OPERATION & MAINTENANCE MANUAL

Manual prepared: July 2017

DFI No. D00265

Figure 1: DFI No. D00265, looking North

1. Identification

Drainage Facility ID (DFI):	D00265
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Numbers) 38V-129
Location:	District: 2B
	Highway No.: 064
	Mile Post: 21.06 to 21.11, Left

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 posts, side streets, access location, and stormwater flow directions are noted on the map.

Flow direction: South

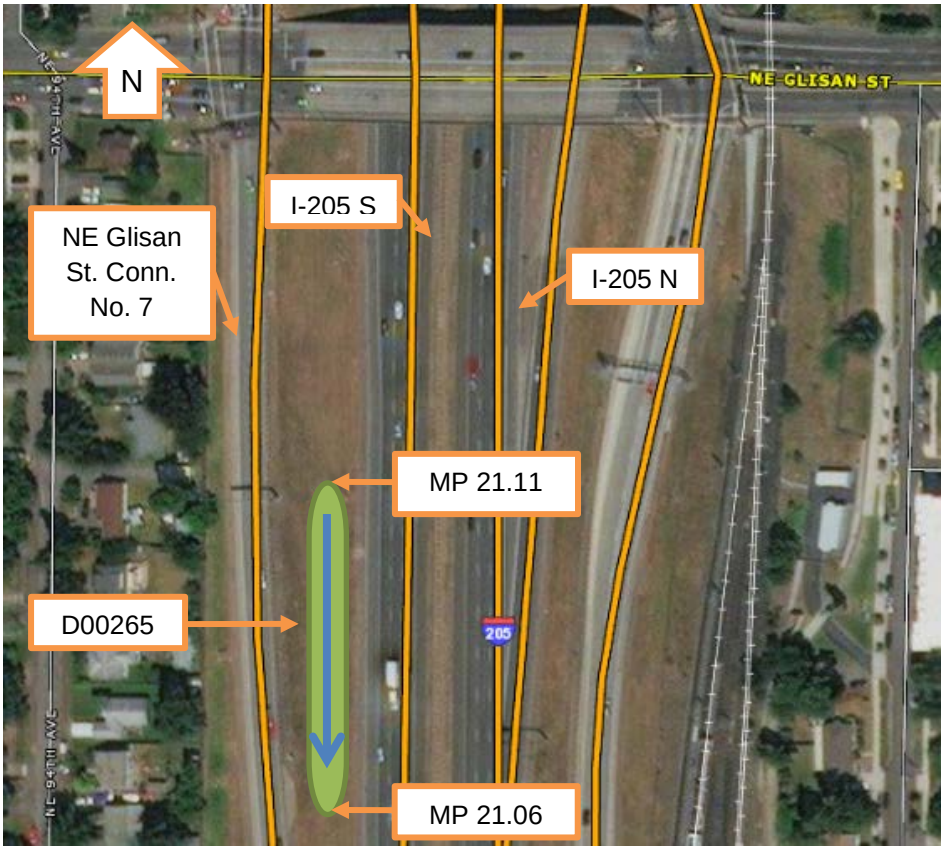


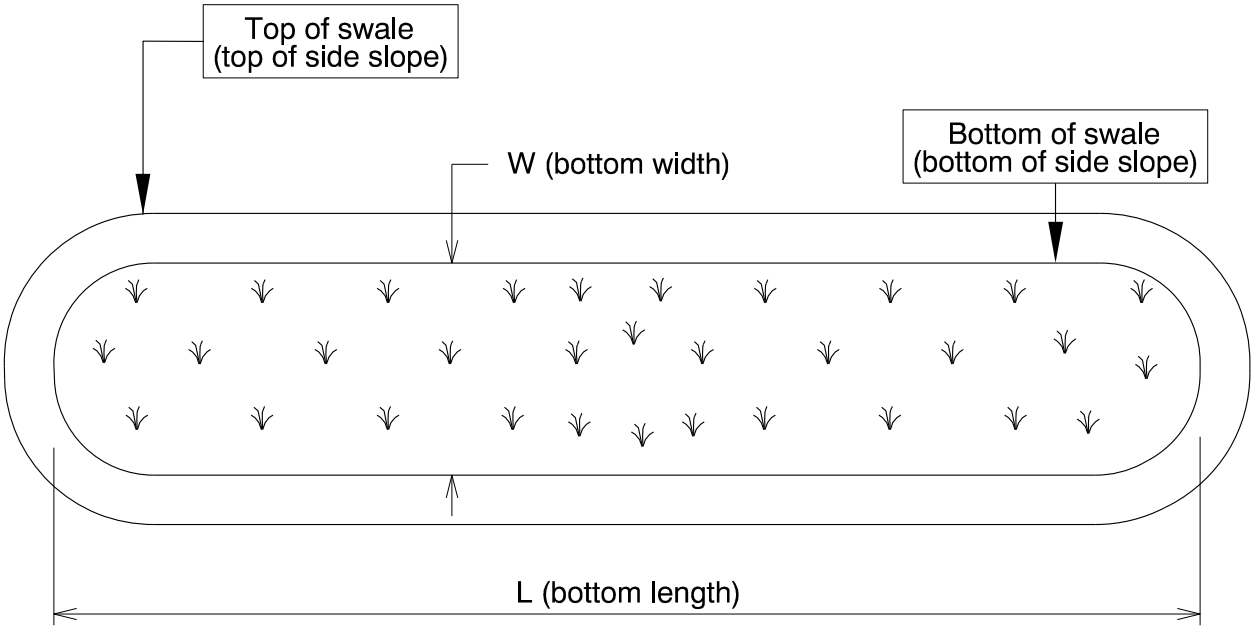
Figure 2: Facility location map

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:

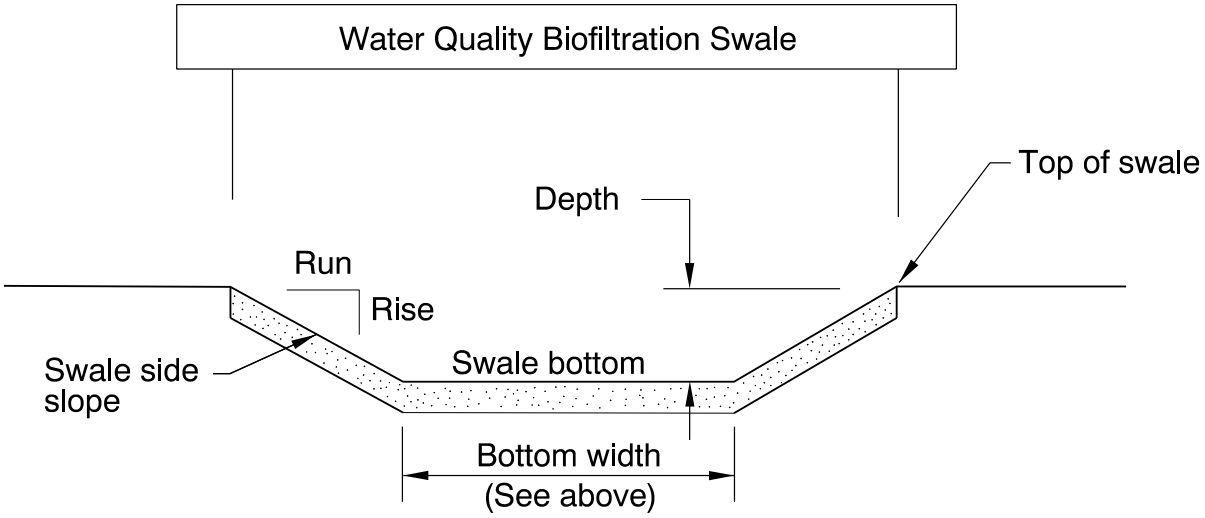
Bottom Length (feet)	Bottom Width (feet)
225	4



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)	Rise (feet)	Run (feet)
2	1	4



Site Specific Information: Facility access via HWY 064 - NE Glisan St. Conn. No. 7.

5. Facility Access

Maintenance access to the facility:

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

Figure 3: Facility access pad, looking North

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 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. ☒).

The Standard Operation Manual for Water Quality Biofiltration Swales (implemented March 2017) outlines facility operation, typical footprint configuration, and component definitions and details. 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 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:	☐	**S19**
Swale Outlet		
Catch basin with grate	☒	**S20**
Outlet Pipe (s)	☐	**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 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

8. Limitations

Access grid installed:

☐ No	☒ Yes
There are (Choose applicable weight: no, light, med., heavy) duty porous pavers installed in this swale	

Swales are designed to allow equipment access along the bottom. If an access grid is **NOT** installed, vehicles entering the swale 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 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 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

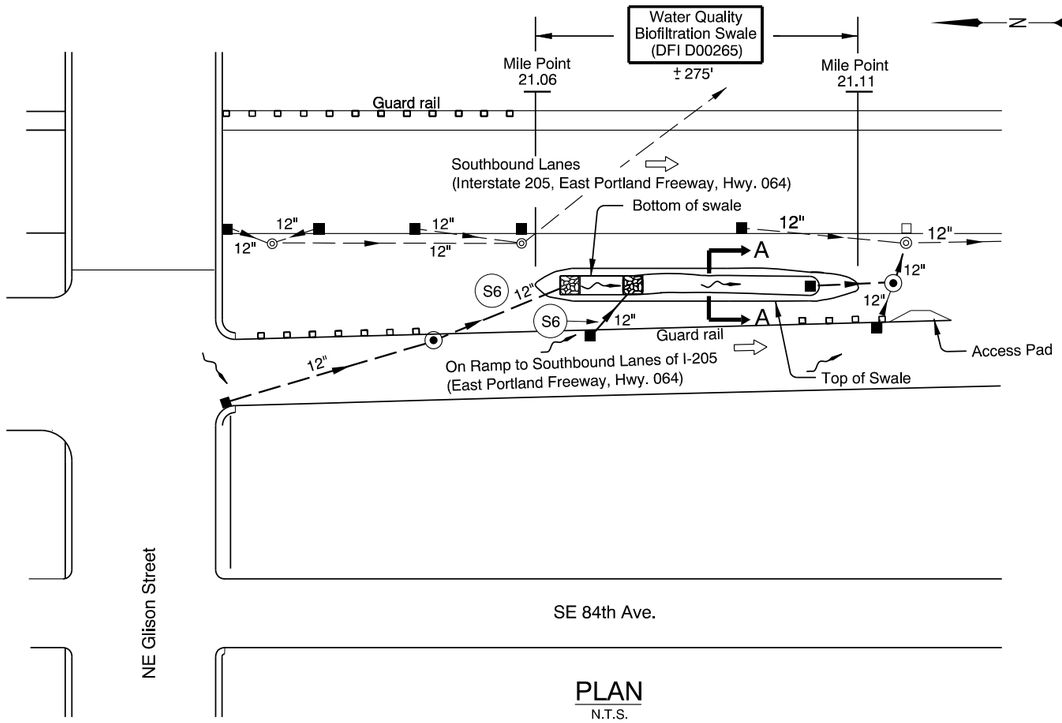
Contact any of the following for more detailed information about management of waste materials found on site:

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

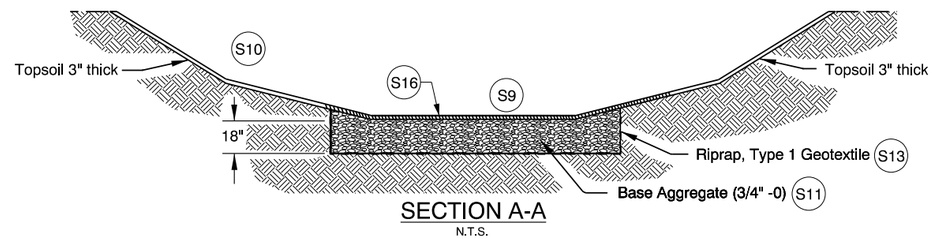
A Appendix A – Site Specific Operational Plan

Contents:

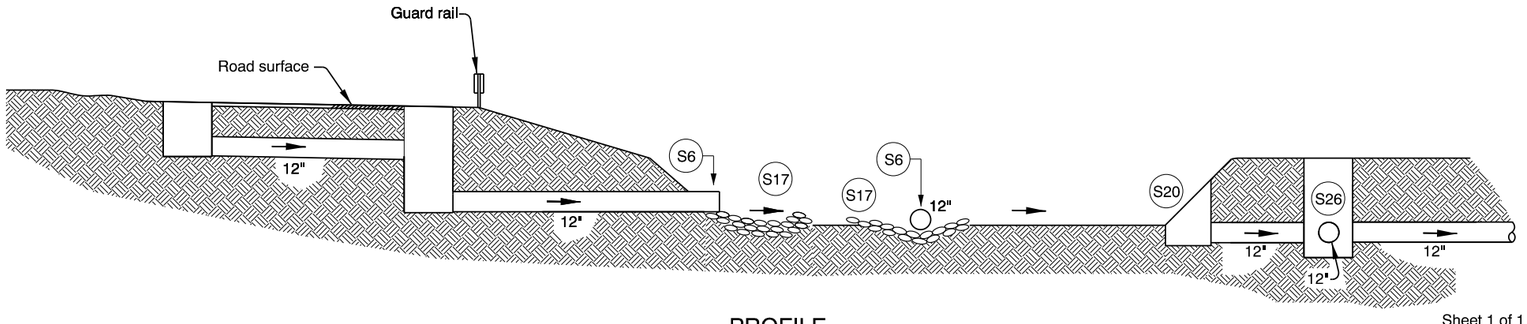
Operational Plan: DFI D00265



PLAN
N.T.S.



SECTION A-A
N.T.S.



PROFILE
N.T.S.

LEGEND:

- Manhole
- Inlet / Schematic View)
- Traffic Direction / Flow
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Rip rap

Sheet 1 of 1

Prepared By: Wynee Hu

Drafted By: Brooklyn Scholz

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00265
MAINTENANCE DISTRICT 2B HWY 064
WATER QUALITY BIOFILTRATION SWALE
E. PORTLAND FREEWAY MP 21.06 - 21.11
MULTNOMAH COUNTY

DFI_D00265.dgn

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 38V-129

38V-129

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

PROJECT SITES	
SITE NO.	LOCATION
1	I-205 SB @ N.E. Glisan St. (M.P. 21.12) (Portland)
2	I-205 NB @ Park Place (M.P. 10.24) (Oregon City)

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

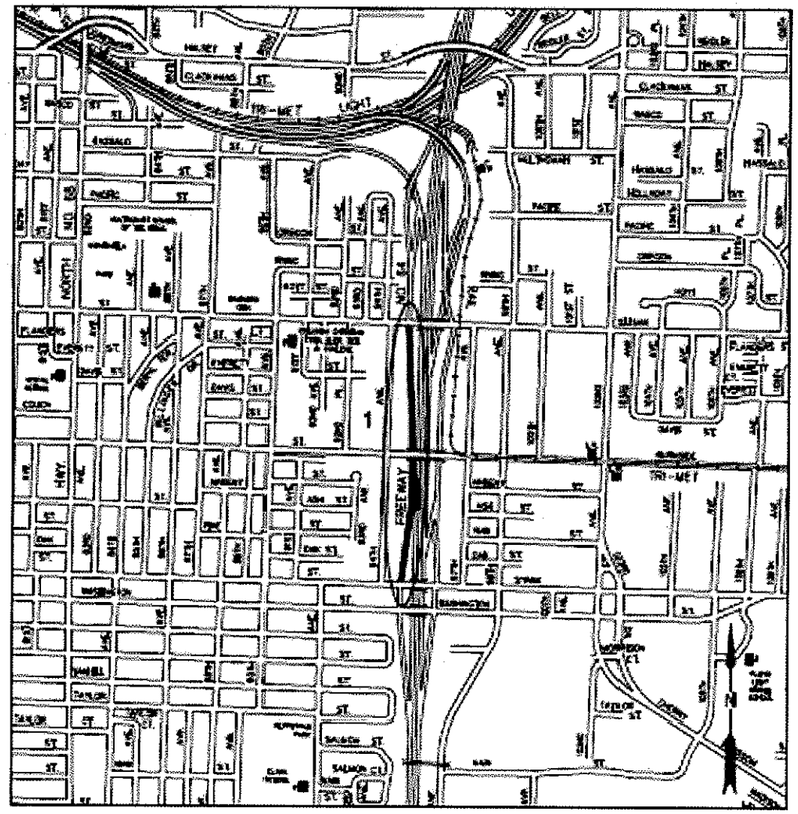
PLANS FOR PROPOSED PROJECT

GRADING, PAVING, DRAINAGE & RAMP METERS

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE

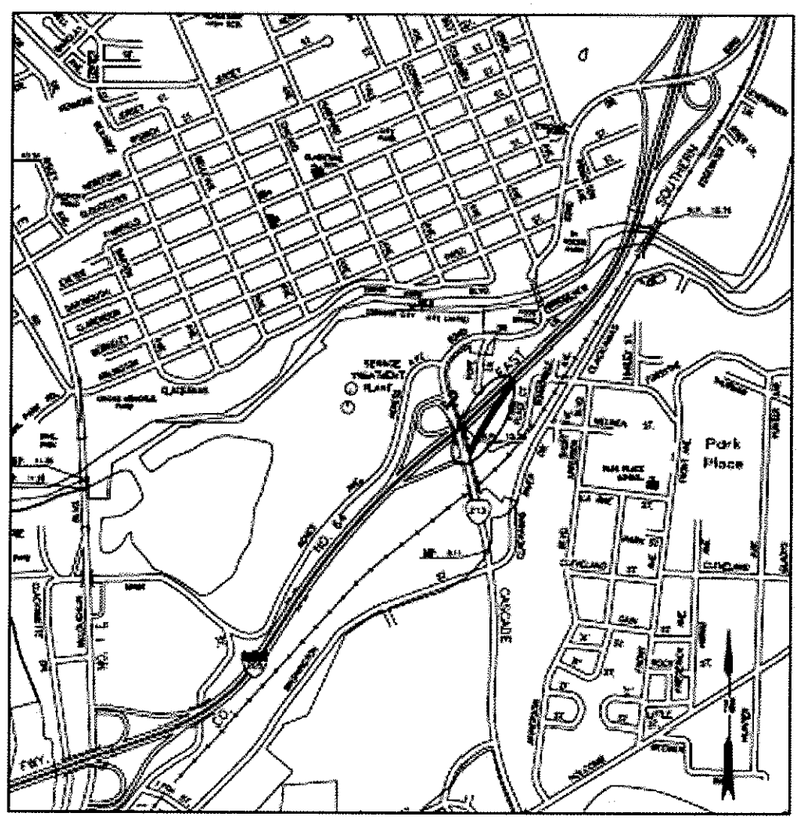
EAST PORTLAND FREEWAY

CLACKAMAS & MULTNOMAH COUNTIES
OCTOBER 2005



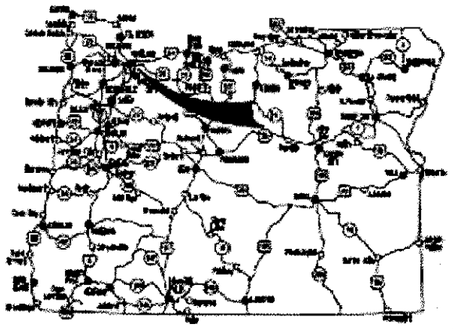
PORTLAND

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



OREGON CITY

T. 2 S., R. 2 E., W.M.



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

Stuart Foster	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Mike Nelson	COMMISSIONER
Randal Pape	COMMISSIONER
Janice J. Wilson	COMMISSIONER
Lorna Youngs	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION
BY:
MURRAY, SMITH & ASSOC., INC.

REGISTERED PROFESSIONAL ENGINEER
19313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION CONCURRENCE

TECHNICAL SERVICES MANAGING ENGINEER _____ DATE _____

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-1X-5064(031)	1

REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182
PROJ. MGR. WAYNE STATLER

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INDEX OF SHEETS, CONT'D.

SHEET NO.	DESCRIPTION
2, 2A	Typical Sections
2B	Superelevation Chart
2B-2 Thru 2B-6 Incl.	Details
2C Thru 2C-5 Incl.	Traffic Control Plans
2D	Pipe Data Sheet
3	Alignment & General Construction - Glisan St.
3A	Drainage & Utilities - Glisan St.
3B	Profile - Glisan St.
4	Alignment & General Construction - Glisan St.
4A	Drainage & Utilities - Glisan St.
4B	Profile - Glisan St.
5	Alignment & General Construction - Glisan St.
5A	Drainage & Utilities - Glisan St.
5B	Profile - Glisan St.
6	Alignment & General Construction - Park Place
6A	Drainage & Utilities - Park Place
6B	Profile - Park Place
7	Alignment & General Construction - Park Place
7A	Drainage & Utilities - Park Place
7B	Profile - Park Place
	PERMANENT PAVEMENT MARKINGS
ST-1 Thru ST-5 Incl.	Permanent Pavement Markings Plan & Details
	PERMANENT SIGNING
S-8300 Thru S-8302 Incl.	Sign Installation Plans
S-8303	Sign Installation Details
S-8304, S-8305	Sign Installation Post & Data Table
S-8306	Monotube Cantilever Sign Support - Elevation
	GEO/HYDRO
GA	Erosion Control Details
GA-2 Thru GA-6 Incl.	Erosion Control Plans
GJ Thru GJ-3 Incl.	Water Quality Details
GJ-4, GJ-5	Water Quality Plans
GJ-6	Water Quality Profile
	ROADSIDE DEVELOPMENT
GN Thru GN-5 Incl.	Roadside Development Plan
	TRAFFIC SIGNALS
13973	Ramp Meter Legend
13974, 13975	Ramp Meter Plan East Portland Frwy. At Glisan St. SB
13976	Ramp Meter Plan East Portland Frwy. At Park Place NB
13977	Pole Information

INDEX OF SHEETS, CONT'D.

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	ILLUMINATION
I-1200, I-1201	Illumination Legend & Plan

Standard Drg. Nos.

RD300	- Trench Backfill, Bedding, Pipe Zone & Multiple Installations
RD312	- Subsurface Drain
RD320	- Paved End Slope For Culverts 60 Inch Maximum Pipe Size
RD336	- Standard Storm Sewer Manhole
RD344	- Standard 48" Diameter Manhole Base Section
RD348	- Manhole With Inlet
RD356	- Manhole Covers & Frames
RD364	- Concrete Inlets, Type G-1, G-2 & G-2M
RD366	- Concrete Inlets, Type CG-1, CG-2, & Curb Inlet Channel
RD368	- Concrete Inlets, Type ME, M-O, & B-SL
RD386	- Circular Concrete Pipe Fill Height Table
RD400	- Guardrail & Metal Median Barrier
RD405, RD415	- Guardrail & Metal Median Barrier Parts
RD420	- Non-Flared Terminal
RD605	- Continously Reinforced Conc. Pavement
RD610	- Asphalt Pavement Details
RD700	- Curbs
RD705	- Islands & Traffic Separators
RD900, RD905, RD910, RD911, RD915, RD920, RD930, RD945	- Traffic Control Plans
RD950	- Barricades
RD1000	- Construction Entrance
RD1005	- Check Dams
RD1010	- Inlet Protection
RD1040	- Sediment Fence (Supported & Unsupported)
TM100	- Temp Wood Post Sizing Charts
TM105	- Orange Flag Board Mounting Details
TM200	- Sign Installation Details
TM201	- Misc. Signal Placement Details
TM205	- Aluminum Panels & Installation
TM206	- Sign Bracing Details Sign Mounting Details - Sign Mounting Details
TM207	- Additional Mounting Details
TM211	- Signing Details US & Interstate Route Shields
TM214	- Wood Post Sizing Charts
TM223	- Conventional Signing Details Directional Sign Layouts
TM224	- Signing Details Directional Sign Layouts
TM230, TM231, TM232	- Mounting Details For Removable Legend
TM239	- Square Tube Sign Support
TM240	- Heavy Duty Square Tube Sign Support
TM403	- Mast Arm Pole Details
TM405	- Pole Foundations & Grounding
TM406, TM407, TM408	- Vehicle Signal Details
TM409	- Pedestrian Signals
TM416	- Overhead Sign Details
TM417, TM418	- Junction Boxes
TM419, TM420	- Loop Details
TM421	- Color Code Charts
TM422	- Miscellaneous
TM423	- Controller Cabinets & Related Details
TM426, TM427	- Service Cabinets
TM428	- Terminal Cabinets
TM431	- Fiber Optic & LED PTR Signs
TM432, TM433	- Ramp Meter Details
TM434	- Maintenance Pad Details
TM435	- Interconnect
TM500, TM502	- Pavement Markings
TM520, TM547	- Durable Pavement Markings Method "A", "B", And "F"
TM602	- Triangular Base Breakaway Sign Support
TM622, TM623, TM624, TM625, TM626, TM627	- Monotube Cantilever Sign Support (Plans & Details)
TM629, TM630	- Slip Base & Fixed Base Luminaire Supports
TM631, TM632	- Traffic Signal Supports
TM635	- Breakaway Sign & Luminaire Supports
BR115	- Standard Slope Paving

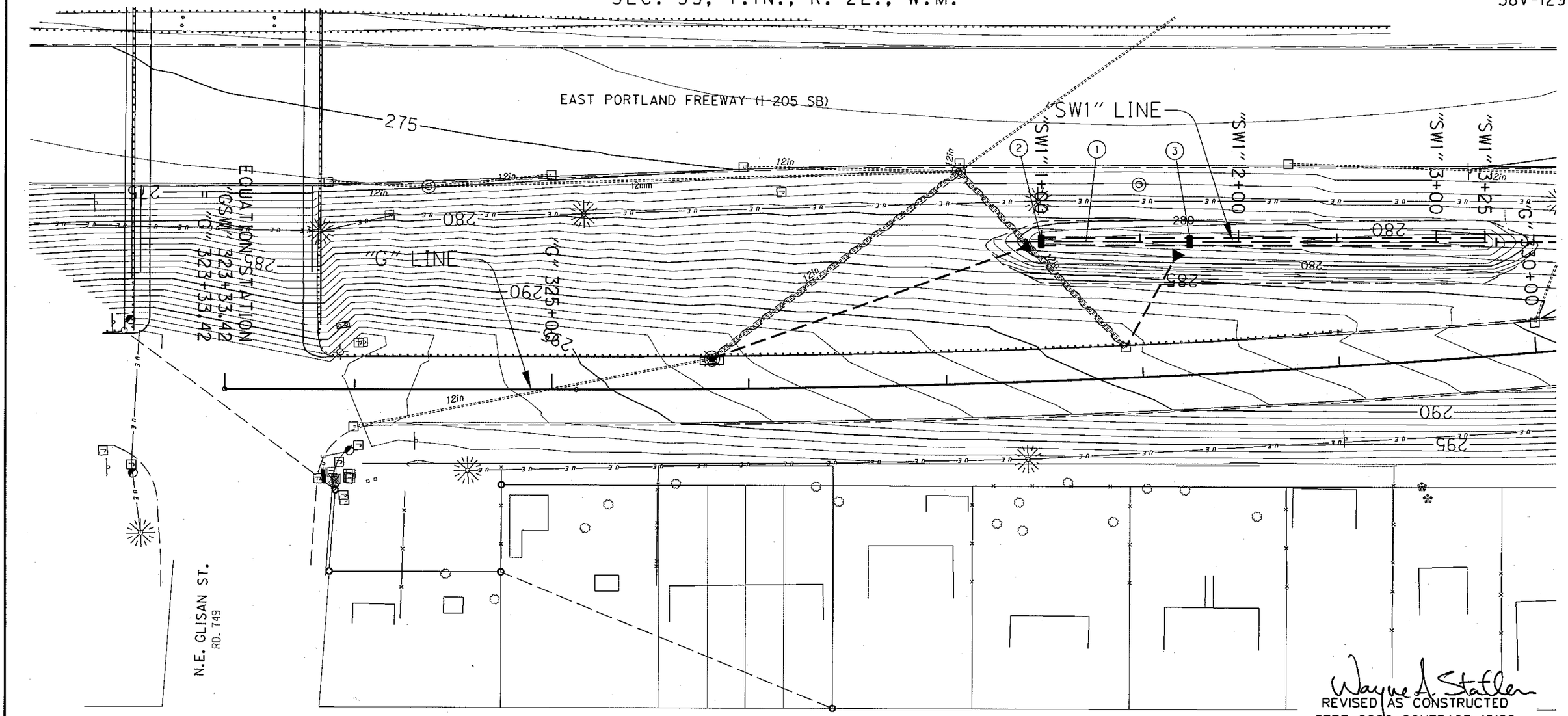
Wayne L. Stalker
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	
OREGON DIVISION	X-IX-S064(031)	1A

SEC. 33, T.1N., R. 2E., W.M.

38V-129



(1) *Sta. "SW1" 1+00 to "SW1" 3+25*
Const. Water Quality Swale
Porous Pavers - 1800 ft²
Riprap, Type 1 Geotextile - 200 ft²
Base Aggregate - 190 Ton
Ditch Exc. - 2300 C.Y.
(For Details, See Shts. GJ & GJ-2)

(2) *Sta. "SW1" 1+00*
Const. Swale Flow Spreader
Stone Emb. Matl. - 1.5 C.Y.
(For Details, See Sht. GJ-3)

(3) *Sta. "SW1" 1+75*
Const. Swale Flow Spreader
Stone Emb. Matl. - 1.5 C.Y.
(For Details, See Sht. GJ-3)

Wayne A. Statler
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
Portland, Oregon

REGISTERED PROFESSIONAL ENGINEER
19,313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY
AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

WATER QUALITY PLAN

SHEET NO. GJ-4

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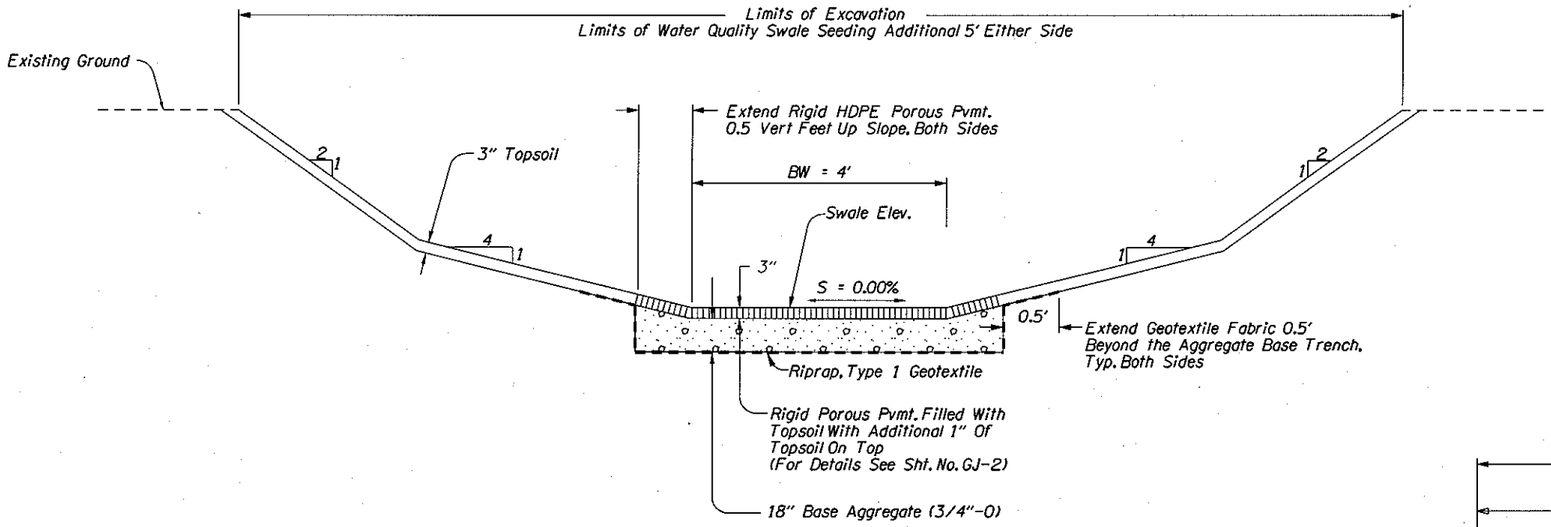
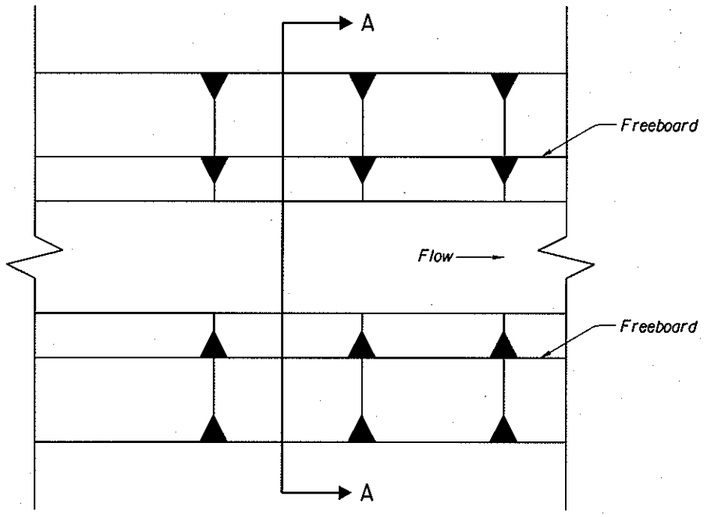
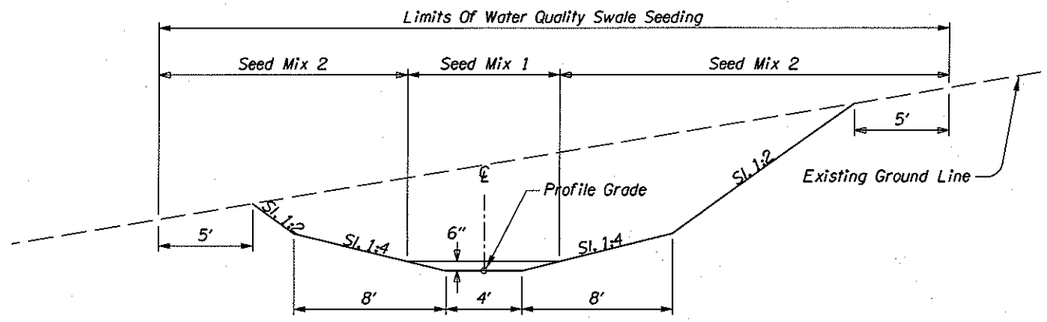


SECTION A-A
SWALE SOIL STRUCTURE



PLAN
GENERAL SWALE LAYOUT



STA. "SW1" 1+00 to STA. "SW1" 3+25
STA. "SW2" 1+00 to STA. "SW2" 2+85

SECTION A-A
SWALE SEEDING LIMITS
(For Seed Mix Details, See Sht. GN)

Wayne A. Stallen
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182

MSA
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Engineers/Planners
Portland, Oregon

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ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY
AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

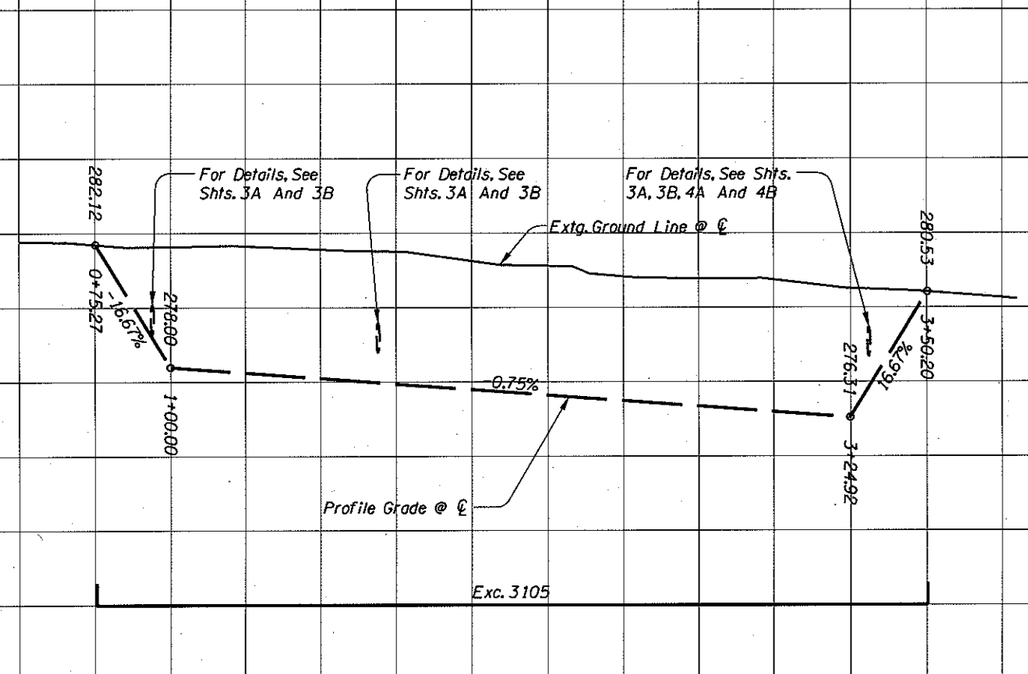
Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

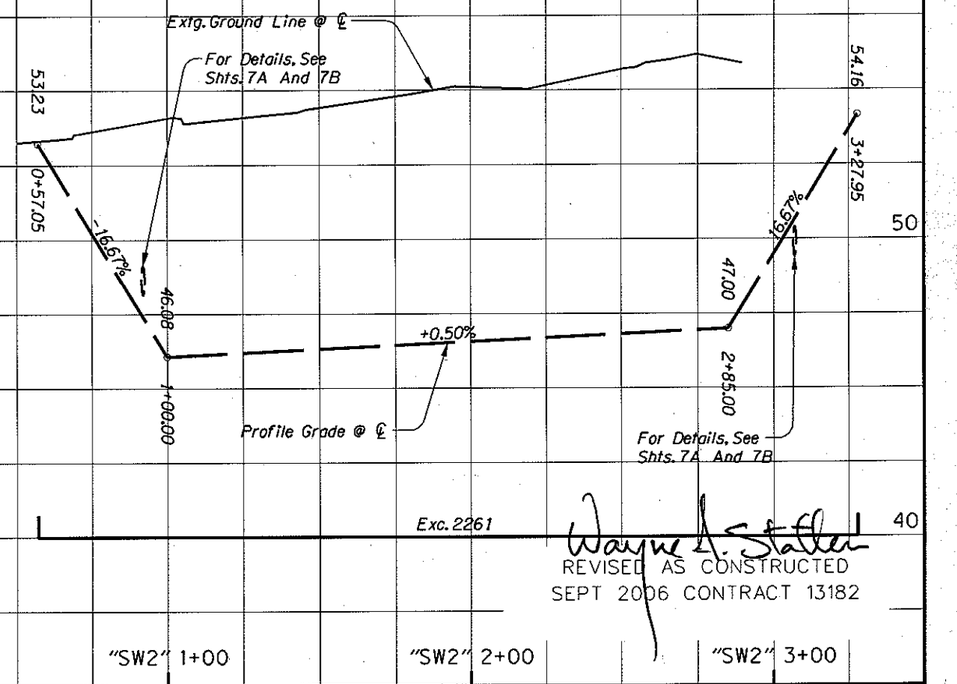
WATER QUALITY DETAILS

SHEET NO. GJ

"SW1" & "SW2"" LINE PROFILES

(See Sheet GJ-4 For "SW1" Line Plan View
See Sheet GJ-5 For "SW2" Line Plan View)





Wayne L. Stalter
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SEPT 2006 CONTRACT 13182

MSA
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OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE

EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

PROFILE

SHEET NO. GJ-6

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