

OPERATION & MAINTENANCE MANUAL

DFI No. D00040

Facility Type: Detention Pond



DECEMBER, 2010

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1. Identification

Drainage Facility ID (DFI): D00040
Facility Type: Detention Pond
Construction Drawings: (V-File Number) 38V-117
Location: District: 3
Highway Number: 001
Mile Post: (253.74 / 253.89) Hwy 001
Description: This facility is located on the southwest quadrant of the Interstate 5 and North Santiam Highway interchange.

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's Senior Hydraulics Engineer (503) 986-3365.

3. Construction

Engineer of Record: ODOT Designer -- Region 2 Hydraulics, Chris Carman, (503) 986-2691

Facility construction: 2005
Contractor: Hamilton Construction Company

4. Storm Drain System and Facility Overview

A detention facility is designed to control the quantity of runoff, by reducing the peak discharge and only detaining runoff for some short period of time. These facilities are designed to store and gradually release or attenuate stormwater runoff via a control structure or release mechanism, and completely drain after the design storm has passed. The most common detention facilities include:

- a. Dry ponds - these are depressed storage areas that store runoff during wet weather and are dry the rest of the time. Usually they are earthen depressions.
- b. Tanks - these are underground storage facilities that are typically constructed from large diameter pipe.
- c. Vaults - these are enclosed underground storage facilities. They are typically constructed from reinforced concrete.

There are seven storm drain pipes that convey stormwater runoff from paved areas along North Santiam Highway and Interstate-5 into this detention pond. The locations of these pipes are noted on the Operational Plan as points A through G in Appendix A.

The southbound lanes of Interstate-5 adjacent to this facility sheet flow into the pond; see Photo 4 and the Operational Plan in Appendix A.

Runoff exits the pond by way of a 27-inch storm drain pipe with grate connected to a manhole containing a flow control assembly. These drainage features are located in the northwest corner of the pond. See Photo 2 and Point H on the Operational Plan in Appendix A.

The manhole containing the flow control assembly is known as a flow control structure. The flow control assembly limits the rate of runoff leaving the pond by using an orifice; see Photo 3 and Plan Sheet GJ-3 in Appendix B.

The storm drain outlet pipe from the flow control structure spans underneath the Interstate-5 southbound on-ramp. This outlet pipe discharges into an ODOT water quality swale (DFI #D00042). The receiving waterway is Mill Creek.

A. Maintenance equipment access:

The pond could be accessed for maintenance along Interstate-5. See Photo 4.

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: Pipe B is shown and drains runoff from Santiam Highway. All other pipe ends in the pond have a concrete collar.



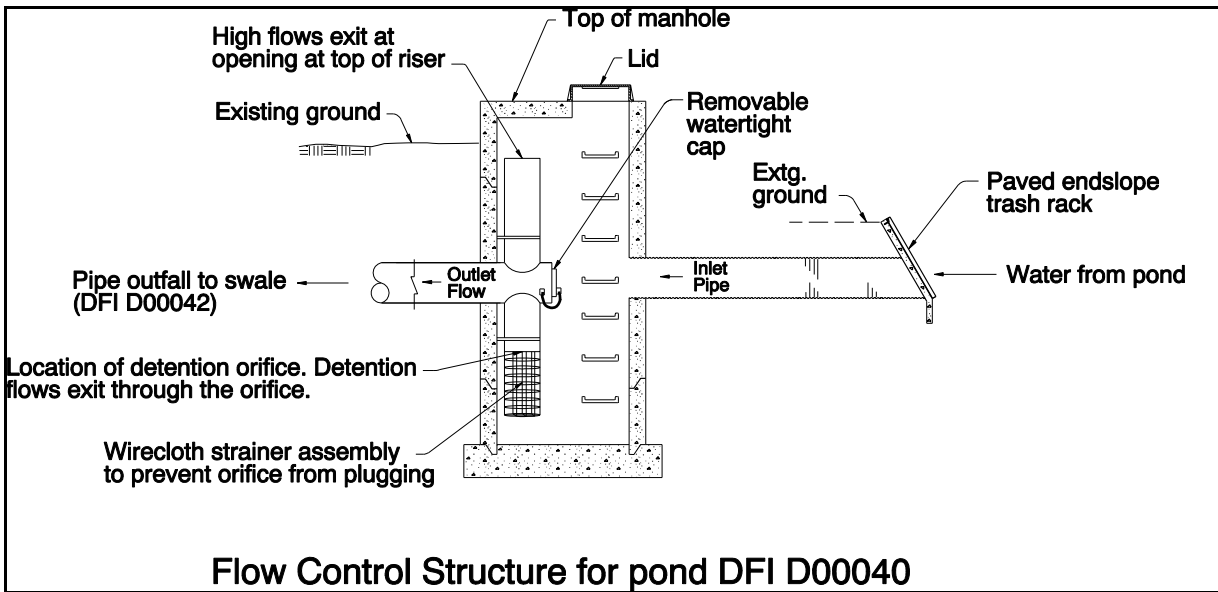
Photo 2: Flow control structure with double lids located in the northwest corner of the pond



Photo 3: Flow control structure (Manhole interior)



Photo 4: Access pond along I-5; (southbound lanes)



5. Facility Haz Mat Spill Feature

The pond can be used to store a volume of liquid by blocking the 27-inch diameter storm drain pipe with metal grate located in the northwest corner of the pond. A barrier such as a metal plate over the metal grate could be used to prevent liquid from draining from the pond. This pipe is noted as point H on the Operational Plan, Appendix A. Also, see Photo 5, below.



Photo 5: Look west at 27-inch storm drain pipe with metal grate (Point H on Operational Plan). This pipe drains into the flow control manhole.

6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure can not 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 bypass the orifice and exit the pond by draining into the top opening of the 30-inch over flow riser pipe located inside the manhole; see Point H on the Operational Plan, Appendix A, or Photo 3, above.

Other, as noted below:

7. Maintenance Requirements

Routine maintenance tables 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>

Maintenance requirements for proprietary structures, such as underground water quality manholes and/or vaults with filter media are noted in Appendix C when applicable.

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual or follow the Maintenance requirements outlined in Appendix C when proprietary structure is selected below:

- Table 1 (general maintenance)
- Table 2 (stormwater ponds)
- Table 3 (water quality or biofiltration swales)
- Table 4 (water quality filter strips)
- Table 5 (water quality bioslopes)

- Table 6 (detention vault)
- Table 7 (detention tank)
- Appendix C (proprietary structure)
- Special Maintenance requirements

Note: Special maintenance Requirements Require Concurrence from ODOT SR Hydraulics Engineer.

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>

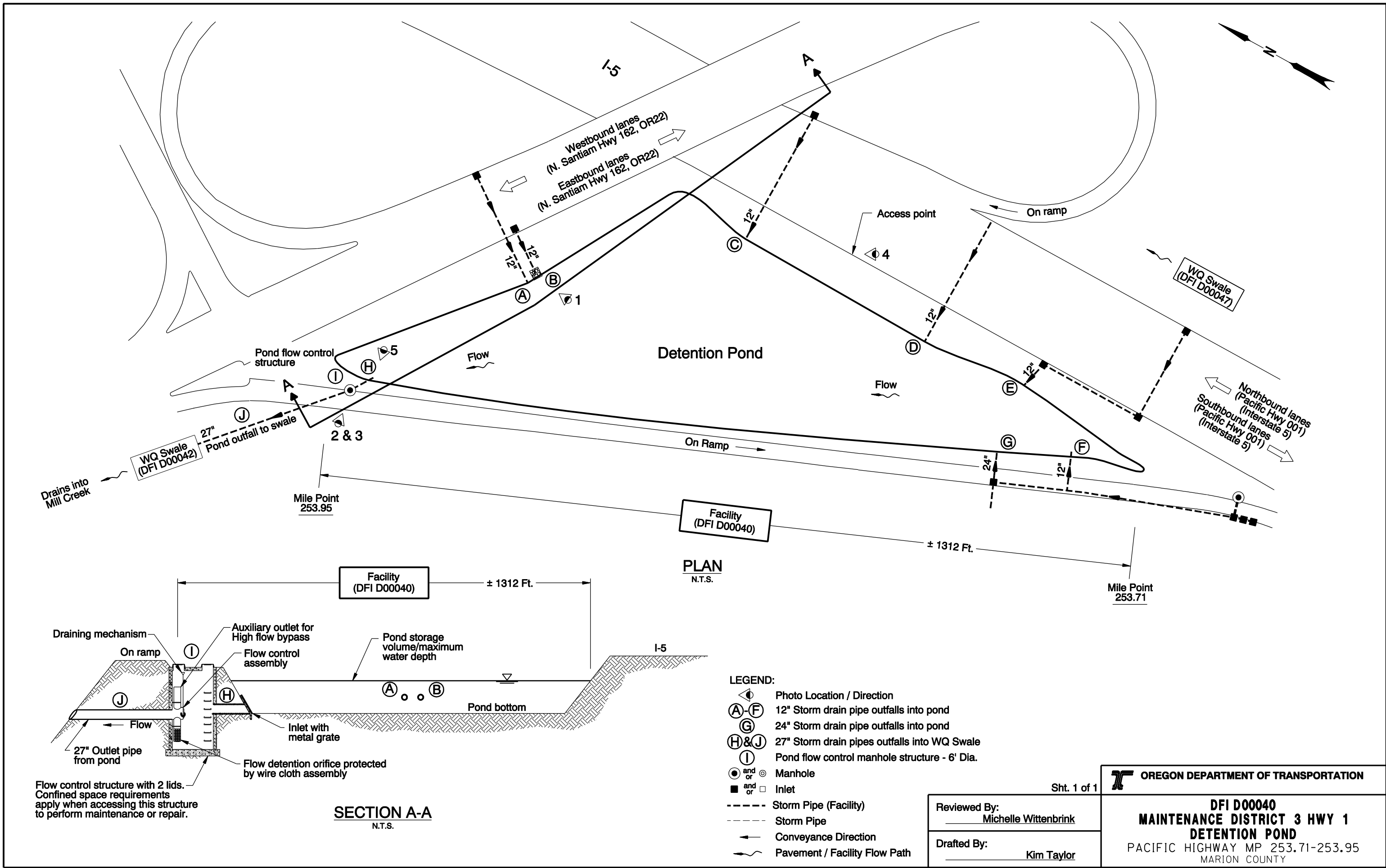
Contact any of the following for more detailed information about management of waste materials found on site:

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

Appendix A

Content:

- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.

SECTION A-A
N.T.S.

- LEGEND:**
- ◁ Photo Location / Direction
 - ⓐ-ⓕ 12" Storm drain pipe outfalls into pond
 - ⓖ 24" Storm drain pipe outfalls into pond
 - ⓗ&ⓙ 27" Storm drain pipes outfalls into WQ Swale
 - Ⓢ Pond flow control manhole structure - 6' Dia.
 - Ⓢ and Ⓢ Manhole
 - and □ Inlet
 - Storm Pipe (Facility)
 - Storm Pipe
 - Conveyance Direction
 - ~ Pavement / Facility Flow Path

Flow control structure with 2 lids.
Confined space requirements
apply when accessing this structure
to perform maintenance or repair.

Sht. 1 of 1

Reviewed By:
Michelle Wittenbrink

Drafted By:
Kim Taylor

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00040
MAINTENANCE DISTRICT 3 HWY 1
DETENTION POND
PACIFIC HIGHWAY MP 253.71-253.95
MARION COUNTY

Appendix B

Content:

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

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.
1A-2	Index Of Sheets Cont'd.
1A-3	Index Of Sheets Cont'd.
1A-4	Standard Drawing Nos.
1B	Layout Sheet

STATE OF OREGON
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

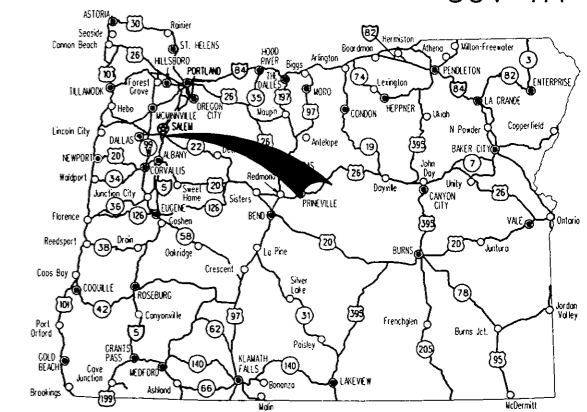
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING,
ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

**I-5: N. SANTIAM HWY. -
KUEBLER BLVD. (SALEM) SEC.**

PACIFIC HIGHWAY

MARION COUNTY

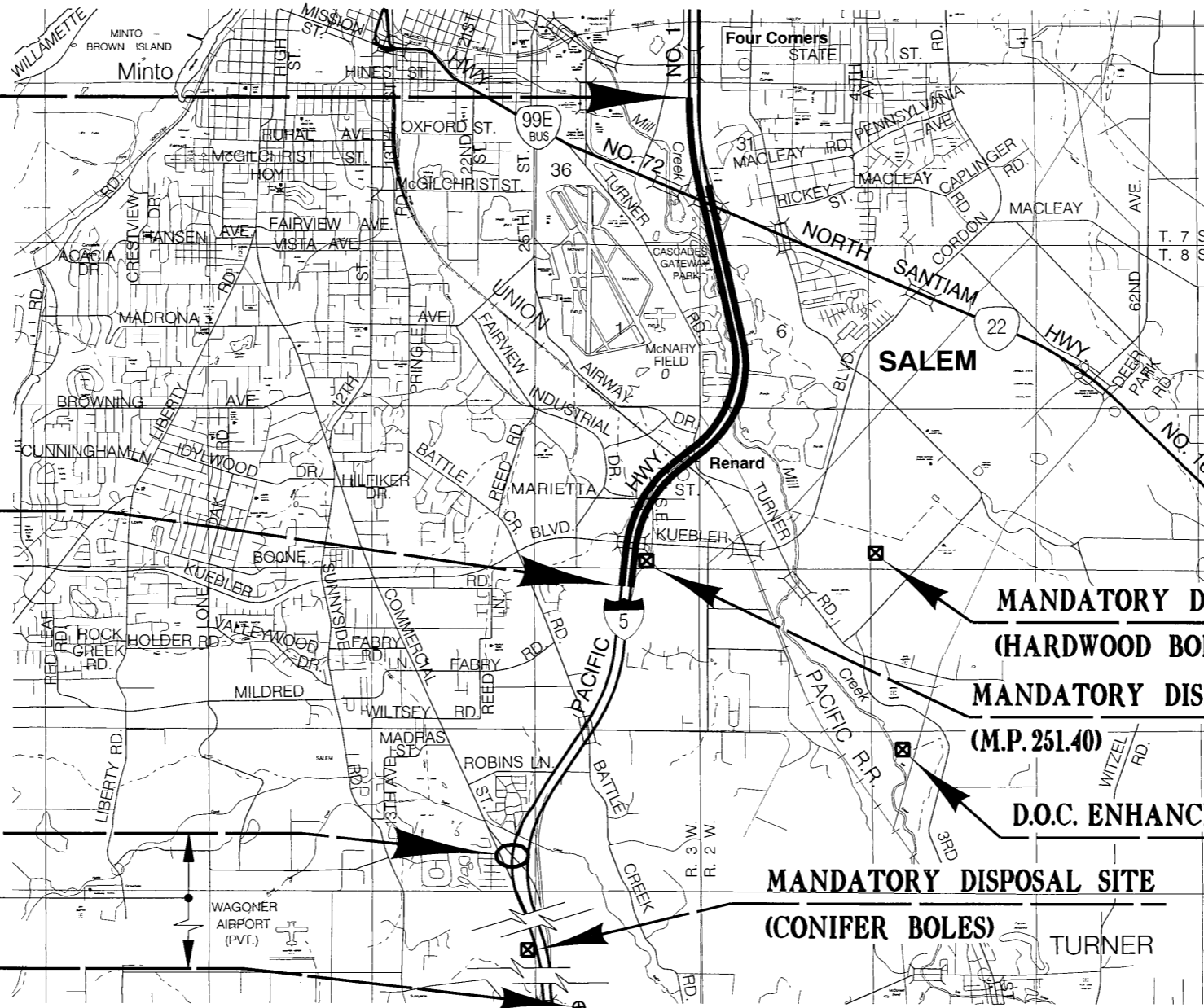
OCTOBER 2005



Overall Length Of Project - 4.02 km (2.49 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 By Calling The Center. (Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)

OTIA-NH-IM-S001(196)
BEGINNING OF PROJECT
STA. "L" 10+280 (M.P. 254.58)



END OF WORK AREA
STA. "L" 15+682.3 (M.P. 251.22)

OTIA-NH-IM-S001(196)
END OF PROJECT
STA. "LS" 18+664.61 (M.P. 249.38)
Approx. 28 Mi. South

PROSPECTIVE MATERIAL SOURCE
(M.P. 221.13)



LET'S ALL
WORK TOGETHER
TO MAKE THIS
JOB SAFE



T. 7, 8 S.,
R. 2, 3 W., W.M.

OREGON TRANSPORTATION COMMISSION

Stuart Foster	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Mike Nelson	COMMISSIONER
Randall Papé	COMMISSIONER
Janice J. Wilson	COMMISSIONER
Bruce A. Warner	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
13,704
JULY 16, 1987
CATHERINE M. NELSON
Expires Dec. 31, 2006

Catherine M. Nelson
TECHNICAL SERVICES MANAGING ENGINEER

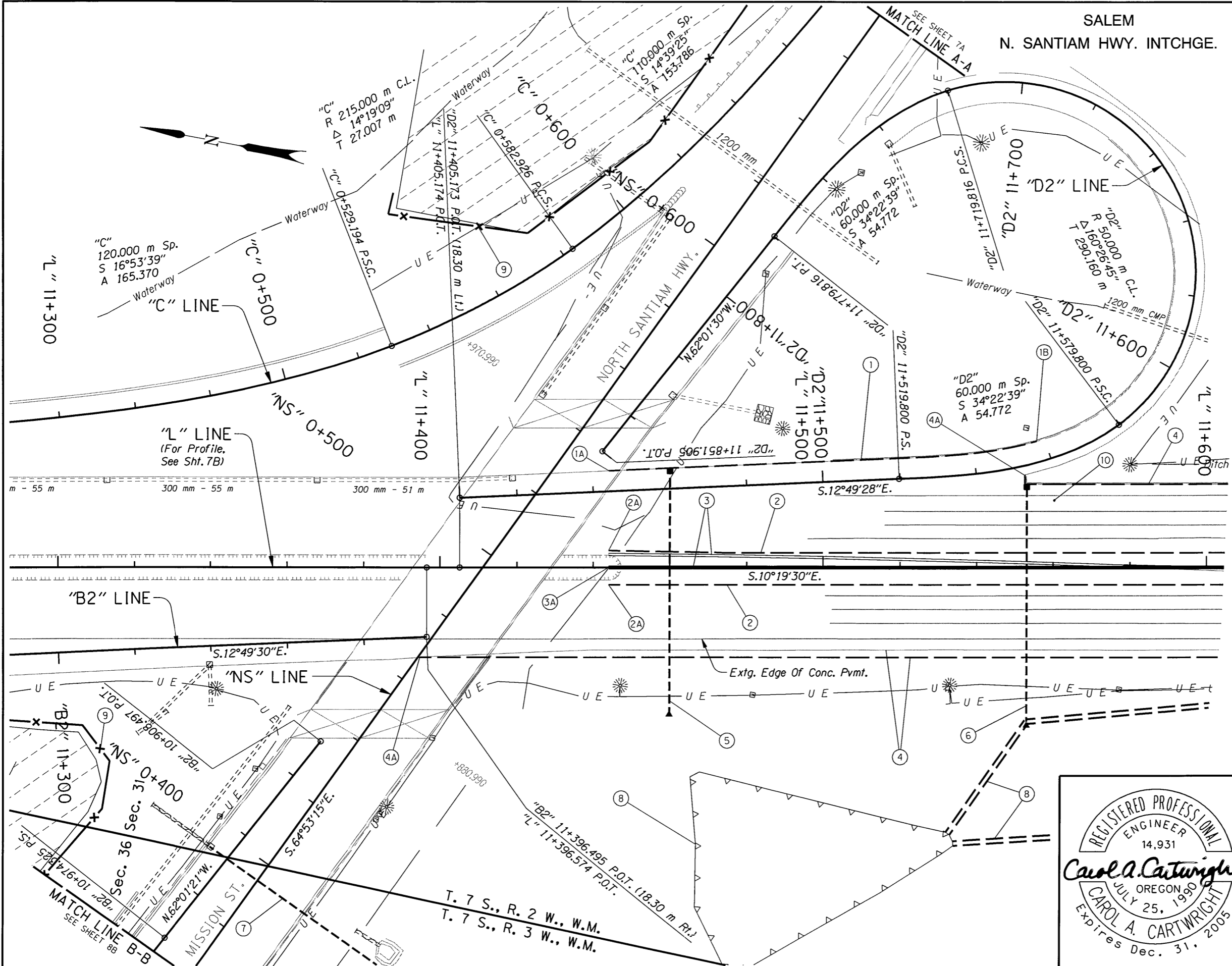
**I-5: N. SANTIAM HWY. -
KUEBLER BLVD. (SALEM) SEC.
PACIFIC HIGHWAY
MARION COUNTY**

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	OTIA-NH-IM-S001(196)	1



PE000950

SALEM
N. SANTIAM HWY. INTCHGE.



- ① Remove Extg. Curb
Const. Low Profile Mountable Curb
- ①A Connect To Extg. Curb
- ①B Const. Curb Transition
(For Details, See Sht. 2B-4)
- ② Const. Low Profile Mountable Curb
- ②A Connect To Extg. Curb
- ③ Sta. "L" 11+444.0 To Sta. "SB" 13+485.0
Remove Extg. Conc. Median Barrier - 510.1 m
Const. Precast Tall Conc.
Median Barrier - 2040.2 m
(Reflectorized)
- ③A Bury End In Extg. Mound
Const. Tall Conc. Barrier Mound Terminal
Flare Rate=0, W=0, E=0
(See Drg. Nos. RD545 & RD565)
- ④ Remove Extg. Curb
Const. Mod. Low Profile Mountable Curb
- ④A Connect To Extg. Curb
(For Details, See Sht. 2B-4)
- ⑤ Sta. "L" 11+460.0
Const. Type "G-2" Inlet With Basin
0.45 m Deep
Inst. 300 mm Sew. Pipe - 65.5 m
Pipe Boring - 66 m
Const. Paved End Slope, Rt.
- ⑥ Sta. "L" 11+553.1
Const. Type "G-2" Inlet With Basin
0.45 m Deep
Inst. 300 mm Sew. Pipe - 62.5 m
Pipe Boring - 63 m
Const. Paved End Slope, Rt.
- ⑦ Sta. "NS" 0+394.9
Inst. 300 mm Sew. Pipe - 54.0 m
Pipe Boring - 54 m
Connect To Extg. Inlet
- ⑧ Const. Ditches
Modify Existing Pond
(For Details, See Sht. GJ-1)
- ⑨ Const. Temp. Type Orange Plastic Fence
- ⑩ Conc. Pvmt. Spall Repair
(For Details, See Sht. 2B-10)

No Work Area Shown Thus:

Plug And Abandon Extg. Pipe Shown Thus:

All Dimensions Are Shown In Meters (m)
Unless Otherwise Noted.

REGISTERED PROFESSIONAL
ENGINEER
14,931
Carol A. Cartwright
OREGON
JULY 25, 1990
CAROL A. CARTWRIGHT
Expires Dec. 31, 2005

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

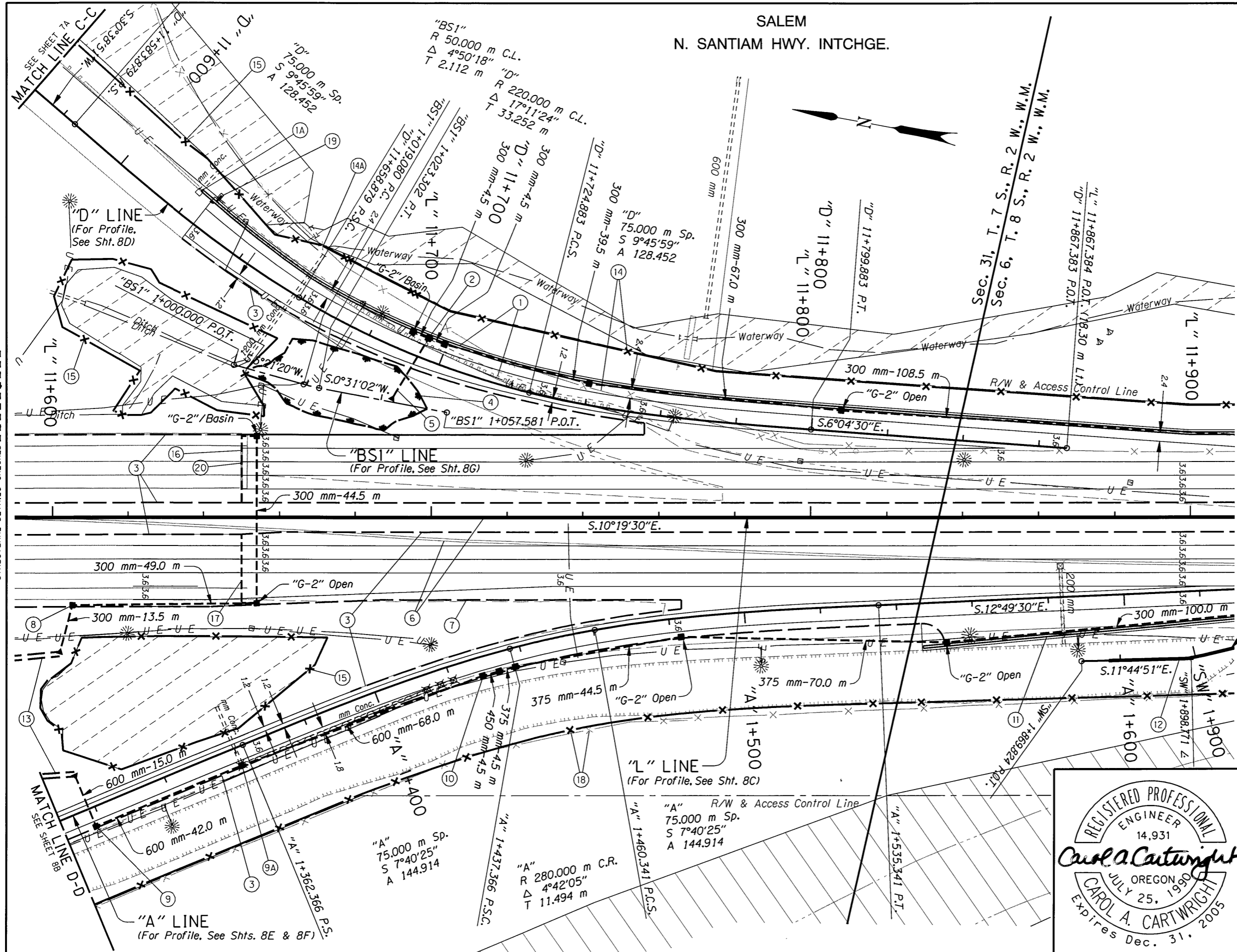
1-5: N. SANTIAM HWY. -
KUEBLER BLVD. (SALEM) SEC.
PACIFIC HIGHWAY
MARION COUNTY

Design Team Leader - Carol Cartwright
Designed By - John Lucas
Drafted By - Jeff Larson

GENERAL CONSTRUCTION

SHEET
NO.
7

SALEM
N. SANTIAM HWY. INTCHGE.



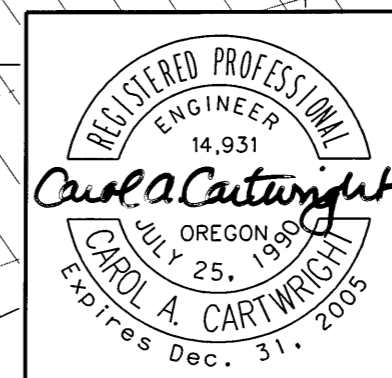
STRUCTURAL DETAILS CHECKED

Restricted Work Area Shown Thus:

No Work Area Shown Thus:

Plug And Abandon Extg. Pipe Shown Thus:

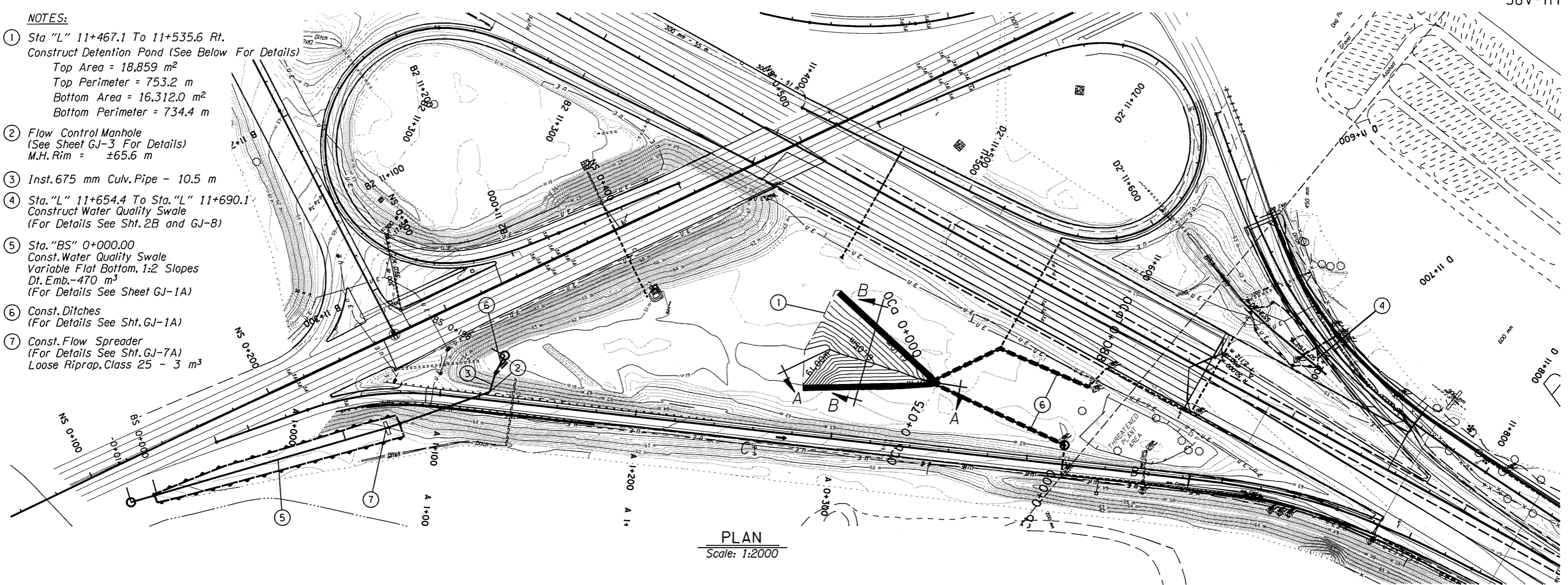
All Dimensions Are Shown In Meters (m) Unless Otherwise Noted.



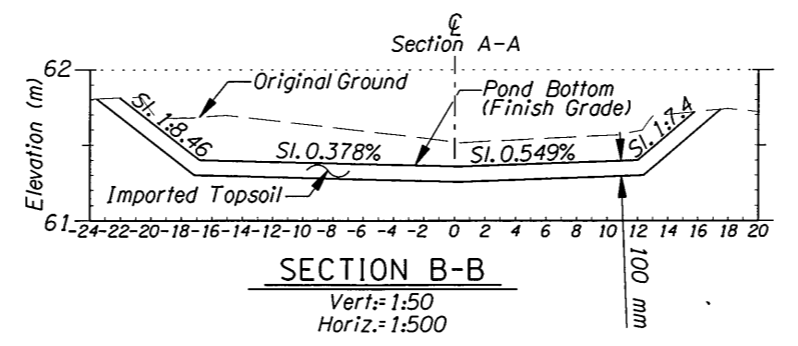
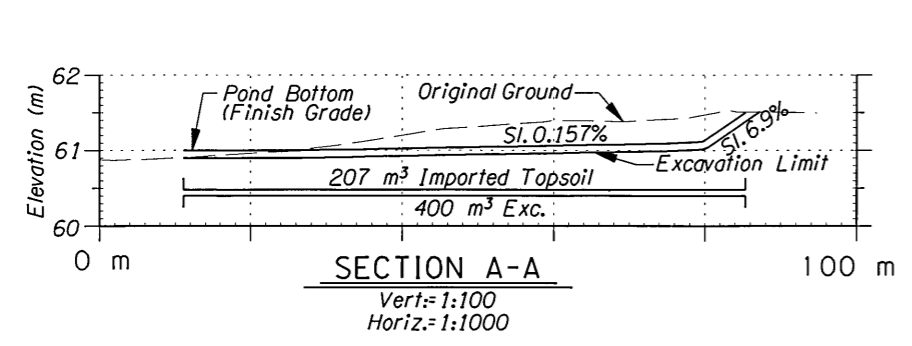
OREGON DEPARTMENT OF TRANSPORTATION ROADWAY ENGINEERING SECTION	
I-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC. PACIFIC HIGHWAY MARION COUNTY	
Design Team Leader - Carol Cartwright Designed By - John Lucas Drafted By - Jeff Larson	
GENERAL CONSTRUCTION	SHEET NO. 8

NOTES:

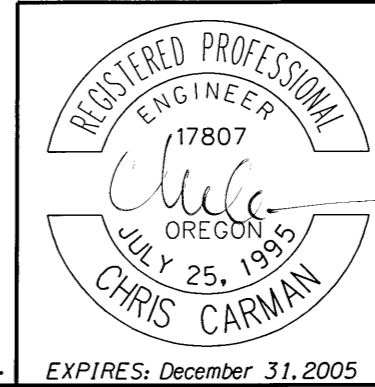
- ① Sta "L" 11+467.1 To 11+535.6 Rt.
Construct Detention Pond (See Below For Details)
Top Area = 18,859 m²
Top Perimeter = 753.2 m
Bottom Area = 16,312.0 m²
Bottom Perimeter = 734.4 m
- ② Flow Control Manhole
(See Sheet GJ-3 For Details)
M.H. Rim = ±65.6 m
- ③ Inst. 675 mm Culv. Pipe - 10.5 m
- ④ Sta. "L" 11+654.4 To Sta. "L" 11+690.1
Construct Water Quality Swale
(For Details See Sht. 2B and GJ-8)
- ⑤ Sta. "BS" 0+000.00
Const. Water Quality Swale
Variable Flat Bottom, 1:2 Slopes
Dt. Emb. - 470 m³
(For Details See Sheet GJ-1A)
- ⑥ Const. Ditches
(For Details See Sht. GJ-1A)
- ⑦ Const. Flow Spreader
(For Details See Sht. GJ-7A)
Loose Riprap, Class 25 - 3 m³



PLAN
Scale: 1:2000

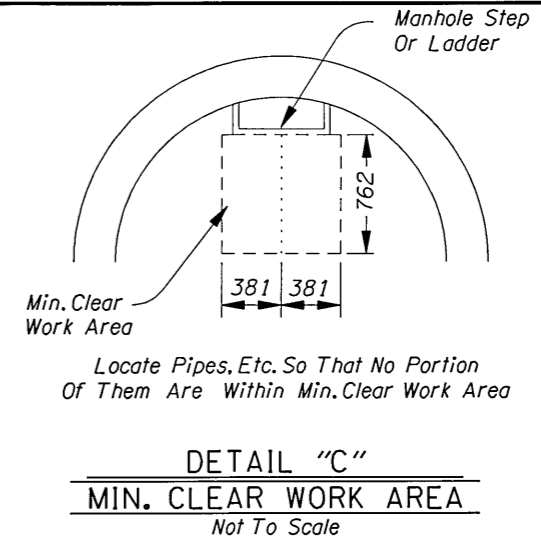
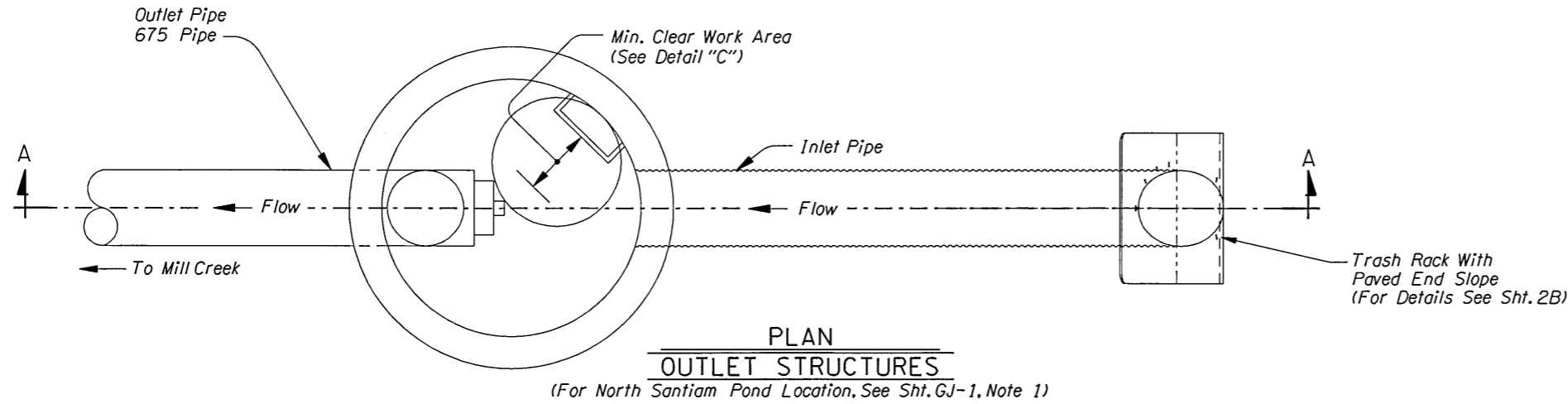


- NOTES:**
1. Side-Slopes Are Shown As Vert. To Horiz.
 2. All dimensions are in meters (m) except as noted.

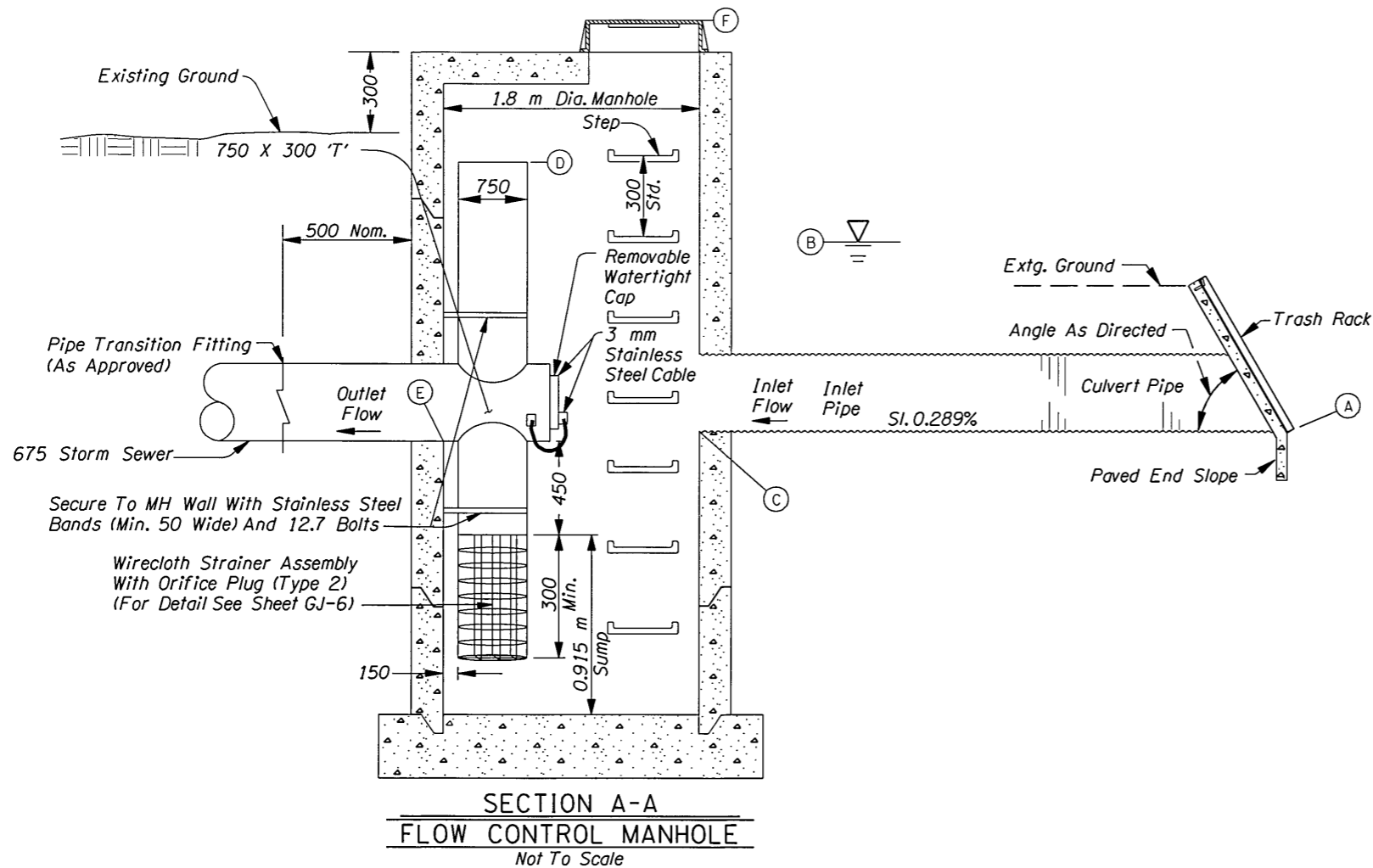


OREGON DEPARTMENT OF TRANSPORTATION REGION 2 TECH CENTER	
1-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC. PACIFIC HIGHWAY MARION COUNTY	
Reviewed By - Alvin Shoblom Designed By - Chris Carman Drafted By - Chris Shearer	
WATER QUALITY / DETENTION PLAN	SHEET NO. GJ-1

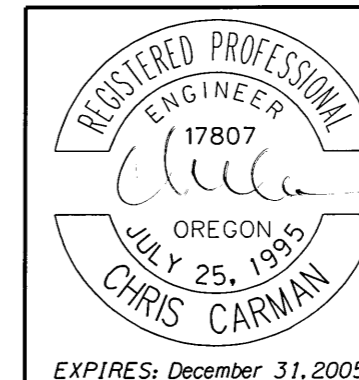
- NOTES:
 1. Hardware, Fasteners And Anchors To Be Stainless Steel; Use 3 mm Stainless Steel Cable.
 2. For Manhole Details Not Shown, See RD346
 3. Hardware, Fasteners, Anchors, Fittings, Appurtenances, Labor, And Equipment Are Incidental.



15 - NORTH SANTIAM INTERCHANGE POND		
	ELEVATION (m)	DESCRIPTION
A	61.00	Elev. Of Pond Bottom
B	61.57	Elev. Of Detention Water Surface 50 Year Storm
C	60.97	F.L. Elev. Of Inlet Pipe
D	61.87	Rim Of Overflow Riser
E	60.97	Fl. Elev. Of 675 Outlet Pipe
F	65.57	M.H. Rim



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



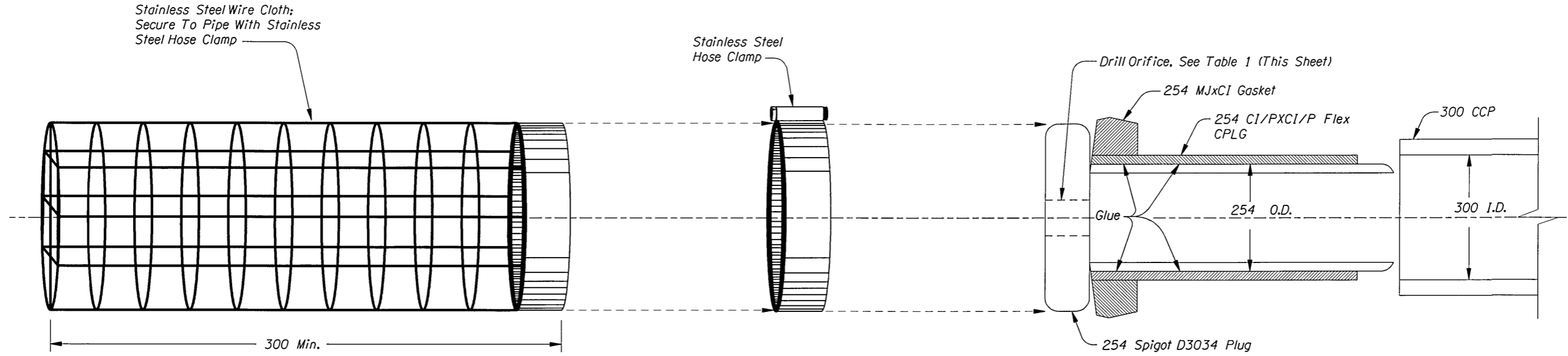
OREGON DEPARTMENT OF TRANSPORTATION
 REGION 2 TECH CENTER

I-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC.
 PACIFIC HIGHWAY
 MARION COUNTY

Reviewed By - Alvin Shoblom
 Designed By - Chris Carman
 Drafted By - Chris Shearer

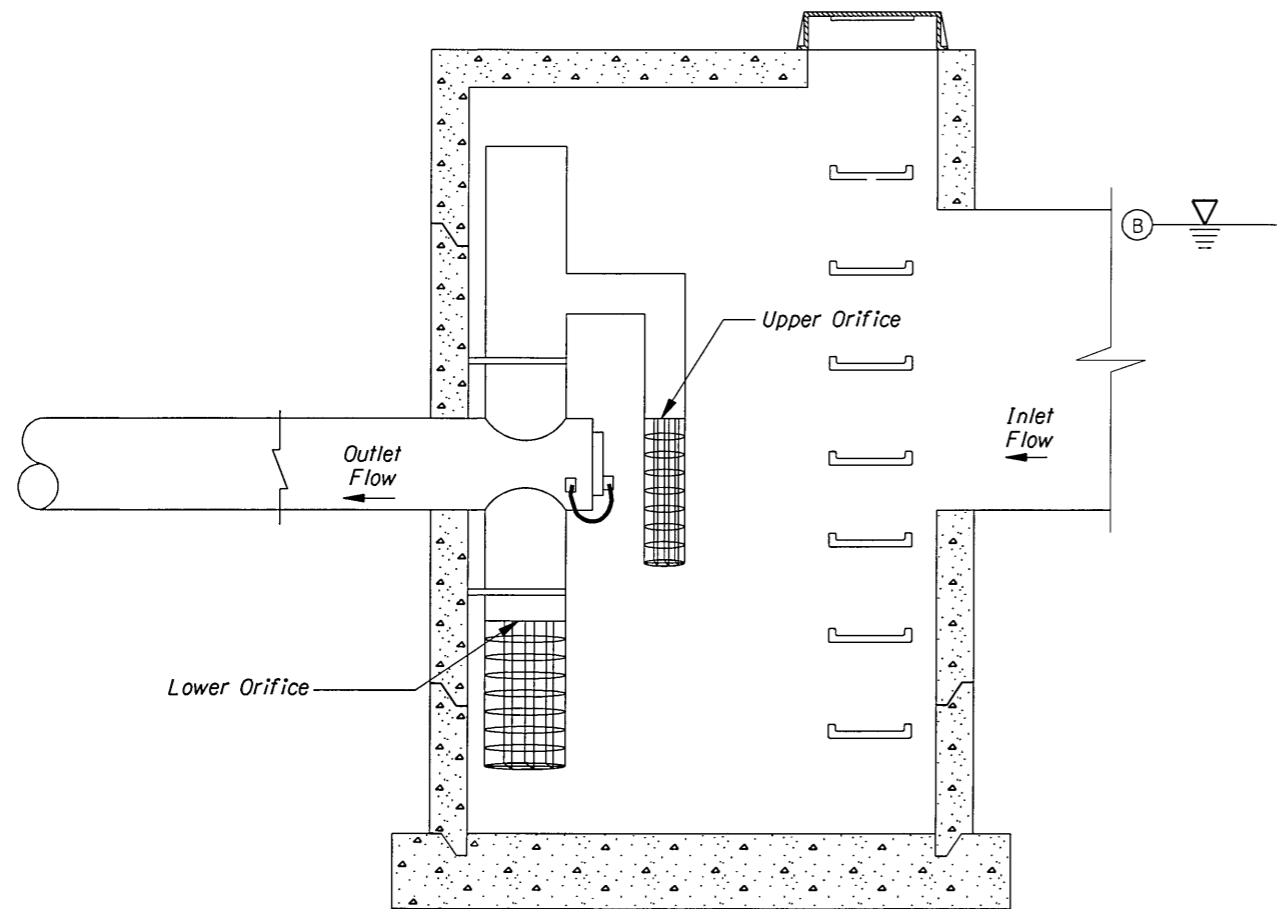
DETAILS

SHEET NO. **GJ-3**



**FLOW CONTROL MANHOLE
WIRE CLOTH STRAINER ASSEMBLY**
Not To Scale

ORIFICE PLUG (TYPE 2)
Not To Scale

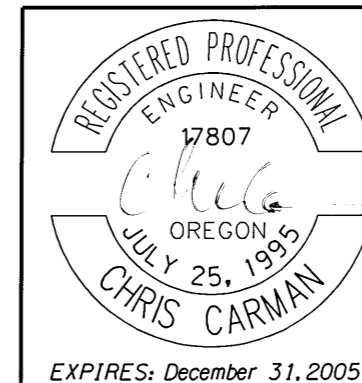


**SECTION A-A
FLOW CONTROL MANHOLE**
Not To Scale

Table 1

Location	Lower Orifice Dia.(mm)	Upper Orifice Dia.(mm)
North Santiam Interchange	63.5	N/A
Sta."L" 14+360.118 2.547 Rt.	50	250
Sta."L" 14+362.421 25.372 Lt.	25	175
Sta."L" 14+149.633 21.50 Rt.	25	75
Sta."L" 14+149.601 0.720 Lt.	50	115
Sta."L" 14+061.976 16.794 Lt.	25	75
Kuebler Blvd. Interchange	25	400

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



**OREGON DEPARTMENT OF TRANSPORTATION
REGION 2 TECH CENTER**

**1-5: NORTH SANTIAM HWY. -
KUEBLER BLVD. (SALEM) SEC.
PACIFIC HIGHWAY
MARION COUNTY**

Reviewed By - Alvin Shoblom
Designed By - Chris Carman
Drafted By - Chris Shearer

DETAILS

SHEET NO.

GJ-6