OPERATION & MAINTENANCE MANUAL

DFI No.: D00038
Facility Type: Detention Tank/Pipe

MARCH, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00038**
Facility Type:	Detention Tank/Pipe
Construction Drawings:	(V-File Number) 38V-117
Location:	District: 3
	Highway No.: 001
	Mile Post: 252.00 / 252.05 (beg./end)
	Description: This facility is located behind the right shoulder's concrete barrier along the northbound lanes of I-5 (Hwy 001).

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:
ODOT Designer – Region 2 Tech. Center
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:

- 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.
- Tanks - these are underground storage facilities that are typically constructed from large diameter pipe.
- Vaults - these are enclosed underground storage facilities. They are typically constructed from reinforced concrete.

This particular detention facility is a 292 foot (89 m) long series of two 146 foot (~44.5 m) long detention pipes, 71-inches in diameter (1800 mm), located behind the right shoulder's concrete barrier along the northbound lanes of I-5 (Hwy 001). The facility is located approximately 611 feet south of the northbound approach slab to Bridge No. 20026, which crosses overtop the U.P.R.R railway (**page 17 of 38V-117 in Appendix B**).

The facility collects stormwater runoff from approximately 1,970 feet of the northbound lanes of I-5 (Hwy 001). (The southbound lanes are controlled by a separate detention facility, D00039.)

Stormwater enters the detention system through two separate manholes: the southernmost manhole and the flow control facility. The southernmost manhole (**Point A of the Operational Plan located in Appendix A**) receives stormwater through both a pair of inlets and a 12-inch wide storm pipe from the south. Stormwater from the southernmost manhole then enters a series of 71-inch wide pipes before exiting to the flow control manhole. Besides providing flow control for this pipe series, the flow control manhole provides flow control for the inlet that ties into the flow control structure (**Point B; Photos 1 & 2**).

After detention, the flow control manhole releases the water into an 18-inch wide storm pipe to the north. The stormwater is directed to a water quality manhole structure, D00034, to the north. Flows treated from the water quality manhole are then further directed northward approximately 87 feet (26.5 m) down a steep slope, via a 12-inch (300 mm) pipe, to an inlet before being released to a ditch near the south side of the railway line (**Photos 3 & 4**).

For further information and details regarding the system refer to **Appendix A for the Operational Plan** and **Appendix B for Construction Drawings**.

A. Maintenance equipment access:

This facility is located along the 12-foot wide, right shoulder of the northbound lanes of I-5. Sufficient room to utilize the shoulder area should allow adequate vehicular access to the system when performing maintenance activities such as using a vactor truck to clean the manholes (**Photo 5**).

However, the facility is behind the concrete barrier on the non-travel side, and the flow control manhole is located in the gravel-covered section past the asphalt behind the concrete barrier. Therefore, the concrete barrier may obstruct access to the facility. Preparation for maintenance must include making sure that equipment will have an adequate reach to access the facility.

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: The flow control manhole is behind the concrete barrier on the right shoulder of the northbound lane on I-5 (Hwy 001.) The flow control manhole is also across from a Kuebler Boulevard exit sign for the southbound lane of I-5 (Hwy 001.)

Photo 2: The facility drainage area is approximately 1,970 feet of the northbound lanes of I-5 (Hwy 001.)

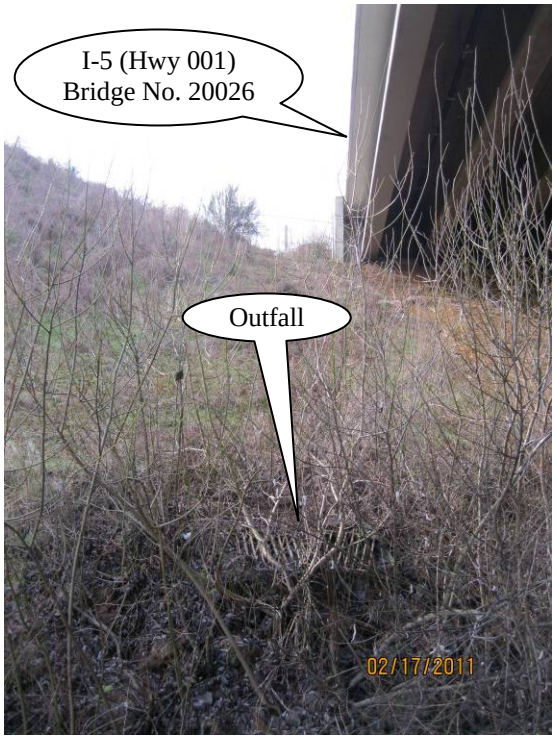


Photo 3: Outfall to ditch. This outfall discharges stormwater from D00038 as well as D00039 and D00034. The picture was taken facing south.

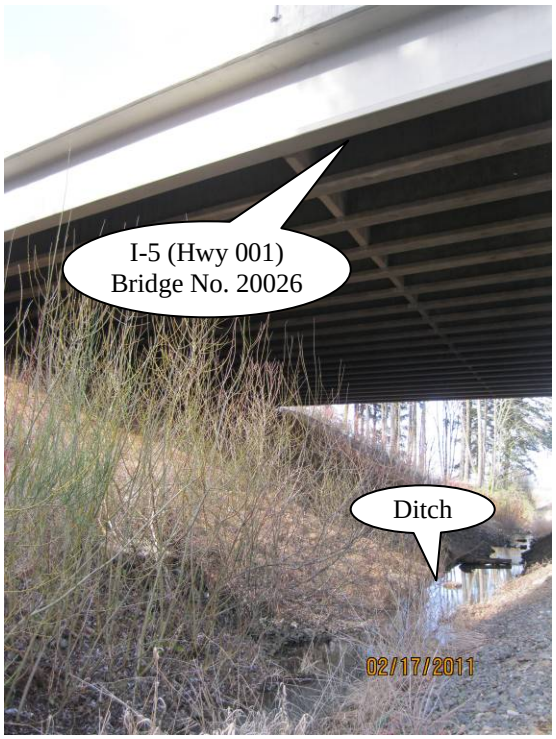


Photo 4: This ditch receives stormwater from D00038 as well as D00039 and D00034. (U.P.R.R railway to the right (north) not pictured.)

Photo 5: Shoulder widens just north of the 252 mile marker on the northbound lane of I-5 (Hwy 001). The flow control manhole (not pictured) is further north. The southernmost manhole (not pictured) is further south.

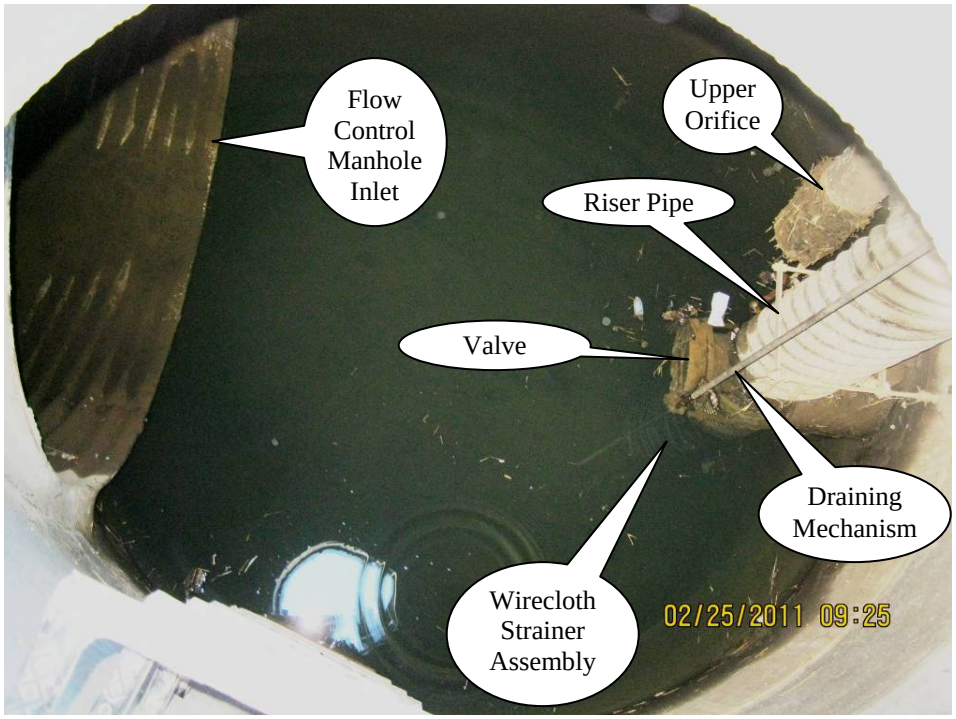


Photo 6: Flow control manhole interior.

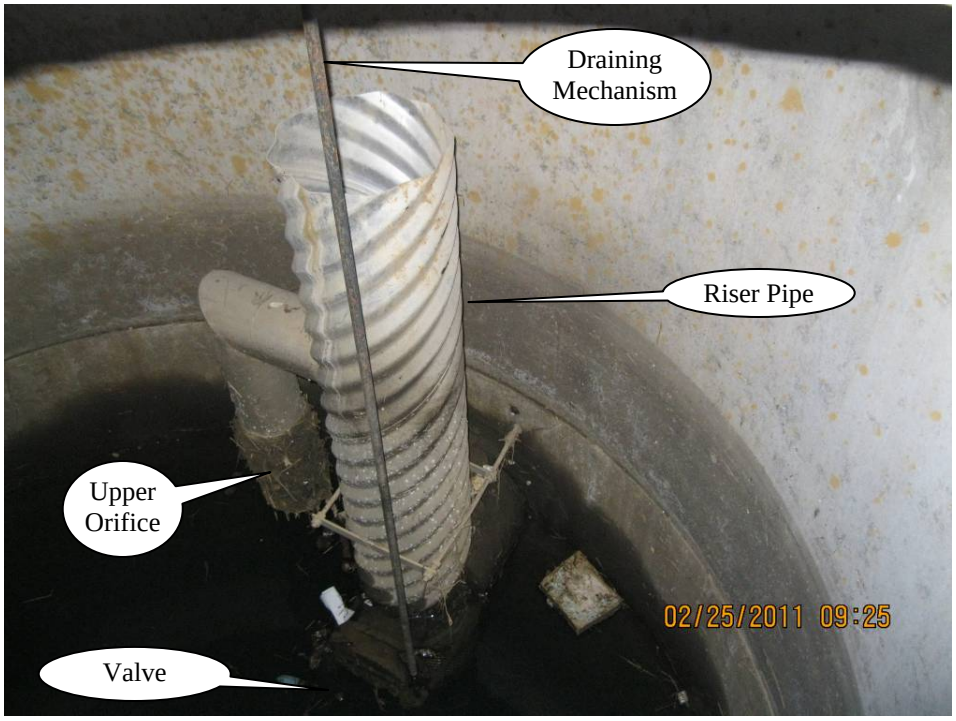


Photo 7: Upper portion of the flow control device.

5. Facility Haz Mat Spill Feature(s)

This detention facility does not have features to block liquids from draining from the pipe. However, the detention pipe itself can be used to store hazardous liquids entering the system until such time the pipe is full and begins flowing toward a water quality structure to the north where additional storage of these liquids may be available in the manhole's sump. Another option may be possible: blocking the outfall pipe downstream from the manhole and capturing hazardous liquids there.

6. Auxiliary Outlet

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 treatment 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:

In the event that the lower and upper orifices become plugged or the stormwater runoff flows exceed the capacity of the facility, the water is released through the high flow riser within the flow control structure.

The auxiliary high flow bypass for the flow control manhole consists of a riser pipe above the outlet flow pipe in the flow control manhole. If stormwater enters the flow control manhole more quickly than the lower orifice can convey stormwater (due to either a larger storm or clogging of the lower orifice), the water level within the manhole will rise until water enters the riser pipe through its upper orifice. The water will then discharge through the high flow riser. (**Flow Control Structure Detail in the Operational Plan in Appendix A; working schematics on sheets GJ-4 & GJ-6 in Appendix B; Photos 6 & 7**).

If the lower orifice clogs and the flow control manhole fills with water, use of the draining mechanism will quickly reduce the water level inside the manhole. The draining mechanism opens a valve in the riser pipe, thus enabling flows to leave directly through the flow control manhole outlet and bypass the lower orifice, the upper orifice and the top of the riser pipe (**Operational Plan in Appendix A; Photos 6 & 7**).

☐ Other, as noted below

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

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 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:

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

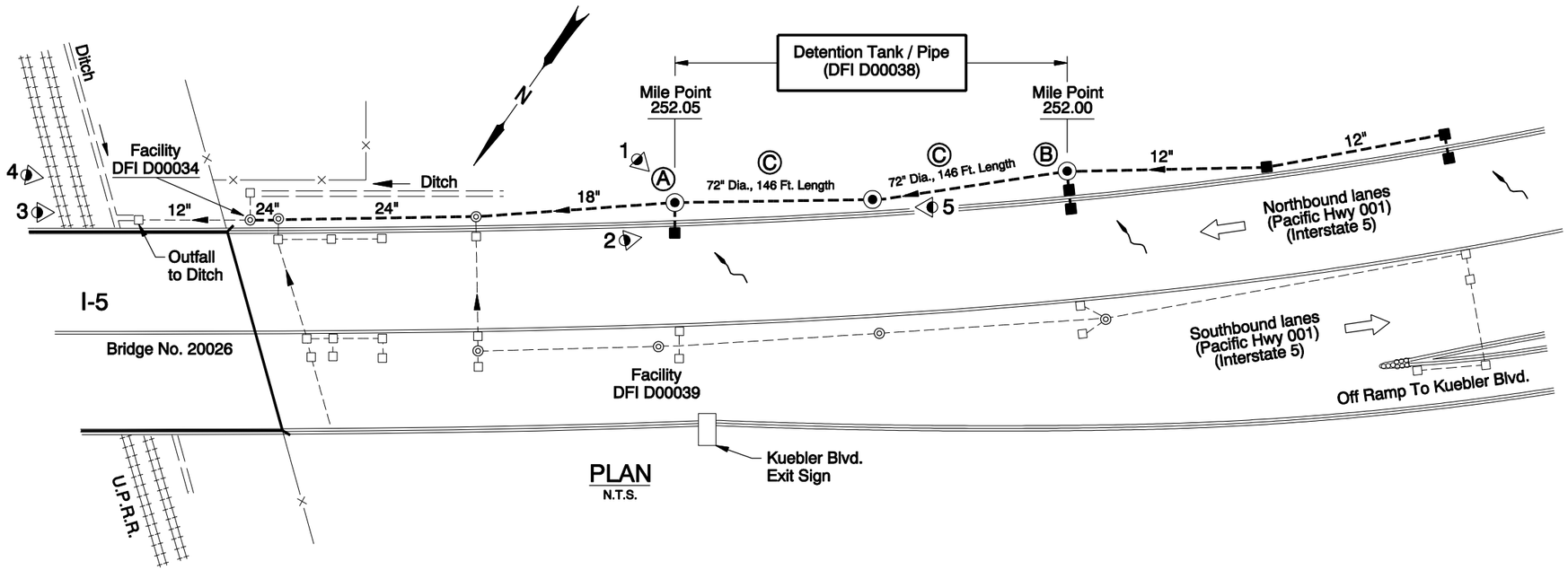
Contact any of the following for more detailed information about management of waste materials found on site:

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

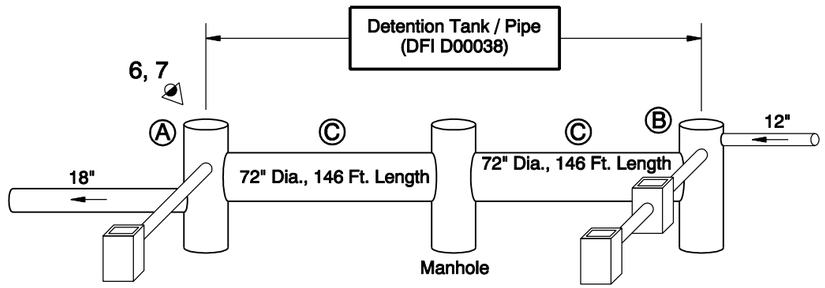
Appendix A

Content:

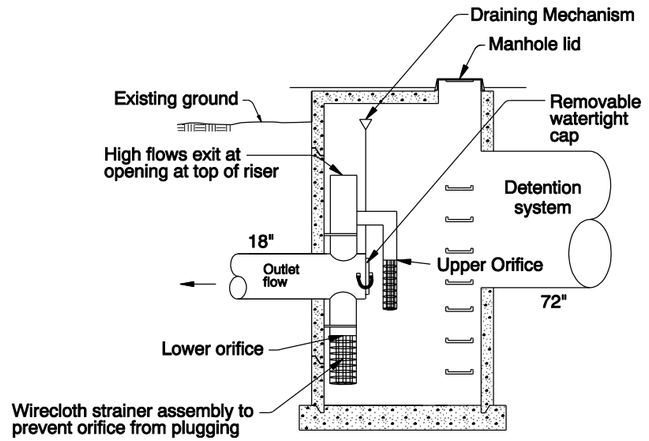
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



SCHEMATIC OF PIPE DRAINAGE SYSTEM
N.T.S.



Flow Control Structure for
Detention Tank / Pipe (DFI D00038)

LEGEND:

- Photo Location / Direction
- A — Flow Control Structure - 9' Dia.
- B — Southern Most Manhole
- C — Detention Pipe - 6' Dia.
- Manhole
- Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Inlet (Schematic View)

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Bob Knorr

Drafted By: Jim Holeman

DFI D00038
MAINTENANCE DISTRICT 3 HWY 1
DETENTION TANK / PIPE
PACIFIC HIGHWAY MP 252.00-252.05
MARION COUNTY

Appendix B

Content:

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

38V-117

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

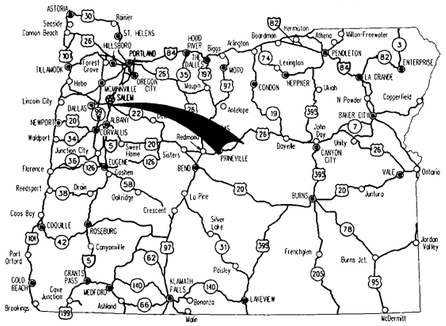
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

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

PACIFIC HIGHWAY

MARION COUNTY

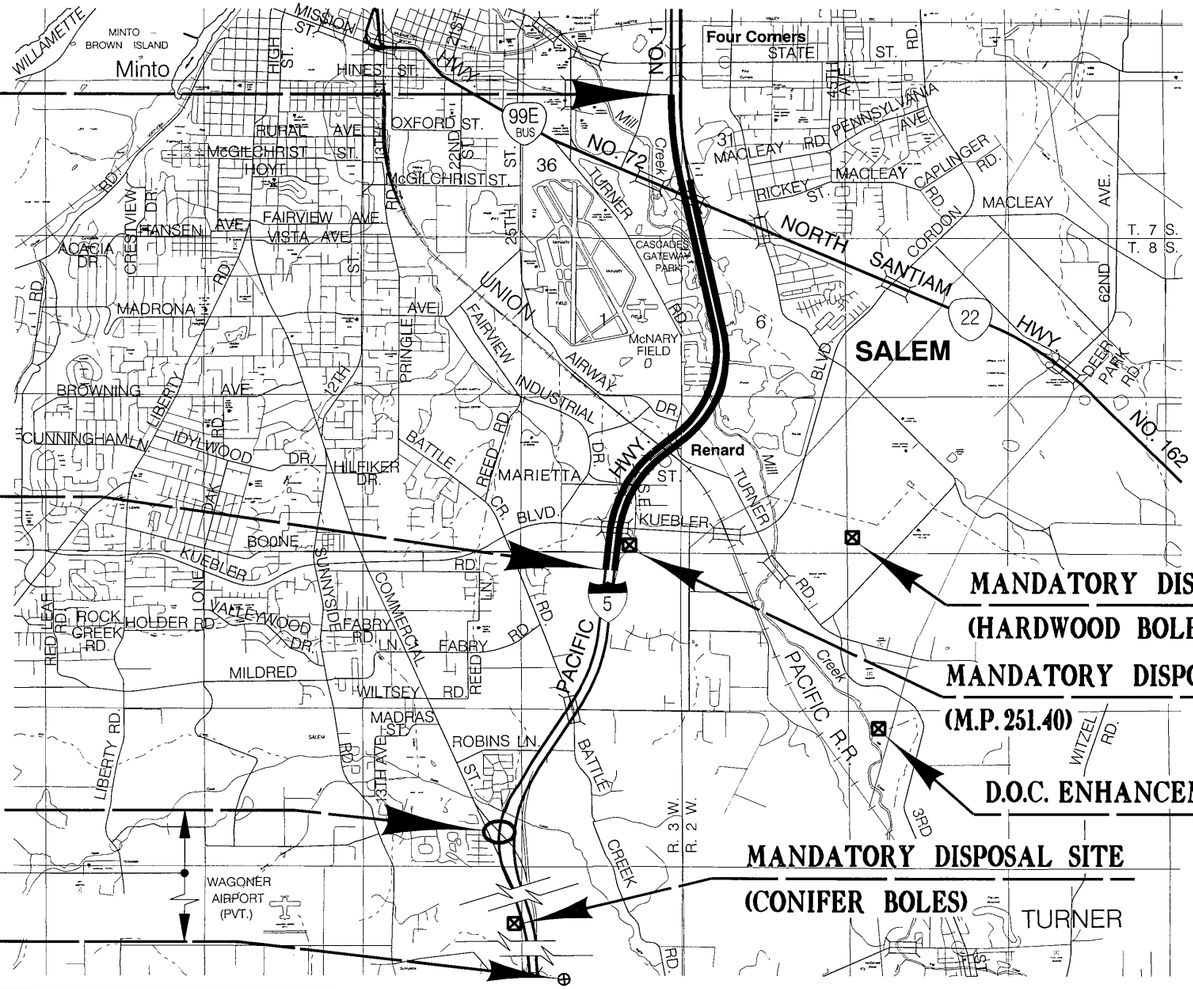
OCTOBER 2005



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)

NO WORK AREA

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)

MANDATORY DISPOSAL SITE
(HARDWOOD BOLES)

MANDATORY DISPOSAL SITE
(M.P. 251.40)

D.O.C. ENHANCEMENT SITE

MANDATORY DISPOSAL SITE
(CONIFER BOLES)

OREGON TRANSPORTATION INVESTMENT ACT

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

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
OREGON
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

METRIC

PE000950

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1:1000 - 1

SALEM

"NB" LINE

"L" 14+000

"NB" 14+000

"L" 14+100

"NB" 14+100

"L" 14+200

"NB" 14+200

"L" 14+300

"G-2" Basin

"RR" 0+500

"PM" 0+400

"RR" 0+400

"PE" 0+400

"T" 0+500

"SB" LINE

"L" LINE

"SB" 14+000

"SB" 14+100

"T" 0+400

"T" LINE

"PE" LINE

"PM" LINE

"RR" LINE

"RR" 0+300

R/W & Access Control Line

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

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

Sec. 12

Sec. 7

+0690

+1250

+1950

+1950

+2665

U.P.R.R.

TURNER RD.

Ditch

U Ditch

Flow Control M.H.

Water Quality Str.

2700 mm M.H.

200 mm C.M.P.

450 mm C.M.P.

300 mm Conc.

450 mm Conc.

1500 mm-38.0 m

300 mm-2.5 m

1800 mm-46.0 m

300 mm-3.5 m

300 mm-18.5 m

300 mm-20.0 m

300 mm-6.5 m

300 mm-26.0 m

300 mm-1.5 m

300 mm-12.0 m

375 mm-18.0 m

375 mm-23.5 m

1800 mm-32.0 m

300 mm-3.5 m

300 mm-24.5 m

300 mm-26.5 m

300 mm-23.0 m

300 mm-2.0 m

300 mm-4.0 m

300 mm-11.5 m

600 mm-45.5 m

300 mm-12.0 m

300 mm-6.0 m

300 mm-4.0 m

450 mm-56.0 m

300 mm-3.0 m

"G-2" Basin

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

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

DRAINAGE & UTILITIES

SHEET NO. 16C

STRUCTURAL DETAILS CHECKED

F:\ODOT_DATA\Projects\13284Kuebler\13284f.dr2 7/10/2005 4:50:49 PM hwye07x

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STRUCTURAL DETAILS CHECKED _____

(1) *Sta."L"14+051.1 To Sta."NB"14+065.4*
Const. Manhole 2700 mm Dia.
Const. Water Quality Structure
Const. Flow Control Manhole 2400 mm Dia.
Const. Siphon Box
Inst. 300 mm Sew. Pipe - 18.5 m
3.0 m Depth
Inst. 300 mm Sew. Pipe - 23.5 m
6.0 m Depth
Inst. 1800 mm Sew. Pipe - 46.0 m
6.0 m Depth
(For Details, See Sht. GJ-4)
(See Drg. No. RD376)

(2) *Const. Ditch*
"V" Bottom, 1:3 Slopes
Dt. Exc. - 48 m^3

(3) *Sta."L"14+110.1 To Sta."L"14+148.9*
Const. Type "G-2MA" Inlet
Shape Bottom
Inst. 300 mm Sew. Pipe - 39.0 m
1.5 m Depth
Inst. 375 mm Sew. Pipe - 23.5 m
6.0 m Depth
Inst. Slope Anchors
(See Drg. Nos. RD330 & RD364)

(4) *Sta."L"14+136.4 To Sta."L"14+183.9*
Const. Water Quality Structure
Const. Flow Control Manhole 2700 mm Dia.
Const. Large Manhole 2700 mm Dia.
Const. Manhole
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 2
0.45 m Deep
Const. Type "G-2" Open Grade HMAC Inlet
Shape Bottom
Adjust Inlet For Wearing Course - 2
Inst. 300 mm Sew. Pipe - 20.0 m
1.5 m Depth
Inst. 300 mm Sew. Pipe - 24.5 m
3.0 m Depth
Inst. 375 mm Sew. Pipe - 18.0 m
6.0 m Depth
Inst. 1800 mm Sew. Pipe - 32.0 m
6.0 m Depth
(For Details, See Sht. GJ-4)

(5) *Sta."L"14+148.9 To Sta."L"14+205.0*
Inst. 450 mm Sew. Pipe - 56.0 m
1.5 m Depth

(6) *Sta."L"14+241.4 To Sta."L"14+266.3*
Const. Type "D MOD" Inlet
Inst. 300 mm Sew. Pipe - 26.5 m
1.5 m Depth
Inst. Slope Anchors
(For Details, See Sht. GJ-9)
(See Drg. No. RD370)

(7) *Sta."L"14+266.3 To Sta."L"14+271.5*
Const. Water Quality Structure
Inst. 600 mm Sew. Pipe - 5.5 m
1.5 m Depth

(8) *Sta."L"14+271.5 To Sta."L"14+317.4*
Const. Manhole
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 5
0.45 m Deep
Const. Type "G-2" Open Grade HMAC Inlet - 4
Shape Bottom
Adjust Inlet For Wearing Course - 6
Inst. 300 mm Sew. Pipe - 78.0 m
1.5 m Depth
Inst. 600 mm Sew. Pipe - 45.5 m
1.5 m Depth

(9) *Sta."SB"14+016.3 To Sta."L"14+051.1*
Const. Manhole
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 2
0.45 m Deep
Adjust Inlet For Wearing Course - 2
Inst. 300 mm Sew. Pipe - 6.5 m
1.5 m Depth
Inst. 300 mm Sew. Pipe - 26.0 m
3.0 m Depth

(10) *Sta."L"14+123.4 To Sta."L"14+190.1*
Const. Large Manhole 2100 mm Dia.
Const. Flow Control Manhole 2100 mm Dia.
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 2
0.45 m Deep
Adjust Inlet For Wearing Course - 2
Inst. 300 mm Sew. Pipe - 2.5 m
1.5 m Depth
Inst. 300 mm Sew. Pipe - 26.5 m
3.0 m Depth
Inst. 1500 mm Sew. Pipe - 38.0 m
6.0 m Depth
(For Details, See Sht. GJ-4)

(11) *Remove Extg. 2.1 m x 1.2 m R.C.B.C.*
Const. Channel Change
(11A) *Const. Outlet*
(For Details, See Shts. GE-1, GE-2, GE-3 & GF-1)

(12) *Const. Channel Change*
(For Details, See Sht. GF-2)

(13) *Remove Pipe*

(14) *Sta."L"14+135.6*
Const. Open Grade Wearing Surface Drain
Outlet To Inlet

(15) *Sta."L"14+135.6*
Const. Open Grade Wearing Surface Drain
Outlet To Inlet

(16) *Sta."L"14+272.0*
Const. Open Grade Wearing Surface Drain
Outlet To Inlet

(17) *Sta."L"14+278.5*
Const. Open Grade Wearing Surface Drain
Outlet To Inlet

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

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

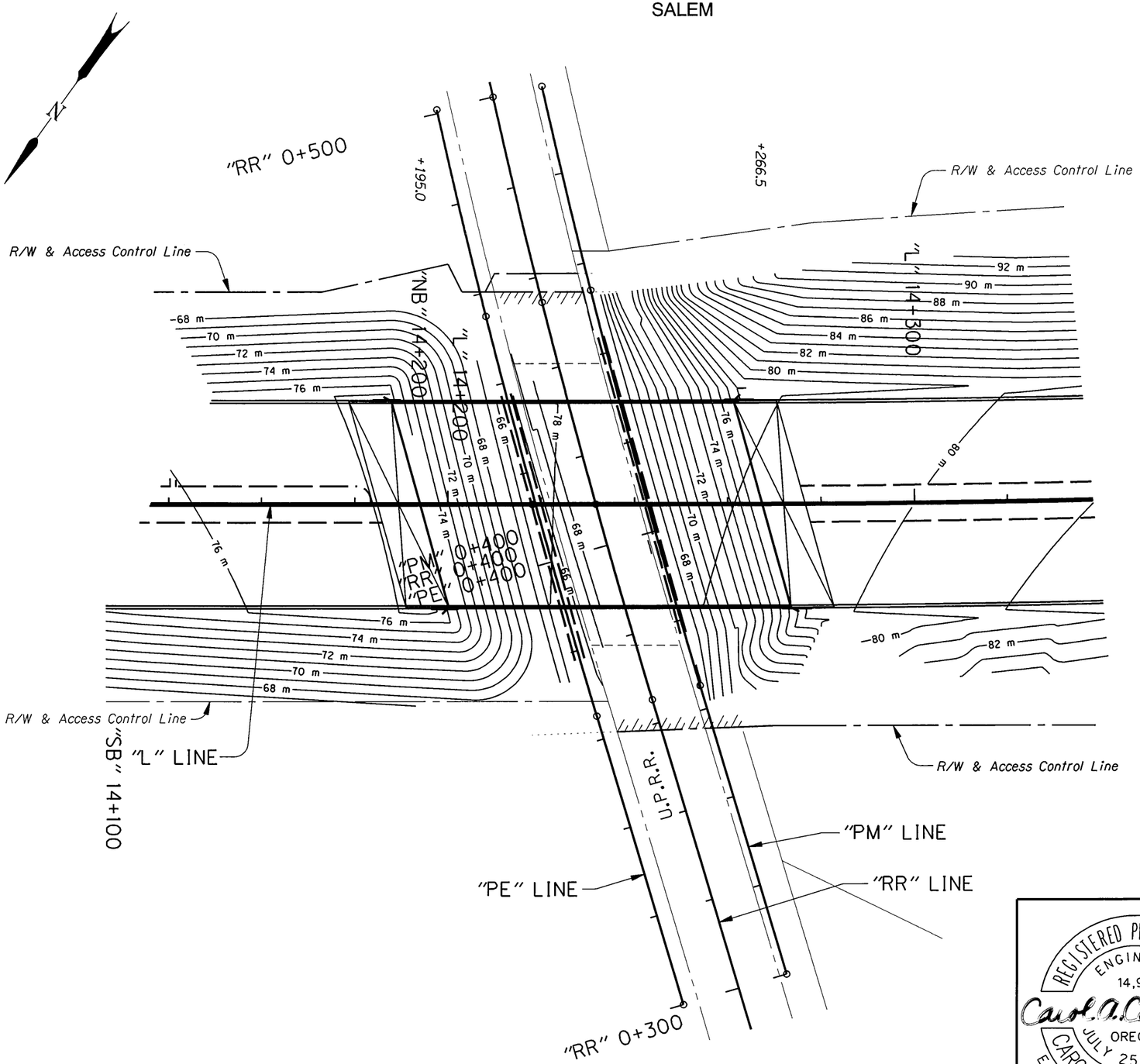
I-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC.
PACIFIC HIGHWAY
MARION COUNTY

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

NOTES

SHEET NO. 16D

Sec. 12, T. 8 S., R. 3 W., W.M.
SALEM



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

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

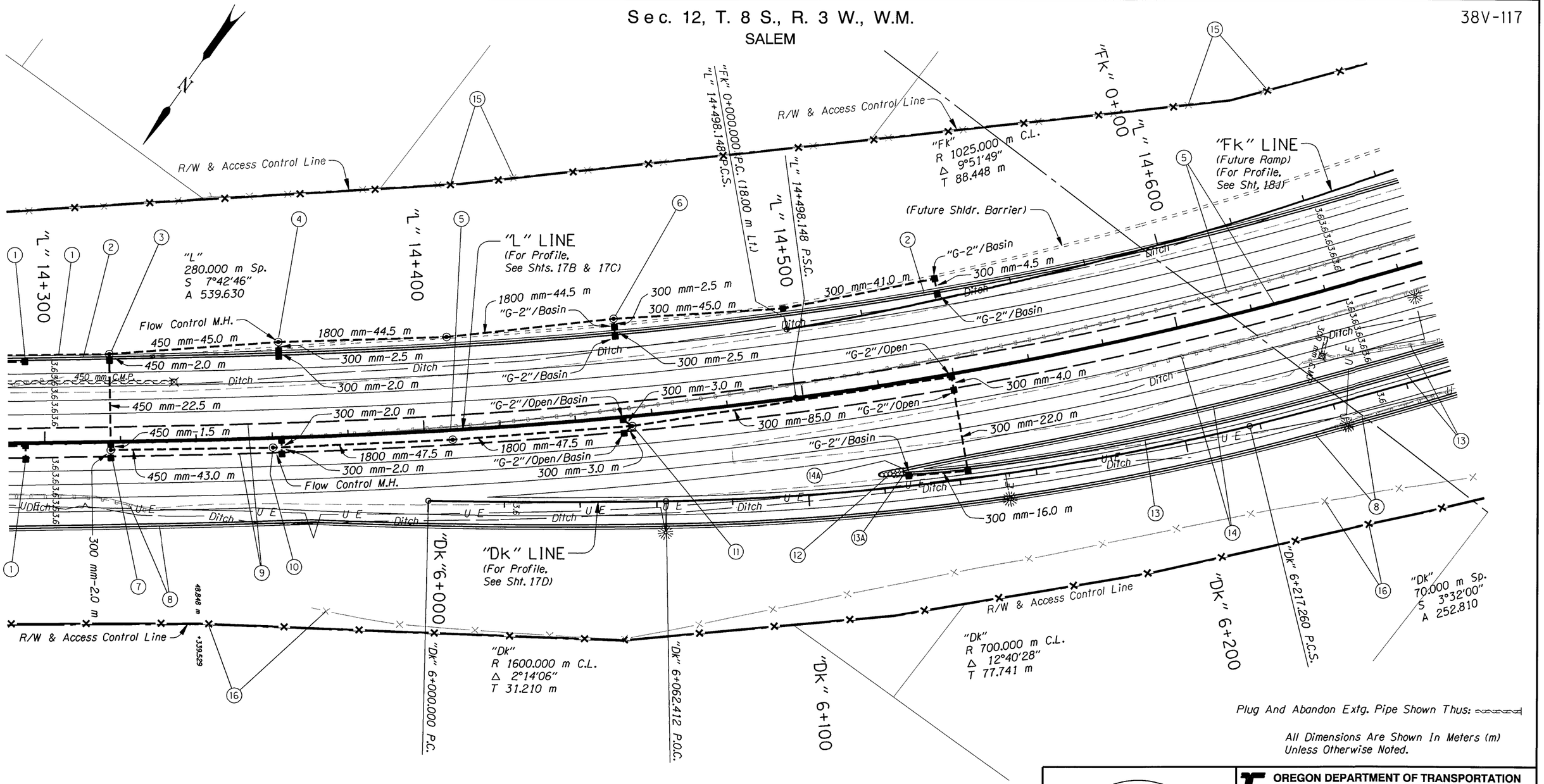
Design Team Leader - Carol Cartwright
Designed By - John Lucas
Drafted By - Jeff Larson

CONTOUR GRADING PLAN

SHEET NO. 16E

Sec. 12, T. 8 S., R. 3 W., W.M.
SALEM

38V-117



Plug And Abandon Extg. Pipe Shown Thus:

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ROADWAY ENGINEERING SECTION

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PACIFIC HIGHWAY
MARION COUNTY

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

GENERAL CONSTRUCTION

SHEET NO. 17

(1) *See Sht. 16D, Note 8*
Inst. 600 mm Sew. Pipe

(2) *See Sht. 16B, Note 5*
Const. Precast Conc. Shldr. Barrier

(3) *Sta."L"14+317.4 To Sta."L"14+362.4*
Const. Manhole
Const. Type "G-2" Open Grade HMAC Inlet - 2
Shape Bottom
Adjust Inlet For Wearing Course
Inst. 450 mm Sew. Pipe - 2.0 m
1.5 m Depth
Inst. 450 mm Sew. Pipe - 69.0 m
3.0 m Depth

(4) *Sta."L"14+362.4 To Sta."L"14+452.4*
Const. Flow Control Manhole 2700 mm Dia.
Const. Manhole 2700 mm Dia.
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 2
0.45 m Deep
Adjust Inlet For Wearing Course
Inst. 300 mm Sew. Pipe - 4.5 m
1.5 m Depth
Inst. 1800 mm Sew. Pipe - 89.0 m
6.0 m Depth
(For Details, See Sht. GJ-4)

(5) *See Sht. 14B, Note 16*
Remove Extg. Metal Median Barrier
Const. Precast Tall Conc. Median Barrier

(6) *Sta."L"14+452.4 To Sta."L"14+539.4*
Const. Manhole 2700 mm Dia.
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 4
0.45 m Deep
Const. Type "G-2" Open Grade HMAC Inlet
Shape Bottom
Adjust Inlet For Wearing Course - 2
Inst. 300 mm Sew. Pipe - 95.5 m
1.5 m Depth
(For Details, See Sht. GJ-4)

(7) *Sta."L"14+317.4 To Sta."L"14+360.1*
Const. Manhole
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
0.45 m Deep
Adjust Inlet For Wearing Course
Inst. 300 mm Sew. Pipe - 2.0 m
1.5 m Depth
Inst. 450 mm Sew. Pipe - 43.0 m
3.0 m Depth

(8) *See Sht. 16B, Note 16*
Remove Extg. Guardrail
Const. Precast Conc. Shldr. Barrier

(9) *Const. Low Profile Mountable Curb*

(10) *Sta."L"14+360.1 To Sta."L"14+454.6*
Const. Flow Control Manhole 2700 mm Dia.
Const. Manhole 2700 mm Dia.
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 2
0.45 m Deep
Adjust Inlet For Wearing Course
Inst. 300 mm Sew. Pipe - 4.0 m
1.5 m Depth
Inst. 1800 mm Sew. Pipe - 95.0 m
6.0 m Depth
(For Details, See Sht. GJ-4)

(11) *Sta."L"14+454.6 To Sta."L"14+539.4*
Const. Manhole 2700 mm Dia.
Const. Type "G-2" Inlet With Basin
0.45 m Deep
Const. Type "G-2" Inlet
Shape Bottom
Const. Type "G-2" Open Grade HMAC Inlet - 2
Shape Bottom
Const. Type "G-2" Open Grade HMAC Inlet
With Basin - 2
Adjust Inlet For Wearing Course - 2
Inst. 300 mm Sew. Pipe - 133.0 m
1.5 m Depth
(For Details, See Sht. GJ-4)

(12) *Sta."L"14+523.0*
Inst. Impact Attenuator
(For Details, See Sht. 2B-5)

(13) *Sta."Dk"6+125.4 To Sta."Dk"6+350.0*
Remove Extg. Guardrail - 110.5 m
Const. Precast Conc. Shldr. Barrier - 222.4 m
(Reflectorized)
Plug Scuppers
(13A) *Connect To Impact Attenuator*
Flare Rate=1:20, W=0.7 m, E=0
(For Details, See Sht. 2B-5)

(14) *Sta."L"14+523.0 To Sta."L"14+743.3*
Remove Extg. Guardrail - 156.2 m
Const. Precast Conc. Shldr. Barrier - 218.6 m
(Reflectorized)
Plug Scuppers
(14A) *Connect To Impact Attenuator*
Flare Rate=1:20, W=0.7 m, E=0
(For Details, See Sht. 2B-5)

(15) *See Sheet 16B, Note 21*
Remove Extg. Fence
Const. Type CL-6 Fence

(16) *See Sheet 16B, Note 22*
Remove Extg. Fence
Const. Type CL-6 Fence

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

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

NOTES

SHEET NO. 17A

38V-117

"L" LINE
LEFT
(Northbound)

87.653 o

680 mm

Profile Grade @ ℄

540 m V.C.

Ground Line @ ℄

Subgrade

+596.518

680 mm

+2.582%

Subgrade

600 mm-45.5 m Sl. 0.176%

450 mm-22.5 m Sl. 0.260%

450 mm-45.0 m Sl. 0.260%

1800 mm-44.5 m Detention Pipe Sl. 0.151%

1800 mm-44.5 m Detention Pipe Sl. 0.149%

300 mm-45.0 m Sl. 1.767%

300 mm-41.0 m Sl. 1.178%

+497.9 Lt. Inlet F.L. 81.367

+539.4 Lt. Inlet F.L. 82.065

300 mm-4.5 m Sl. 5.274%

+539.4 Lt. Inlet F.L. 81.845

+317.4 Lt. Inlet F.L. 78.173

450 mm-2.0 m Sl. 0.305%

+317.4 Lt. Manhole F.L. 78.168 F.L. 77.258 F.L. 77.108

+362.4 Lt. Inlet F.L. 79.552

300 mm-2.0 m Sl. 3.077%

+362.4 Lt. Inlet F.L. 79.503

300 mm-2.5 m Sl. 3.108%

+362.4 Lt. Manhole F.L. 79.433 F.L. 77.374

+407.4 Lt. Manhole F.L. 77.441

+452.4 Lt. Inlet F.L. 80.985

300 mm-2.5 m Sl. 5.415%

+452.4 Lt. Inlet F.L. 80.855

300 mm-2.5 m Sl. 5.422%

+452.4 Lt. Manhole F.L. 80.733 F.L. 77.580 F.L. 77.507

+294.9 Lt. Inlet F.L. 78.118

300 mm-11.5 m Sl. 2.171%

STAGE II
Exc. 44 970
Emb. In Pl. 575

STAGE IV
Exc. 10
Emb. In Pl. 35

14+300 14+400 14+500 14+600

88 87 86 85 84 83 82 81 80 79 78 77 76

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

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 P.E.
Designed By - John Lucas
Drafted By - Steve Donaldson

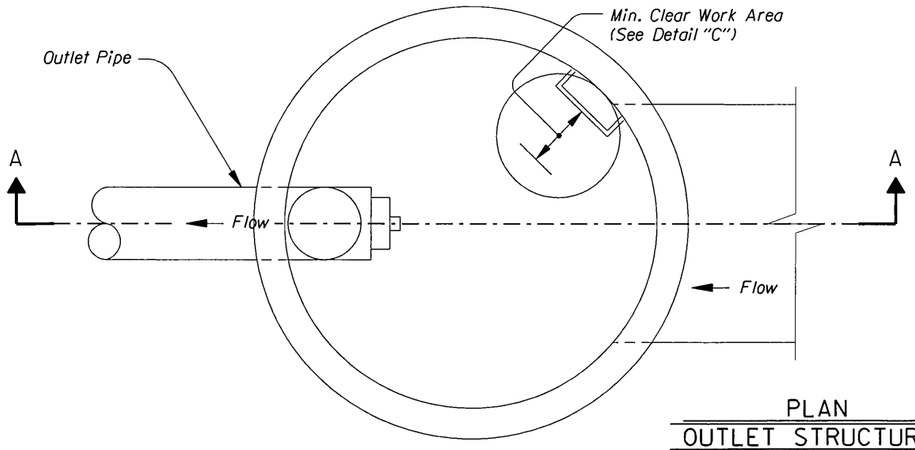
PROFILE

SHEET NO. 17C

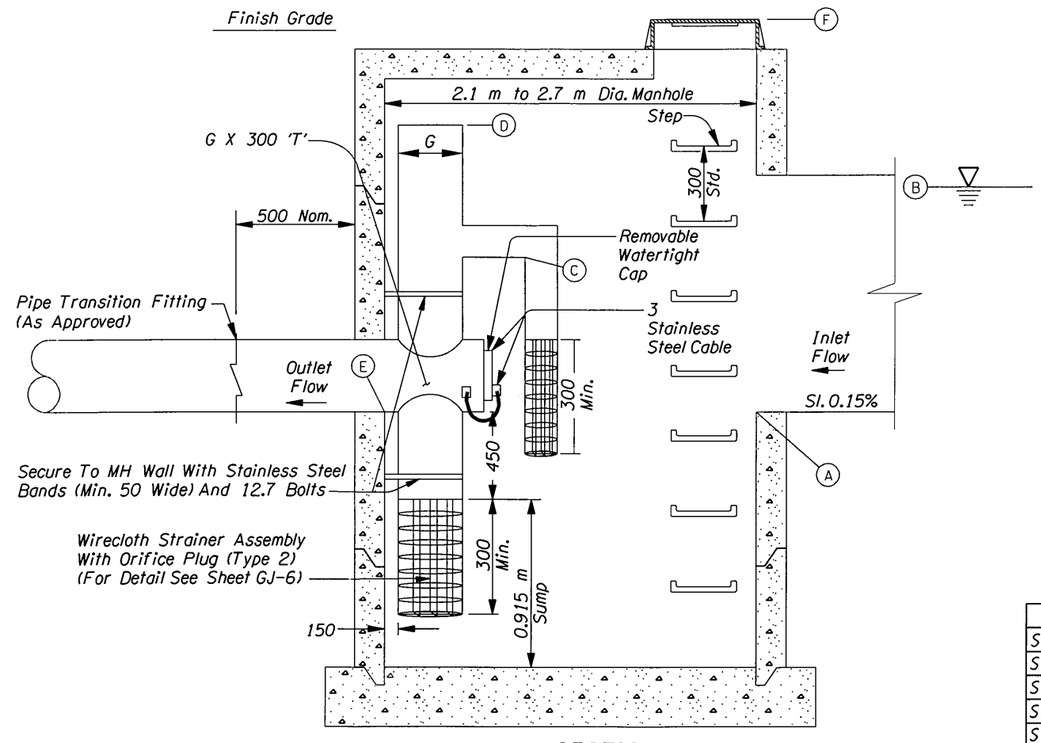
F:\ODOT_DATA\Projects\13284Kuebler\13284fs.pf2 7/10/2005 5:10:36 PM hwye07x

1:1000 - 9

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.

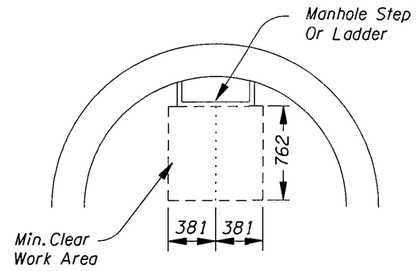


PLAN
OUTLET STRUCTURES
(For Location, See Sht. 16C and 17)
Not To Scale



SECTION A-A
FLOW CONTROL MANHOLE
Not To Scale

Location	G(mm)
Sta. "L" 14+149.633 21.510 Rt.	250
Sta. "L" 14+149.601 0.720 Lt.	250
Sta. "L" 14+061.972 16.494 Lt.	250
Sta. "L" 14+362.421 25.372 Lt.	300
Sta. "L" 14+360.118 2.547 Rt.	450



Locate Pipes, Etc. So That No Portion Of Them Are Within Min. Clear Work Area

DETAIL "C"
MIN. CLEAR WORK AREA
Not To Scale

Sta "L" 14+149.633 21.510 Rt.		
	ELEVATION (m)	DESCRIPTION
A	73.251	Detention Pipe Inlet
B	74.733	Elev. Of Detention Water Surface 50 Year Storm
C	74.247	Fl. Elev. Of Elbow
D	75.033	Rim Of Overflow Riser
E	73.247	Fl. Elev. Of Outlet Pipe
F	75.796	Top Of Manhole

Sta "L" 14+149.601 0.720 Lt.		
	ELEVATION (m)	DESCRIPTION
A	72.466	Detention Pipe Inlet
B	74.131	Elev. Of Detention Water Surface 50 Year Storm
C	73.058	Fl. Elev. Of Elbow
D	74.431	Rim Of Overflow Riser
E	72.458	Fl. Elev. Of Outlet Pipe
F	76.124	Top Of Manhole

Sta "L" 14+061.972 16.794 Lt.		
	ELEVATION (m)	DESCRIPTION
A	69.814	Detention Pipe Inlet
B	71.408	Elev. Of Detention Water Surface 50 Year Storm
C	70.353	Fl. Elev. Of Elbow
D	71.708	Rim Of Overflow Riser
E	69.803	Fl. Elev. Of Outlet Pipe
F	74.439	Top Of Manhole

Sta "L" 14+362.421 25.372 Lt.		
	ELEVATION (m)	DESCRIPTION
A	77.376	Detention Pipe Inlet
B	78.839	Elev. Of Detention Water Surface 50 Year Storm
C	78.071	Fl. Elev. Of Elbow
D	79.139	Rim Of Overflow Riser
E	77.371	Fl. Elev. Of Outlet Pipe
F	80.618	Top Of Manhole

Sta "L" 14+360.118 2.547 Rt.		
	ELEVATION (m)	DESCRIPTION
A	78.348	Detention Pipe Inlet
B	79.723	Elev. Of Detention Water Surface 50 Year Storm
C	79.043	Fl. Elev. Of Elbow
D	80.023	Rim Of Overflow Riser
E	78.343	Fl. Elev. Of Outlet Pipe
F	81.590	Top Of Manhole

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

REGISTERED PROFESSIONAL ENGINEER
17807
OREGON
JULY 25, 1995
CHRIS CARMAN
EXPIRES: December 31, 2005

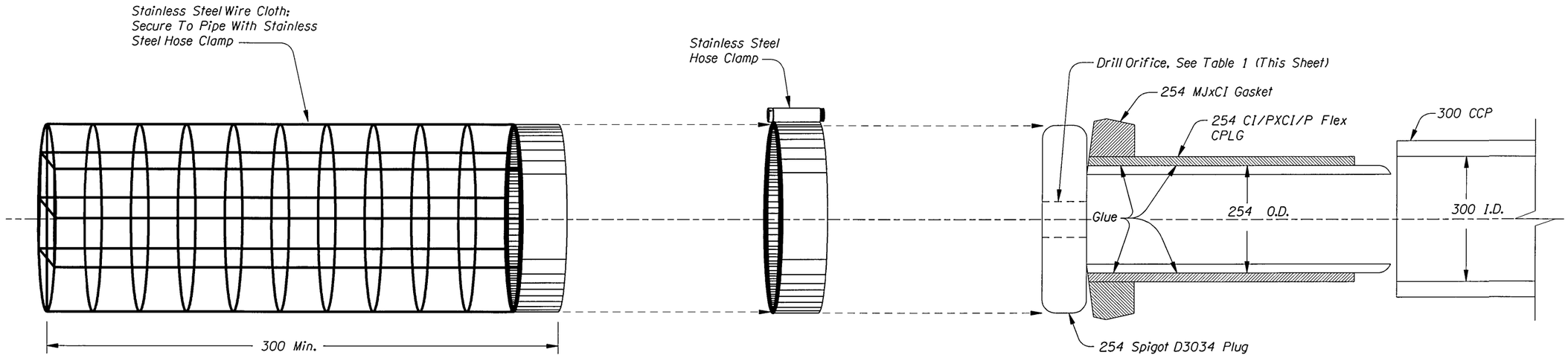
OREGON DEPARTMENT OF TRANSPORTATION
REGION 2 TECH CENTER

I-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-4

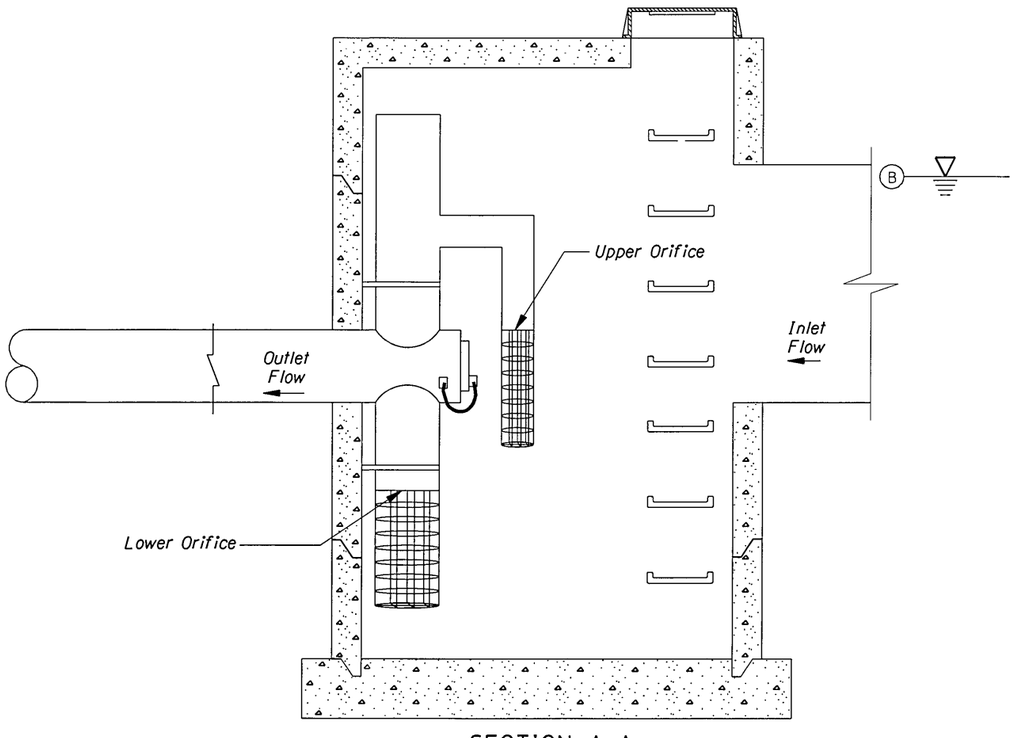


FLOW CONTROL MANHOLE
WIRE CLOTH STRAINER ASSEMBLY

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

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OREGON
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CHRIS CARMAN

EXPIRES: December 31, 2005

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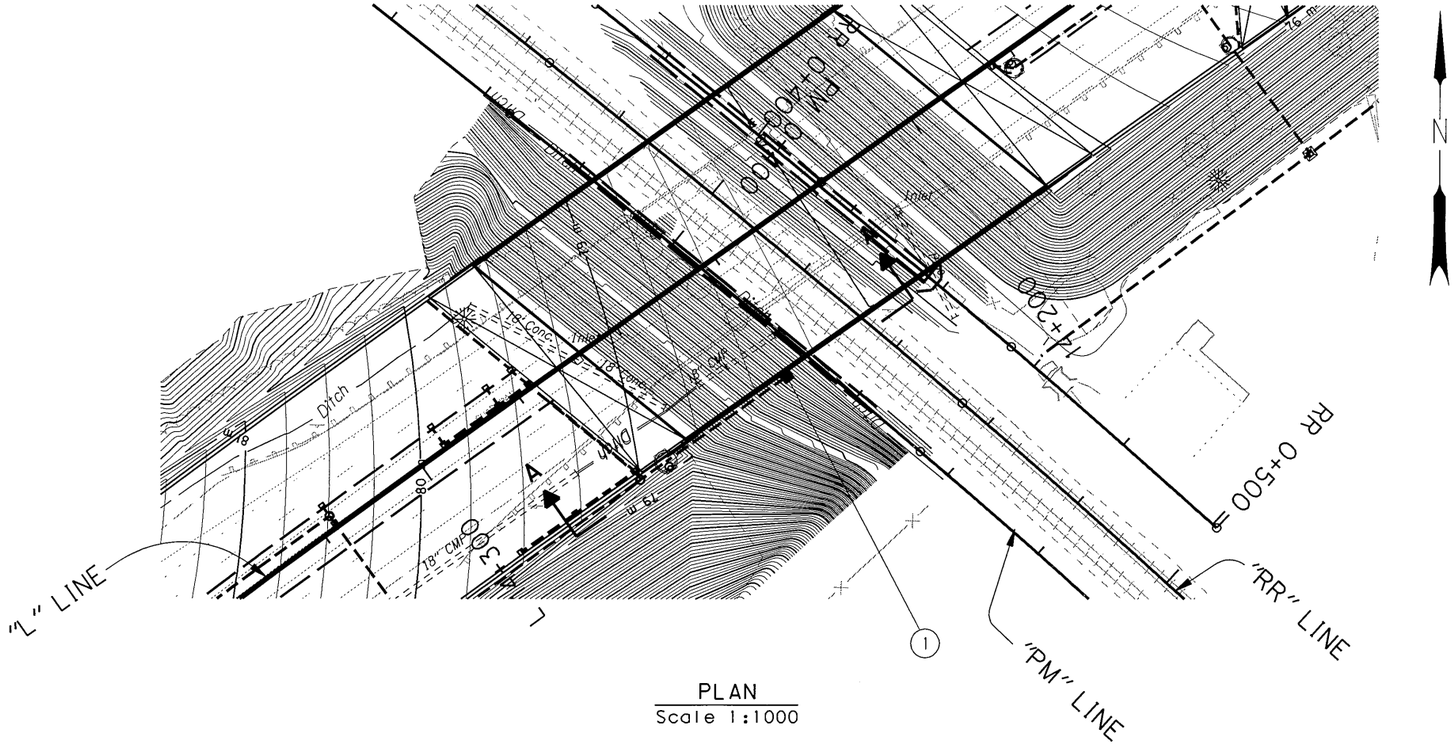
I-5: NORTH SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC.
PACIFIC HIGHWAY
MARION COUNTY

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

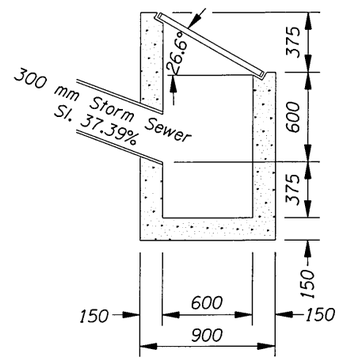
DETAILS

SHEET NO. GJ-6

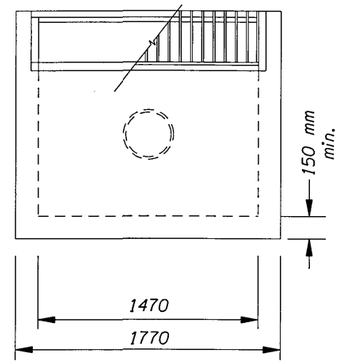


PLAN
Scale 1:1000

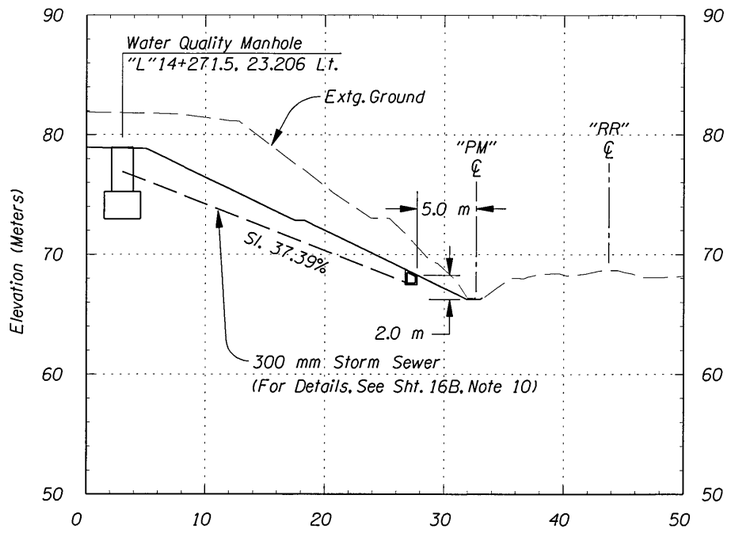
① Sta."L"14+241.4 To Sta."L"14+266.3
Const.Type Modified "D" Inlet
Inst.300 mm Sew.Pipe - 26.5 m
Inst.Metal Pipe Slope Anchors
(See Sht.16D,Note 6)
(See Details Below And
Drg.Nos.RD330,RD370)



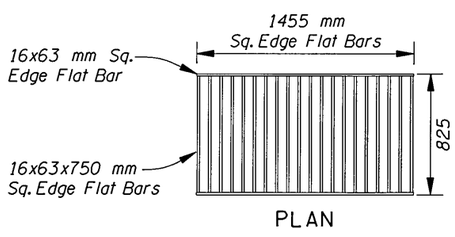
SECTION A-A



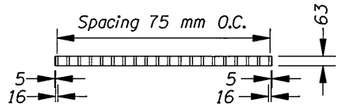
SECTION B-B



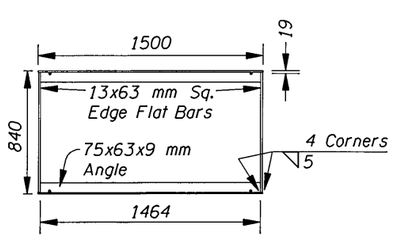
SECTION A-A



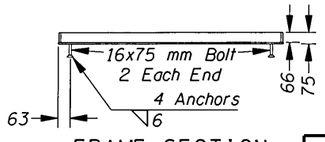
PLAN



GRATE SECTION
TYPE 1



FRAME PLAN



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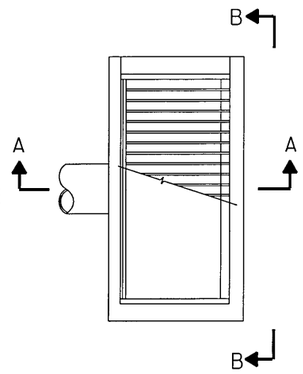

PLAN

Notes:
1. Concrete Strength Shall Be Commercial Grade Concrete.
2. G-2 Grates May Be Used If Approved By The Engineer.
3. Catch Basin,Frame,And Grates Shall Meet MS18 Loading.

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

Note:
9 mm Cross Bars Shall Be Flush With The Grate Surface And May Be Fillet Welded,Resistance Welded Or Electroforged To Bearing Bars.

REGISTERED PROFESSIONAL ENGINEER
17807
OREGON
JULY 25, 1995
CHRIS CARMAN
Expires Dec. 31, 2005

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

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

Reviewed By - Luis Rivas
Designed By - Chris Carman
Drafted By - Steve Donaldson

STORMWATER

SHEET NO.
GJ-9

U.P.R.R ENERGY DISSIPATOR