

OPERATION & MAINTENANCE MANUAL

DFI No.: D00044

**Facility Type: Water Quality
Biofiltration Swale**



MARCH, 2011

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1. Identification

Drainage Facility ID (DFI): D00044

Facility Type: Water Quality Biofiltration Swale

Construction Drawings: (V-File Number) 38V-117

Location: District: 3

Highway Number: 001

Mile Post: (253.05 / 253.38) (beg./end)

Description: This facility is located along the right shoulder of NB I-5 (Hwy 001). Access can be obtained from I-5 (Hwy 001) through a swing gate built into the concrete barrier on the right shoulder of the northbound lanes near the southern end of the swale.

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 Tech. Center, Chris Carman, P.E., (503) 986-2691

Construction Year: 2005

Contractor: Hamilton Construction Company

4. Storm Drain System and Facility Overview

A water quality swale is a flat-bottomed open channel designed to treat stormwater runoff from highway pavement areas. This type of facility is lined with grass. Treatment by trapping sedimentation occurs when stormwater runoff flows through the grass.

This facility, D00044, is a water quality biofiltration swale located along the right shoulder east of the northbound lanes of I-5 (Hwy 001) between mile posts 253.05 and 253.38. The facility is south of another water quality biofiltration swale, D00043, which is between mile posts 253.40 and 253.52. A ditch extends from the northern end of the D00044 swale to the southern end of the D00043 swale and connects these two facilities (**Point A in Operational Plan in Appendix A; Photo 1**). Just west of the ditch, there is a fence and an access road with a “turn-a-round” area (**Point B; 2B-8, 10 and 10A of 38V-117 in Appendix B; Photo 1**). The access road extends from the northern end of the D00044 swale to the southern end of the D00043 swale. Near the southern end of the D00044 swale, there is a 26-foot long metal swing gate built into the concrete barrier on the right shoulder of the northbound lanes of I-5 (Hwy 001) (**Operational Plan in Appendix A; 2B-8, 11 and 11A of 38V-117 in Appendix B; Photos 2 & 3**).

Stormwater runoff from I-5 (Hwy 001) pavement is directed into this water quality swale. The southbound and northbound lanes adjacent to the swale and over 984 feet south of it directly contribute stormwater runoff from impervious areas to the swale through four separate conveyance pipes (**Operational Plan in Appendix A; 10, 10A, 11, 11A and 12 of 38V-117 in Appendix B; Photo 4**). The conveyance pipes’ outlets into the swale are at four different locations (**Points C, D, E, F on Operational Plan in Appendix A; Photos 5, 6, 7, 8**). The ditch at this swale’s northern end conveys stormwater from this swale to facility D00043 (**Point A; Photo 1**).

Subsequently, stormwater drains into the Mill Creek Overflow from facility D00043. (**9 and 9A of 38V-117 in Appendix B; Photo 9**).

A. Maintenance equipment access:

A 26-foot long metal swing gate in the concrete shoulder barrier can be moved to allow maintenance crews entrance into the facility. This entrance is located near the southern end of the swale. The metal gate swings inwards to the swale creating a 13.5-foot wide opening to an access road approximately 11.5 feet wide (**Operational Plan in Appendix A; 2B-8, 11 and 11A of 38V-117 in Appendix B; Photos 2 & 3**).

An access road with a “turn-a-round” extends from the northern end of the D00044 swale to the southern end of the D00043 swale and allows for vehicular access between the two facilities (**Point B; Photo 1**). Access to the ditch behind the chain-link fence just east of this access road is through chain-link gates in the fence. These gates are at the northern end of the D00044 swale and at the southern end of the D00043 swale (**Operational Plan in Appendix A; 9, 9A, 10 and 10A of 38V-117 in Appendix B; Photo 1**).

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 ditch connecting Facility D00044 to Facility D00043 is behind a fence north of Facility D00044 (Point A on Operational Plan in Appendix A). A “Turn-A-Round” area is just west of the ditch and fence (Point B). This picture was taken facing northeast. D00044 is to the south of the pictured area and D00043 is to the north of the pictured area.



Northbound lanes
of I-5 (Hwy 001)

Photo 2: Swing gate at the southern end of the swale of this facility, D00044.



Northbound lanes
of I-5 (Hwy 001)

Swing Gate

Photo 3: Swing gate at the southern end of the swale of this facility, D00044.

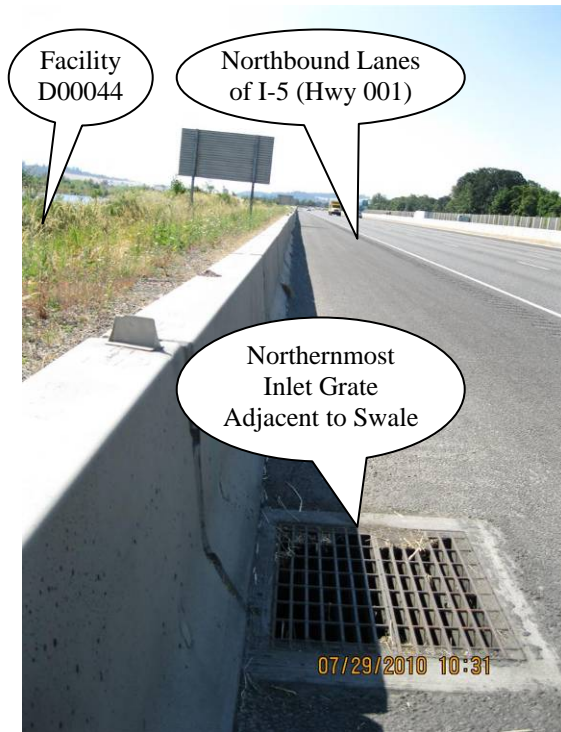


Photo 4: Facility D00044 receives stormwater from the adjacent southbound and northbound lanes of I-5 (Hwy 001) as well as a section of I-5 (Hwy 001), which extends over 984 feet south of the swale.



Photo 5: Southernmost pipe outlet into swale (Point C on Operational Plan in Appendix A).



Photo 6: Southern central pipe outlet into swale (Point D on Operational Plans).



Photo 7: Northern central pipe outlet into swale (Point E on Operational Plan in Appendix A).



Photo 8: Northernmost pipe outlet into swale (Point F on Operational Plans..

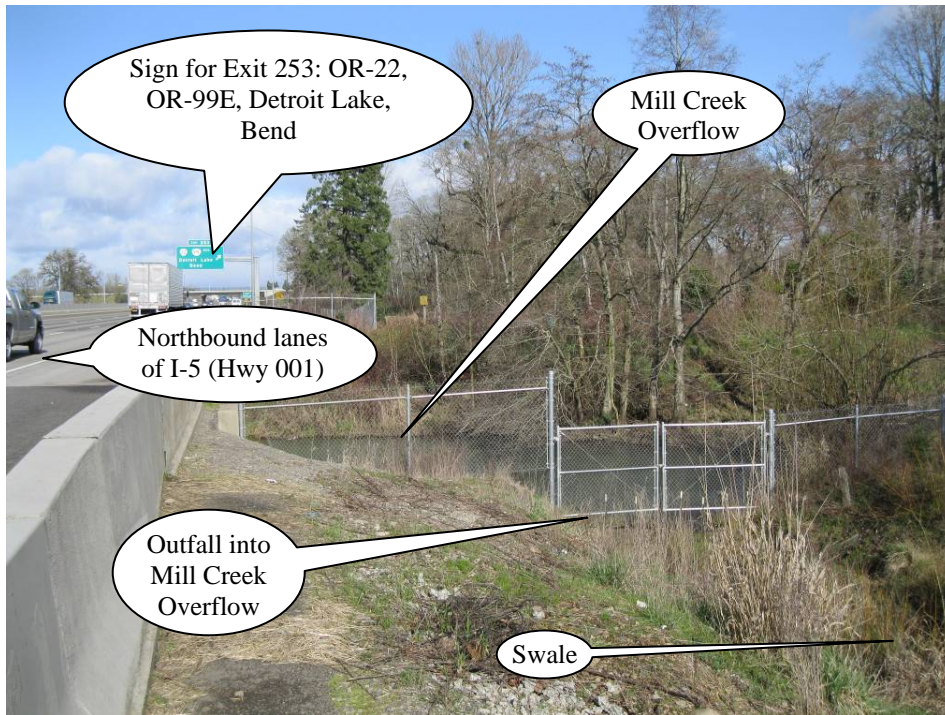


Photo 9: Outfall into Mill Creek Overflow at the northern end of adjoining facility D00043.

5. Facility Haz Mat Spill Feature(s)

A connecting ditch joins this facility to facility D00043 (**Point A; Photo 1**). Since this facility, D00044, does not have a conventional outlet such as a pipe or a grate, the only way to contain hazardous material in the channel is by adding a barrier such as sandbags.

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:

The auxiliary outlet for this facility is the connecting ditch (**Point A; Photo 1**). This feature allows high flows to continue to facility D00043 and eventually exit into the Mill Creek Overflow.

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>

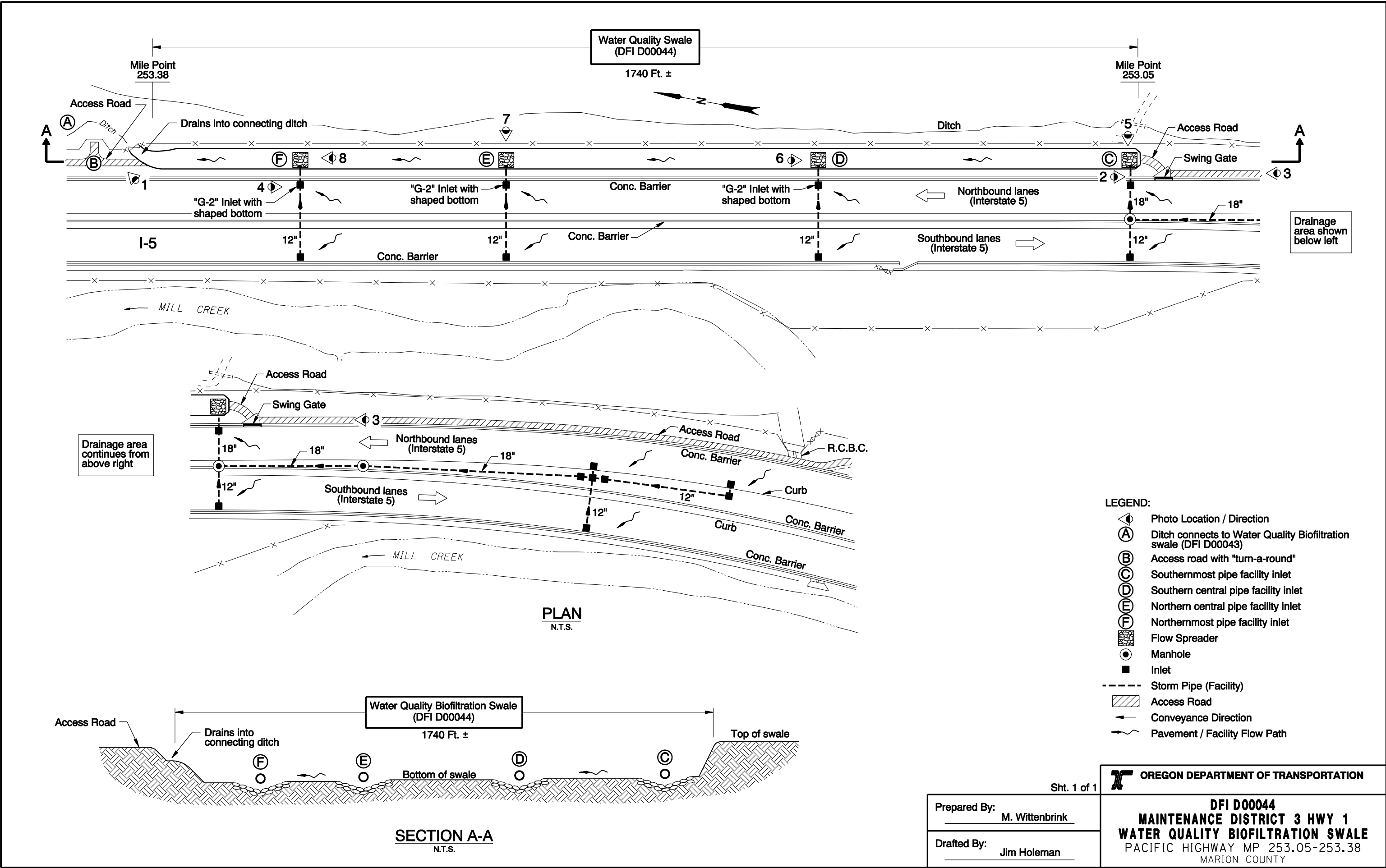
Contact any of the following for more detailed information about management of waste materials found on site:

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)**



- LEGEND:**
- ◉ Photo Location / Direction
 - Ⓐ Ditch connects to Water Quality Biofiltration swale (DFI D00043)
 - Ⓑ Access road with "turn-a-round"
 - Ⓒ Southernmost pipe facility inlet
 - Ⓓ Southern central pipe facility inlet
 - Ⓔ Northern central pipe facility inlet
 - Ⓕ Northernmost pipe facility inlet
 - ▣ Flow Spreader
 - Manhole
 - Inlet
 - - - Storm Pipe (Facility)
 - ▨ Access Road
 - Conveyance Direction
 - ~ Pavement / Facility Flow Path

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00044
MAINTENANCE DISTRICT 3 HWY 1
WATER QUALITY BIOFILTRATION SWALE
 PACIFIC HIGHWAY MP 253.05-253.38
 MARION COUNTY

Prepared By: M. Wittenbrink	
Drafted By: Jim Holeman	

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

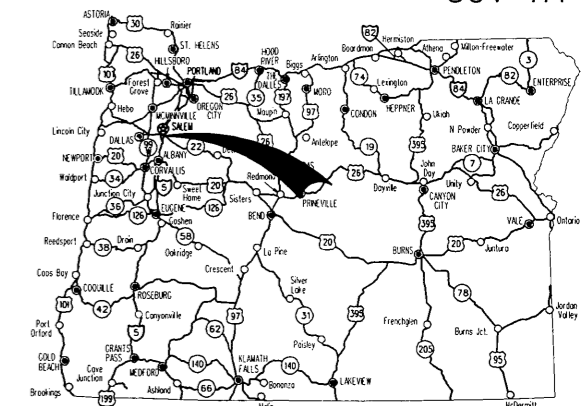
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING,
ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

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

PACIFIC HIGHWAY

MARION COUNTY

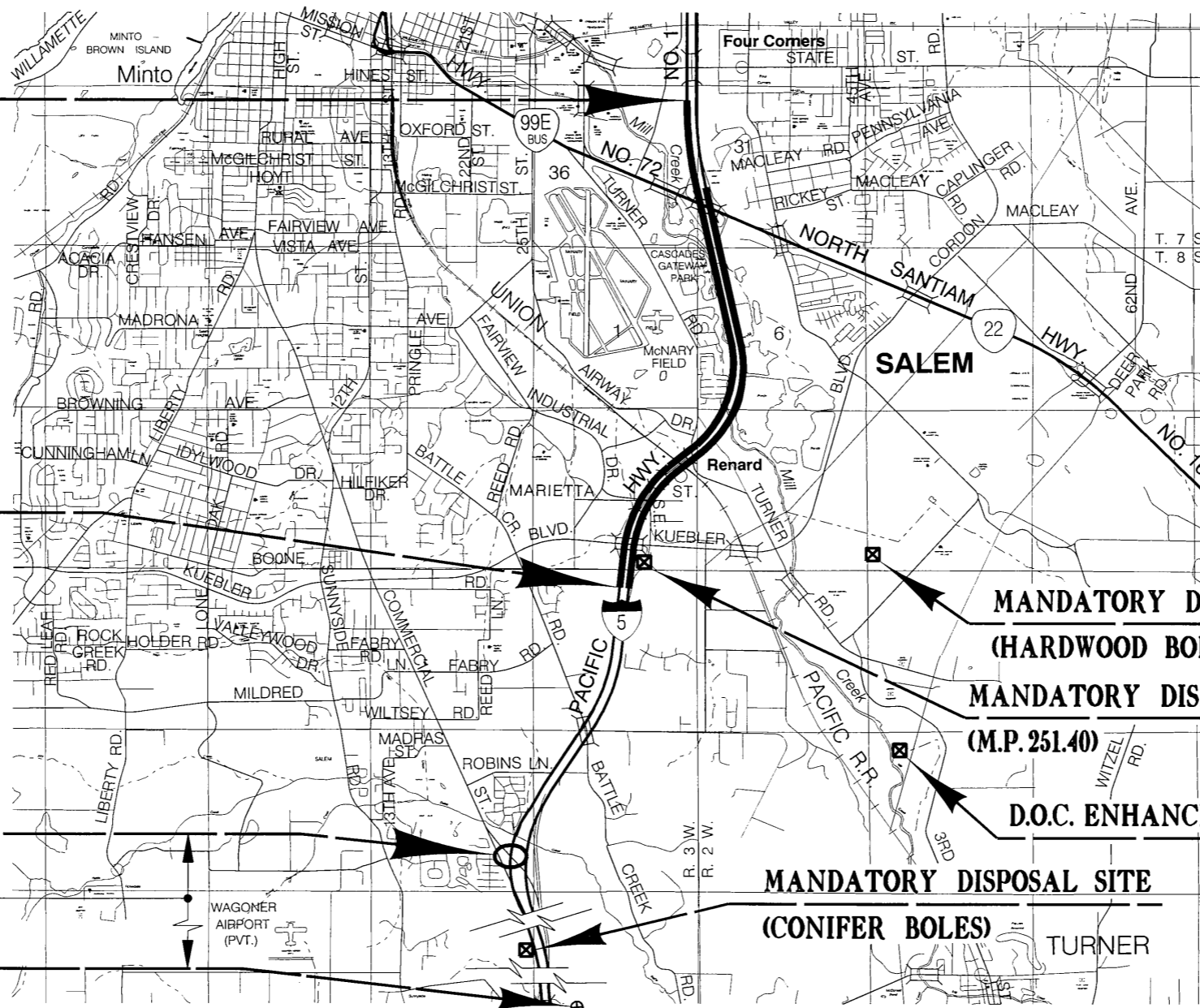
OCTOBER 2005



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)

NO WORK AREA

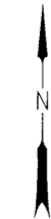
OTIA-NH-IM-S001(196)
END OF PROJECT
STA. "LS" 18+664.61 (M.P. 249.38)

Approx. 28 Mi. South

PROSPECTIVE MATERIAL SOURCE
(M.P. 221.13)



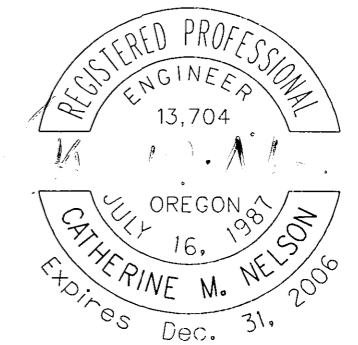
LET'S ALL
WORK TOGETHER
TO MAKE THIS
JOB SAFE



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 |



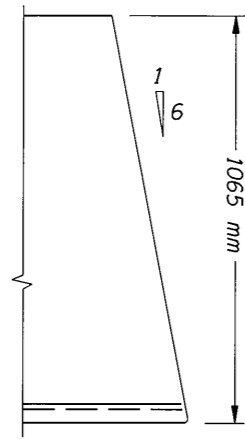
Catherine M. Nelson
TECHNICAL SERVICES MANAGING ENGINEER

**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

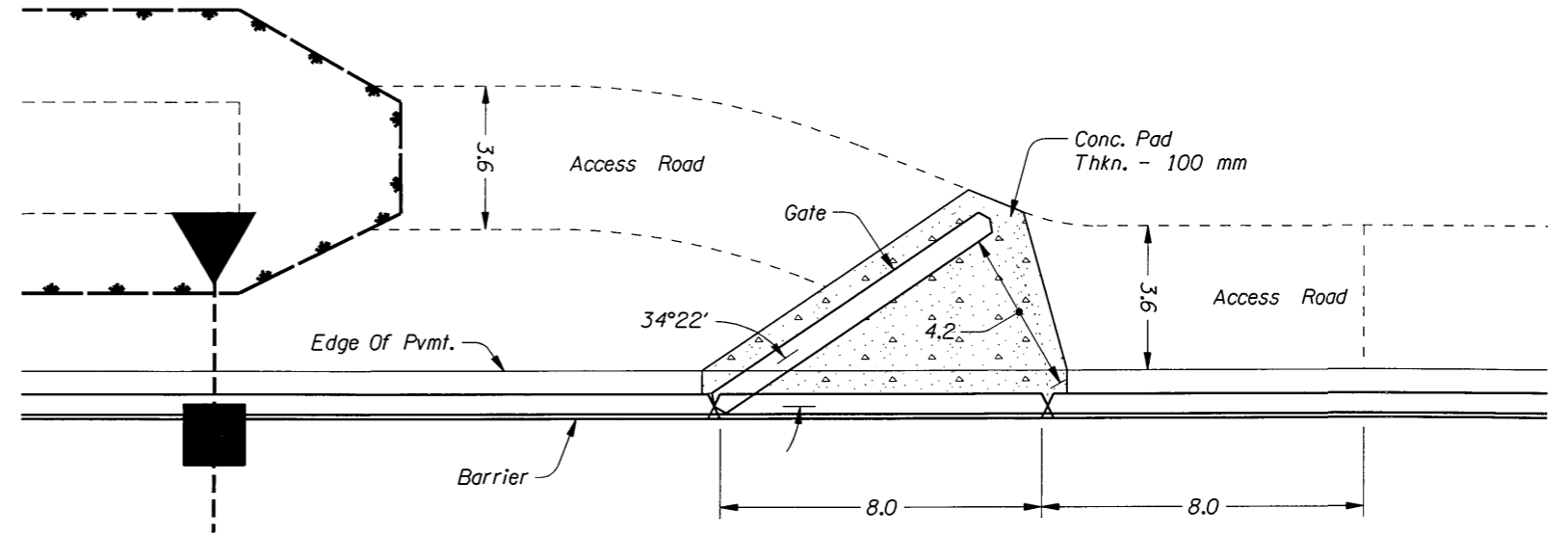


PE000950

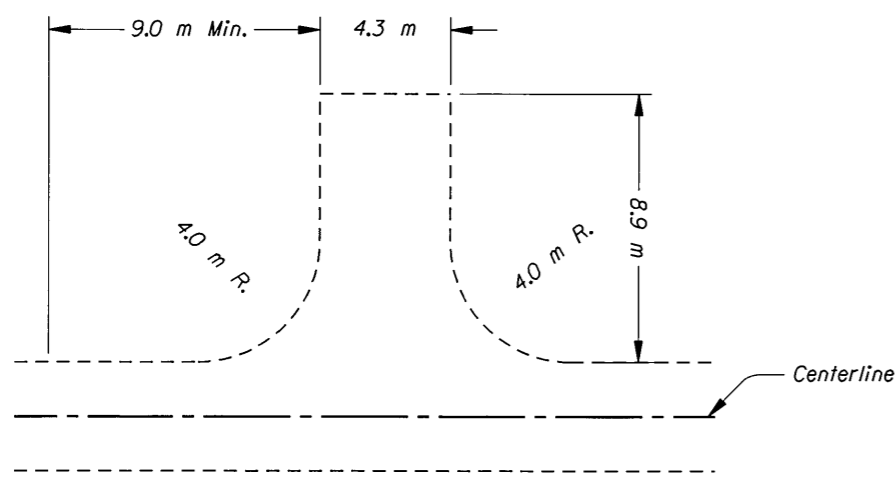


Trailing End Terminal

PRECAST TALL BARRIER ELEVATION
 (For Details Not Shown, See Drg. No. RD545)

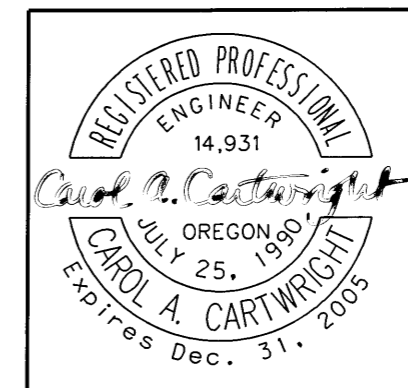


BARRIER GATE

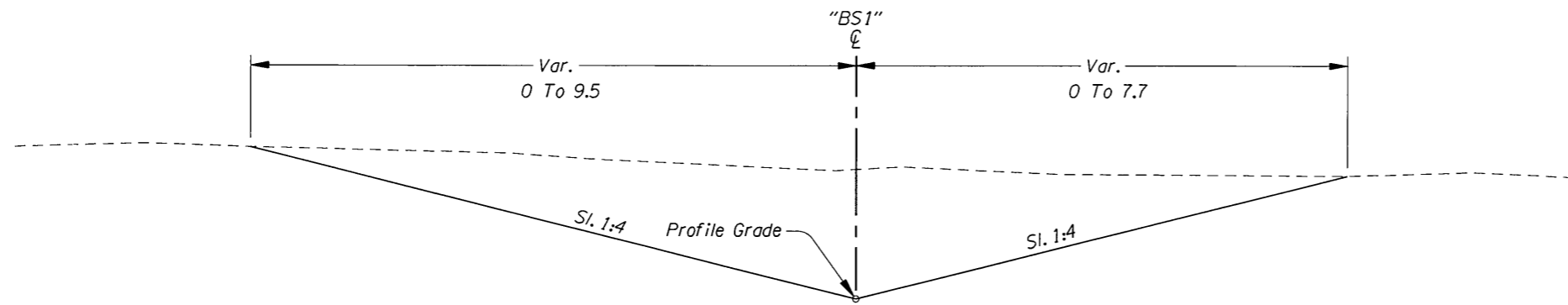


ACCESS ROAD "TURN-A-ROUND"

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

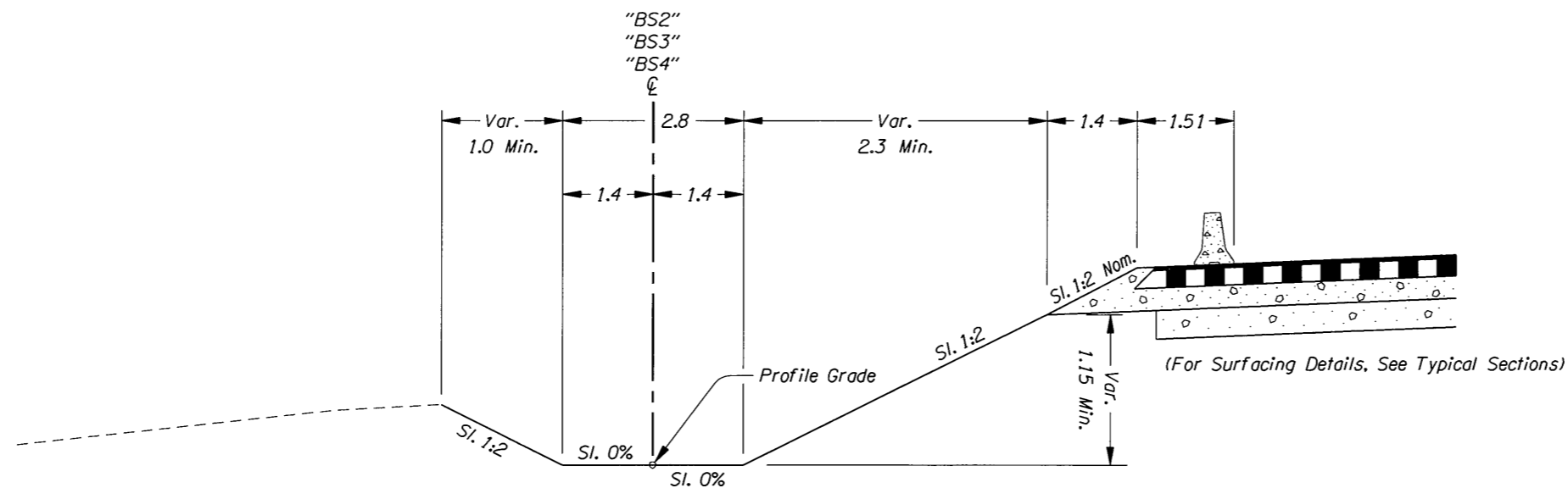


OREGON DEPARTMENT OF TRANSPORTATION ROADWAY ENGINEERING SECTION	
I-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC. PACIFIC HIGHWAY MARION COUNTY	
Design Team Leader - Carol Cartwright Designed By - John Lucas Drafted By - Jeff Larson	
DETAILS	SHEET NO. 2B-8



(For Planting Details, See Roadside Development Plans)

WATER QUALITY SWALE
 STA. "L"11+654.4 To STA. "L"11+690.1, Lt.

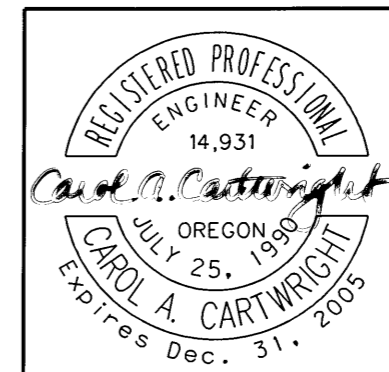


(For Planting Details, See Roadside Development Plans)

WATER QUALITY SWALES

STA. "L"12+000.9 To	STA. "L"12+004.3 (Taper Section)
"L"12+004.3 To	"L"12+176.5
"L"12+176.5 To	"L"12+207.2 (Taper Section)
"L"12+240.2 To	"L"12+258.5 (Taper Section)
"L"12+258.5 To	"NB"12+770.0
"NB"12+770.0 To	"NB"12+774.0 (Taper Section)
"NB"13+116.1 To	"NB"13+120.0 (Taper Section)
"NB"13+120.0 To	"NB"13+400.0
"NB"13+400.0 To	"NB"13+403.9 (Taper Section)
"NB"13+648.0 To	"NB"13+656.0 (Taper Section)
"NB"13+656.0 To	"NB"13+787.0
"NB"13+787.0 To	"NB"13+790.9 (Taper Section)

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



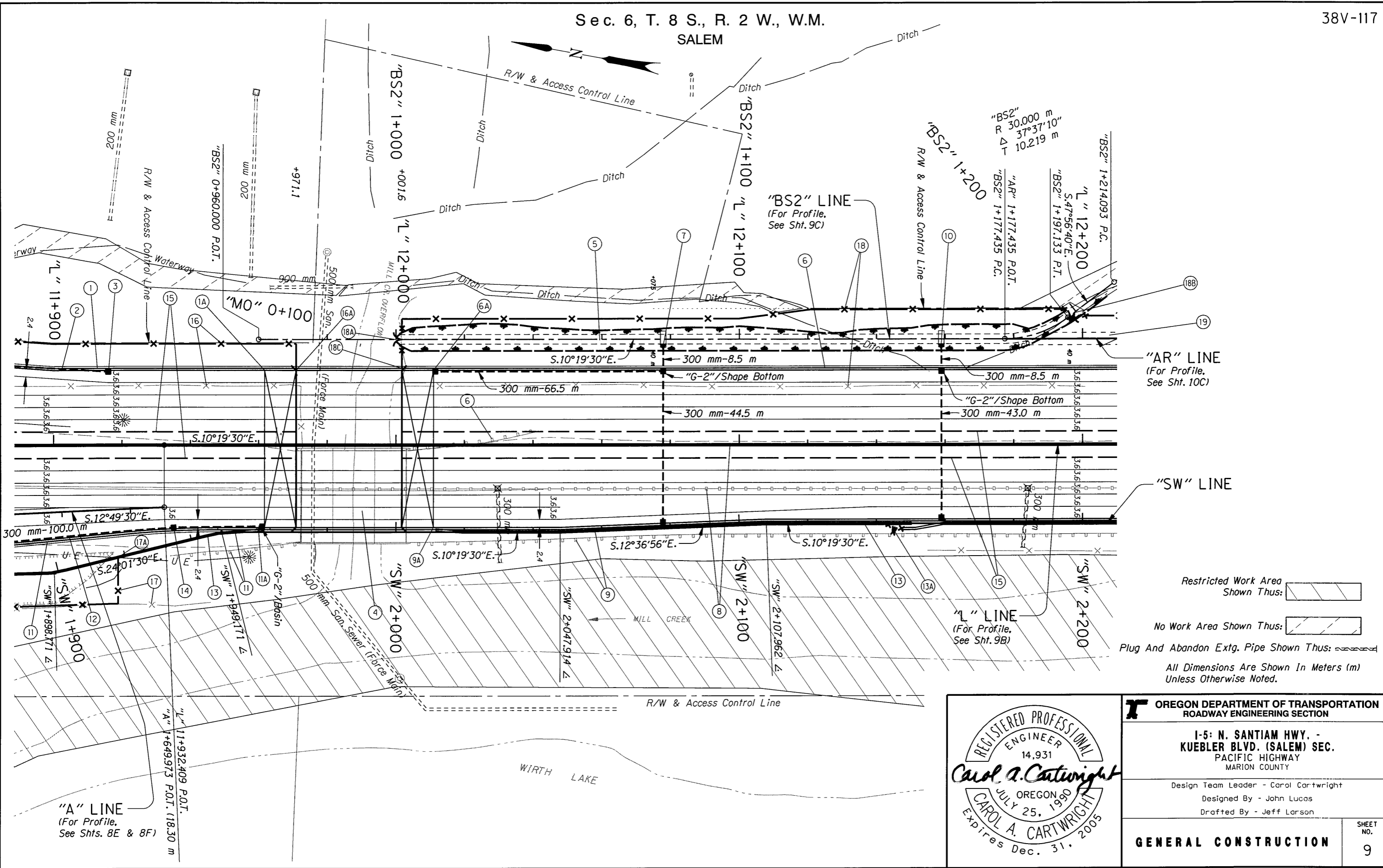
OREGON DEPARTMENT OF TRANSPORTATION
 ROADWAY ENGINEERING SECTION

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

DETAILS

SHEET
 NO.
2B-9



STRUCTURAL DETAILS CHECKED

"AR" LINE
(For Profile,
See Sht. 10C)

"SW" LINE

"L" LINE
(For Profile,
See Sht. 9B)

"A" LINE
(For Profile,
See Shts. 8E & 8F)

Restricted Work Area
Shown Thus:

No Work Area Shown Thus:

Plug And Abandon Extg. Pipe Shown Thus:

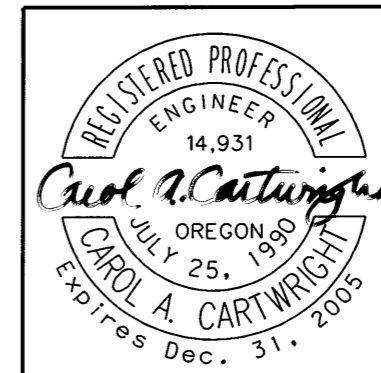
All Dimensions Are Shown In Meters (m)
Unless Otherwise Noted.



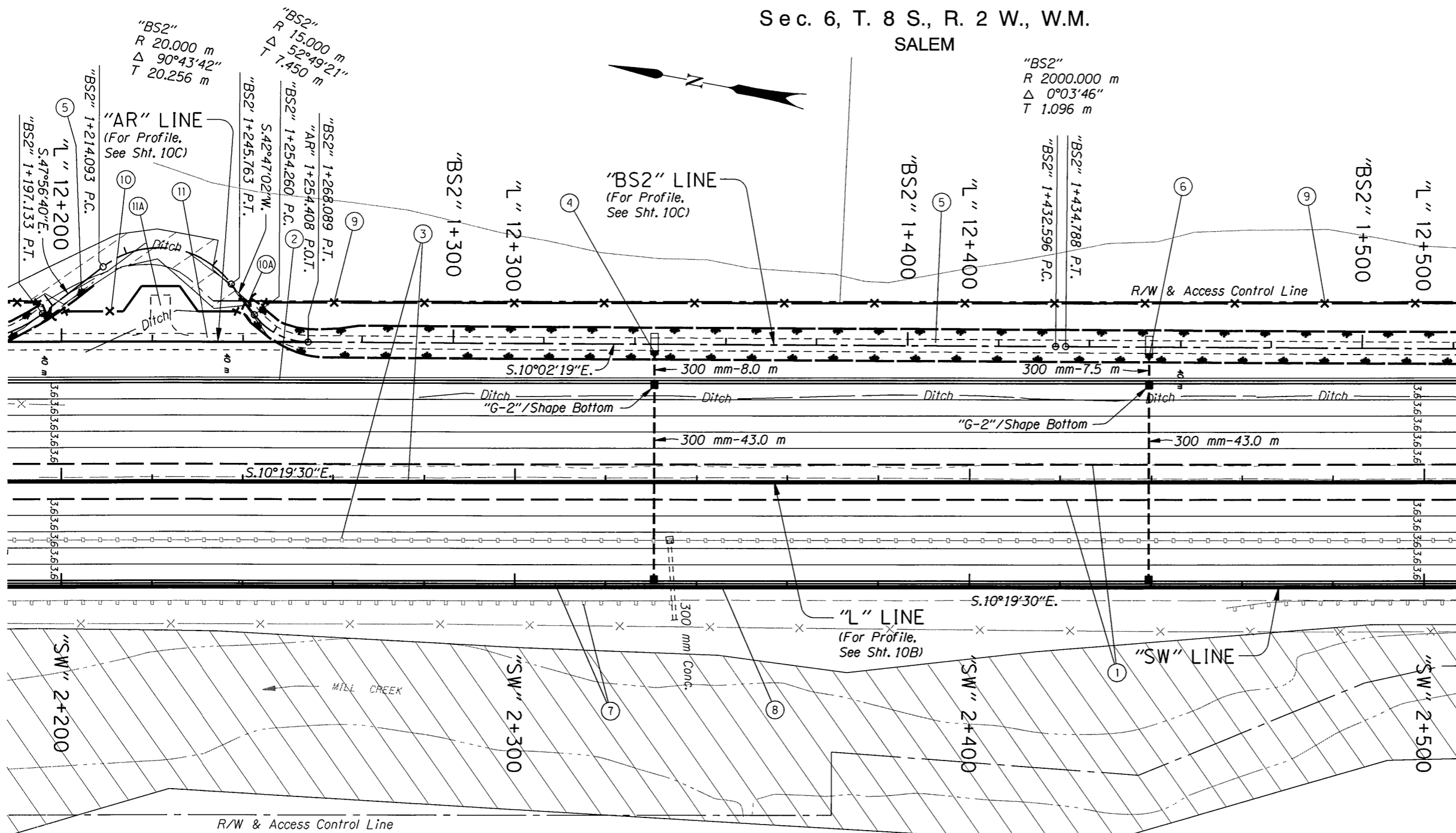
OREGON DEPARTMENT OF TRANSPORTATION ROADWAY ENGINEERING SECTION	
I-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC. PACIFIC HIGHWAY MARION COUNTY	
Design Team Leader - Carol Cartwright Designed By - John Lucas Drafted By - Jeff Larson	
GENERAL CONSTRUCTION	SHEET NO. 9

STRUCTURAL DETAILS CHECKED

- ① See Sht. 8A, Note 1
Const. Precast Conc. Shldr. Barrier
Plug Scuppers
- ①A Const. Conc. Barrier Transition To
Bridge Rail - 3.8 m
(See Drg. No. RD520)
- ② See Sht. 8A, Note 2
Inst. 300 mm Sew. Pipe
- ③ Sta. "L"11+916.0
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
Adjust Inlet For Wearing Course
0.45 m Deep
- ④ Sta. "L"11+971.1 To Sta. "L"12+001.6
Structure No. 19127
Remove Extg. Structure
Const. Structure - 30.5 m
Rdwy. Width - 46.2 m
(For Drg. Nos., See Sht. 1A)
- ⑤ Const. Water Quality Swale
(For Details, See Shts. 2B-9 & GJ-8)
- ⑥ Sta. "L"12+011.0 To Sta. "L"12+777.8
Remove Extg. Guardrail - 38.1 m
Const. Precast Conc. Shldr. Barrier - 763.2 m
(Reflectorized)
Plug Scuppers
- ⑥A Const. Conc. Barrier Transition To
Bridge Rail - 3.8 m
Flare Rate=0, W=0, E=0
- ⑦ Sta. "L"12+011.5 To Sta. "L"12+077.9
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 - 3
Inst. 300 mm Sew. Pipe - 119.5 m
1.5 m Depth
Const. Paved End Slope
Const. Flow Spreader
(For Details, See Sht. GJ-7)
- ⑧ See Sht. 7, Note 3
Remove Extg. Conc. Median Barrier
Remove Extg. Metal Median Barrier
Const. Precast Tall Conc. Median Barrier
- ⑨ Sta. "L"12+011.0 To Sta. "SB"13+459.7
Remove Extg. Guardrail - 784.6 m
Const. Precast Conc. Shldr. Barrier - 1438.1 m
(Reflectorized)
Plug Scuppers
- ⑨A Const. Conc. Barrier Transition To
Bridge Rail - 3.8 m
Flare Rate=0, W=0, E=0
- ⑩ Sta. "L"12+158.9
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
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 - 51.5 m
1.5 m Depth
Const. Paved End Slope
Const. Flow Spreader
(For Details, See Sht. GJ-7)
- ⑪ See Sht. 8A, Note 11
Remove Extg. Guardrail
Const. Precast Conc. Shldr. Barrier
- ⑪A Const. Conc. Barrier Transition To
Bridge Rail - 3.8 m
- ⑫ See Sht. 8A, Note 10
Inst. 300 mm Sew. Pipe
- ⑬ See Sht. 8A, Note 12
Const. Soundwall
- ⑬A Inst. Single Type CL-6 Locked Gate - 1.8 m
- ⑭ Sta. "L"11+935.1 To Sta. "L"11+961.2
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
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 - 26.5 m
1.5 m Depth
- ⑮ Const. Low Profile Mountable Curb
- ⑯ See Sheet 8A, Note 14
Remove Extg. Fence
Const. Type CL-6 Fence
- ⑯A End At Bridge
- ⑰ See Sht. 8B, Note 7
Remove Extg. Fence
Const. Type CL-6 Fence
- ⑰A End At Soundwall
- ⑱ Sta. "L"12+001.8 To Sta. "L"12+244.8
Remove Extg. Fence
Const. Type CL-6 Fence
- ⑱A Inst. Double Type CL-6 Locked Gate - 4.2 m
- ⑱B Inst. Double Type CL-6 Locked Gate - 4.2 m
- ⑱C End At Bridge
- ⑲ Const. Access Road



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	
NOTES	SHEET NO. 9A



STRUCTURAL DETAILS CHECKED

Restricted Work Area
Shown Thus:

No Work Area Shown Thus:

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



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.
10

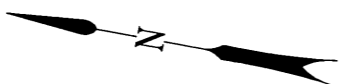
STRUCTURAL DETAILS CHECKED *ma*

- ① Const. Low Profile Mountable Curb
- ② See Sht. 9A, Note 6
Const. Precast Conc. Shldr. Barrier
- ③ See Sht. 7, Note 3
Remove Extg. Metal Median Barrier
Const. Precast Tall Conc. Median Barrier
- ④ Sta. "L"12+330.6
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
0.45 m Deep
Const. Type "G-2" Open Grade HMAC Inlet
Shape Bottom
Adjust Inlet For Wearing Course
Inst. 300 mm Sew. Pipe - 51.0 m
1.5 m Depth
Const. Paved End Slope
Const. Flow Spreader
(For Details, See Sht. GJ-7)
- ⑤ Const. Water Quality Swale
(For Details, See Shts. 2B-9 & GJ-8)
- ⑥ Sta. "L"12+439.4
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
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 - 50.5 m
1.5 m Depth
Const. Paved End Slope
Const. Flow Spreader
(For Details, See Sht. GJ-7)
- ⑦ See Sht. 9A, Note 9
Remove Extg. Guardrail
Const. Precast Conc. Shldr. Barrier
- ⑧ See Sht. 8A, Note 12
Const. Soundwall
- ⑨ Sta. "L"12+244.8 To Sta. "NB"13+545.5
Const. Type CL-6 Fence

- ⑩ See Sht. 9A, Note 18
Const. Type CL-6 Fence
- ⑩A Inst. Double Type CL-6 Locked Gate - 4.2 m
- ⑪ Const. Access Road
- ⑪A Const. "Turn-A-Round"
(For Details, See Sht. 2B-8)

	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. 10A

SALEM



"BS2" R 18.500 m Δ 22°15'37" T 3.640 m
"BS2" R 5.000 m Δ 22°08'20" T 0.978 m

"BS2" R 2000.000 m Δ 0°20'57" T 6.096 m

"NB" 12+708.833 P.O.T. (3.90 m Lt.)

"BS2" 1+701.401 P.C.

"L" 12+700

"NB" 12+781.964 P.S.

"BS2" 1+798.606 P.T.

"NB" 12+800

"BS2" 1+805.251 P.T.

"L" 12+804.988 P.S.

"BS2" 1+814.268 P.O.T.

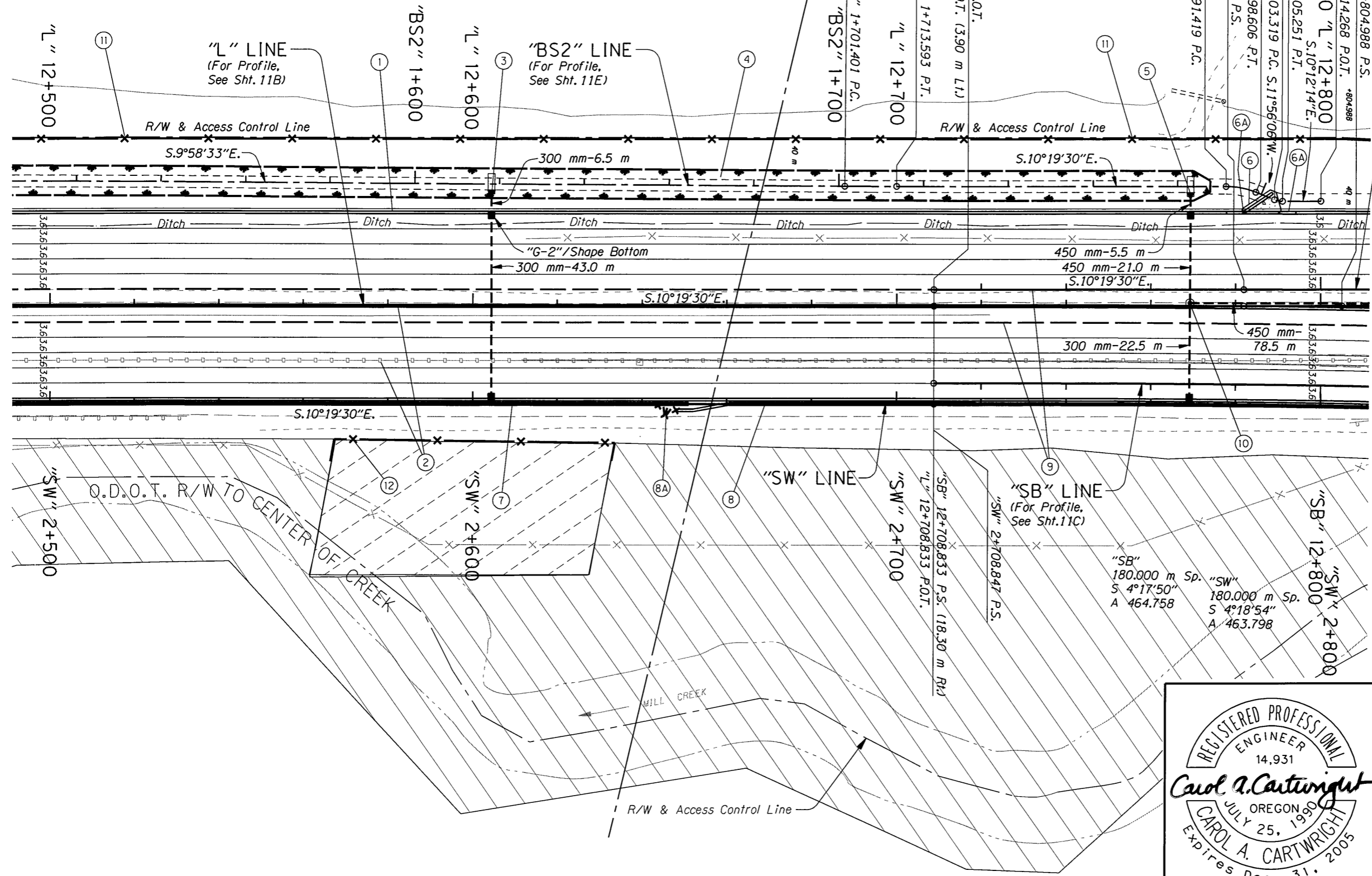
"NB" LINE (For Profile, See Sht. 11D)

"L" LINE (For Profile, See Sht. 11B)

"BS2" LINE (For Profile, See Sht. 11E)

"SB" LINE (For Profile, See Sht. 11C)

STRUCTURAL DETAILS CHECKED



Restricted Work Area Shown Thus: [Hatched Box]

No Work Area Shown Thus: [White Box]

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



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

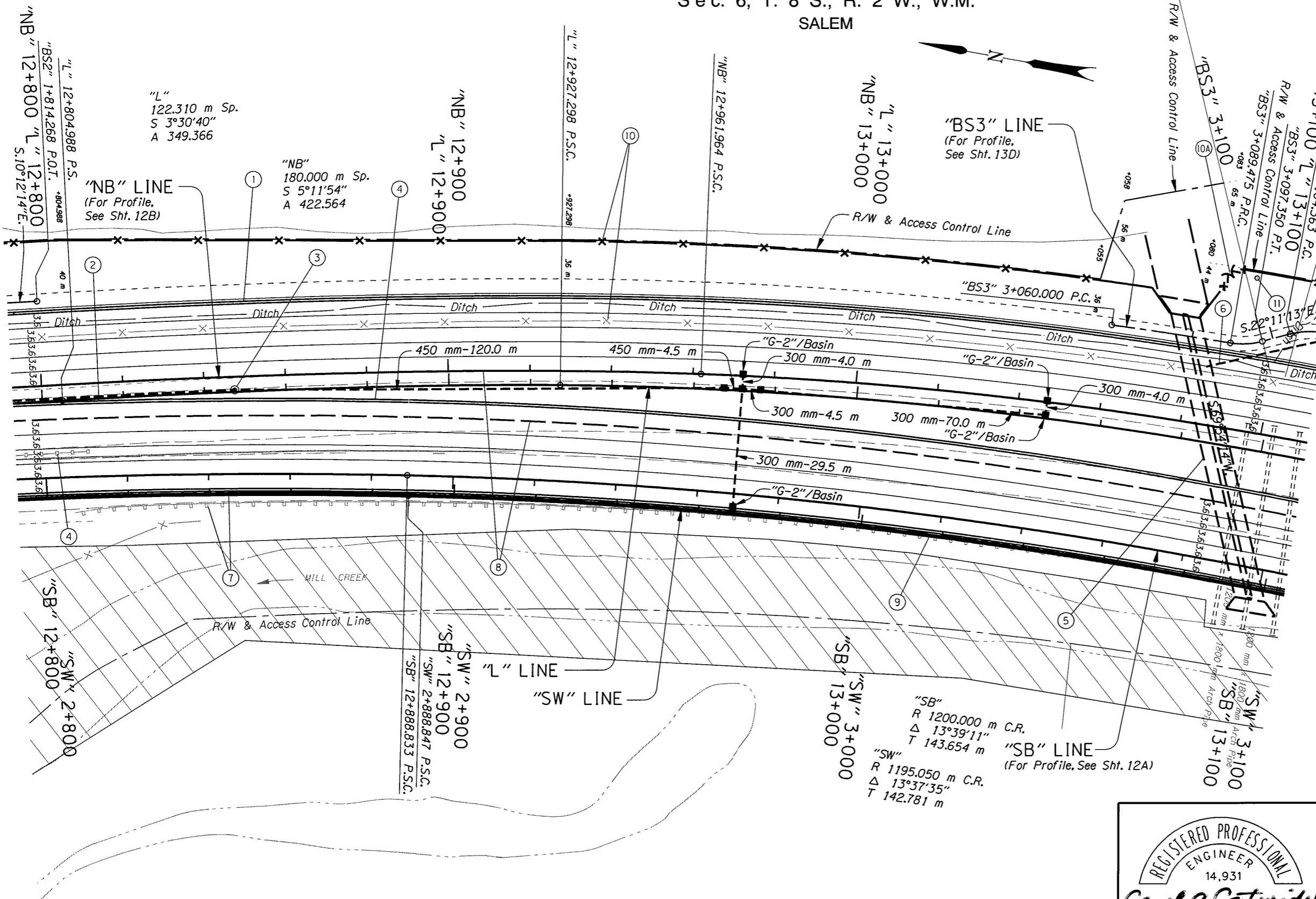
GENERAL CONSTRUCTION

SHEET NO. 11

STRUCTURAL DETAILS CHECKED 11A

- ① See Sht. 9A, Note 6
Const. Precast Conc. Shldr. Barrier
- ② See Sht. 7, Note 3
Remove Extg. Metal Median Barrier
Const. Precast Tall Conc. Median Barrier
- ③ Sta. "L"12+604.4
Const. Type "G-2" Open Grade HMAC Inlet
With Basin
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 - 49.5 m
1.5 m Depth
Const. Paved End Slope
Const. Flow Spreader
(For Details, See Sht. GJ-7)
- ④ Const. Water Quality Swale
(For Details, See Shts. 2B-9 & GJ-8)
- ⑤ Sta. "L"12+769.4
Const. Type "G-2" Open Grade HMAC Inlet
Shape Bottom
Adjust Inlet For Wearing Course
Inst. 450 mm Sew. Pipe - 26.5 m
1.5 m Depth
Const. Paved End Slope
Const. Flow Spreader
(For Details, See Sht. GJ-7)
- ⑥ Sta. "L"12+777.8 To Sta. "L"12+794.1
Const. 8 m Barrier Gate
- ⑥A Const. Conc. Barrier Transition To
Barrier Gate - 7.6 m
(For Details, See Sht. 2B-8)
- ⑦ See Sht. 9A, Note 9
Remove Extg. Guardrail
Const. Precast Conc. Shldr. Barrier
- ⑧ See Sht. 8A, Note 12
Const. Soundwall
- ⑧A Inst. Single Type CL-6 Locked Gate - 1.8 m
- ⑨ Const. Low Profile Mountable Curb
- ⑩ Sta. "L"12+769.4 To Sta. "L"12+847.5
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 - 22.5 m
1.5 m Depth
Inst. 450 mm Sew. Pipe - 78.5 m
1.5 m Depth
- ⑪ See Sheet 10A, Note 9
Const. Type CL-6 Fence
- ⑫ Const. Temp. Type Orange Plastic Fence

	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. 11A	



- ① Sta. "NB" 12+794.1 To Sta. "NB" 13+535.9
Const. Precast Conc. Shldr. Barrier - 740.2 m (Reflectorized)
Plug Scuppers
Flare Rate=0, W=0, E=0
- ② See Sht. 11A, Note 10
Inst. 450 mm Sew. Pipe
- ③ Sta. "L" 12+847.5 To Sta. "L" 13+047.0
Const. Manhole
Const. Type "G-2" Open Grade HMAC Inlet With Basin - 4
0.45 m Deep
Const. Type "G-2" Open Grade HMAC Inlet - 3
Shape Bottom
Adjust Inlet For Wearing Course - 3
Inst. 300 mm Sew. Pipe - 112.0 m
1.5 m Depth
Inst. 450 mm Sew. Pipe - 124.5 m
1.5 m Depth
(See Drg. Nos. RD336 & RD344)
- ④ See Sht. 7, Note 3
Remove Extg. Metal Median Barrier
Const. Precast Tall Conc. Median Barrier
- ⑤ Structure No. 20109
Const. Double 2.4 m x 1.2 m R.C.B.C. - 72.6 m
(For Drg. Nos., See Sht. 1A)
- ⑥ Sta. "NB" 13+084.1 To Sta. "NB" 13+114.6
Inst. 600 mm Sew. Pipe - 34.0 m
1.5 m Depth
Connect To 2.4 m x 1.2 m R.C.B.C.
- ⑦ See Sht. 9A, Note 9
Remove Extg. Guardrail
Const. Precast Conc. Shldr. Barrier
- ⑧ Const. Low Profile Mountable Curb
- ⑨ See Sht. 8A, Note 12
Const. Soundwall
- ⑩ See Sheet 10A, Note 9
Remove Extg. Fence
Const. Type CL-6 Fence
- ⑩A Inst. Double Type CL-6 Locked Gate - 4.2 m
- ⑪ Sta. "L" 13+091.5, 42.2 m Lt.
Const. Eagle Perch
(For Details, See Sht. 2B-14)

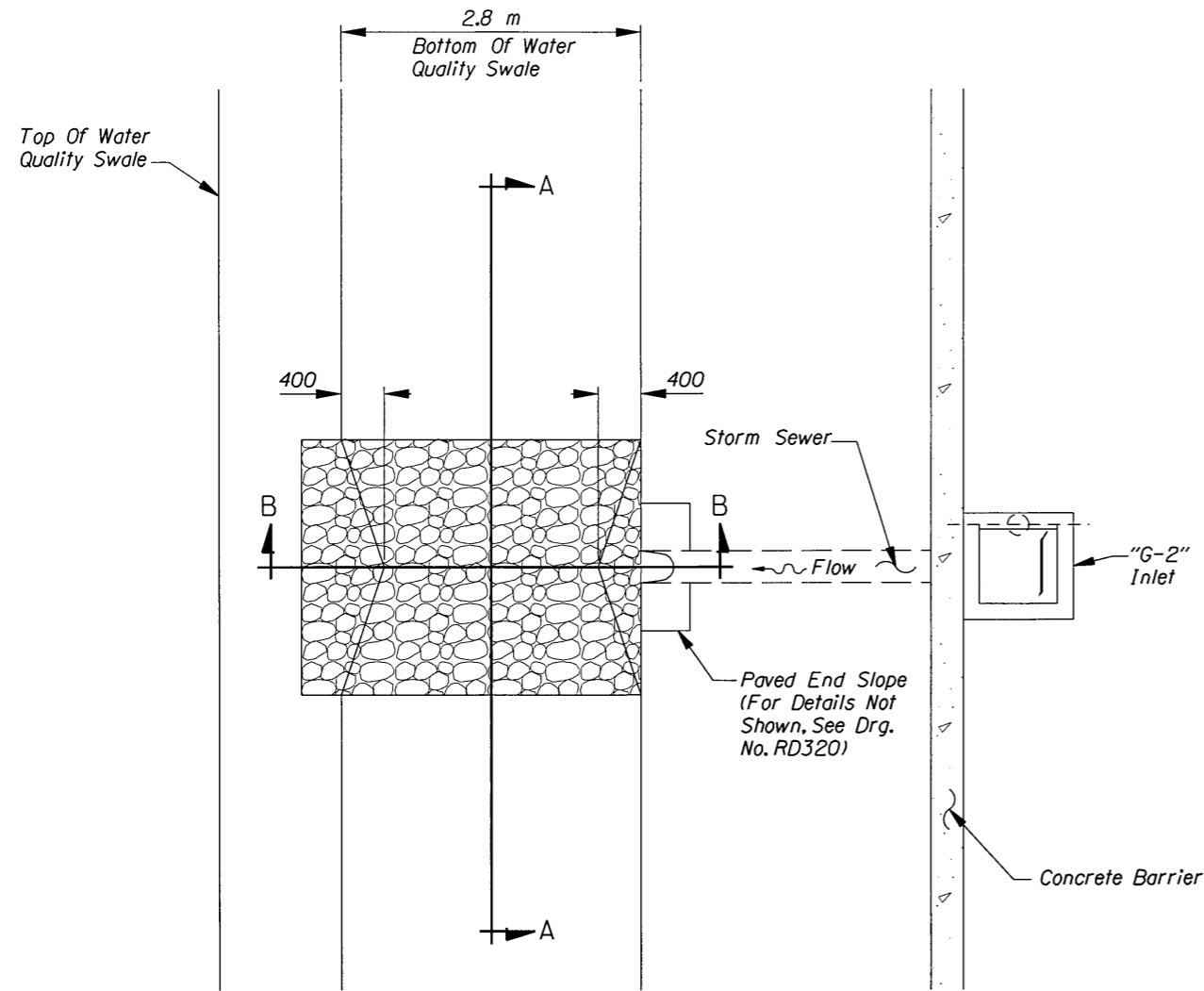
All Dimensions Are Shown In Meters (m)
Unless Otherwise Noted.

STRUCTURAL DETAILS CHECKED

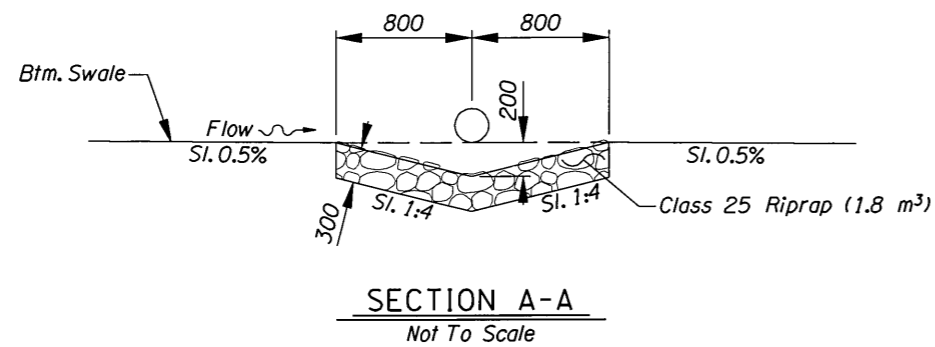
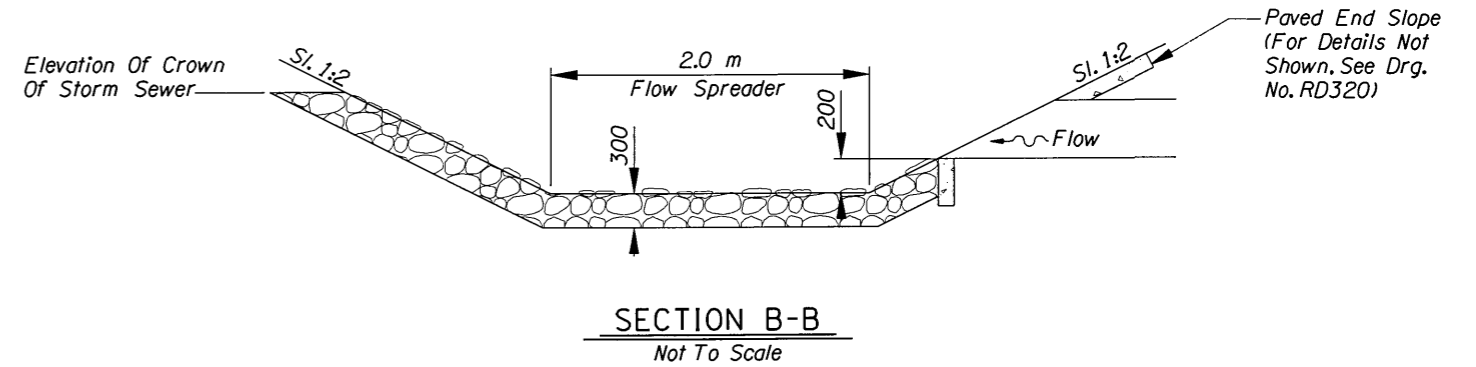
Restricted Work Area
Shown Thus:



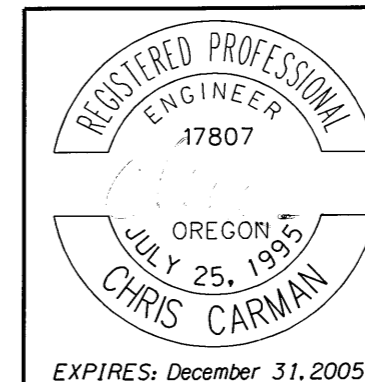
OREGON DEPARTMENT OF TRANSPORTATION ROADWAY ENGINEERING SECTION	
1-5: N. SANTIAM HWY. - KUEBLER BLVD. (SALEM) SEC. PACIFIC HIGHWAY MARION COUNTY	
Design Team Leader - Carol Cartwright Designed By - John Lucas Drafted By - Jeff Larson	
GENERAL CONSTRUCTION	SHEET NO. 12



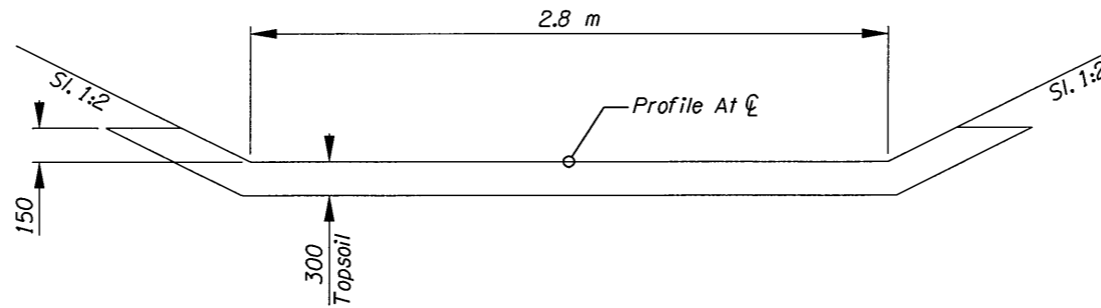
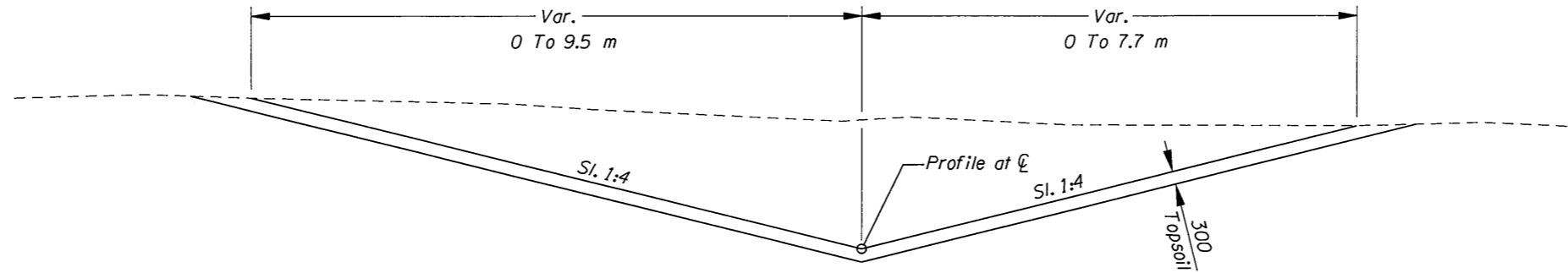
FLOW SPREADER - PLAN
Not To Scale (For Locations See Sht. 9, 10, 11, 13)



NOTES:
1. Side-Slopes Are Shown As Vert. To Horiz.
2. 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-7

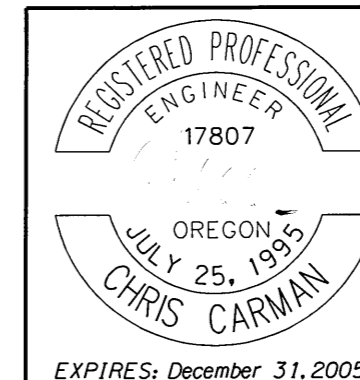


(For Planting Details, See Roadside Development Plans)
 (For Locations, See Sht. 2B-9)

WATER QUALITY SWALE - CROSS SECTION
 Not To Scale

NOTES:

1. Side Slopes Are Shown As Vert. To Horiz.
2. All Dimensions Shown Are In Millimeters (mm) Unless Otherwise Noted



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	
WATER QUALITY SWALE DETAILS	SHEET NO. GJ-8