OPERATION & MAINTENANCE MANUAL

DFI No. : D00680

Facility Type: Extended Detention Pond

[April, 2018]

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00680**
Facility Type:	Extended Detention Pond
Construction Drawings:	(V-File Number) 46V-022
Location:	District: 2B
	Highway No.: 75
	Mile Post: (2.22 to 2.28) Hwy 75
	Description: This facility is located in the northwest quadrant of the intersection of the Sunrise Corridor (Hwy 75) and the Clackamas Highway (Hwy 212/224).

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 are four storm drain pipes that convey stormwater runoff from paved areas along the Sunrise Corridor alignment, and the new cul-de-sac constructed off of 125th Court to the northeast into this detention pond. The locations of these are noted on the Operation Plan as points D, E, F, and G 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 Point L 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 24-inches in diameter and connects to the existing 48-inch pipe in the Clackamas Highway. The receiving waterway for the outlet pipe is the Clackamas River.

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

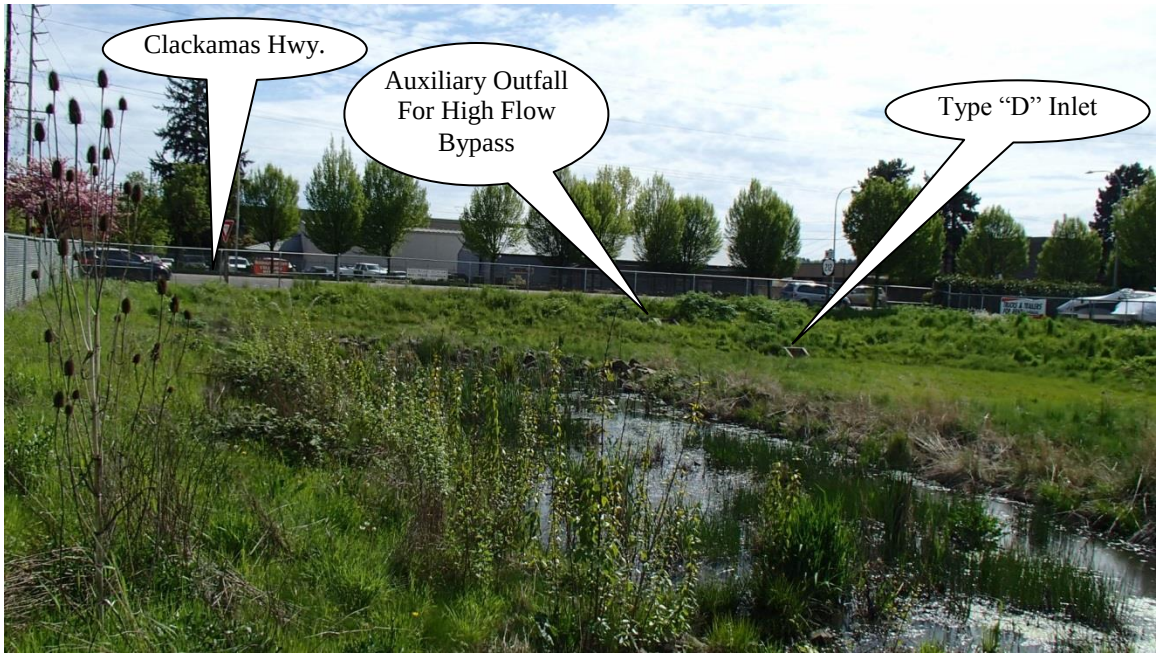


Photo 1: a view of bio-retention pond, looking Southwest toward Clackamas Hwy.

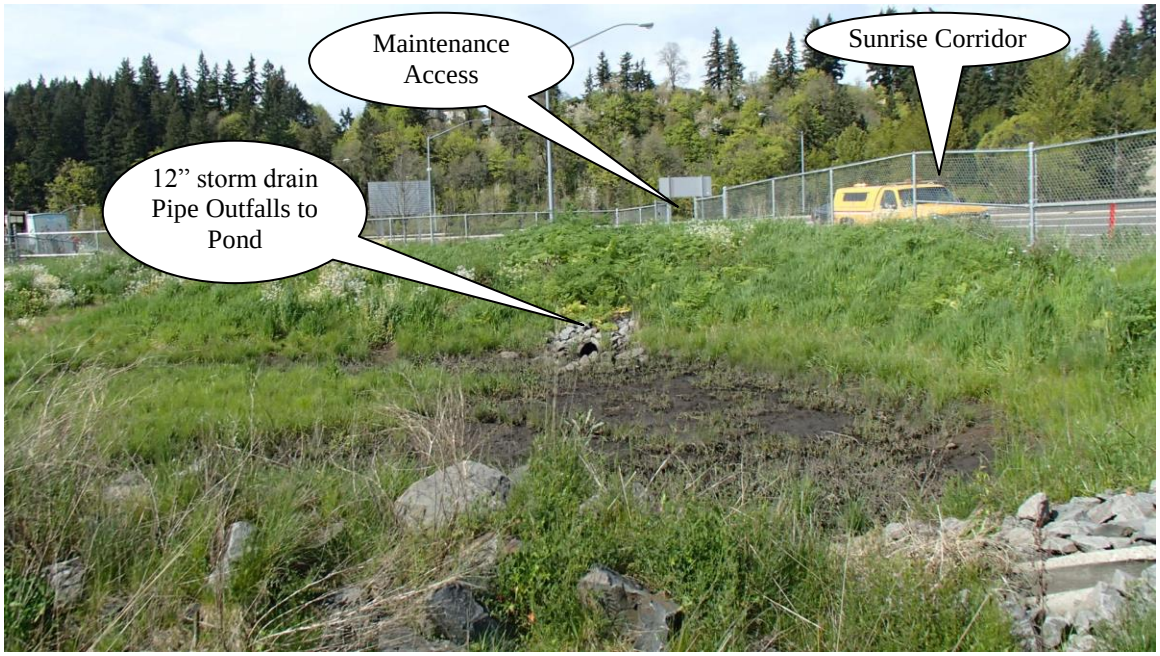


Photo 2: a view of bio- retention pond, looking Northeast toward Sunrise Corridor.

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 middle of the south side 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. There is an underdrain system that will also need to be blocked by plugging the pond flow control outlet in the flow control manhole.

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 two type “D” inlets. These inlets connect to the outfall pipe from the main outfall and flow control structure. See Photo 1 and the Operational Plan in Appendix A.

☒ Other, as noted below

There is an underdrain pipe system designed to provide infiltration for the pond.

Two sediment forebays are constructed to provide pretreatment. They are located in the north and southeast sides of the pond.

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

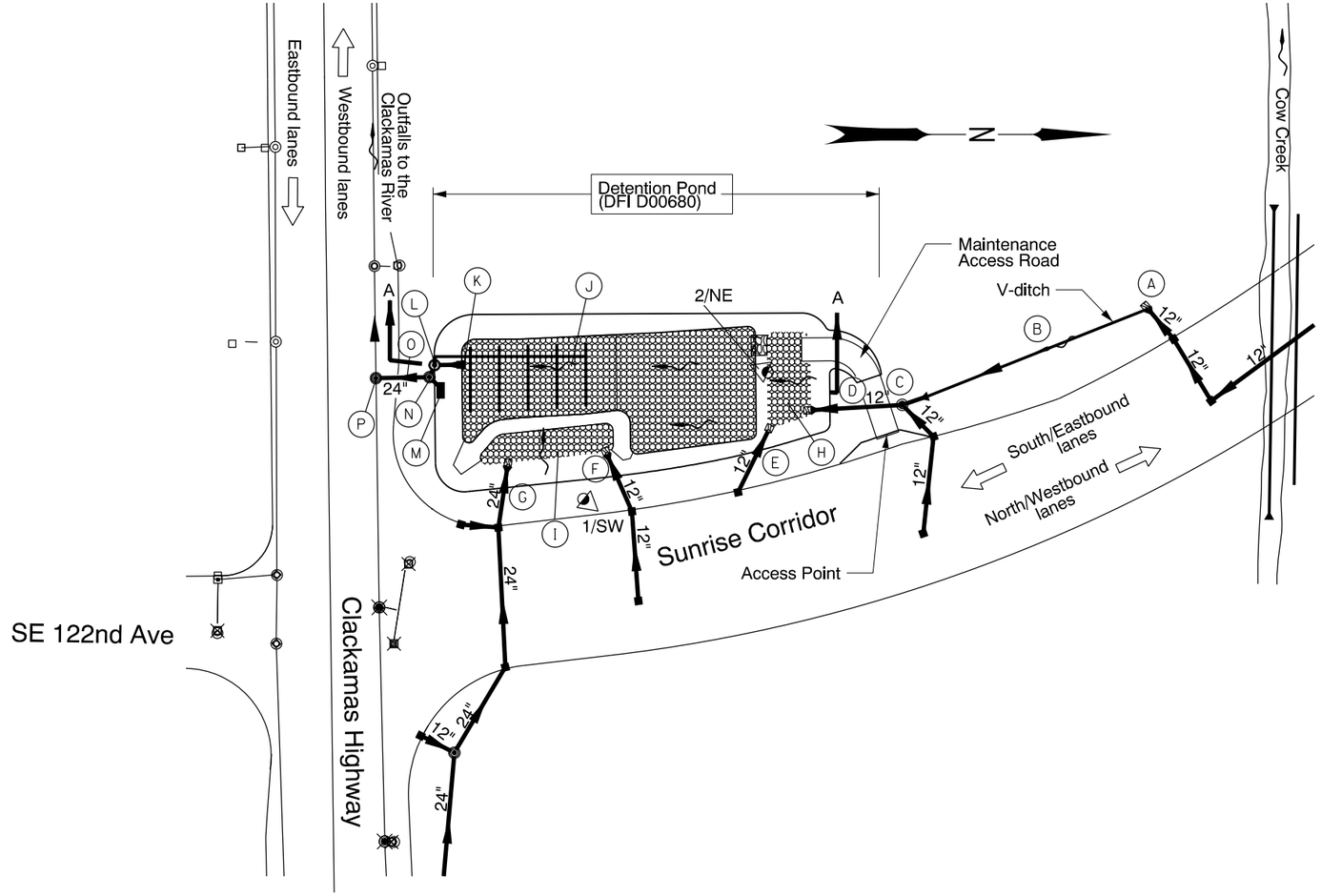
Appendix A

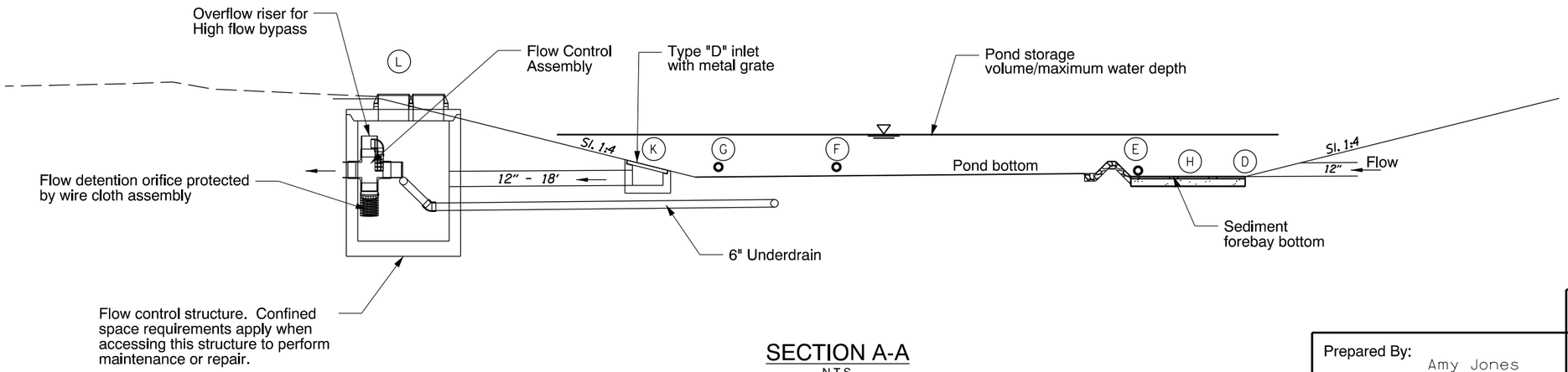
Content:

- **Operational Plan and Profile Drawing**

LEGEND:

- Photo Location / Direction
- (A) 12" Storm drain pipe outfalls into v-ditch
- (B) V-ditch conveying upstream flows
- (C) Storm drain manhole
- (D) 12" Storm drain pipe outfalls to pond
- (E) 12" Storm drain pipe outfalls to pond
- (F) 12" Storm drain pipe outfalls to pond
- (G) 24" Storm drain pipe outlet
- (H) & (I) Sediment forebay
- (J) Underdrain pipes
- (K) Type "D" inlet and 12" storm drain pipe outlet structure
- (L) Pond flow control manhole structure
- (M) Auxiliary outfall for high flow bypass
- (N) Storm drain manhole
- (O) & (P) 24" storm drain pipe and manhole connection to downstream system
- Manhole (and or)
- Inlet (and or)
- Storm Pipe (Facility)
- Storm Pipe (Existing)
- Conveyance Direction
- Pavement / Facility Flow Path





SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Amy Jones

Drafted By: Amy Jones

DFI D00680
MAINTENANCE DISTRICT 2B HWY 75
EXTENDED DETENTION POND
SUNRISE CORRIDOR MP 2.22 TO 2.28
CLACKAMAS COUNTY

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

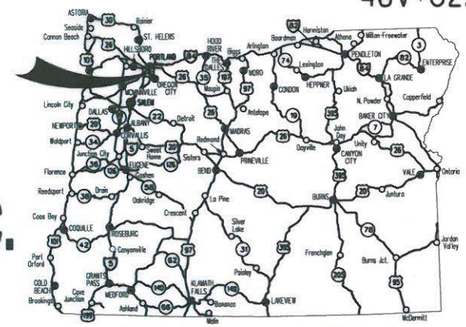
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

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

CLACKAMAS HWY.

CLACKAMAS COUNTY
MARCH 2013

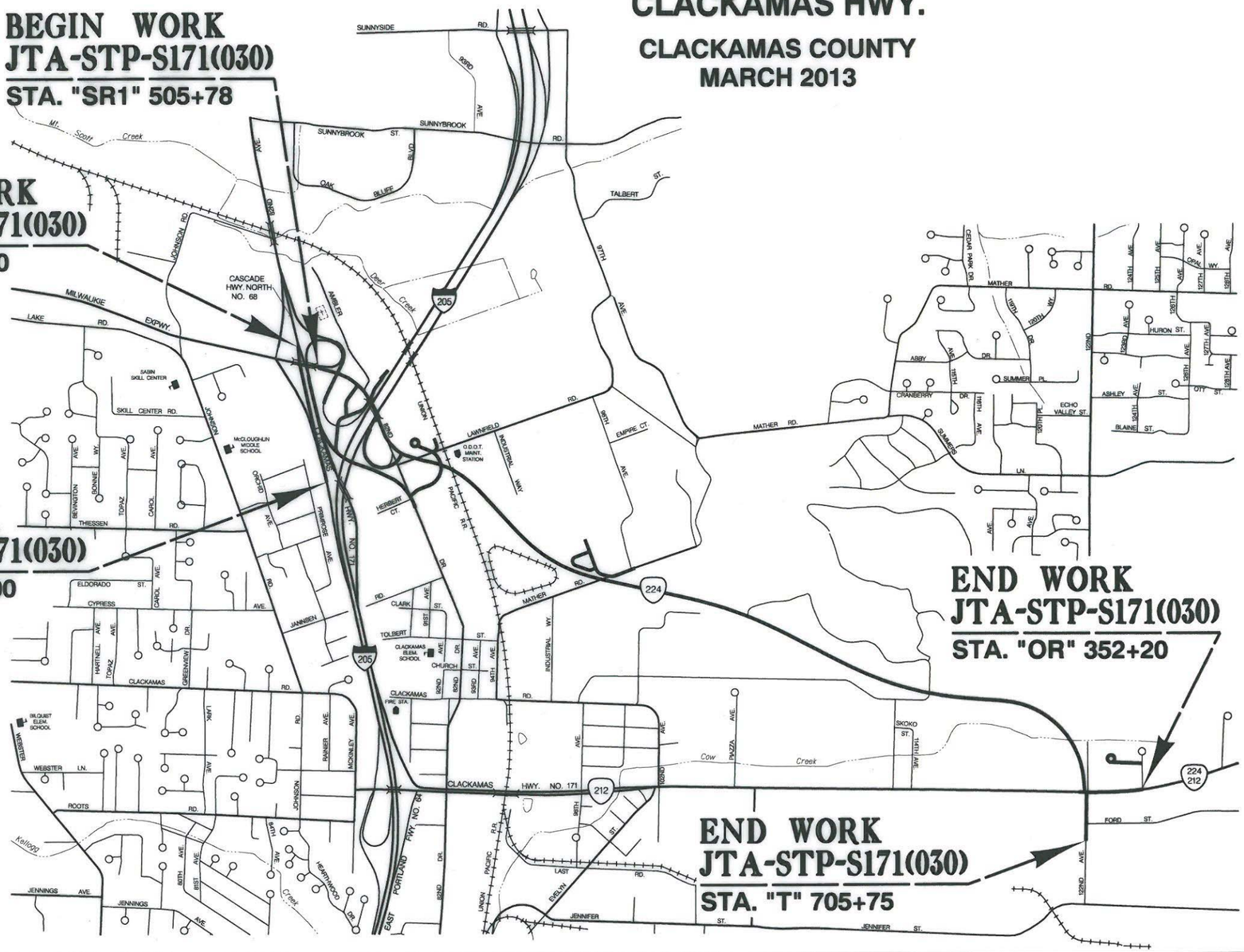
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.



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
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

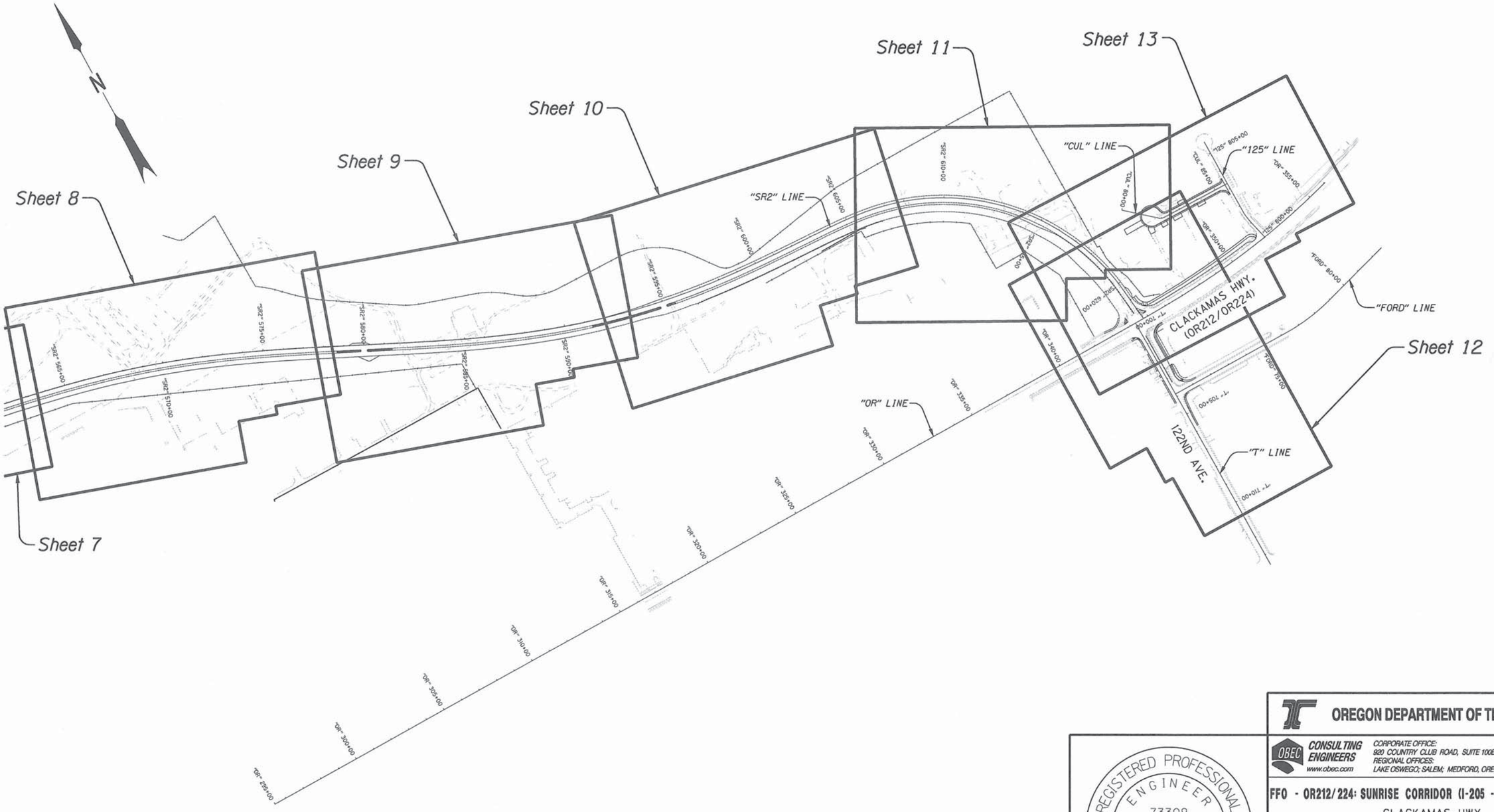
LAWRENCE H. FOX - PROJECT MANAGER
Print name and title

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.



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

OREGON DEPARTMENT OF TRANSPORTATION

OBEC CONSULTING ENGINEERS
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CORPORATE OFFICE:
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REGIONAL OFFICES:
LAKE OSWEGO; SALEM; MEDFORD, OREGON; VANCOUVER, WASHINGTON

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

N

CLACKAMAS HWY. (OR212/OR224)

"FORD" LINE

SE FORD ST.

"SR2" LINE

"SR2" 620+00

"OR" 345+00

"T" 700+00

"T" 705+00

"T" 710+00

"OR" LINE

"OR" 340+00

"T" LINE

122ND AVE.

OR212

R/W

Perm. ease.

Temp. const. ease.

Temp. const. ease.

12"-33'

12"-150'

12"-10'

24"-250'

24"-44'

24"-31'

24"-161'

12"-26'

12"-26'

24"-69'

12"-62'

24"-97'

12"-26'

12"-43'

12"-47'

24"-43'

12"-31'

12"-67'

12"-19'

12"-63'

24"-37'

See enlargement, sht. 12D-2

D00680
Detention Pond
SWM12

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

OREGON DEPARTMENT OF TRANSPORTATION

OBEC CONSULTING ENGINEERS
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REGIONAL OFFICES:
LAKE OSWEGO; SALEM; MEDFORD, OREGON; VANCOUVER, WASHINGTON

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. 12D

File No.

c:\obec\pwobec01\dms08150\15555f_12D.dri0 12/30/2012 2:52:15 PM

(1) Remove pipe - 35'

(2) Abandon pipe

(3) Remove inlet - 11

(4) Remove manhole - 2

(5) See sht. 11D, note18
Inst. 12" storm sew. pipe

(6) See sht. 11D, note 19
Const. storm manhole
Inst. 12" storm sew. pipe

(7) Sta. "SR2" 620+14.85, 21.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 62'
5' depth

(8) Sta. "SR2" 620+10.39, 83.9' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 43'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(9) Sta. "CUL" 81+56.98, 67.9' Rt. to
Sta. "OR" 347+24.50, 111.7' Lt.
Inst. 24" storm sew. pipe - 250'
5' depth

(10) Sta. "OR" 348+73.09, 32.4' Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 150'
5' depth
Inst. 12" storm sew. pipe - 33' stub
5' depth
Cap and mark for future extension
(See drg. no. RD310)

(11) Sta. "OR" 347+21.83, 32.3' Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 26'
5' depth

(12) Sta. "OR" 347+24.50, 111.7' Lt.
Const. storm manhole
Inst. 24" storm sew. pipe - 44'
10' depth

(13) Sta "OR" 347+22.22, 67.4' Lt.
Const storm manhole 60" dia.
Inst. 24" storm sew. pipe - 31'
10' depth
Inst. 12" storm sew. pipe - 10' stub
5' depth
Cap and mark for future extension

(14) Sta "OR" 346+99.5, 45.5' Lt.
Const. storm manhole 72" dia.
Inst. 24" storm sew. pipe - 161'
10' depth

(15) Sta. "OR" 345+25.42, 42.6' Lt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 26'
5' depth

(16) Sta. "OR" 345+37.88, 65.6' Lt.
Const. storm manhole 60" dia.
Inst. 24" storm sew. pipe - 69'
10' depth

(17) Sta. "SR2" 621+12.18, 12.72' Lt.
Const. type "G-2" inlet
Inst. 24" storm sew. pipe - 97'
5' depth

(18) Sta. "SR2" 621+31.24, 89' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 26'
5' depth

(19) Sta. "SR2" 621+05.73, 83.9' Rt.
Const. type "G-2" inlet
Inst. 24" storm sew. pipe - 43'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(20) Sta. "SR2" 619+29.50, 83.86' Rt.
Const. type "G-2" inlet
Inst. 12" storm sew. pipe - 47'
5' depth
Const. sloped end
Const. paved end slope, Rt.
Const. riprap basin
(For details, see sht. GJ-22)

(21) Sta. "OR" 342+76.63, 52.3' Lt.
Const. storm manhole 60" dia.
Inst. 24" storm sew. pipe - 37'
10' depth

(22) Sta. "OR" 342+76.89, 15.3' Lt.
Const. storm manhole 60" dia. over
extg. storm sew. pipe

(23) Sta. "T" 702+63.97, 18.4' Rt.
Const. storm manhole 60" dia.
over extg. storm sew. pipe
(For details, see sht. GJ-16B)

(24) Sta. "T" 703+44.42, 17.9' Rt.
Const. type "GB-2" inlet, modified
Connect to extg. storm sew. pipe
(For details, see sht. GJ-16B)

(25) Sta. "OR" 347+98.39, 14.7' Lt.
Minor adjust storm manhole

(26) Sta. "OR" 347+24.74, 15.3' Lt.
Minor adjust storm manhole

(27) Sta. "OR" 345+98.7, 15.5' Lt.
Minor adjust storm manhole

(28) Sta. "OR" 344+35.72, 15.6' Lt.
Minor adjust storm manhole

(29) Sta. "T" 700+77.37, 15.6' Rt.
Adjust inlet

(30) Sta. "FORD" 70+49.37, 49.98' Lt.
Const. type "GB-2" inlet
Inst. 12" storm sew. pipe - 34'
10' depth
(For details, see Industrial Way plans)

(31) Sta. "FORD" 70+35.05, 19.1' Lt.
Const. storm manhole 60" dia.
Inst. 12" storm sew. pipe - 9'
10' depth

(32) Sta. "FORD" 70+52.85, 20' Rt.
Const. type "GB-2" inlet
Inst. 12" storm sew. pipe - 38'
10' depth
(For details, see Industrial Way plans)

(33) Sta. "FORD" 71+05.51, 18.8' Lt.
Const. type "GB-2" inlet
Inst. 12" storm sew. pipe - 70'
10' depth
(For details, see Industrial Way plans)

(34) Sta. "FORD" 70+44.76, 10.2' Lt.
Const. water quality structure SWM13
Inst. 18" storm sew. pipe - 14'
10' depth
(For details, see sht. GJ-16)

(35) Sta. "FORD" 70+58.75, 9.6' Lt.
Const. storm manhole 84" dia.
Inst. 60" storm sew. pipe - 75'
20' depth

(36) Sta. "FORD" 71+33.87, 9.6' Lt.
Const. storm manhole 84" dia.
Inst. 60" storm sew. pipe - 100'
20'

(37) Sta. "FORD" 72+33.87, 9.6' Lt.
Const. storm manhole 84" dia.
Inst. 60" storm sew. pipe - 100'
20' depth

(38) Sta. "FORD" 73+33.87, 9.6' Lt.
Const. flow control manhole 84" diam.
Inst. 12" storm sew. pipe - 16'
10' depth
Connect to extg. manhole
(For details, see sht. GJ-16)

(39) Sta. "FORD" 70+31.20, 10.9' Lt.
Const. storm manhole 84" dia.
over extg. storm sew. pipe
Inst. 18" storm sew. pipe - 14'
10' depth

(40) Const. storm pond, D00680 (SWM12)
Inst. facility field marker, type S1-2
Inst. facility field marker, type S2
Aggregate base - 110 tons
(For details, see shts. GJ-15 & GJ-15A)

(41) See sht. 11D, note 18
Const. type "G-2" inlet
Inst. 12" storm sew. pipe

(42) See sht. 11D, note 17
Const. type "G-2" inlet
Inst. 12" storm sew. pipe

(43) Relocate waterline
(For details, see shts. WA-6, WA-N1a & WA-N1b)

(44) Preserve and protect extg. gas line

(45) Utilities relocated prior to construction

(46) Relocate fiber optic line
(By others)

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

(48) Preserve and protect waterline

REGISTERED PROFESSIONAL ENGINEER
64352
OREGON
NOVEMBER 14, 2000
AMY L. JONES
EXPIRES: 06/30/2013

OREGON DEPARTMENT OF TRANSPORTATION

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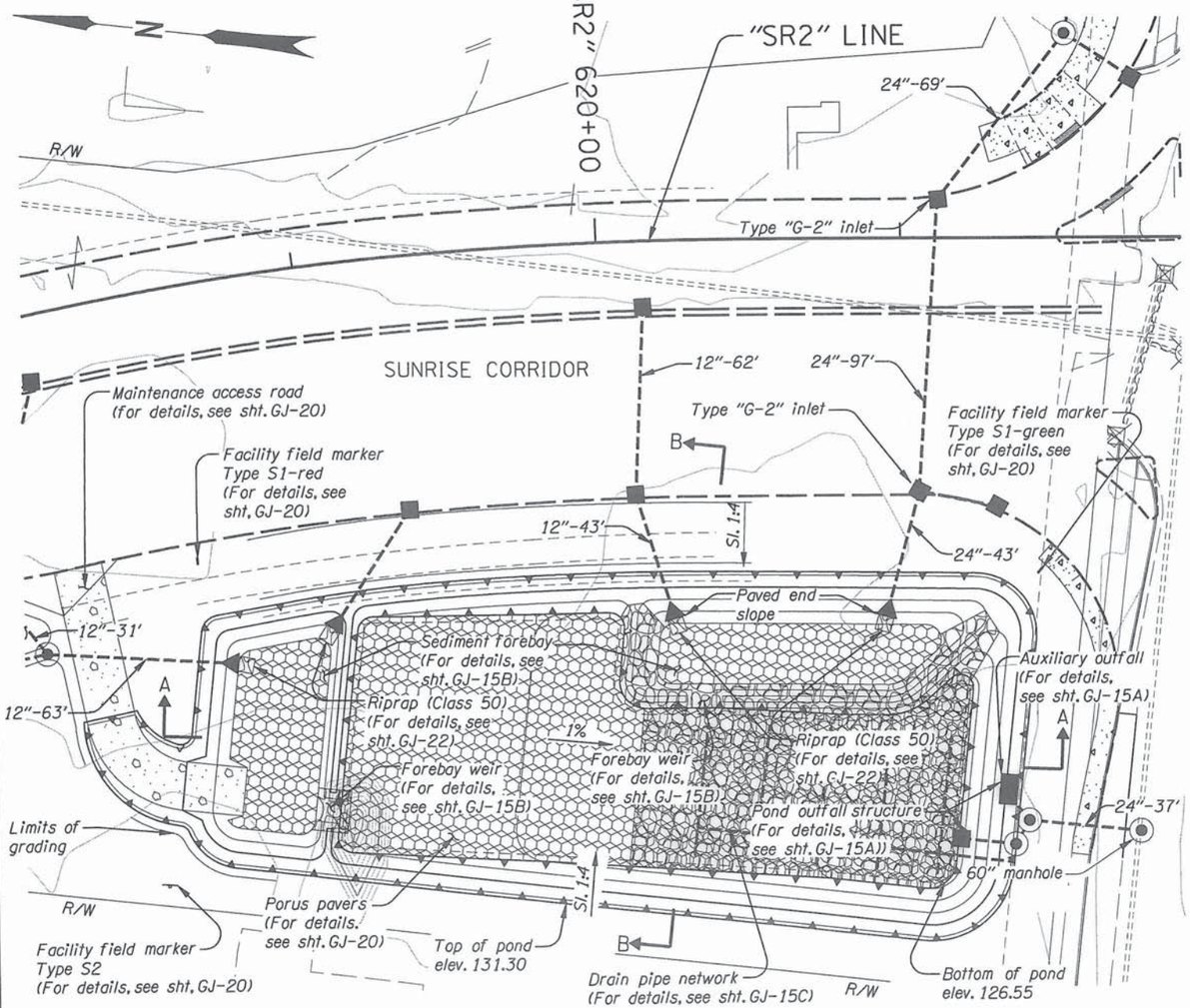
FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.
CLACKAMAS HWY.
CLACKAMAS COUNTY

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

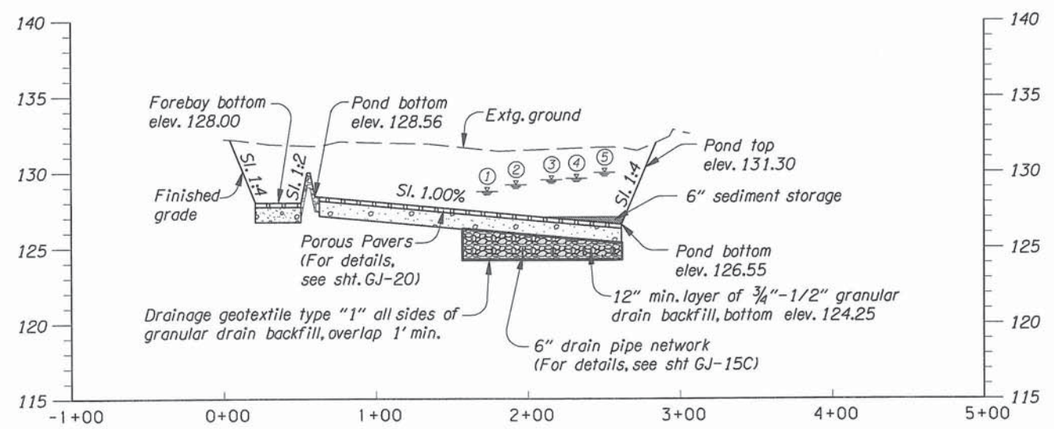
DRAINAGE & UTILITIES NOTES

SHEET NO. 12E

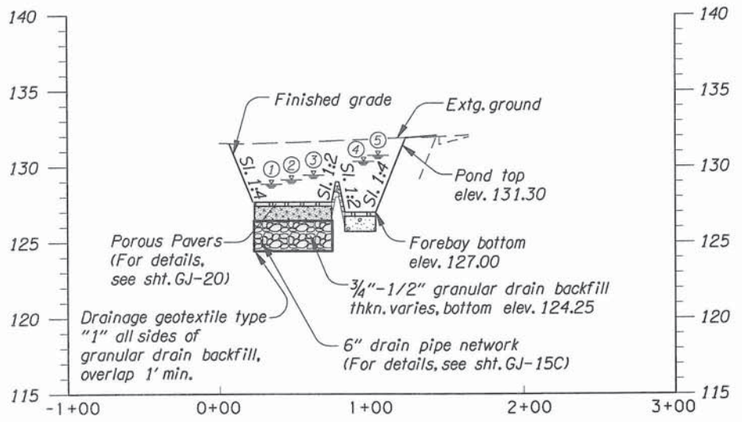
File No.



"SWM12" PLAN
STORAGE POND, DFI-D00680



SECTION A-A



SECTION B-B

(1) Water quality WSE - 128.76
(2) 2 Year WSE - 129.23
(3) 10 year WSE - 129.55
(4) 25 year WSE - 129.65
(5) 100 year WSE - 130.62
(Via emergency spillway only)

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

OREGON DEPARTMENT OF TRANSPORTATION

OBEC CONSULTING ENGINEERS
www.obec.com
CORPORATE OFFICE:
920 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6089
REGIONAL OFFICES:
LAKE OSWEGO; SALEM; MEDFORD, OREGON; VANCOUVER, WASHINGTON

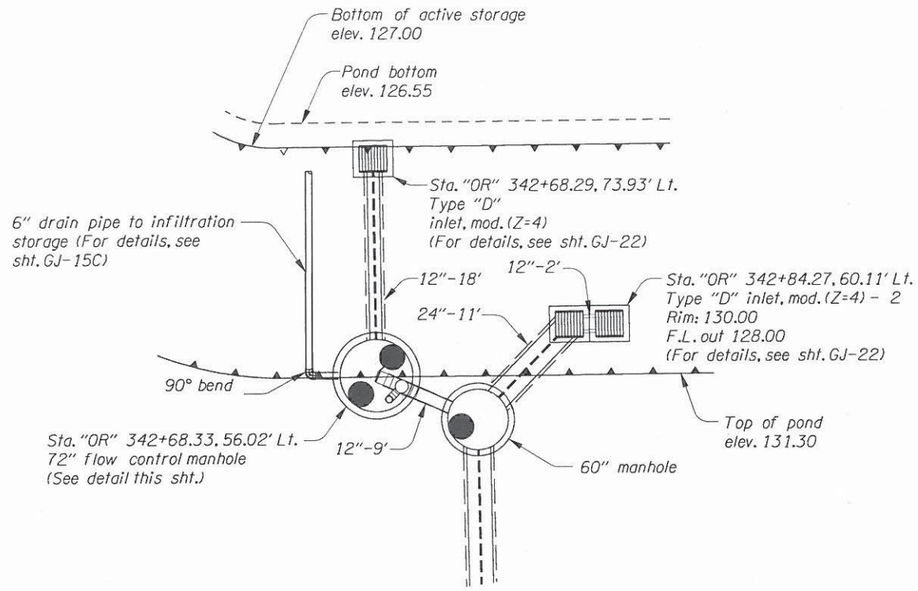
FFO - OR212/224: SUNRISE CORRIDOR (I-205 - SE 122ND AVE) SEC.
CLACKAMAS HWY.
CLACKAMAS COUNTY

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

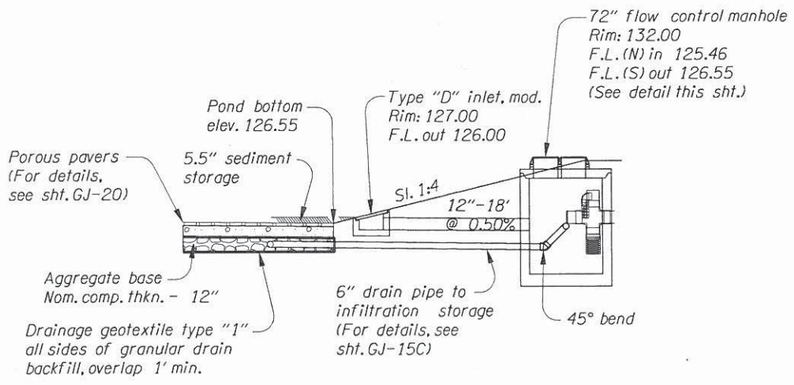
STORMWATER DETAILS

SHEET NO. GJ-15

File No.



PLAN



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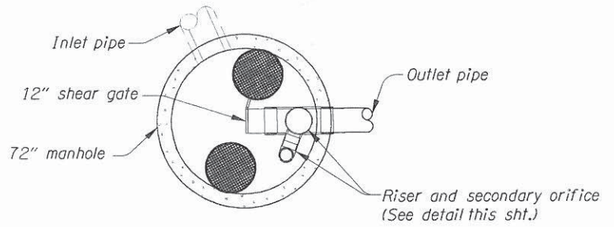
"SWM12" OUTFALL STRUCTURE DETAIL
DFI-D00680



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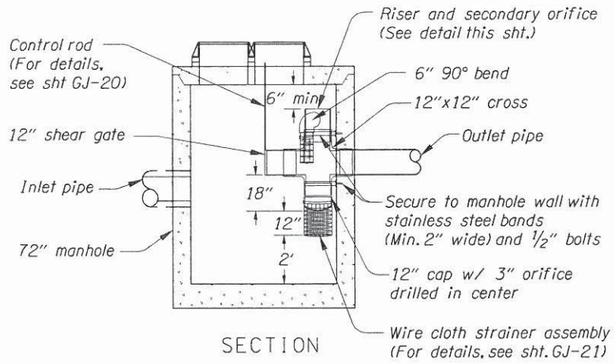

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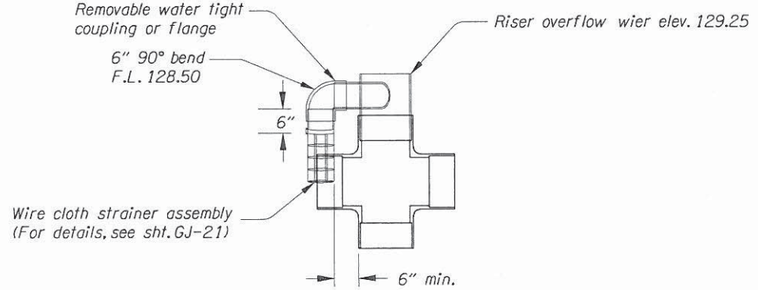

SECONDARY ORIFICE DETAIL

"SWM12" FLOW CONTROL MANHOLE
DFI-D00680

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

OREGON DEPARTMENT OF TRANSPORTATION

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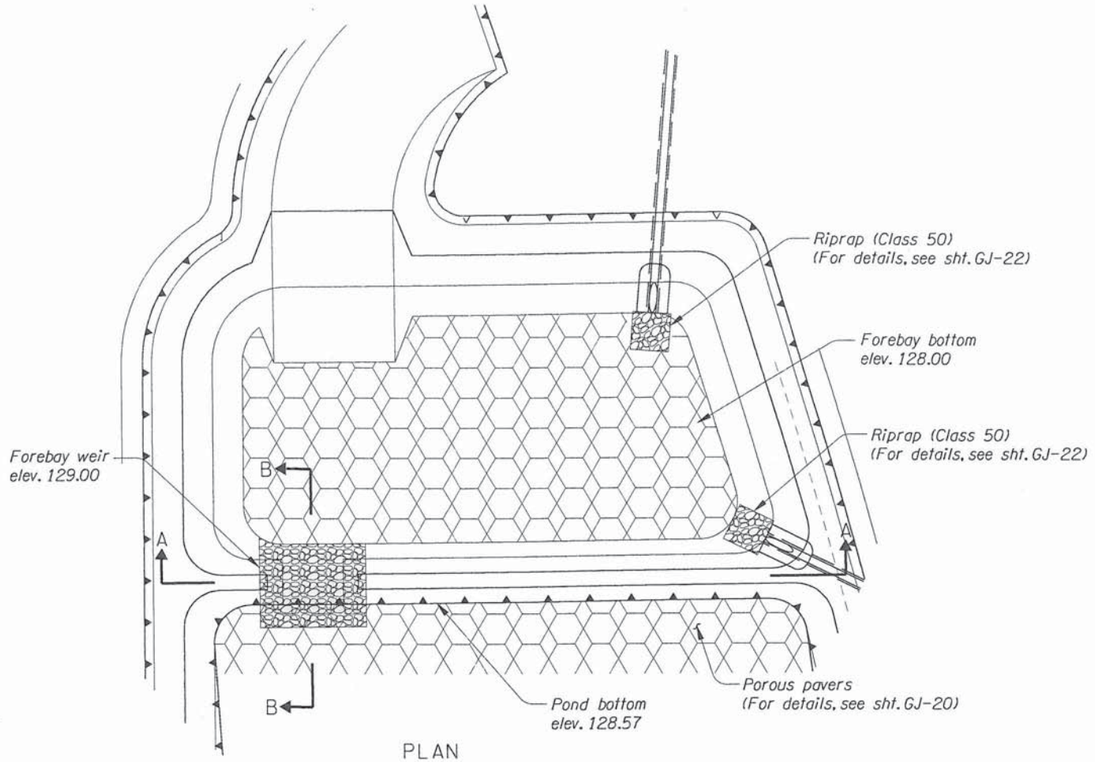
CLACKAMAS HWY.
CLACKAMAS COUNTY

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

STORMWATER DETAILS

SHEET NO. GJ-15A

File No.



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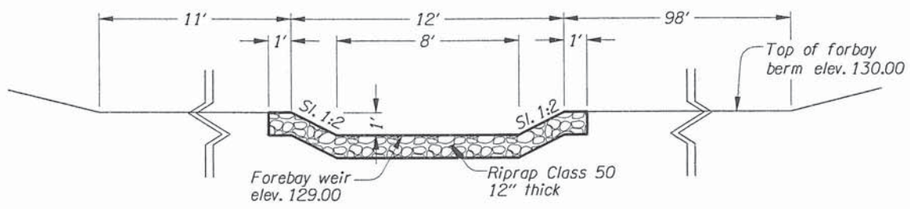
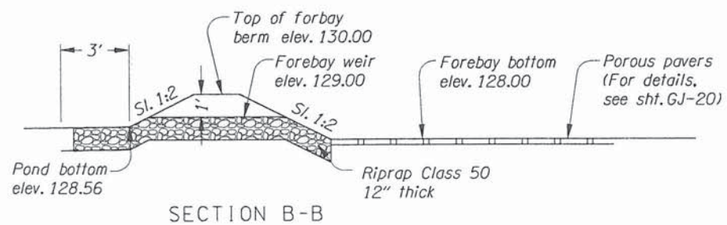
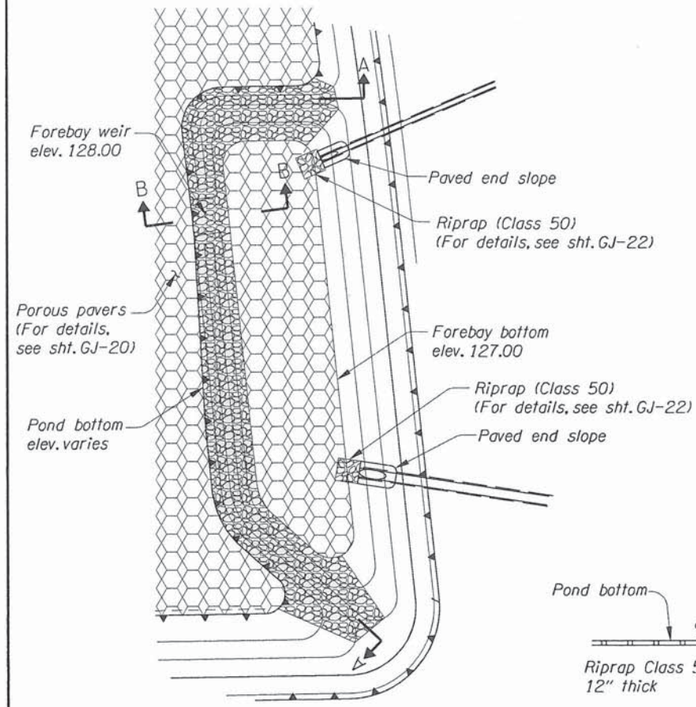


SECTION A-A



SECTION B-B

"SWM12" FOREBAY A DETAIL
DFI-D00680



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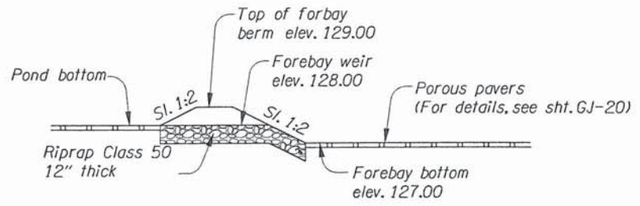

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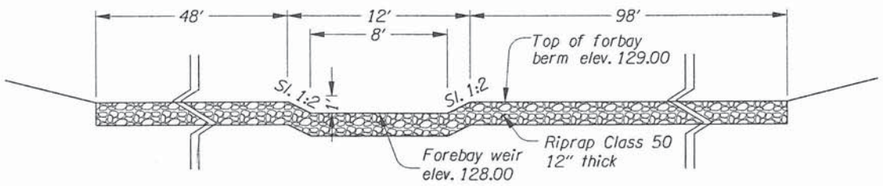

SECTION A-A

"SWM12" FOREBAY B DETAIL
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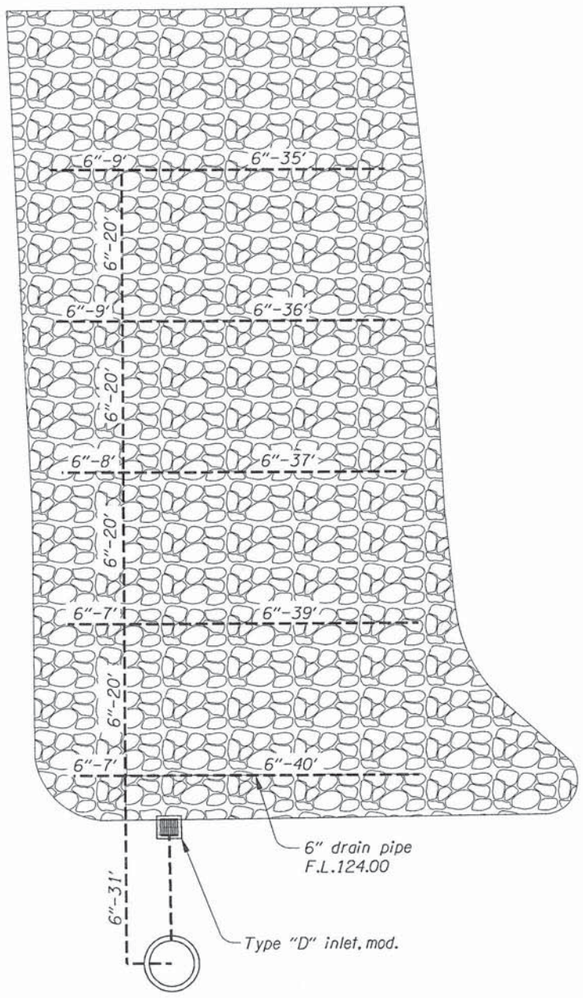
STORMWATER DETAILS

SHEET NO. GJ-15B

File No.



"SWM12" DRAIN PIPE NETWORK DETAIL
DFI-D00680

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STORMWATER DETAILS

SHEET NO. GJ-15C

File No.