OPERATION & MAINTENANCE MANUAL

DFI No. : D00675
Facility Type: Water Quality Biofiltration Swale

[April, 2018]

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00675**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 46V-022
Location:	District: 2B
	Highway No.: 064
	Mile Post: 13.40;13.45 (beg./end)
	Description: This facility is located on the north side of the I-205 southbound off-ramp to 82nd Drive.

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 Hydro Unit Manager

Or

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

3. Construction

4. Engineer of Record: Consultant Designer – [OBEC Consulting Engineers, Amy Jones, 971-634-2005]

Facility construction: [2014]
Contractor: Kerr Contractors, Inc.

5. 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 biofiltration swale is designed to treat runoff from the water quality design storm and provide infiltration prior to entering the existing storm drain pipe system in Interstate 205 prior to entering Dean Creek. It is located on the north side of the Interstate 205 southbound off ramp to 82nd Drive.

There is one storm drain pipe that conveys stormwater runoff from paved areas along the Interstate 205 Alignment to the swale. This pipe is connected to a split flow manhole on the upstream end which diverts the water quality storm to the beginning of the swale, while allowing larger storm events to enter the existing storm sewer system. The location of these are noted on the Operation Plan as points A and B in Appendix A.

Runoff exits the swale by way of a Type "D" inlet connected to a 12-inch storm drain outlet pipe. See Photo 1 and Point C on the Operational Plan in Appendix A.

The storm drain outlet pipe from the inlet and 12" pipe connect into the downstream pipe system that drains to Dean Creek. The receiving waterway for the outlet pipe is Dean Creek.

A. Maintenance equipment access:
The swale and outlet structure can be accessed directly from the shoulder of the Interstate 205 southbound off ramp to 82nd Drive.

B. Heavy equipment access into facility:

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

C. Special Features:

☒ Amended Soils
☐ Porous Pavers
☐ Liners
☒ Underdrains

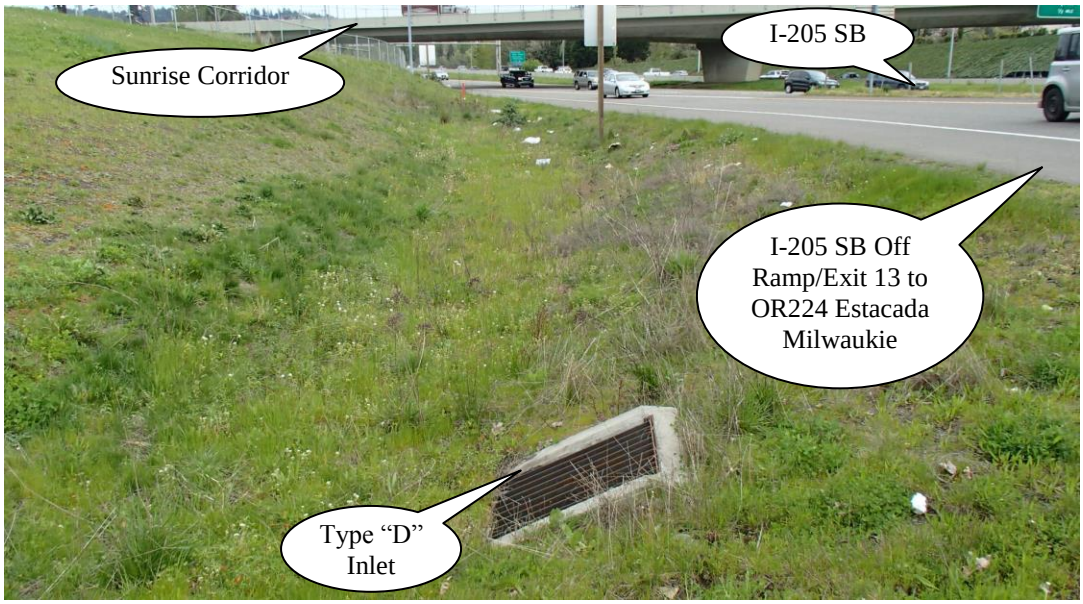


Photo 1: a view of water quality biofiltration swale, looking Northeast.

Photo 2: looking Southwest from North part of the facility.

6. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the 12-inch diameter outlet pipe with the Type "D" inlet located at the outfall structure at the west end of the swale. A barrier such as a metal plate over the metal grate on the inlet could be used to prevent liquid from draining from the swale.

7. Auxiliary Outlet (High Flow Bypass)

There is no auxiliary outlet provided for the water quality swale. Storm events larger than the water quality storm will be diverted to bypass the swale with the split flow manhole upstream of the swale.

8. 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

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual:

- ☒ 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:

9. 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:

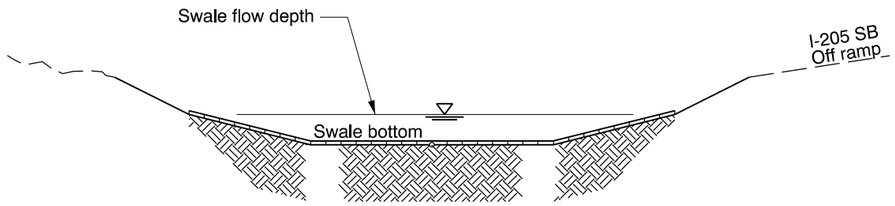
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 731-8290

ODEQ Northwest Region Office (503) 229-5263

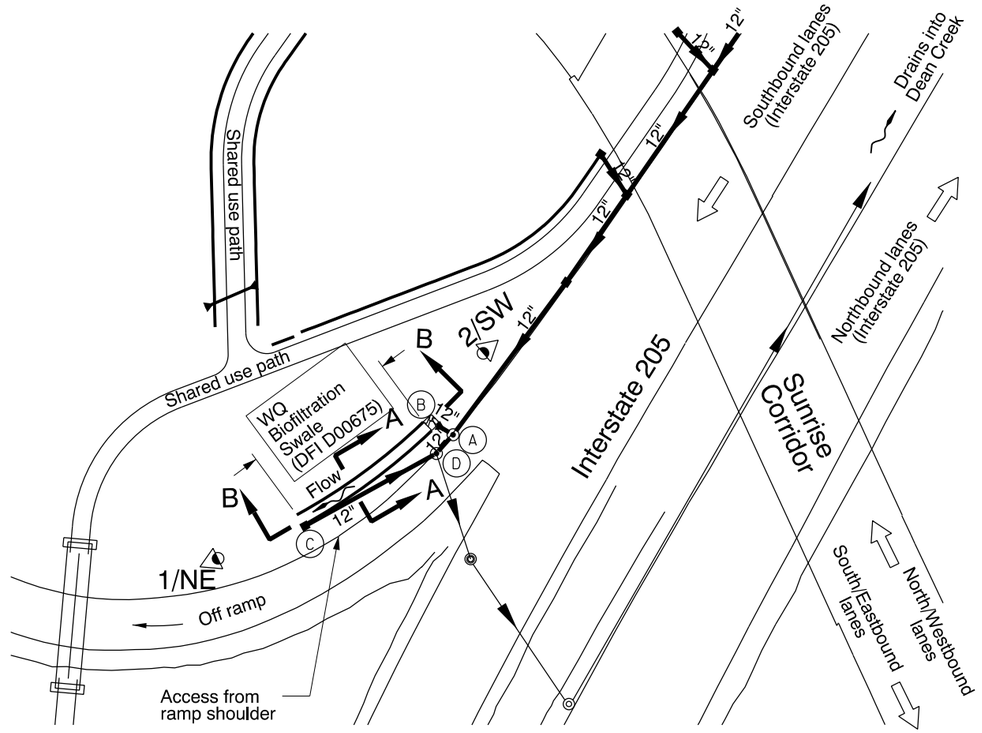
Appendix A

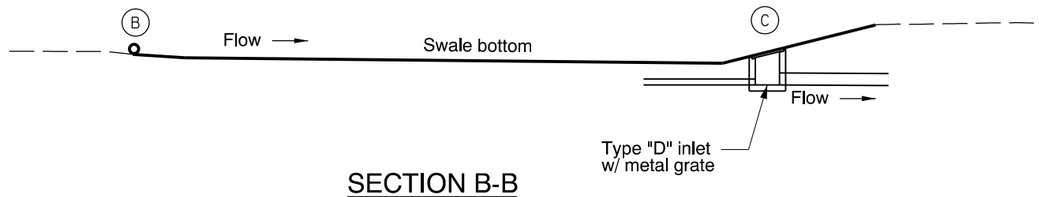
Content:

- **Operational Plan and Profile Drawing**



SECTION A-A
N.T.S.





SECTION B-B
N.T.S.

LEGEND:

- Photo Location / Direction
- (A) Split flow manhole
- (B) 12" storm drain pipe outlet
- (C) Type"D" inlet and 12" storm drain pipe outfall
- (D) Storm drain manhole
- Manhole
- Inlet
- Storm Pipe (Facility)
- Storm Pipe (Existing)
- Conveyance Direction
- Pavement / Facility Flow Path

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Amy Jones

Drafted By: Amy Jones

DFI D00675
MAINTENANCE DISTRICT 2B HWY 64
WATER QUALITY BIOFILTRATION SWALE
EAST PORTLAND FWY MP 13.40 TO 13.45
CLACKAMAS COUNTY

Appendix B

Content:

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

46V-022

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

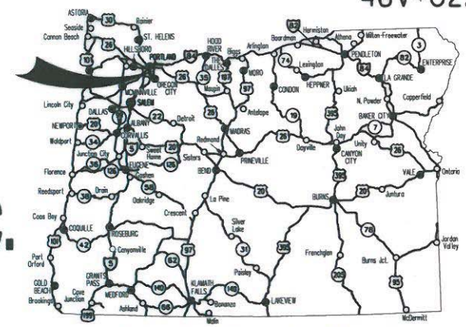
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.

CLACKAMAS HWY.

CLACKAMAS COUNTY
MARCH 2013

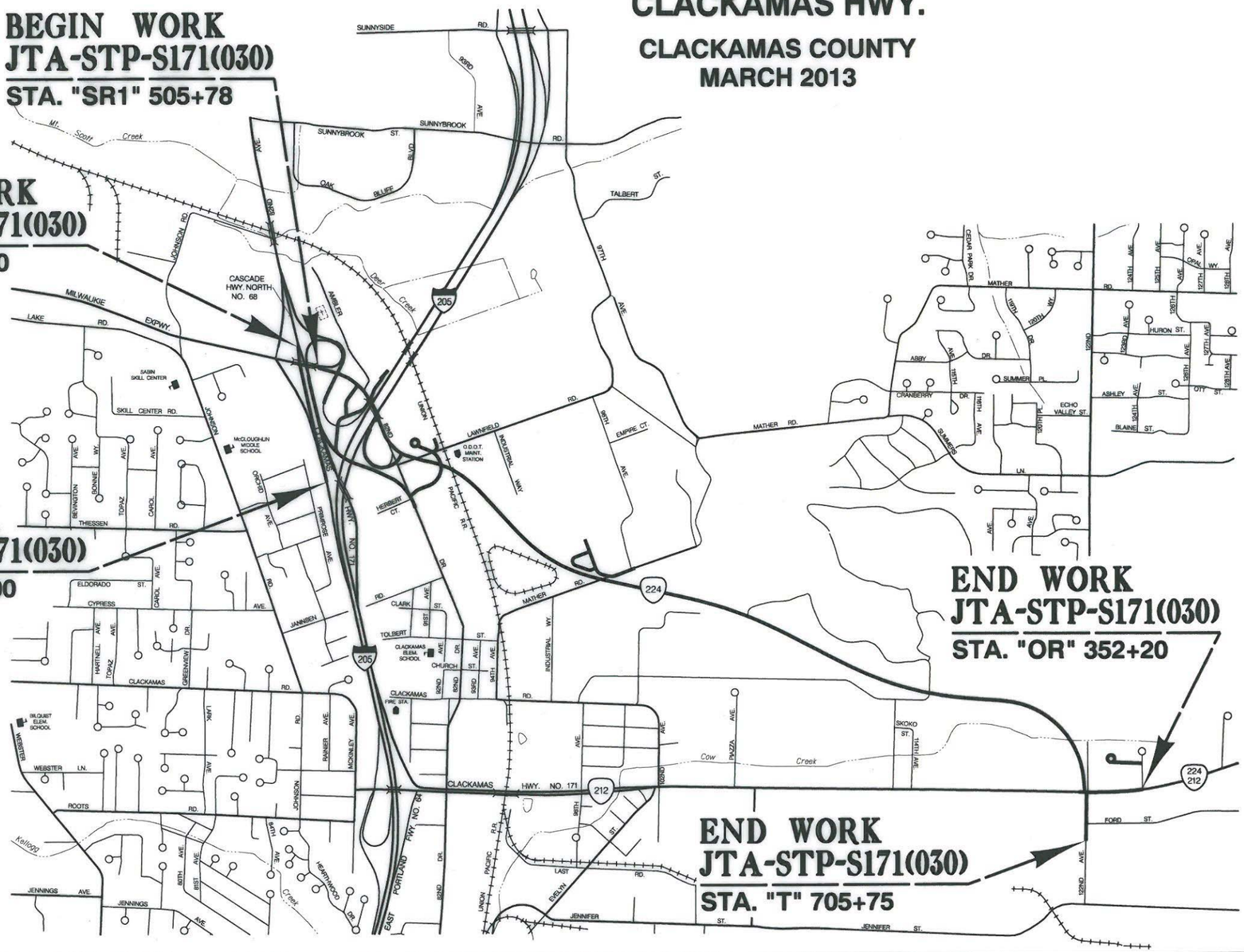
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.



Overall Length Of Project - 3.90 Miles

BEGIN WORK
JTA-STP-S171(030)
STA. "SR1" 505+78

BEGIN WORK
JTA-STP-S171(030)
STA."G" 463+00



END WORK
JTA-STP-S171(030)
STA. "G" 492+00

END WORK
JTA-STP-S171(030)
STA. "OR" 352+20

END WORK
JTA-STP-S171(030)
STA. "T" 705+75

N

SEC. 4, 5, 9, 10, 11
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

Pat Egan	CHAIR
David Lohman	COMMISSIONER
Mary F. Olson	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tammy Baney	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

PLANS PREPAIRED FOR
OREGON DEPARTMENT OF TRANSPORTATION

OBEC CONSULTING ENGINEERS
www.obec.com
CORPORATE OFFICE:
920 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-8089
REGIONAL OFFICES:
LAKE OSWEGO; SALEM; MEDFORD, OREGON; VANCOUVER, WASHINGTON

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: _____ 12/31/12
Signature & date

LAWRENCE H. FOX - PROJECT MANAGER
Print name and title

Concurrence by ODOT Chief Engineer

FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.
CLACKAMAS HWY.
CLACKAMAS COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	JTA-STP-S171(030)	1

File No.

46V-022

N

CASCADE HWY. NORTH (OR213, 82ND AVE.)

CLACKAMAS HWY. (OR224, MILWAUKIE EXPRESSWAY)

I-205 EAST PORTLAND FREEWAY

Sheet 3

Sheet 4

Sheet 5

Sheet 6

Sheet 7

Sheet 8

"A" LINE

"B" LINE

"C" LINE

"G" LINE

"LS1" LINE

"NBS" LINE

"SBS" LINE

"SUP3" LINE

"AM" LINE

"SUP5" LINE

"SUP4" LINE

"82D" LINE

"82E" LINE

"EM" LINE

"LN3" LINE

"F1" LINE

"SUP1" LINE

"UPRR" LINE

"EAR" LINE

"SR1" LINE

"BX" LINE

"SR2" LINE

"I" LINE

AMBLER RD.

82ND DR.

HERBERT CT.

LAWNFIELD RD.

MATHER RD.

INDUSTRIAL WAY

DFI D00675

REGISTERED PROFESSIONAL ENGINEER
73309
OREGON
MAY 13, 2003
TOM METCALF
EXPIRES: 12/31/14

OREGON DEPARTMENT OF TRANSPORTATION

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FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.

CLACKAMAS HWY.

CLACKAMAS COUNTY

Design Team Leader - Tom Metcalf
Designed By - Jason Rahm/Alissa Loberg
Drafted By - Serban Dinca/Brittney Zornado

SHEET LAYOUT PLAN

SHEET NO. 1B

File No.

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Sec. 4, T. 2 S., R. 2 E., W.M.

46V-022

DFI D00675
WQ Biofiltration
Swale SWM08

DFI D00673
Bio-retention pond
SWM06

DFI D00671
Bio-retention pond
SWM04

"AM" 50+00
"SUP5" LINE
"AM" LINE
"SR1" 510+00
MATCH LINE
SEE SHEET 3D
"SUP4" 30+00
"SUP3" 25+00
"82D" 220+00
"SR1" 515+00
"82E" LINE
"82E" 220+00
"SBS" 720+00
"NBS" 720+00
"SR1" 520+00
MATCH LINE
SEE SHEET 5D
82ND DR.
"NBS" LINE
"SR1" LINE
"82D" 225+00
"SUP4" LINE
"SUP3" LINE
"SUP3" 30+00
"82D" 225+00
"SBS" LINE
"SBS" 725+00
"82D" LINE
EAST PORTLAND FREEWAY (I-205)
MATCH LINE
SEE SHEET 15D
MATCH LINE
SEE SHEET 16D
R/W
Temp. const. ease.
Perm. ease.
12"-132'
12"-11'
12"-108'
12"-34'
12"-100'
12"-32'
12"-50'
12"-70'
12"-125'
12"-64'
12"-130'
12"-84'
12"-83'
12"-140'
12"-17'
12"-37'
12"-99'
12"-73'
12"-32'
18"-320'
15"-29'

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REGISTERED PROFESSIONAL ENGINEER
64332
OREGON
NOVEMBER 14, 2000
AMY L. JONES
EXPIRES: 06/30/2013

FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.
CLACKAMAS HWY.
CLACKAMAS COUNTY

Design Team Leader - Tom Metcalf
Designed By - Ben Wewerka/Amy Jones
Drafted By - Serban Dinca/Brittney Zornado

DRAINAGE & UTILITIES

SHEET NO. 4D

File No.

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(1) Remove pipe - 408'

(2) Abandon pipe

(3) Remove inlet - 8

(4) Abandon inlet

(5) Sta. "82D" 229+36.08, 38.2' Rt.
Const. type "D" inlet
Inst. 12" storm sew. pipe - 73'
5' depth
Const. sloped end
Const. paved end slope, Lt.
Const. riprap basin
(For details, see sht. GJ-22)

(6) Const. bio-retention pond, D00673 (SWM06)
Inst. facility field markers, type S1 - 2
Inst. facility field marker, type S2
Conc. pipe anchor
Aggregate base - 180 tons
6" gate valve
(For details, see shts. GJ-9 & GJ-9A)

(7) Sta. "82D" 227+18.07, 46.5' Rt.
Const. storm manhole
Inst. 12" storm sew. pipe - 32'
5' depth
Connect to extg. inlet

(8) Sta. "SBS" 716+52.97, 46.11' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 132'
5' depth
(For profile, see sht. 19B)

(9) Sta. "82D" 219+15.12, 19.1' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 108'
5' depth

(10) Sta. "82D" 220+22.75, 18.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 100'
5' depth

(11) Sta. "82D" 221+22.76, 18.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 70'
5' depth

(12) Sta. "82D" 221+92.91, 18.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 125'
5' depth

(13) Sta. "SR1" 517+72.57, 30.5' Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 64'
5' depth

(14) Sta. "SR1" 518+38.71, 32.9' Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 84'
10' depth

(15) Sta. "SR1" 518+51.89, 50.4' Rt.
Const. storm manhole
Inst. 12" storm sew. pipe - 83'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(16) Sta. "SR1" 520+09.32, 36.2' Lt. to Sta. "SR1" 521+47.84, 38' Lt.
Inst. 12" storm sew. pipe - 130'
5' depth

(17) Sta. "SR1" 520+09.32, 36.2' Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 140'
10' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(18) Const. bio-retention pond, D00671 (SWM04)
Inst. facility field markers, type S1 - 2
Inst. facility field marker, type S2
Conc. pipe anchor
Aggregate base - 275 tons
6" gate valve
Const. sloped end
Const. paved end slope, Lt.
(For details, see shts. GJ-7 & GJ-7A)

(19) Sta. "82D" 219+10.58, 29.5' Rt.
Const. type "G-2M" inlet
Inst. 12" storm sew. pipe - 11'
5' depth

(20) Sta. "82D" 220+15.49, 52.2' Rt.
Const. type "G-2M" inlet
Inst. 12" storm sew. pipe - 34'
5' depth

(21) Sta. "82D" 221+10.54, 48.2' Rt.
Const. type "G-2M" inlet
Inst. 12" storm sew. pipe - 32'
5' depth

(22) Sta. "82D" 223+34 to Sta. "82D" 224+45, Rt.
Const. water quality swale, D00675 (SWM08)
Inst. facility field marker, type S1 - 2
Inst. facility field marker, type S2
Const. paved end slope, Rt.
(For details, see sht. GJ-11)

(23) Sta. "82D" 223+37.42, 18.28' Rt.
Const. storm manhole over extg. storm sew. pipe
Inst. 12" storm sew. pipe - 17'
5' depth

(24) Sta. "82D" 228+38.20, 57.27' Lt.
Const. type "D" inlet

(25) Sta. "SUP3" 27+55.5, 51.54' Rt. to Sta. "SUP3" 27+92.6, 49.91' Rt.
Inst. 12" culv. pipe - 37'
5' depth
Const. sloped end - 2
Const. paved end slope, Lt. & Rt.
(For profile, see sht. 19C)

(26) Sta. "SR1" 511+44.88, 51.4' Rt. to Sta. "SR1" 511+98.64, 59' Rt.
Inst. 12" culv. pipe - 50'
5' depth
Const. sloped end, Lt. & Rt.

(27) See sht. 3D, note 26
Inst. 18" storm sew. pipe

(28) Preserve and protect gas line

(29) Relocate waterline
(For details, see sht. WA-N2a)

(30) Preserve and protect pole

(31) Utilities relocated prior to construction

REGISTERED PROFESSIONAL ENGINEER
64330
OREGON
NOVEMBER 14, 2000
AMY L. JONES
EXPIRES: 06/30/2013

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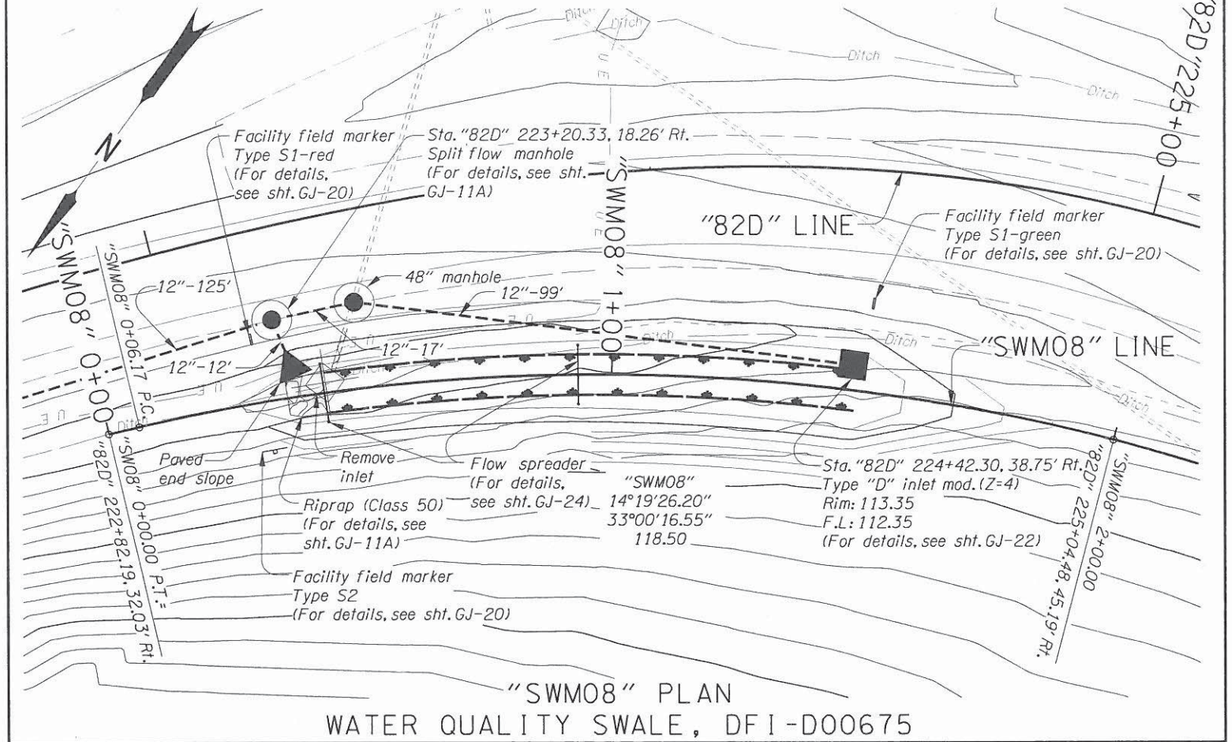
CLACKAMAS COUNTY

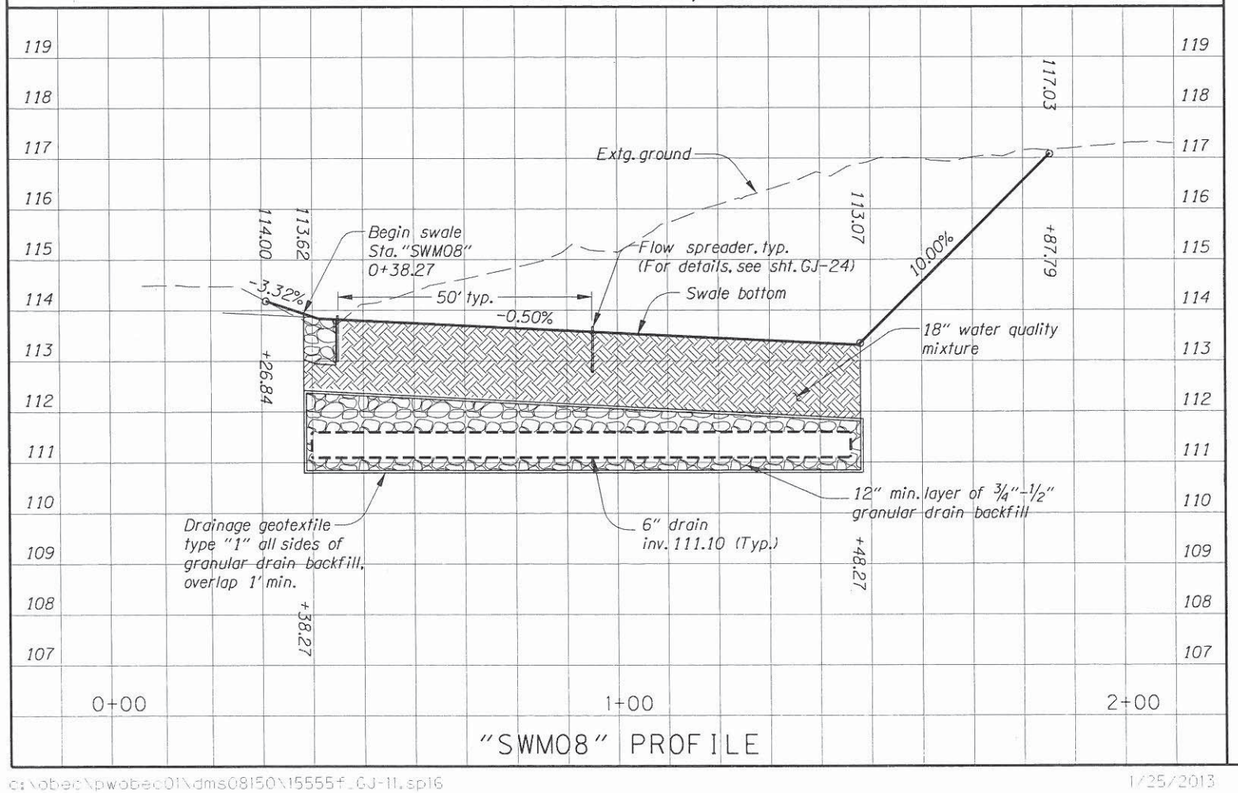
Design Team Leader - Tom Metcalf
Designed By - Ben Wewerka/Amy Jones
Drafted By - Serban Dinca/Brittney Zornado

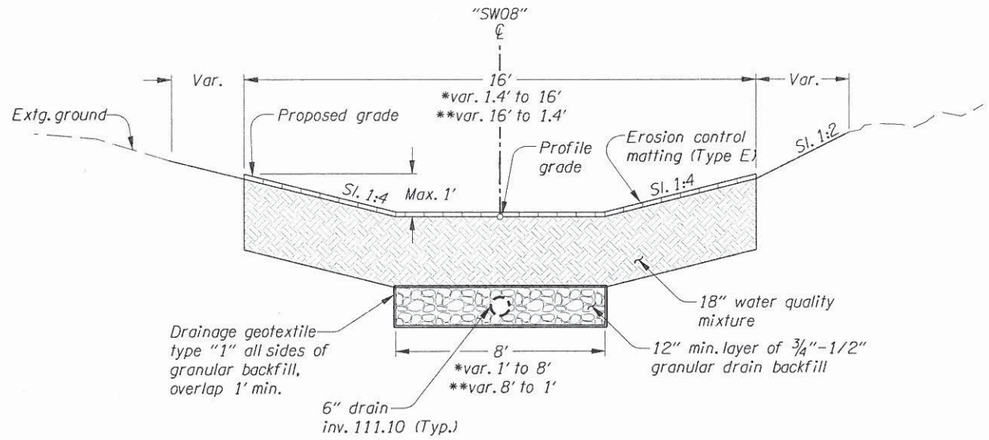
DRAINAGE & UTILITIES NOTES

SHEET NO. 4E

File No.







"SWM08" WATER QUALITY SWALE TYPICAL SECTION, DFI-D00675

*STA. "SWM08" 0+26.85 To STA. "SWM08" 0+38.27
"SWM08" 0+38.27 To "SWM08" 1+48.27
** "SWM08" 1+48.27 To "SWM08" 1+87.79

REGISTERED PROFESSIONAL ENGINEER 64632 OREGON NOVEMBER 14, 2000 AMY L. JONES
EXPIRES: 06/30/2013

OREGON DEPARTMENT OF TRANSPORTATION

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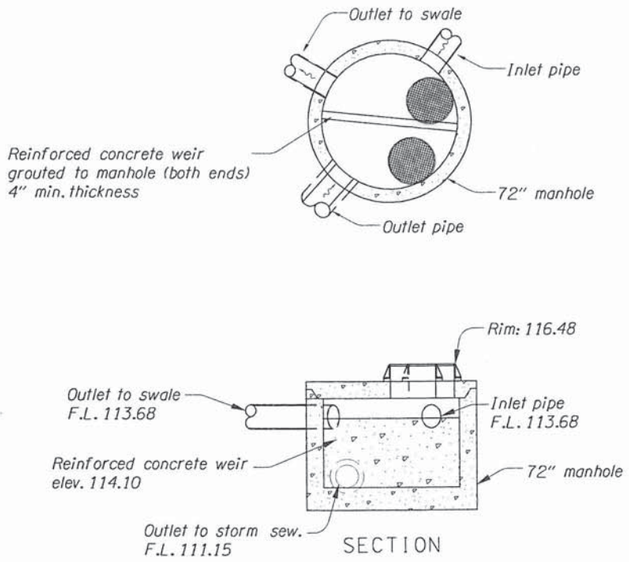
FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.
CLACKAMAS HWY.
CLACKAMAS COUNTY

Design Team Leader - Tom Metcalf
Designed By - Ben Wewerka/Amy Jones
Drafted By - Serban Dinca/Brittney Zornado

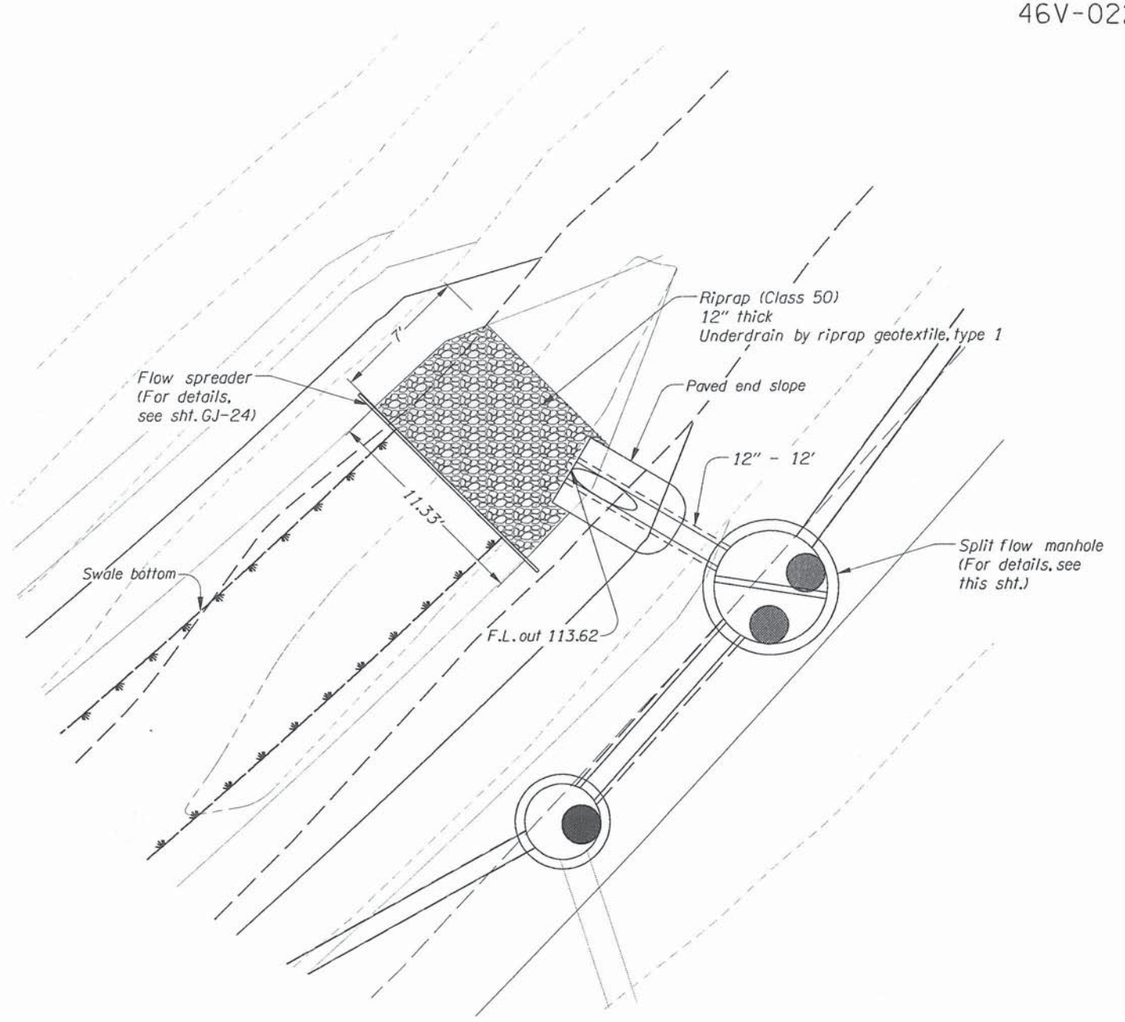
STORMWATER DETAILS

SHEET NO. GJ-11

File No.



"SWM08" SPLIT MH DETAIL
DFI-D00675



"SWM08" GRADING/RIPRAP DETAIL
DFI-D00675

REGISTERED PROFESSIONAL ENGINEER
64332
OREGON
NOVEMBER 14, 2000
AMY L. JONES
EXPIRES: 06/30/2013

OREGON DEPARTMENT OF TRANSPORTATION

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CLACKAMAS HWY.
CLACKAMAS COUNTY

Design Team Leader - Tom Metcalf
Designed By - Ben Wewerka/Amy Jones
Drafted By - Serban Dinca/Brittney Zornado

STORMWATER DETAILS

SHEET NO.
GJ-11A