OPERATION & MAINTENANCE

MANUAL

Manual prepared: July 2017

DFI No. D00255

Figure 1: DFI No. D00255, looking north

1. Identification

Drainage Facility ID (DFI):	D00255
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Numbers) 35V-135
Location:	District: 2B
	Highway No.: 064
	Mile Post: 14.084 to 14.079

2. Manual Purpose

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

3. Facility Location

The location map below details the facility location. The highway, mile points, side streets, access location, and stormwater flow direction is noted on the map.

Flow direction: South

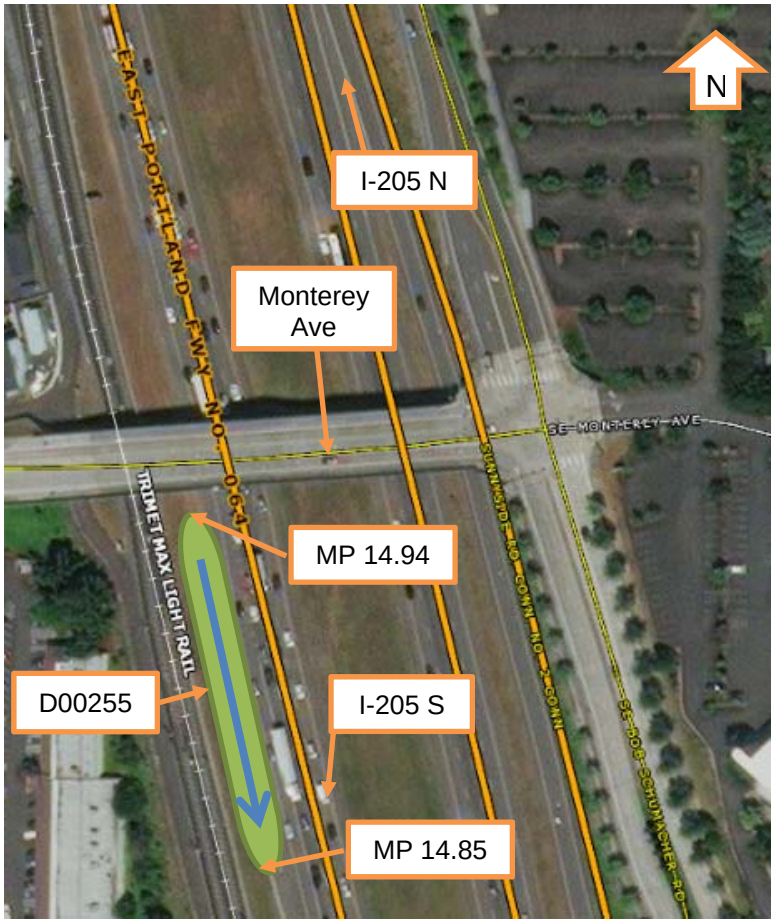


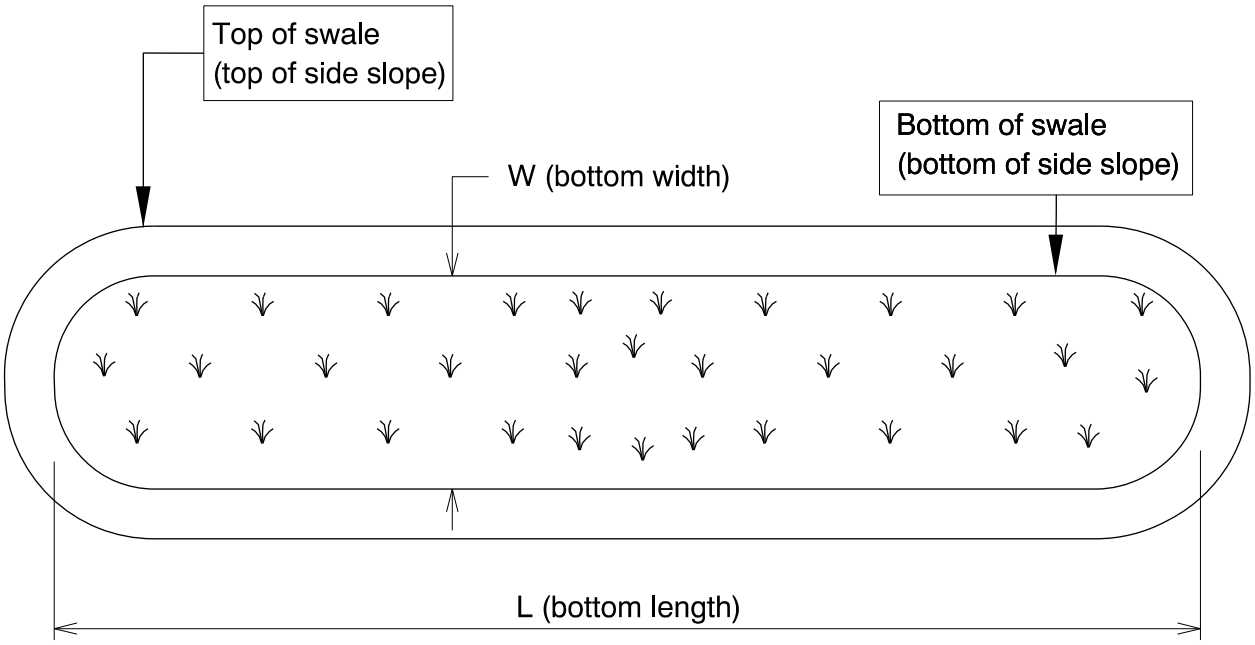
Figure 2: Facility location map

4. Facility Summary

The length and width of a swale is based on the bottom dimensions.

The bottom length and bottom width of the swale is:

Bottom Length (feet)	Bottom Width (feet)
92	8

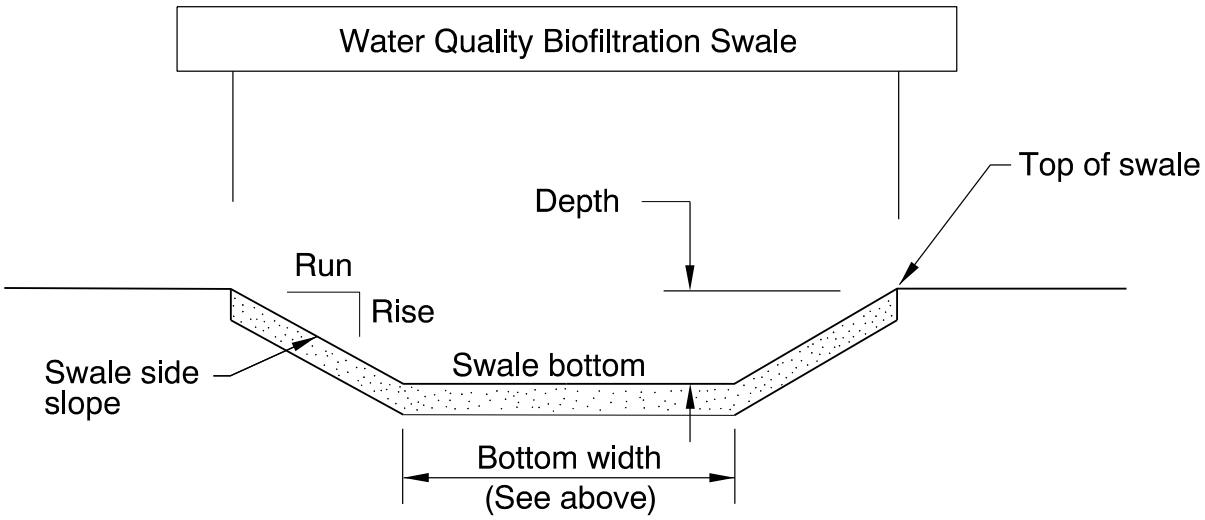


The depth of the swale is the vertical distance measured from the bottom of the swale to the top. The slope of the swale sides is presented by a vertical distance (rise) followed by the horizontal distance (run).

Depth and side slopes:

Depth (feet)
2

Side slope	
Rise (feet)	1
Run (feet)	6



Site Specific Information: The facility receives stormwater runoff as sheet flow from I-205 (HWY 064). The stormwater is treated by the facility, and exits via a G-2MA inlet and a 12-inch pipe at the southern end of the swale.

5. Facility Access

Maintenance access to the swale:

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

Figure 3: Swale footprint with shoulder access, looking south

6. Operational Components / Maintenance Items

Classification

This facility is classified as an:

☒ On-line Swale	☐ Off-line Swale
A swale that does not include a high flow bypass component; flow drains into and through the facility	**A swale 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

A swale 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 table below titled "Swale Components" has been provided to highlight the applicable components for this facility. The component is in use when the box contains an "x" (e.g. ☒).

How a swale operates, typical footprint configuration, and component definitions and details are outlined in the Standard Operation Manual for Water Quality Biofiltration Swales (implemented March 2017). A link to the Manual is attached to the feature marker in TransGIS. https://gis.odot.state.or.us/TransGIS/

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 of this O& M Manual for site specific operational plan.

Maintenance Items

Operational components marked in the "Swale Components" table should be inspected and maintained according to Section 7. Each swale component is defined and detailed in the Standard Operation Manual using the associated "ID" number noted below.

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**
Storm drain 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	☐	**S19**
Swale Outlet		
Catch basin with grate	☒	**S20**
Storm drain outlet pipe	☐	**S21**
Open channel outlet	☐	**S22**
Auxiliary Outlet	☐	**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**

7. Maintenance

Maintenance Frequency/Maintain Records

a. Inspect annually. Preferably prior to the rainy season.

b. Clean and maintain as necessary. Refer to the Activity 125 in the Maintenance Guide for conditions when maintenance is needed.

c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The Maintenance Guide outlines the standard maintenance actions for water quality and detention facilities under Activity 125.

There are standard maintenance tables for standard ODOT designs. The maintenance tables describe the following (a) conditions when maintenance is needed (b) recommended maintenance to correct the condition. 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 and detention facilities
- Tables 3 (Maintenance of Water Quality or Biofiltration Swales): Contains maintenance information for swales

The ODOT Maintenance Guide can be viewed at the following website:

http://www.oregon.gov/ODOT/HWY/OOM/pages/mguide.aspx

8. Limitations

Access grid installed:

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

Swales are designed to allow equipment access along the bottom.

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

9. Waste Material Handling

Material removed from the facility is defined as waste by the Department of Environmental Quality (DEQ). Refer to the road waste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

http://www.oregon.gov/ODOT/HWY/OOM/pages/ems.aspx

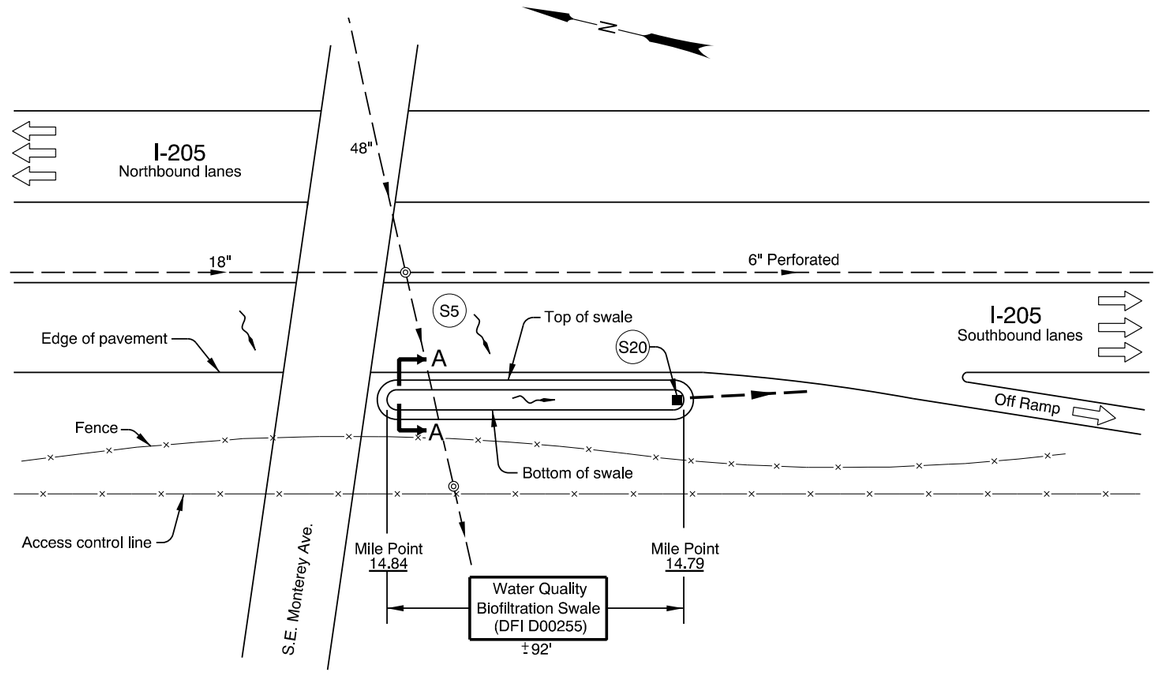
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 986-2647
ODEQ Northwest Region Office	(503) 229-5263

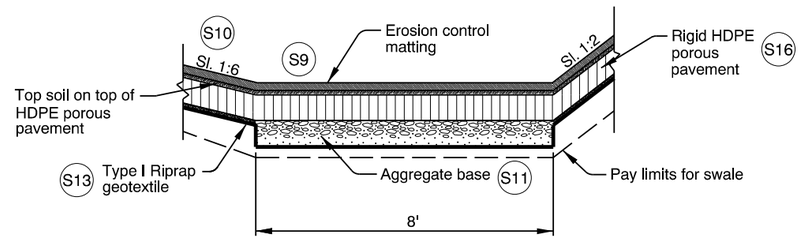
Appendix A

Contents:

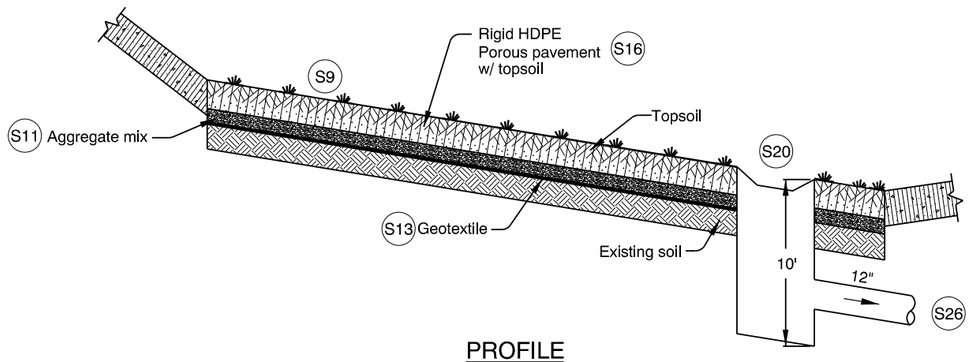
- **Site Specific Operational Plan**



PLAN
N.T.S.



SECTION A-A
N.T.S.



PROFILE
N.T.S.

LEGEND:

- Manhole
- Catch Basin
- Traffic direction / Flow
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- S# Table 1: Facility Components

Page 1 of 1

Prepared By: Carlyle Phillips

Drafted By: Brooklyn Scholz

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00255
MAINTENANCE DISTRICT 2-B HWY 064
WATER QUALITY BIOFILTRATION SWALE
I-205 M.P. 14.84-4.79
CLACKAMAS COUNTY

DFI_D0255.dgn

Appendix B

Contents:

- **Project Contract Plans**

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A, 1A-2	Index Of Sheets Cont'd.
1A-3	Standard Drawing Nos.
1B	Project Sheet Layout
2, 2A Thru 2A-20 Incl.	Typical Sections
2B Thru 2B-21 Incl.	Details (Sht. 2B-19 REMOVED from Plans)
2B-22, 2B-23	Profiles
2B-24, 2B-25	Water Quality Plans
2B-26 Thru 2B-29 Incl.	Water Quality Details
2B-30	Water Quality Plan
2B-31 Thru 2B-35 Incl.	Water Quality Details
2B-36	Water Quality Plan
2B-37 Thru 2B-42 Incl.	Water Quality Details
2B-43	Water Quality Plan
2B-44 Thru 2B-46 Incl.	Water Quality Details
2B-47	(Sheet REMOVED from Plans)
2B-48	(Sheet REMOVED from Plans)
2B-49, 2B-50	Water Diversion Plans
2C, 2C-2	Traffic Control Details
2C-3	Traffic Control Bike Detour Stage I
2C-4	Traffic Control Bike Detour Stage II
2C-5 Thru 2C-9 Incl.	Traffic Control Stage I Detour

IM-ACHPP-S064(17)
BEGINNING OF PROJECT
STA. "LNr" 18+019.37 (M.P. 15.98)

SHEET NO.	DESCRIPTION
2C-10	Traffic Control Stage II Detour
2C-11 Thru 2C-14 Incl.	Traffic Control All Stages
2C-15 Thru 2C-18 Incl.	Traffic Control Stage I Phase 1
2C-18A, 2C-19, 2C-19A, 2C19B, 2C-20, 2C-20A, 2C-21	Traffic Control Stage I Phase 1 & 2
2C-22 Thru 2C-25 Incl.	Traffic Control All Stage I
2C-26 Thru 2C-29 Incl., 2C-29A	Traffic Control Stage I Phase 2
2C-30	Traffic Control Stage II Phase 2 (Night Work ONLY)

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

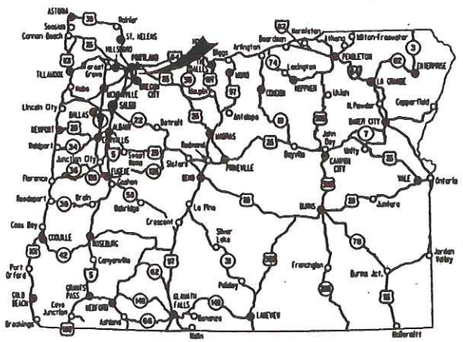
GRADING, STRUCTURES, PAVING, PAVEMENT MARKINGS, SIGNING, ILLUMINATION, & SIGNALS

I-205: AT SUNNYBROOK INTCHGE., PHASE 1 SEC.

EAST PORTLAND FREEWAY

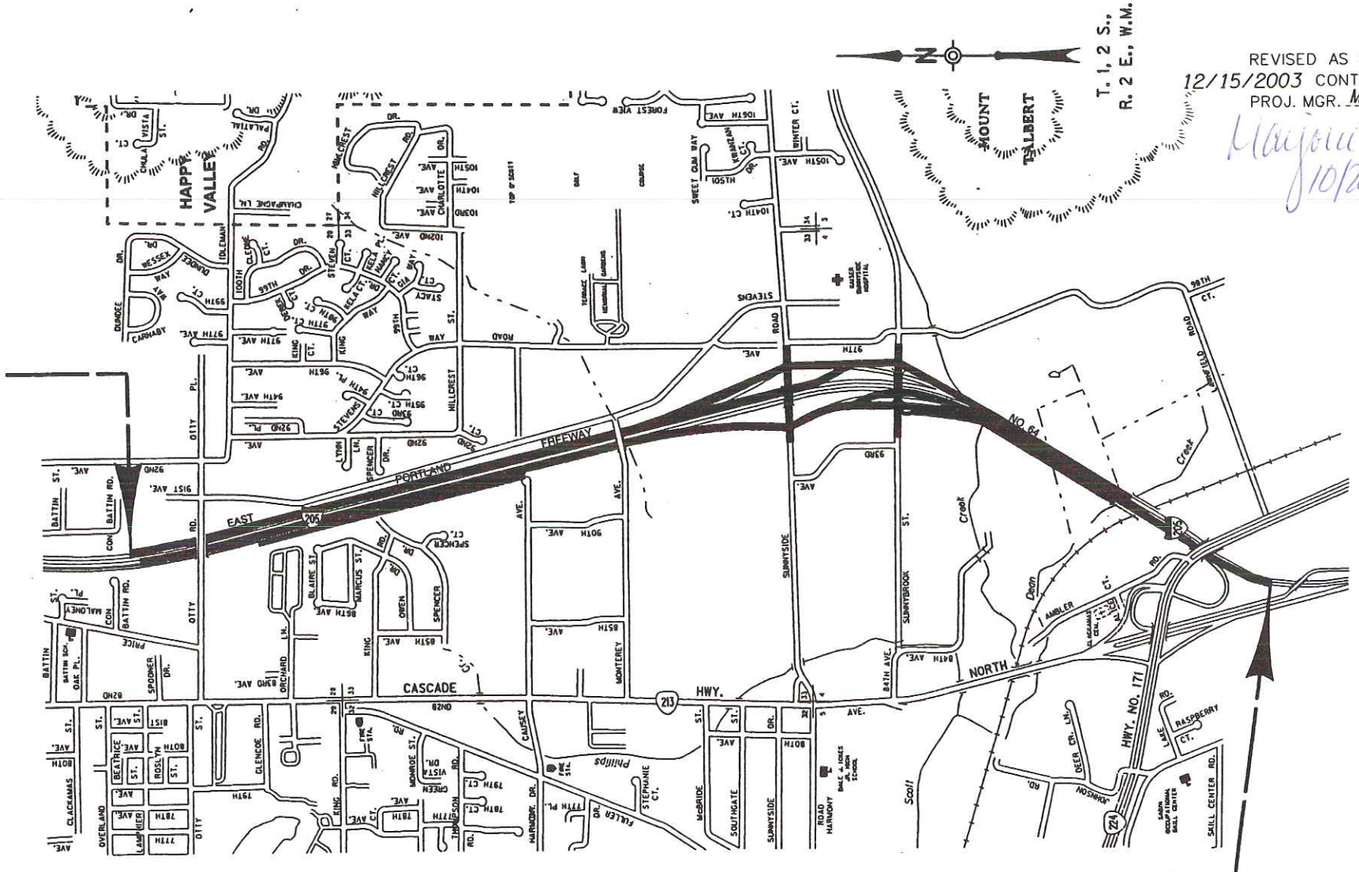
CLACKAMAS COUNTY

AUGUST 2002



Overall Length Of Project - 4.186 km 2.60 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 From The Center, Or Answers To Questions About The Rules By Calling (503) 232-1987.



END OF PROJECT IM-ACHPP-S064(17)
STA. "LS" 22+205.48 (M.P. 13.74)

REVISED AS CONSTRUCTED
12/15/2003 CONTRACT 12747
PROJ. MGR. Marjorie West
Marjorie West 10/20/04

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

OREGON TRANSPORTATION COMMISSION

Steven H. Corey	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Stuart Foster	COMMISSIONER
Randall Papé	COMMISSIONER
John Russell	COMMISSIONER
Bruce A. Warner	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
13,704
OREGON
JULY 16, 1987
CATHERINE M. NELSON
Expires Dec. 31, 2002

Catherine M. Nelson

TECHNICAL SERVICES MANAGING ENGINEER

I-205: AT SUNNYBROOK INTCHGE., PHASE 1 SEC.
EAST PORTLAND FREEWAY
CLACKAMAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		1

METRIC

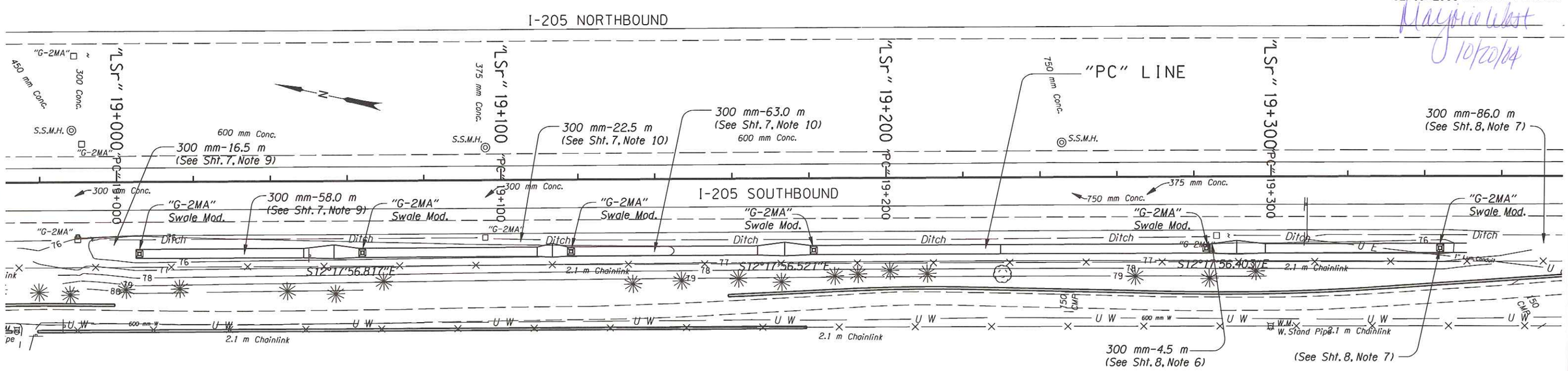
26-JUN-2002 11:

c:\usr\proj\bc

VIEW A1 C603-1949-060

S I T E P L A N
"PC3A", "PC3B" & "PC4" SWALES

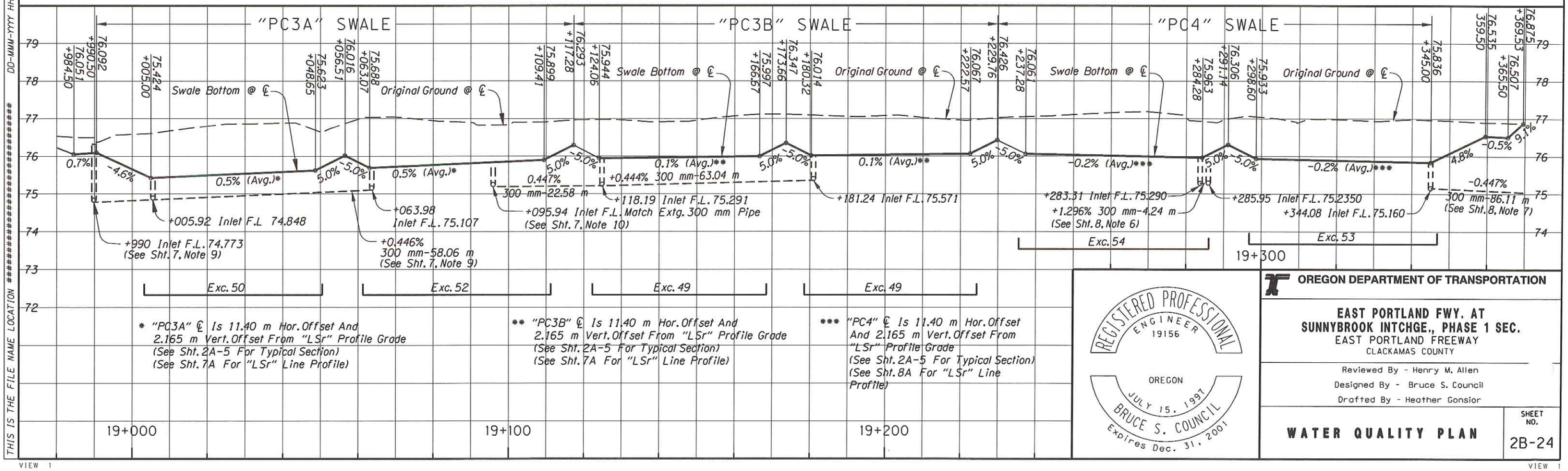
REVISED AS CONSTRUCTED
12/15/2003 CONTRACT 12747
Marjorie West
10/20/04



Notes:

1) Pipe Lengths Shown On The Profiles Are True Slope Lengths From Center To Center Of Manholes, Inlets, Or End(s) Of Pipe. Pipe Lengths Shown In Plan View And In Construction Notes On Sht. 10A Are Pay Lengths.

2) Swale Btm. At Centerline Elevation(s) Is Approximate And Will Be Controlled By The "LSr" Profile Grade And By The "LSr" Line (See Typical Section, Sht. 2A-5), And Represe The Finished Grade Of The Swale(s). (For Details, See Sht. 2B-26.)



** "PC3A" ℄ Is 11.40 m Hor. Offset And 2.165 m Vert. Offset From "LSr" Profile Grade (See Sht. 2A-5 For Typical Section) (See Sht. 7A For "LSr" Line Profile)*

*** "PC3B" ℄ Is 11.40 m Hor. Offset And 2.165 m Vert. Offset From "LSr" Profile Grade (See Sht. 2A-5 For Typical Section) (See Sht. 7A For "LSr" Line Profile)*

**** "PC4" ℄ Is 11.40 m Hor. Offset And 2.165 m Vert. Offset From "LSr" Profile Grade (See Sht. 2A-5 For Typical Section) (See Sht. 8A For "LSr" Line Profile)*

REGISTERED PROFESSIONAL ENGINEER
19156
OREGON
JULY 15, 1997
BRUCE S. COUNCIL
Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION

EAST PORTLAND FWY. AT SUNNYBROOK INTCHGE., PHASE 1 SEC.
EAST PORTLAND FREEWAY
CLACKAMAS COUNTY

Reviewed By - Henry M. Allen
Designed By - Bruce S. Council
Drafted By - Heather Gonsior

WATER QUALITY PLAN

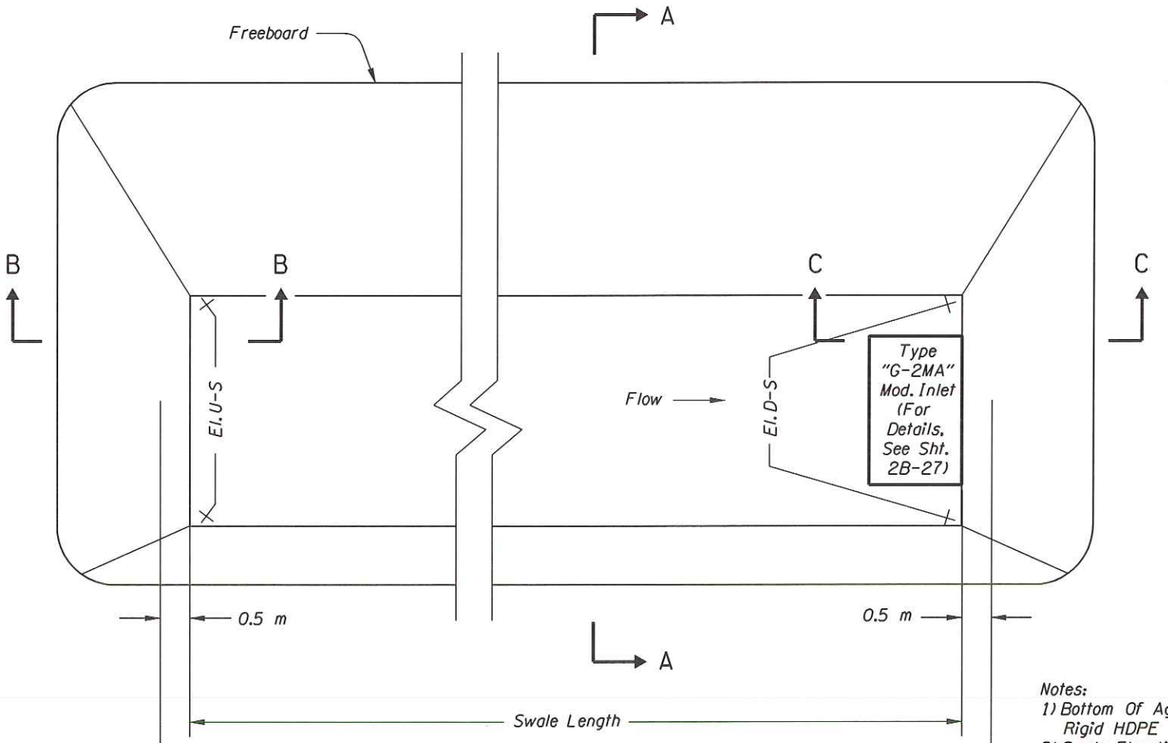
SHEET NO. 2B-24

THIS IS THE FILE NAME LOCATION ********** DD-MMM-YYYY HH:MM

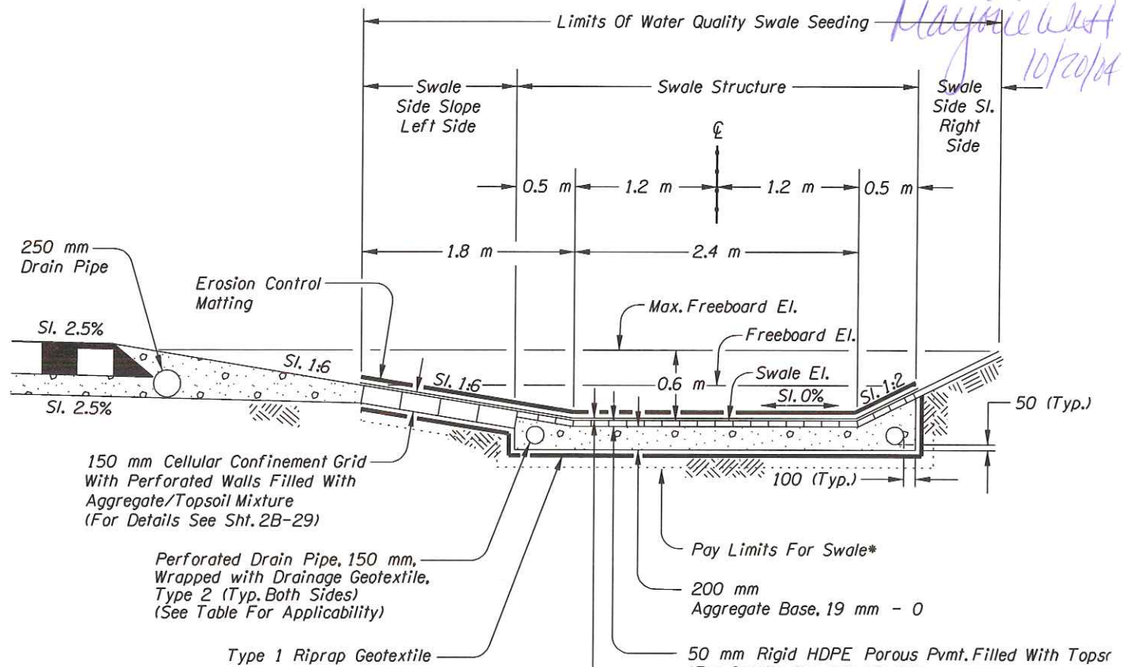
VIEW 1 VIEW 1

" P C 3 A " - " P C 6 A " S W A L E S

REVISED AS CONSTRUCTED
12/15/2003 CONTRACT 12747



PLAN



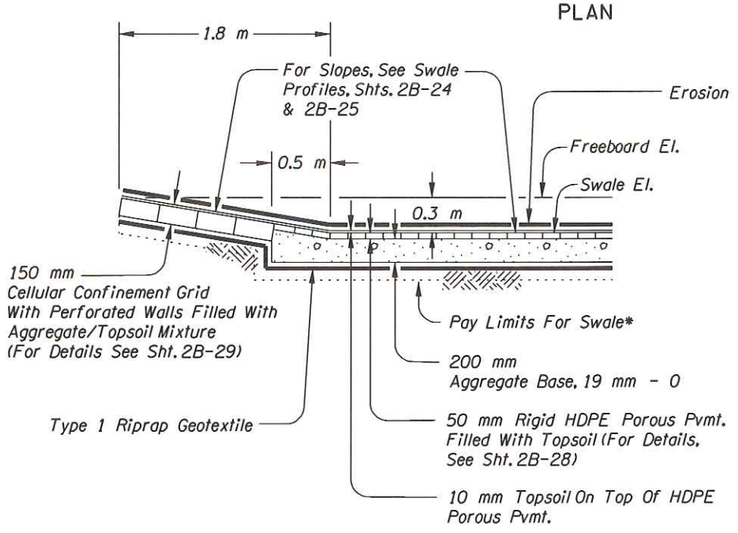
SECTION A-A

Notes:
1) Bottom Of Aggregate Extends To Limits Of Rigid HDPE Porous Pvmt.
2) Swale Elevation Called Out On Plans Is At Top Of Rigid HDPE Porous Pvmt. And/Or Cellular Confinement System, Where Applicable.
3) Place Topsoil Up To Edge Of Gravel Shldr.
4) I-205 Embankment May Extend Into Swale Slopes. If This Occurs, Still Apply Seeding To Vertical Limits Shown.

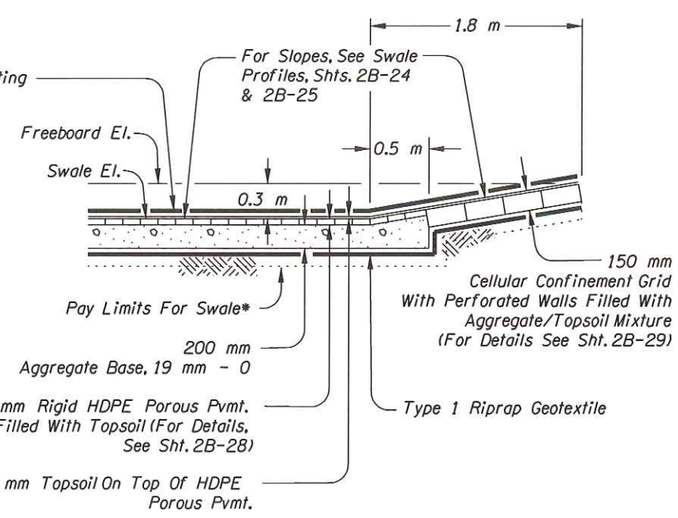
*Inlet And Outlet Structure(s) Not Included In Swale Pay Item

Swale ID	Length (m)	El. U-S (m)	El. D-S (m)	Longitudinal Slope	Perf. Drain Pipe Required
PC3A	104	75.90	75.42	0.5%	Yes
PC3B	99	75.94	76.07	0.6%	Yes
PC4	108	76.06	75.84	0.2%	Yes
PC5	107	72.45	70.74	1.6%	No
PC6A	92	70.54	68.79	1.9%	No

All Dimensions Are In Millimeters (mm) Unless Otherwise Noted.



SECTION B-B



SECTION C-C

REGISTERED PROFESSIONAL ENGINEER
19156
OREGON
JULY 15, 1997
BRUCE S. COUNCIL
Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION

EAST PORTLAND FWY. AT SUNNYBROOK INTCHGE., PHASE 1 SEC.
EAST PORTLAND FREEWAY
CLACKAMAS COUNTY

Reviewed By - Henry M. Allen
Designed By - Bruce S. Council
Drafted By - Heather Consior

WATER QUALITY DETAILS

SHEET NO. 2B-26

THIS IS THE FILE NAME LOCATION ########################## DD-MMM-YYYY HH:MM

VIEW 3

VIEW 3