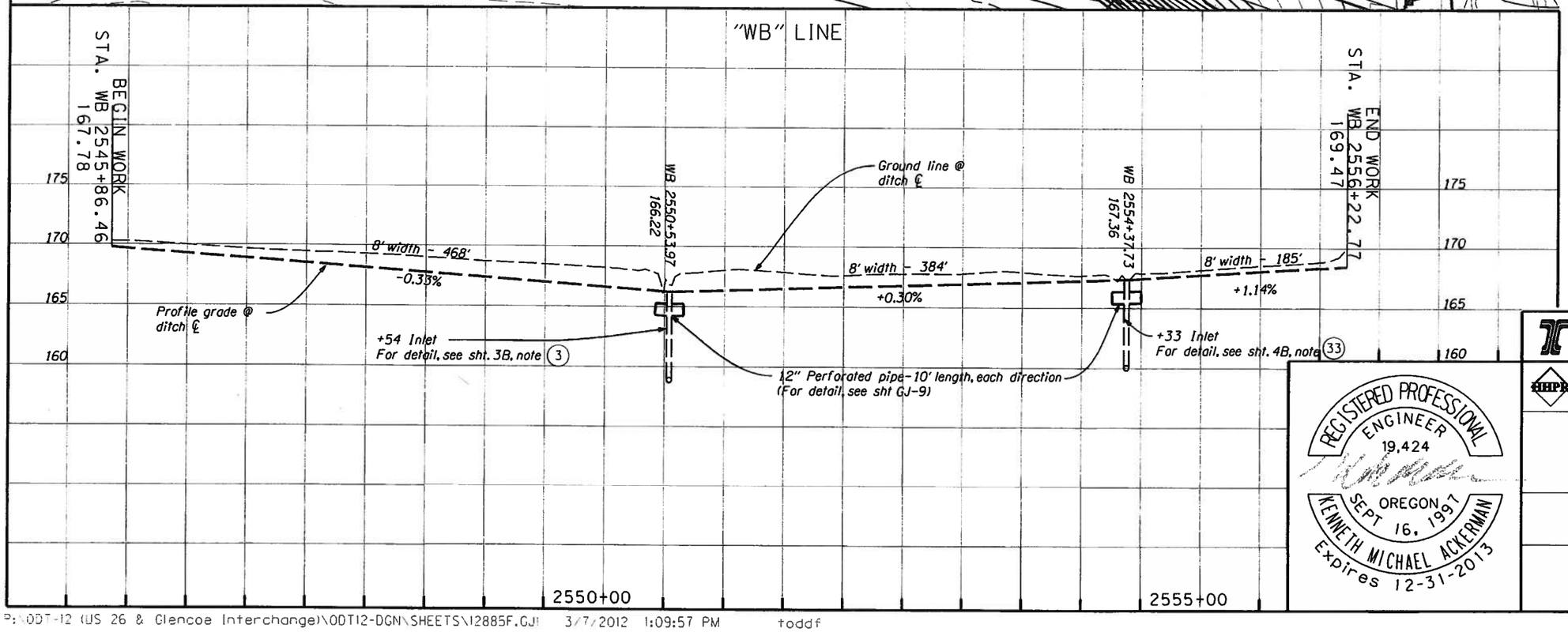
45V-029



1 Sta. "WB" 2545+86.46, 41.44' Rt to Sta. "WB" 2556+22.77, 38.50' Rt Const. MFD ditch (For details, see sht. GJ-9)

2 Water quality swale See sht. GJ-5 for plan and profile

3 Water quality swale See sht. GJ-6 for plan and profile



LEGEND

- Major contour-5' / Minor contour-1' — Extg. contours
- Major contour-5' / Minor contour-1' — Proposed stormwater contours

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS & PLANNERS & LANDSCAPE ARCHITECTS & SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

REGISTERED PROFESSIONAL ENGINEER 19,424 OREGON SEPT 16, 1997 KENNETH MICHAEL ACKERMAN Expires 12-31-2013

US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

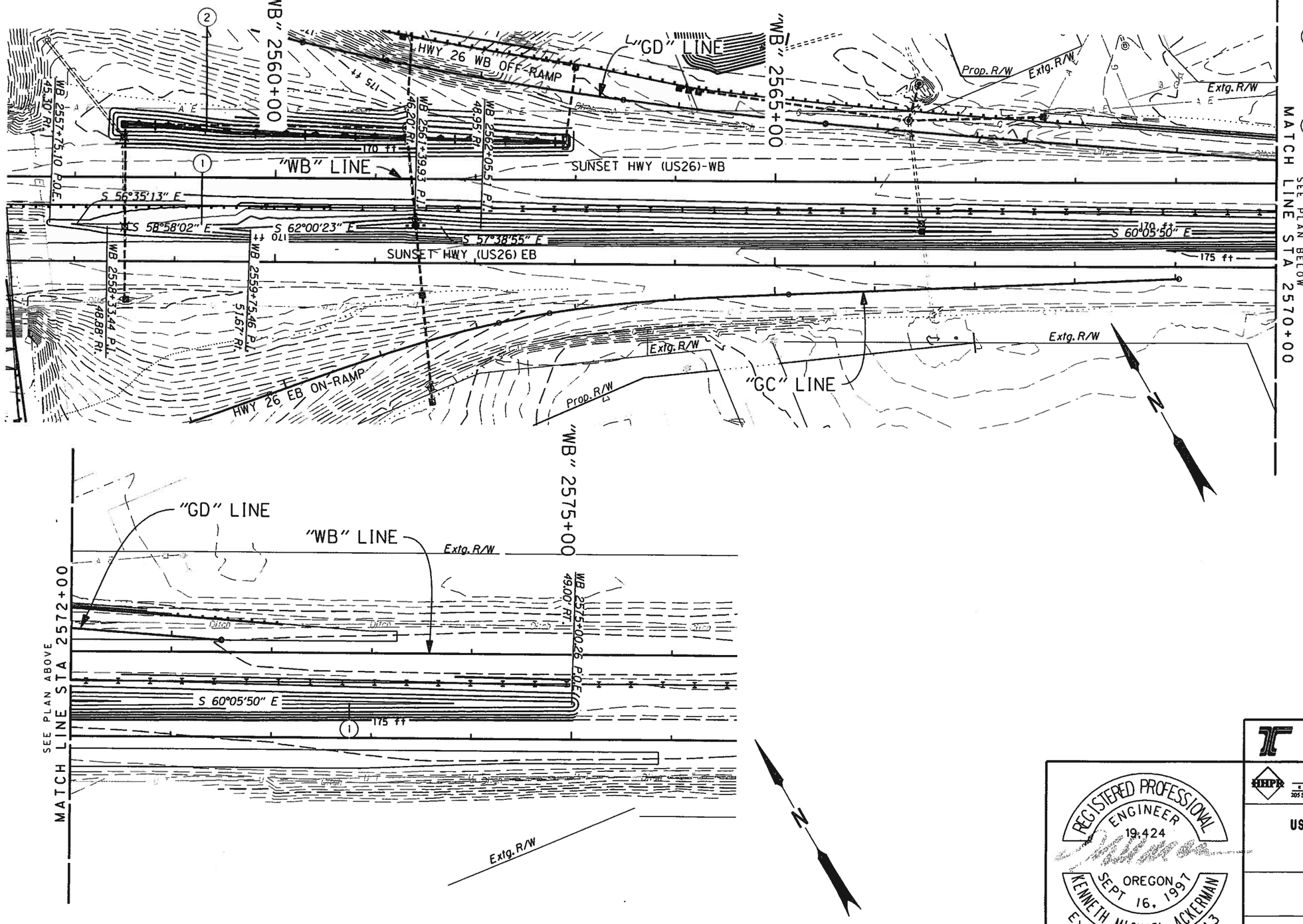
MFD DITCH PLAN & PROFILE

SHEET NO. GJ

P:\ODT-12 (US 26 & Glencoe Interchange)\ODT12-DGN\SHEETS\12885F.GJ! 3/7/2012 1:09:57 PM toddf

Sec. 1 & 12, T. 1N, R. 3W, W.M.

45V-029



(1) Sta. "WB" 2557+75.10, 45.30' Rt to Sta. "WB" 2575+00.26, 49.00' Rt
Const. MFD ditch
(See sht. GJ-3 for profiles)
(For details, see sht. GJ-9)

(2) Water quality swale
See sht. GJ-4 for plan and profile

LEGEND

- Major contour-5'
- Minor contour-1'
- Extg. contours
- Major contour-5'
- Minor contour-1'
- Proposed stormwater contours

REGISTERED PROFESSIONAL ENGINEER
19424
OREGON
SEPT 16, 1997
KENNETH MICHAEL ACKERMAN
Expires 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS/PLANNERS/LANDSCAPE ARCHITECTS/SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

MFD DITCH PLAN

SHEET NO. GJ-2

P:\ODT12 (US 26 & Glencoe Interchange)\ODT12-DGN\SHEETS\12885F.GJ1 3/5/2012 10:54:28 AM TeriH

"WB" LINE

BEGIN WORK
STA. 2557+75.10
170.28

WB 2559+74.50
167.59

2561+39.79
166.27

2566+47.14
167.79

Profile grade @ ditch ℄

Ground line @ ditch ℄

8' width - 199'
-1.35%

8' width - 165'
-0.80%

8' width - 507'
+0.30%

8' width - 853'
+0.30%

+39 Inlet
For details, see sht. 4B note (20)

+46 Inlet
For detail, see sht. 5B note (10)

12" Perforated pipe-10' length, each direction
(For detail, see sht GJ-9)

180
175
170
165

2560+00
2565+00
2570+00

"WB" LINE

END WORK
WB 2575+00.26
170.35

Ground line @ ditch ℄

Profile grade @ ditch ℄

8' width - 853'
+0.30%

MFD mix line
(For detail, see sht. GJ-9)

Bottom of Drain Rock
(For detail, see sht. GJ-9)

180
175
170
165

2570+00
2575+00

REGISTERED PROFESSIONAL ENGINEER
19,424
OREGON
SEPT 16, 1997
KENNETH MICHAEL ACKERMAN
Expires 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS/PLANNERS/LANDSCAPE ARCHITECTS/SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

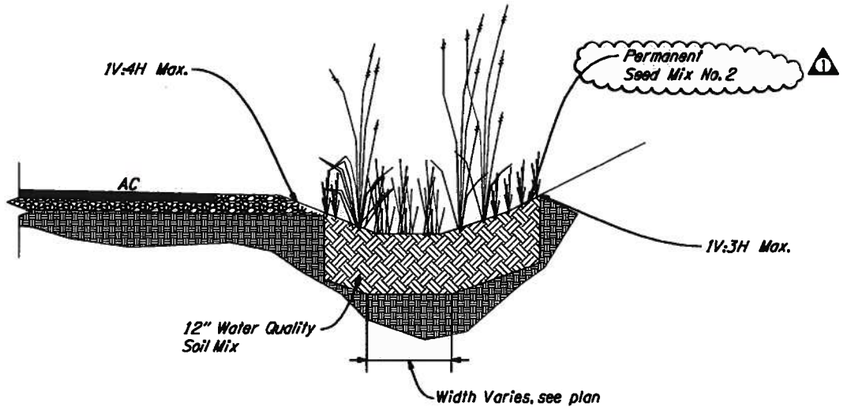
US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

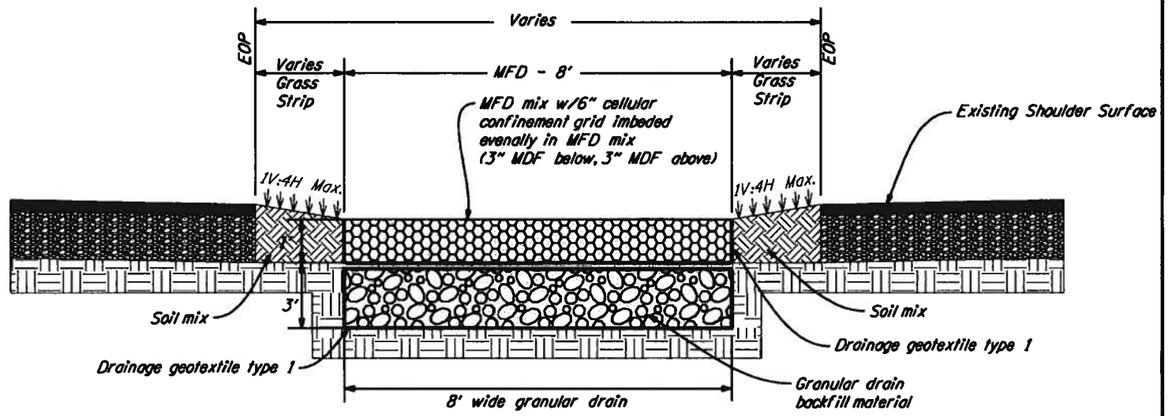
MFD DITCH PROFILE

SHEET NO.
GJ-3

P:\ODT-12 (US 26 & Glencoe Interchange)\ODT12-DGN\SHEETS\12885F.GJI 3/7/2012 1:15:31 PM +oddf

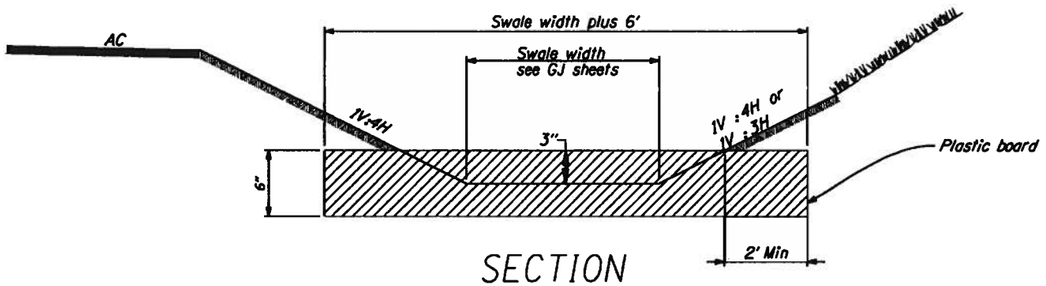


WATER QUALITY SWALE SECTION
N.T.S.

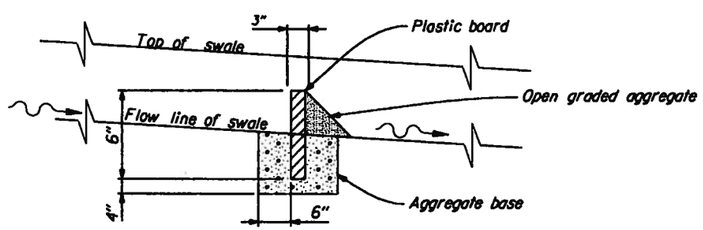


Media Filter Ditch

MFD (TYPE 1) SECTION DITCH CONFIGURATION
N.T.S.



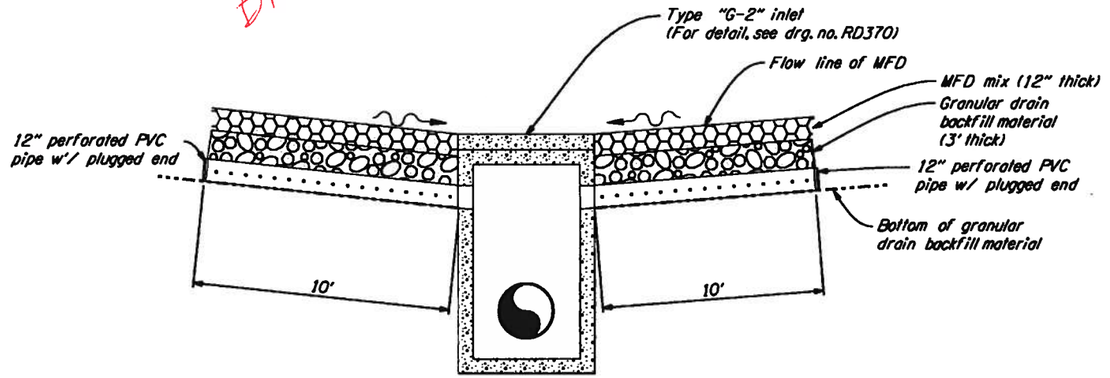
SECTION



ELEVATION

Note:
Space approx. every 50' from pipe outfall

FLOW SPREADING CHECK DAM
N.T.S.



TYPE "G-2" INLET W/ PERFORATED PIPE IN MFD
N.T.S.

No.	DATE	REVISIONS	BY
1	04-25-2012	Changed Seed Mix Call Out	K.M.A.

REGISTERED PROFESSIONAL ENGINEER 19424 OREGON SEPT 16, 1997 KENNETH MICHAEL ACKERMAN Expires 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS/PLANNERS/LANDSCAPE ARCHITECTS/SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

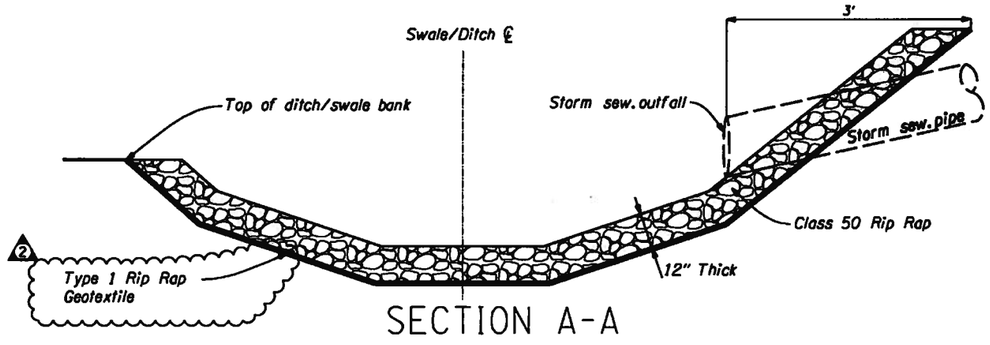
US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

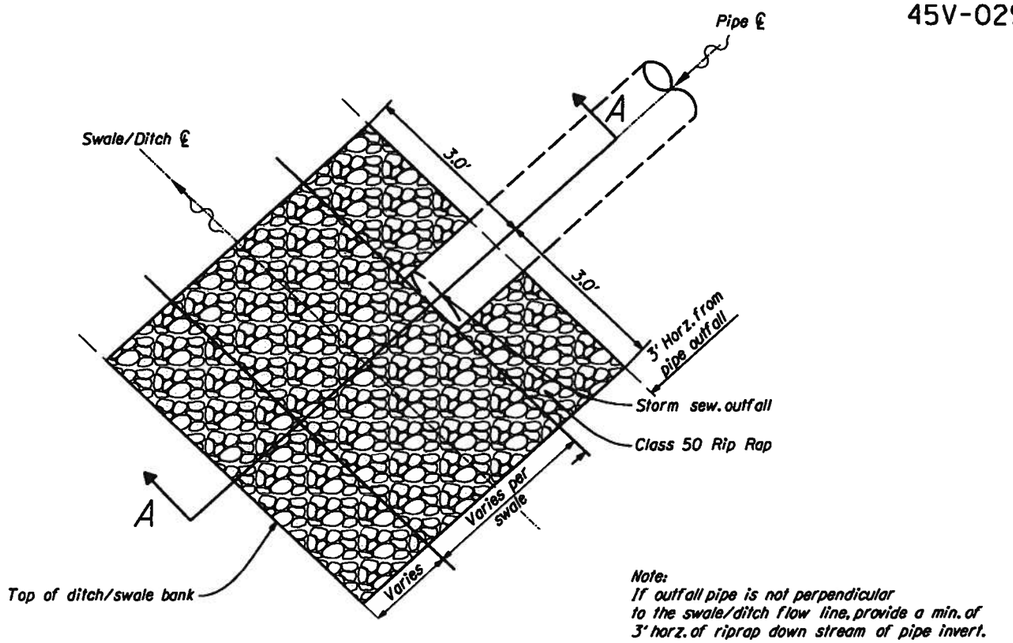
DETAILS

SHEET NO. GJ-9

45V-029



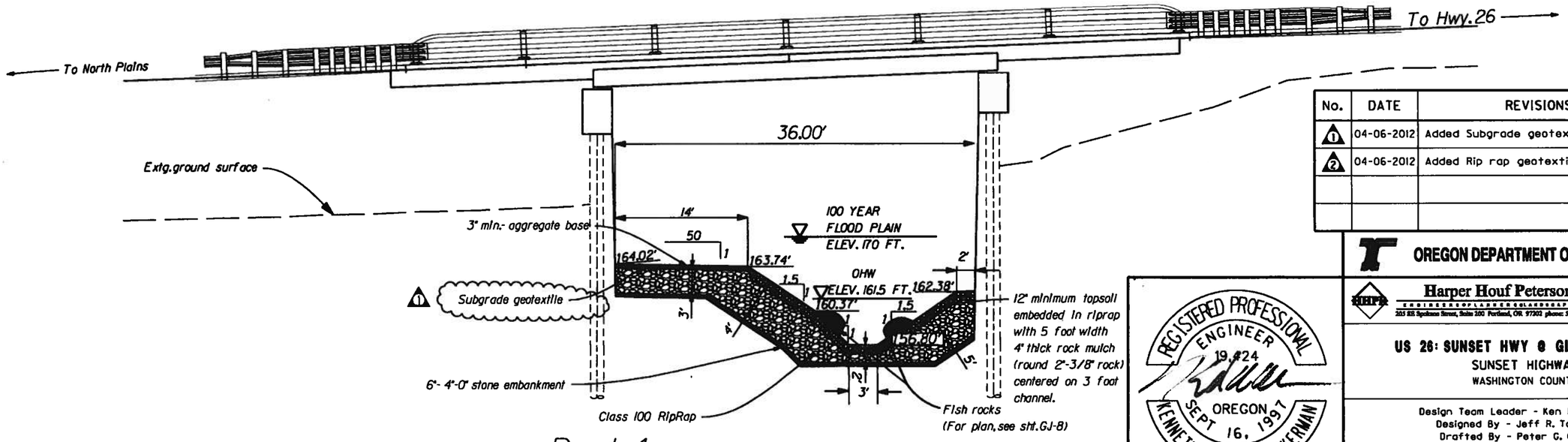
SECTION A-A



PLAN VIEW

Note:
If outfall pipe is not perpendicular to the swale/ditch flow line, provide a min. of 3' horz. of riprap down stream of pipe invert.

OUTFALL PROTECTION
N.T.S.



Bent 1 SECTION A-A Bent 2
N.T.S.

No.	DATE	REVISIONS	BY
1	04-06-2012	Added Subgrade geotextile	K.M.A.
2	04-06-2012	Added Rip rap geotextile	K.M.A.

REGISTERED PROFESSIONAL ENGINEER
19424
OREGON
SEPT 16, 1997
KENNETH MICHAEL ACKERMAN
Expires 12-31-2013

OREGON DEPARTMENT OF TRANSPORTATION

Harper Houf Peterson Righellis Inc.
ENGINEERS/PLANNERS/LANDSCAPE ARCHITECTS/SURVEYORS
205 SE Spokane Street, Suite 200 Portland, OR 97202 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

US 26: SUNSET HWY @ GLENCOE ROAD
SUNSET HIGHWAY
WASHINGTON COUNTY

Design Team Leader - Ken M. Ackerman
Designed By - Jeff R. Torgerson
Drafted By - Peter G. Coffman

DETAILS

SHEET NO. GJ-10

P:\ODT-12 (US 26 & Glencoe Interchange)\ODT12-DGN\SHEETS\12885F.GJ1 4/26/2012 2:00:42 PM peterc