OPERATION & MAINTENANCE MANUAL

DFI No. : D00679

Facility Type: Bio-Retention Pond

[April, 2018]

INDEX

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1. Identification

Drainage Facility ID (DFI):	**D00679**
Facility Type:	Detention Pond
Construction Drawings:	(V-File Number) 46V-022
Location:	District: 2B
	Highway No.: 75
	Mile Post: (2.10 to 2.14) Hwy 75
	Description: This facility on the inside of the highway horizontal curve, southwest of the Sunrise Corridor

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

Engineer of Record:	Consultant Designer – [OBEC Consulting Engineers, Amy Jones, 971-634-2005]
Facility construction:	[2014]
Contractor:	Kerr Contractors, Inc.

4. Storm Drain System and Facility Overview

A bio-retention pond is a basin that is designed to capture the water quality design volume and filter out the pollutants by filtering the runoff through the water quality mix constructed in the pond bottom. The

filtration process removes a variety of pollutants through physical, biological and chemical treatment mechanisms. The water in the facility exits through an under drain pipe below the water quality mix. The outlet control structure limits the rate of runoff leaving the pond by using an orifice. These facilities are designed to infiltrate the water quality design storm volume within 36 hours. The sizing of these facilities depends on the location and the amount of contributing impervious area.

This bio-retention pond is designed to store runoff during wet weather and is dry the remainder of the time. It is located at in the northwest quadrant of the intersection of the Sunrise Corridor and the Clackamas Highway. Access to the facility is provided with an access road connecting to the highway shoulder.

There is one storm drain pipe that conveys stormwater runoff from paved areas along the Sunrise Corridor alignment. The location of this is noted on the Operation Plan as point A in Appendix A

Runoff exits the pond by way of a Type “D” inlet connected to 12-inch storm drain pipe that connects to a manhole containing the flow control assembly. See Photos 1 and 2 and Point B on the Operational Plan in Appendix A.

The storm drain outlet pipe from the flow control manhole connects to a manhole that connects to the auxiliary outfall. The storm drain pipe from the auxiliary outfall is 12-inches in diameter and outfalls directly to Cow Creek. The receiving waterway for the outlet pipe is Cow Creek.

A. Maintenance equipment access:
   The pond and outlet structures can be accessed from the shoulder of the Clackamas Highway. The northern forebay can be accessed from a maintenance access road connecting to the Sunrise Corridor. The outfall pipes and southeast sediment forebay can be accessed from the Sunrise Corridor shoulder. See maintenance access road layout on the Operational Plan in Appendix A

B. Heavy equipment access into facility:

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

C. Special Features:

   ☒ Amended Soils
   ☒ Porous Pavers

☐ Liners
☐ Underdrains

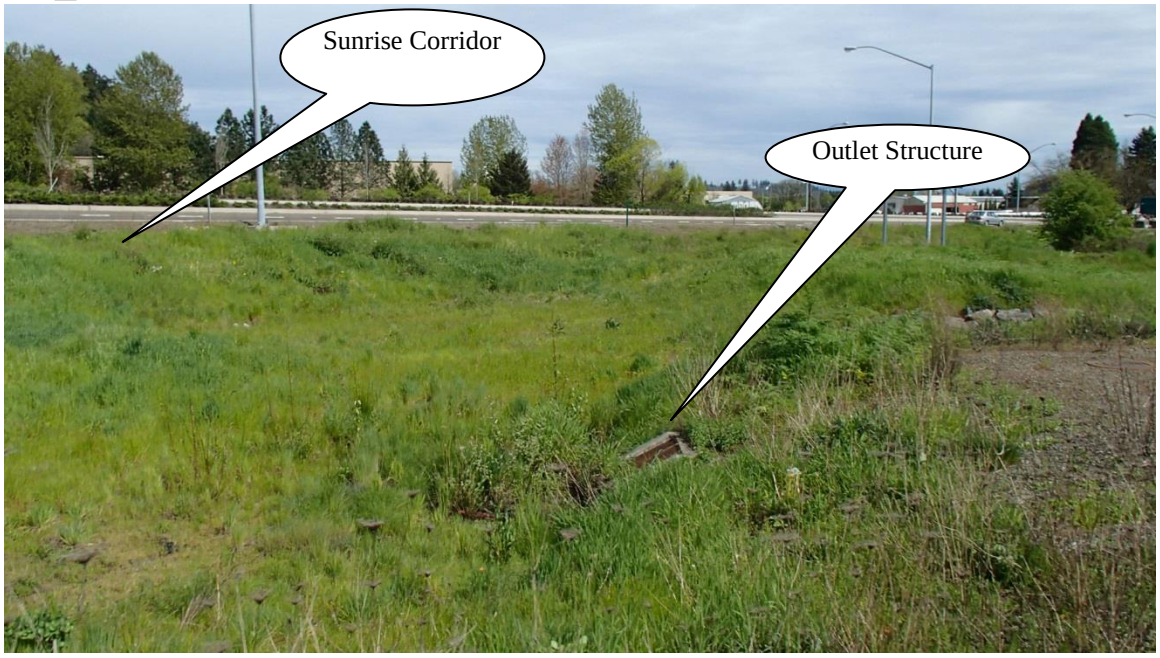


Photo 1: a view of bio-retention pond looking East toward Sunrise Corridor.

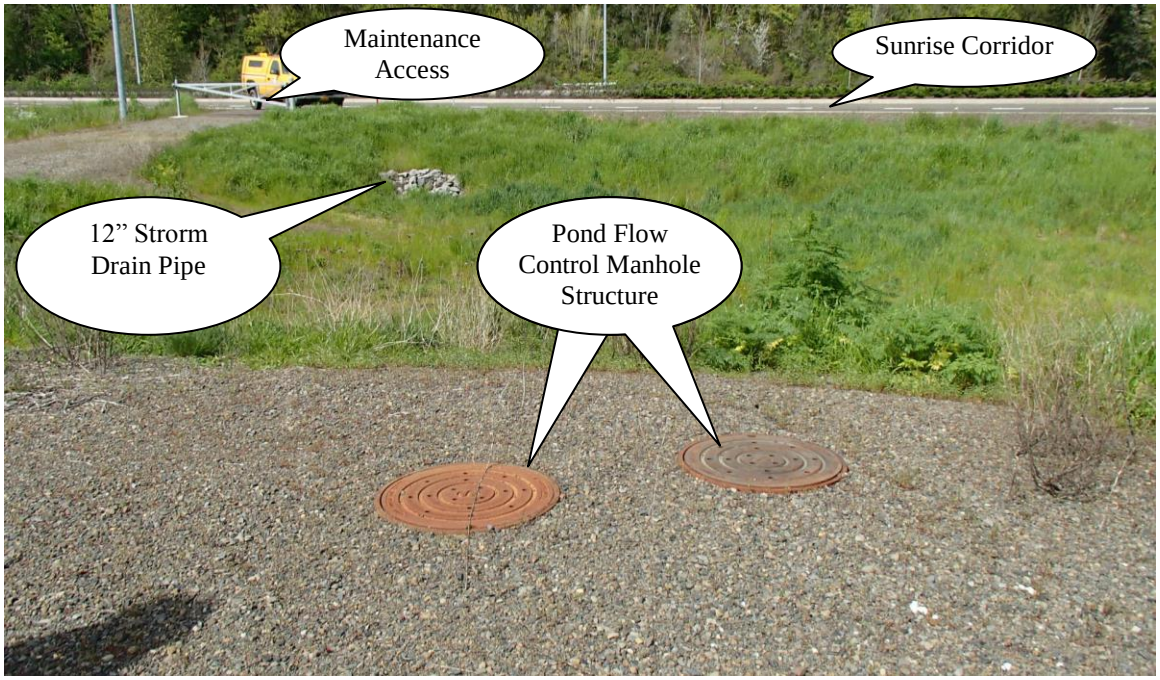


Photo 2: a view of bio-retention pond looking North toward Sunrise Corridor.

5. Facility Haz Mat Spill Feature(s)

The pond 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 in the south corner of the pond. This pipe is noted as point C in the Operational Plan. A barrier such as a metal plate over the metal grate on the inlet could be used to prevent liquid from draining from the pond.

6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure cannot safely pass the projected high flows. Broad-crested spillway weirs and over flow risers are the two most common auxiliary outlets used in stormwater 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
High flows exit the pond through the auxiliary outlet structure consisting of a riprap lined overflow spillway. These inlets connect to the outfall pipe from the main outfall and flow control structure. See Point E in the Operational Plan in Appendix A.

☒ Other, as noted below

The pond was designed to allow 6” of sediment storage prior to the outfall. This needs to be removed periodically as required.

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

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

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	(503) 731-8290
ODEQ Northwest Region Office	(503) 229-5263

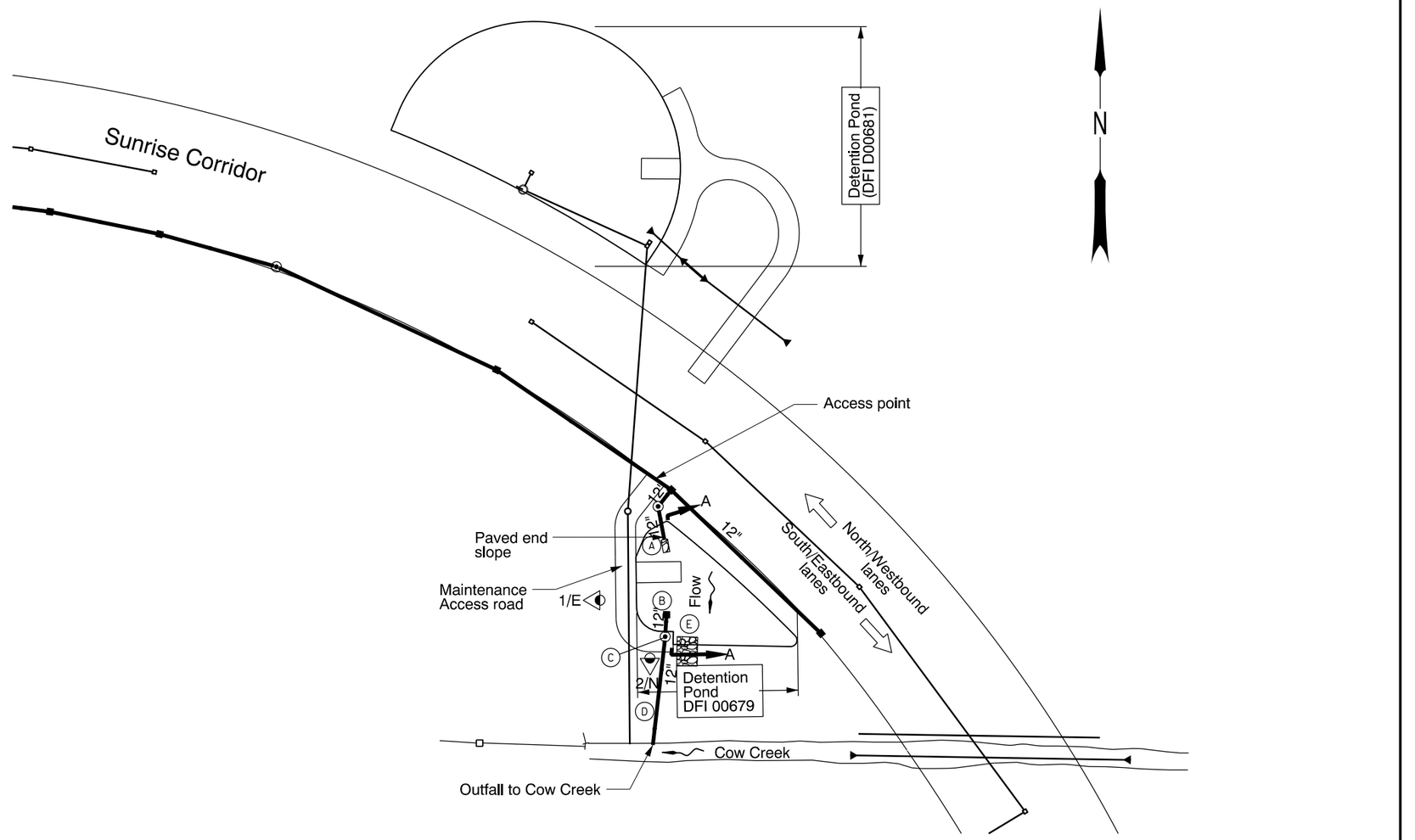
Appendix A

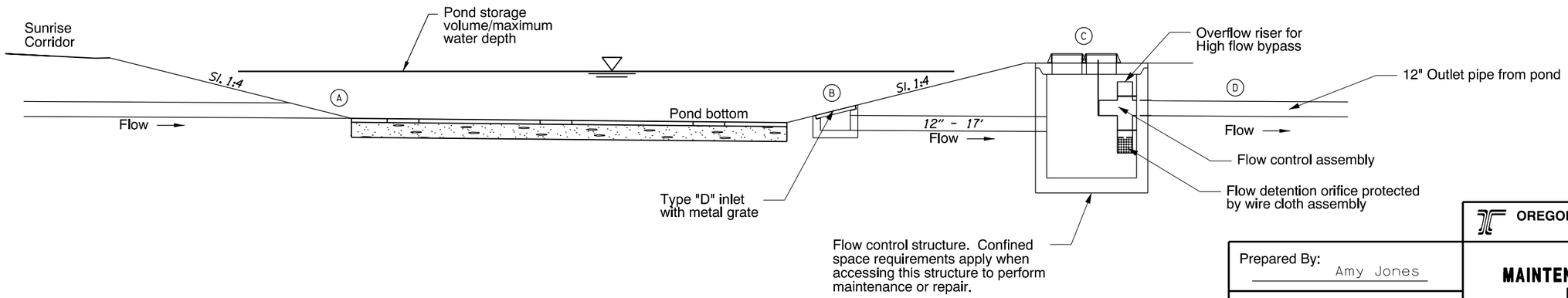
Content:

- **Operational Plan and Profile Drawing**

LEGEND:

- Photo Location / Direction
- (A) 12" Storm drain pipe outfalls into pond
- (B) Outlet structure and 12" storm drain pipe
- (C) Pond flow control manhole structure
- (D) 12" storm drain pipe outlet
- (E) Auxiliary Outfall for High flow bypass
- Manhole (and or ◎)
- Inlet (■ and or □)
- Storm Pipe (Facility)
- Storm Pipe (Not connected to facility)
- Storm Pipe (Existing)
- Conveyance Direction
- Pavement / Facility Flow Path





OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Amy Jones

Drafted By: Amy Jones

DFI D00679
MAINTENANCE DISTRICT 2B HWY 75
BIO-RETENTION POND
HIGHWAY MP 2.1
CLACKAMAS COUNTY

DFI_D00679.dgn :: Default 4/25/2018 8:04:47 AM hwyr15v

DFI_D00679.dgn

Appendix B

Content:

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

46V-022

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

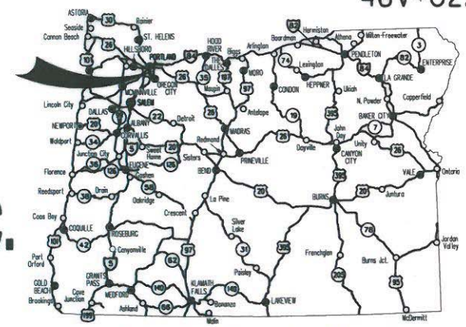
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

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

CLACKAMAS HWY.

CLACKAMAS COUNTY
MARCH 2013

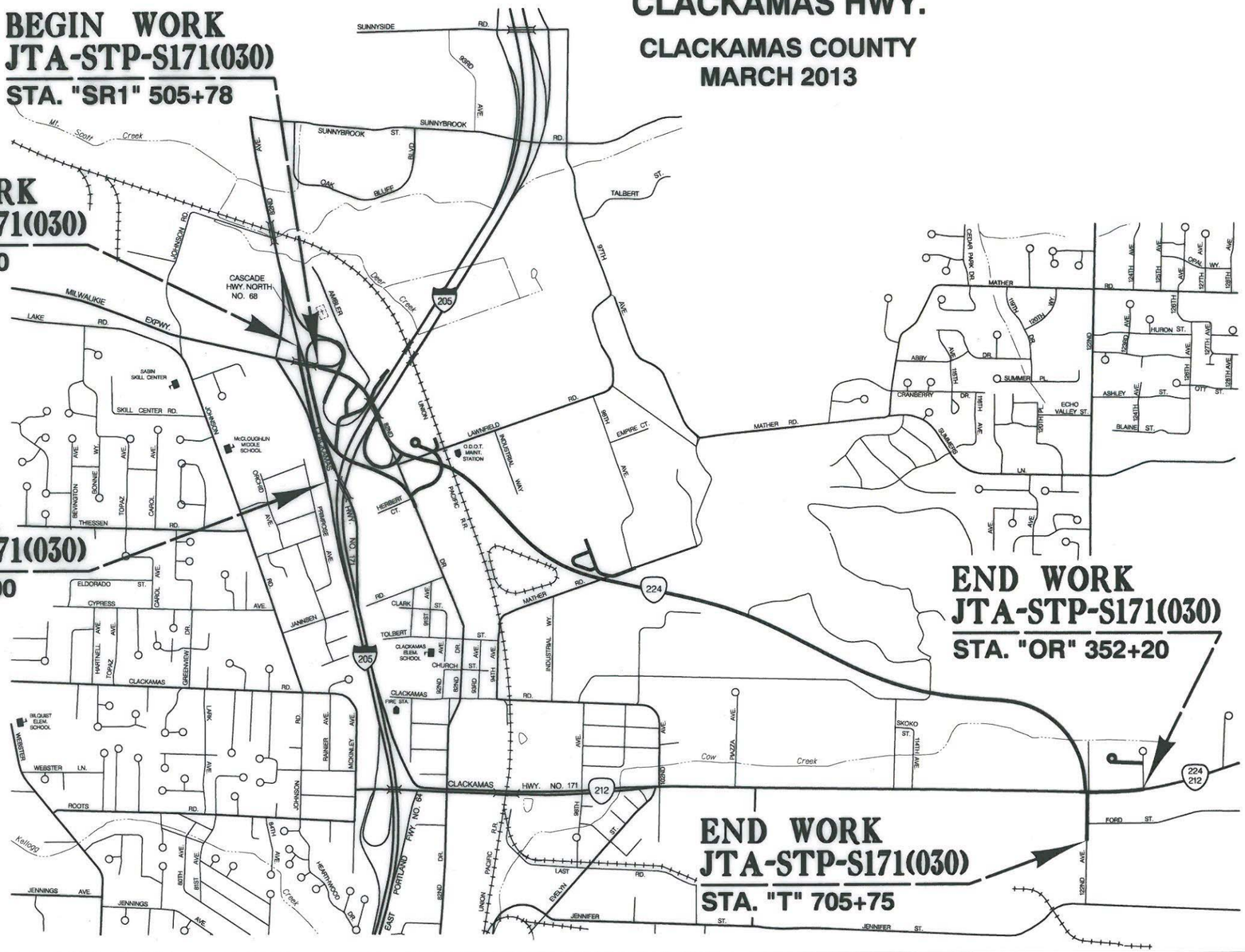
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.



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
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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

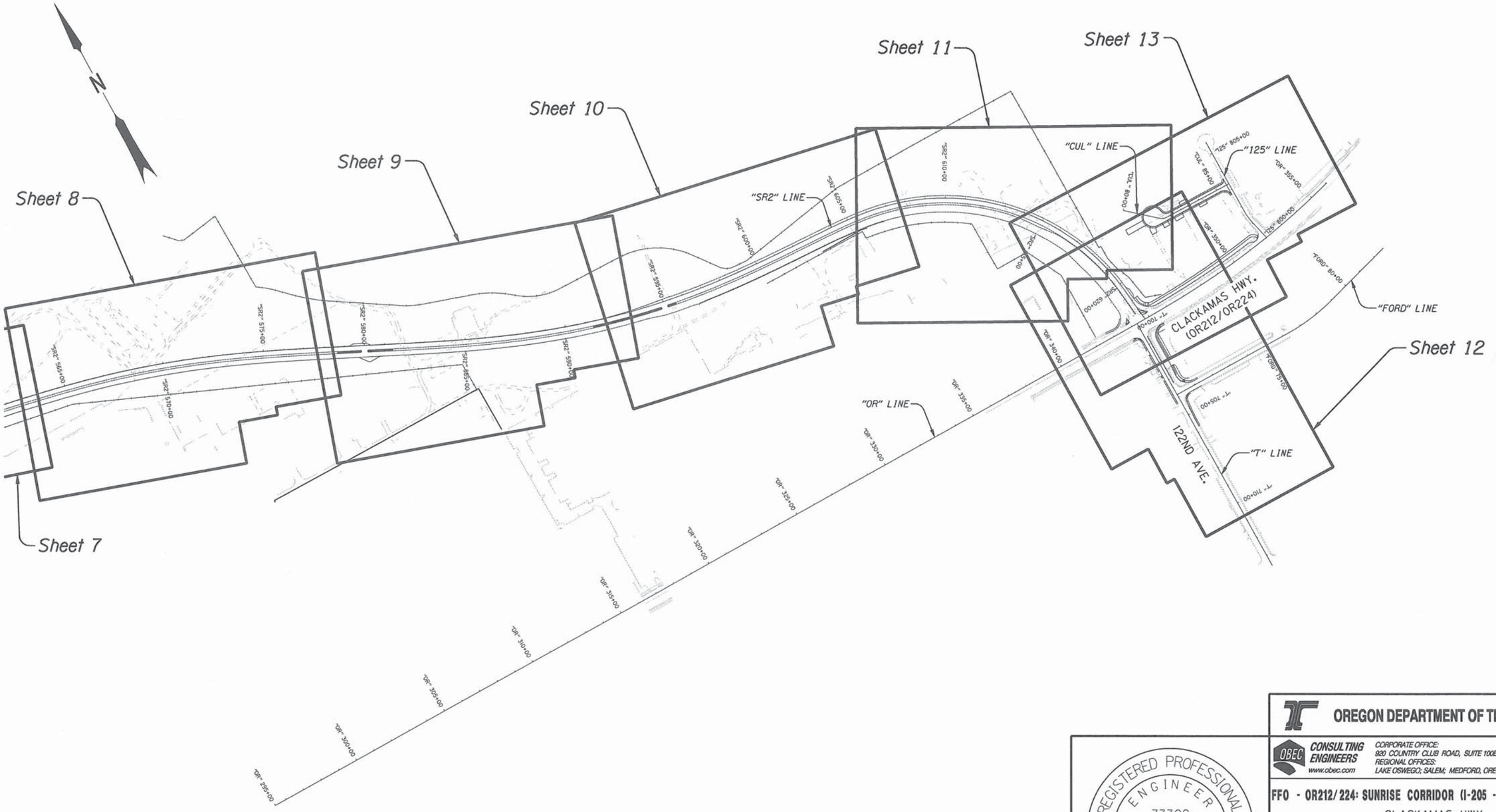
Concurrence by ODOT Chief Engineer

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



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-2

Sec. 10 & 11, T. 2 S., R. 2 E., W.M.

46V-022

D00681
Detention Pond
SWM14

D00679
Detention Pond
SWM11

"SR2" 610+00

"SR2" 615+00

"SR2" LINE

18"–38'
18"–85'
12"–15'
18"–106'
24"–207'
12"–165'
12"–164'
12"–217'
36"–188'
12"–98'
12"–165'
12"–16'
12"–161'
12"–189'
12"–26'
12"–87'
12"–94'
24"–182'
12"–50'
12"–17'
71"x47"–218'
12"–85'
12"–19'
12"–67'
12"–31'
12"–63'

LEGEND
No work area
Regulated work area

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

DRAINAGE & UTILITIES

SHEET NO. 11C

File No.

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(1) See sht. 10D, note 6
Const. type "G-2" inlet
Inst. 12" storm sew. pipe

(2) See sht. 10D, note 26
Inst. 12" storm sew. pipe

(3) See sht. 10D, note 27
Const. type "G-2" inlet
Inst. 12" storm sew. pipe

(4) Sta. "SR2" 608+18.59, 66.11' Rt.
Const. storm manhole
Inst. 12" storm sew. pipe - 189'
10' depth

(5) Sta. "SR2" 610+20.32, 67.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 165'
10' depth

(6) Sta. "SR2" 613+68.40, 68.4' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 161'
5' depth

(7) Sta. "SR2" 611 +96.32, 67.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 16'
5' depth

(8) Sta. "SR2" 611+96.47, 84.3' Rt.
Const. sedimentation manhole 72" dia.
Inst. 12" storm sew. pipe - 26'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see shts. GJ-14B & GJ-22)

(9) Sta. "SR2" 610+70.49, 75.3' Lt.
Inst. 24" storm sew. pipe - 207'
20' depth

(10) Sta. "SR2" 611+78.92, 102' Rt.
Const. storm manhole
Inst. 24" storm sew. pipe - 182'
5' depth

(11) Sta. "SR2" 610+25.24, 21.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 164'
5' depth

(12) Sta. "SR2" 611+92.88, 21.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 165'
5' depth

(13) Sta. "SR2" 613+61.30, 21.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 217'
5' depth

(14) Sta. "SR2" 615+83.24, 21.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 50'
5' depth

(15) Sta. "SR2" 615+83.85, 72' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 17'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(16) Sta. "SR2" 618+07.62, 21.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 67'
5' depth

(17) Sta. "SR2" 617+76.97, 82.52' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 31'
5' depth

(18) Sta. "SR2" 617+79.54, 109.9' Rt. to
Sta. "SR2" 617+91.07, 110.64' Rt.
Inst. 12" storm sew. pipe - 19'
5' depth
Const. sloped end
Const. paved end slope, Rt.

(19) Sta. "SR2" 617+91.07, 110.64' Rt.
Const. storm manhole
Inst. 12" storm sew. pipe - 63'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(20) Sta. "SR2" 614+53.78, 95.78 Rt. to
Sta. "SR2" 615+64.37, 57.61' Lt.
Inst. 36" conc. culv. pipe - 188'
10' depth
Fill bottom 1/3 with compacted native soil
Culv. drainage marker, type 1
Culv. drainage marker, type 2
(For details, see sht. GJ-23)
(See drg. no. RD398)

(21) Sta. "SR2" 614+64.21, 110.92' Rt. to
Sta. "SR2" 615+90.08, 69.37' Lt.
Inst. 71"x47" corr. metal arch culv. pipe - 218'
20' depth
Const. sloped end - 2
Const. paved end slope, Lt. & Rt.
Culv. drainage marker, type 1
Culv. drainage marker, type 2
(See drg. nos. RD304, RD319 & RD382)

(22) Sta. "SR2" 615+78.94, 88.2' Rt. to
Sta. "SR2" 617+82.05, 101.7' Rt.
Const. ditch
"V" bottom, 1:3 slopes
Dt. exc. - 291 cu. yd.
(For details, see sht. GJ-25)

(23) Const. storage pond, D00681 (SWM14)
Inst. facility field markers, type S1 - 2
Inst. facility field marker, type S2
Aggregate base - 475 tons
(For details, see sht. GJ-14)

(24) Const. storage pond, D00679 (SWM11)
Inst. facility field markers, type S1 - 2
Inst. facility field marker, type S-2
Aggregate base - 225 tons
(For details, see sht. GJ-14)

(25) Sta. "SR2" 610+65.28, 86.86' Lt. to
Sta. "SR2" 611+00.09, 80.68' Lt.
Inst. 18" culv. pipe - 38'
5' depth
Const. sloped end - 2
Const. paved end slope, Lt. & Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(26) Sta. "SR2" 611+16.49, 78.61' Lt. to
Sta. "SR2" 611+95.50, 78.13' Lt.
Inst. 18" culv. pipe - 85'
5' depth
Const. sloped end - 2
Const. paved end slope, Lt. & Rt.

(27) See sht. 10D, note 22
Const. ditch

(28) Inst. CIPP liner in extg. sanitary sew. pipe
(For details, see sht. SA-5)

(29) Remove abandoned electrical lines & pole

REGISTERED PROFESSIONAL ENGINEER
64332
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NOVEMBER 14, 2009
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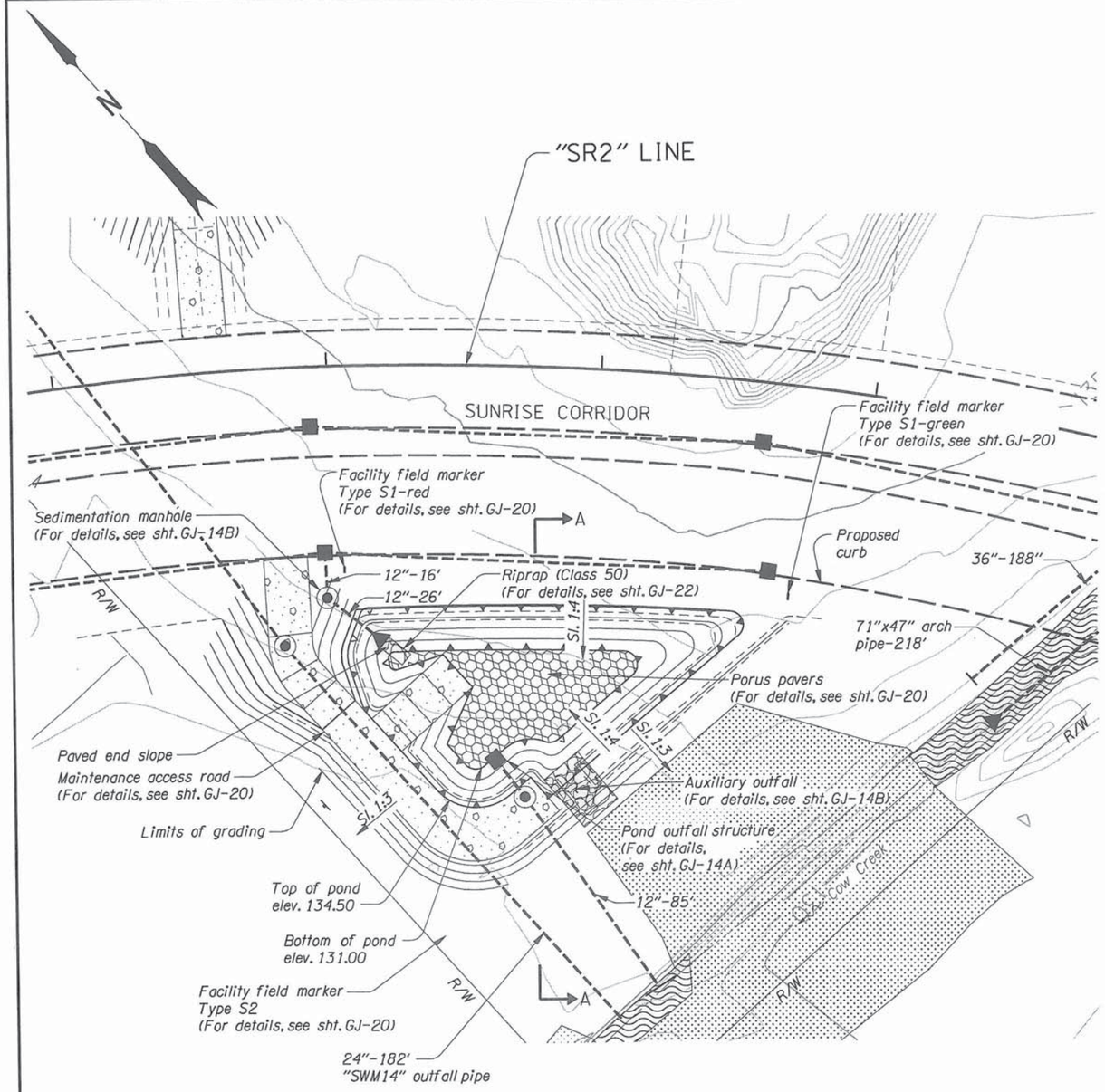
CLACKAMAS HWY.
CLACKAMAS COUNTY

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

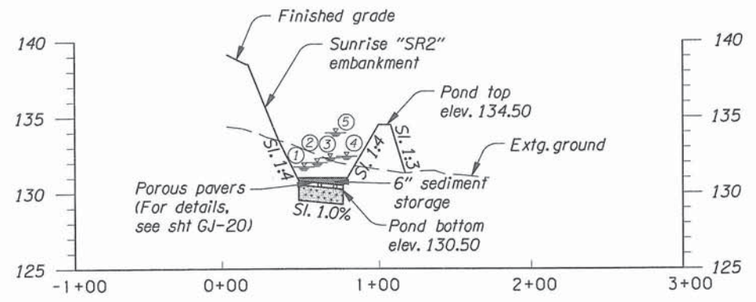
DRAINAGE & UTILITIES NOTES

SHEET NO. 11D



"SWM11" PLAN
STORAGE POND, DFI-D00679

LEGEND
- No work area
- Regulated work area



SECTION A-A

REGISTERED PROFESSIONAL ENGINEER
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AMY L. JONES
EXPIRES: 06/30/2013

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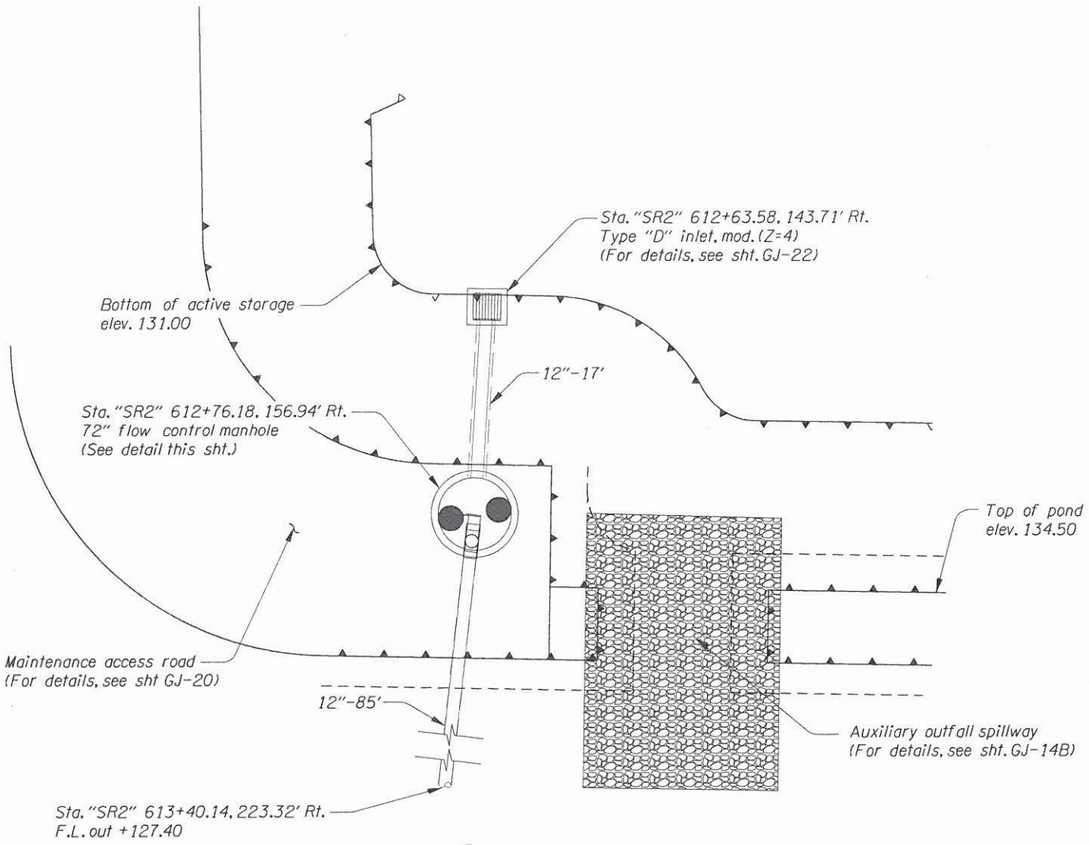
CLACKAMAS HWY.
CLACKAMAS COUNTY

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

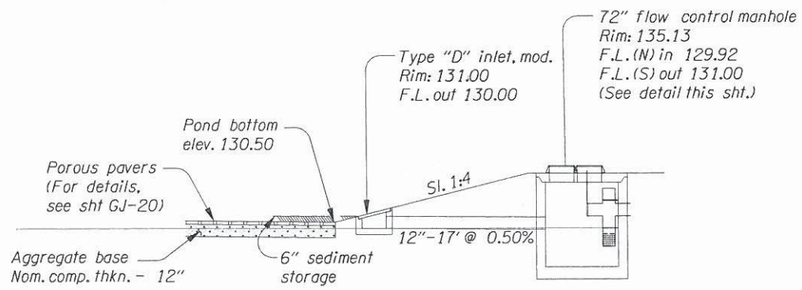
STORMWATER DETAILS

SHEET NO. GJ-14

File No.

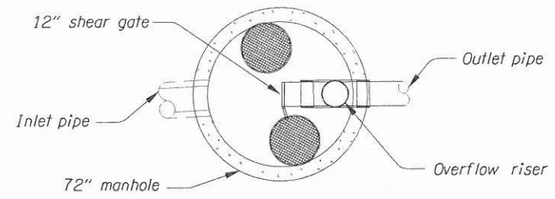


PLAN

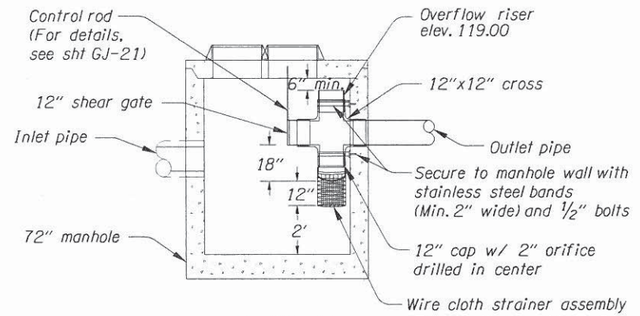


SECTION

"SWM11" OUTFALL STRUCTURE DETAIL
DFI-D00679



PLAN



SECTION

FLOW CONTROL MANHOLE

REGISTERED PROFESSIONAL ENGINEER
64352
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

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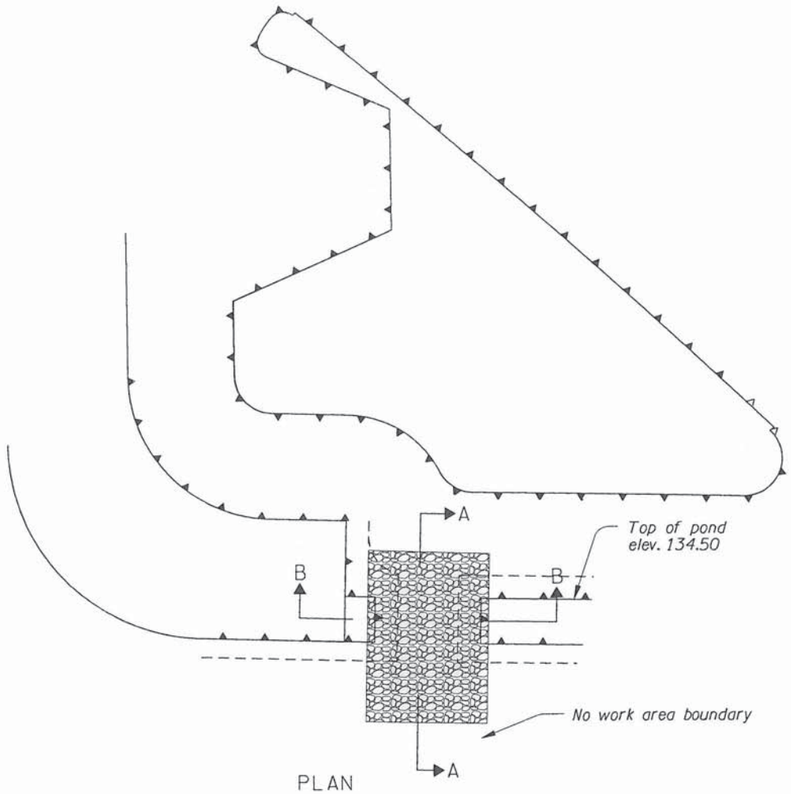
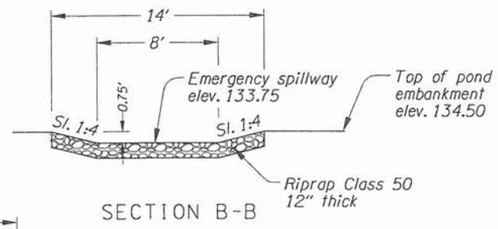
Designed By - Ben Wewerka/Amy Jones
Drafted By - Serban Dinca/Brittney Zornado

STORMWATER DETAILS

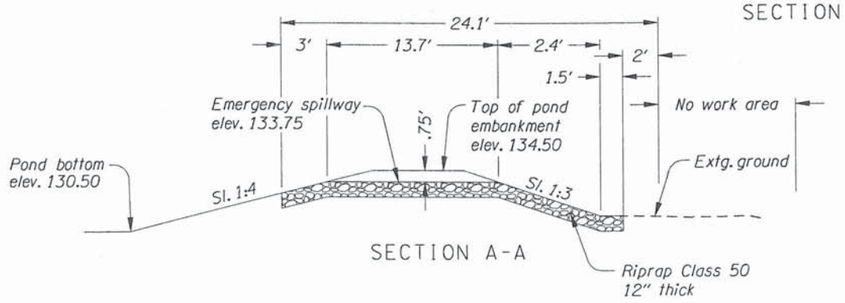
SHEET NO. GJ-14A



PLAN

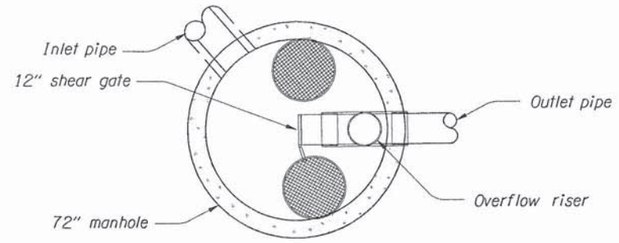


SECTION B-B

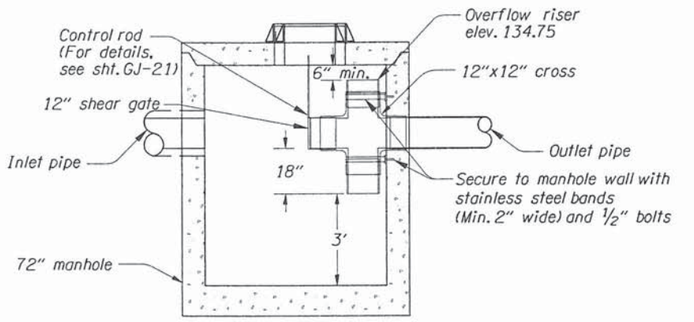


SECTION A-A

"SWM11" AUXILIARY OUTFALL DETAIL
DFI-D00679



PLAN



SECTION

"SWM11" SEDIMENTATION MANHOLE DETAIL
DFI-D00679

REGISTERED PROFESSIONAL ENGINEER
64382
OREGON
NOVEMBER 14, 2000
AMY L. JONES
EXPIRES: 06/30/2013

OREGON DEPARTMENT OF TRANSPORTATION

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CLACKAMAS HWY.

CLACKAMAS COUNTY

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STORMWATER DETAILS

SHEET NO. GJ-14B