OPERATION & MAINTENANCE MANUAL

DFI No. D00077
Facility Type: Water Quality Biofiltration Swale

June 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00077**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 37V-006
Location:	District: 2B (Old 2A)
	Highway No.: 001
	Mile Post: 289.45 (beg./end)
	Description: This facility is located at southeast corner of the Interchange of Nyberg Road & Interstate 5 (surrounded by northbound on-ramp)

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 – CH2M Hill, (503) 235-5000
Facility construction	2003
Contractor:	Wildish Paving

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 water quality biofiltration swale is located within the southeast cloverleaf of the Nyberg Road and Interstate 5 interchange. The drainage area for this water quality facility includes approximately 400 lineal feet of area along the south half of Nyberg Road, between the eastern edge of the off-ramp and the drainage break on the Nyberg Road Bridge. The drainage is collected by a series of inlets that discharge into a 12-inch storm pipe. The 12-inch storm pipe discharges into a manhole with sump, serving as a pretreatment device for the water quality swale. The drainage is then directed into the riprap basin outfall, serving as the beginning of the water quality biofiltration swale (See Photo 7 and the Operational Plans; Appendix B). The swale bottom consists of erosion control matting and 12-inches of topsoil.

Treated water from this swale is collected by a ditch inlet (indicated as point C in the Operational Plan) conveyed by a 12-inch pipe to a junction inlet. The flow from this inlet is equally distributed to two dispersion trenches - each part of a separate water quality facility (D00076). Stormwater is ultimately discharged through these dispersion trenches.

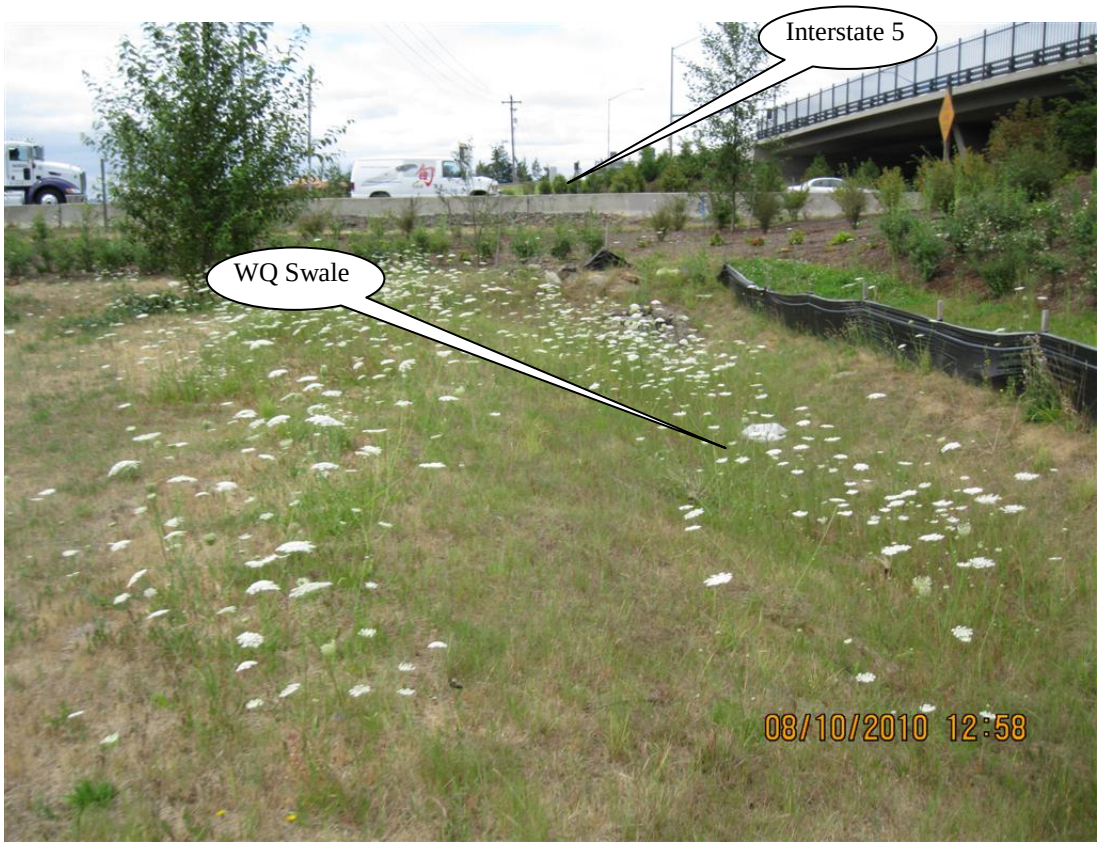


Photo 1: WQ Biofiltration Swale looking west. I-5 is located in the background.

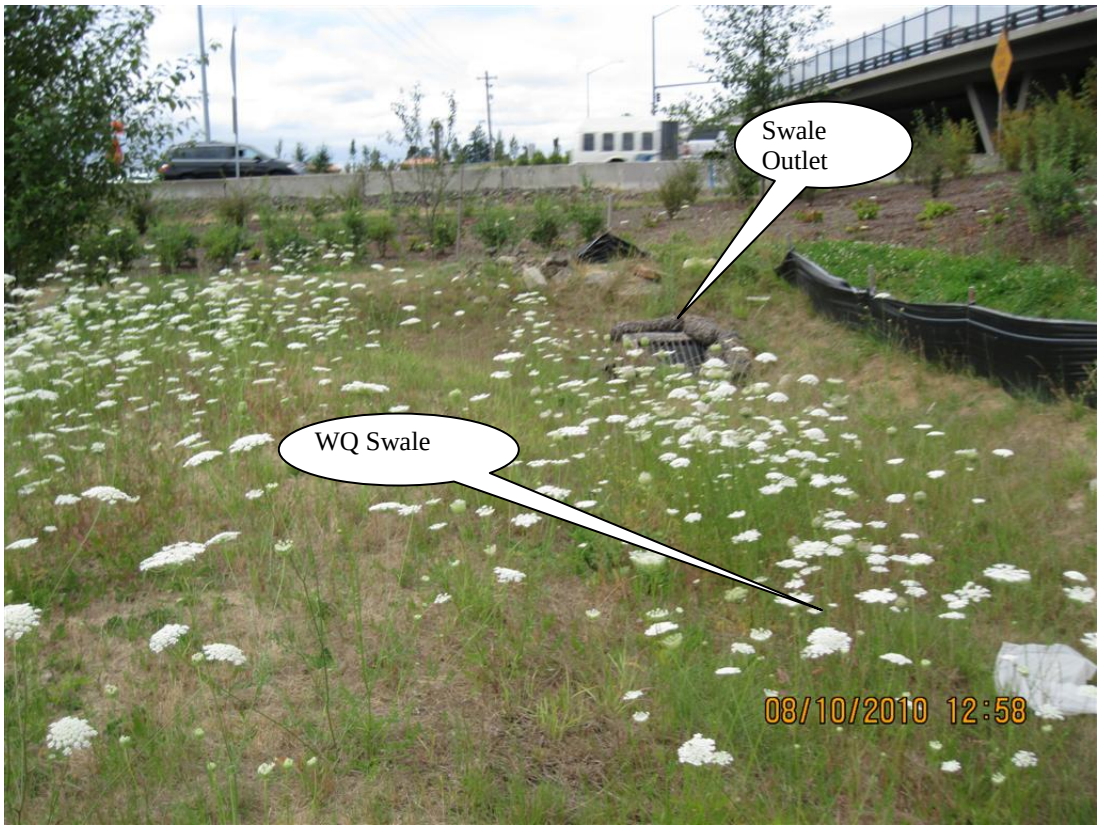


Photo 2: WQ Biofiltration Swale looking west. I-5 is located in the background.

Photo 3: East Dispersion Trench, looking west. Interstate 5 is the background.

Photo 4: Typical cleanout for dispersion trench.

Photo 5: Manhole at Point A. Provides pretreatment by collection of sediments with sump.

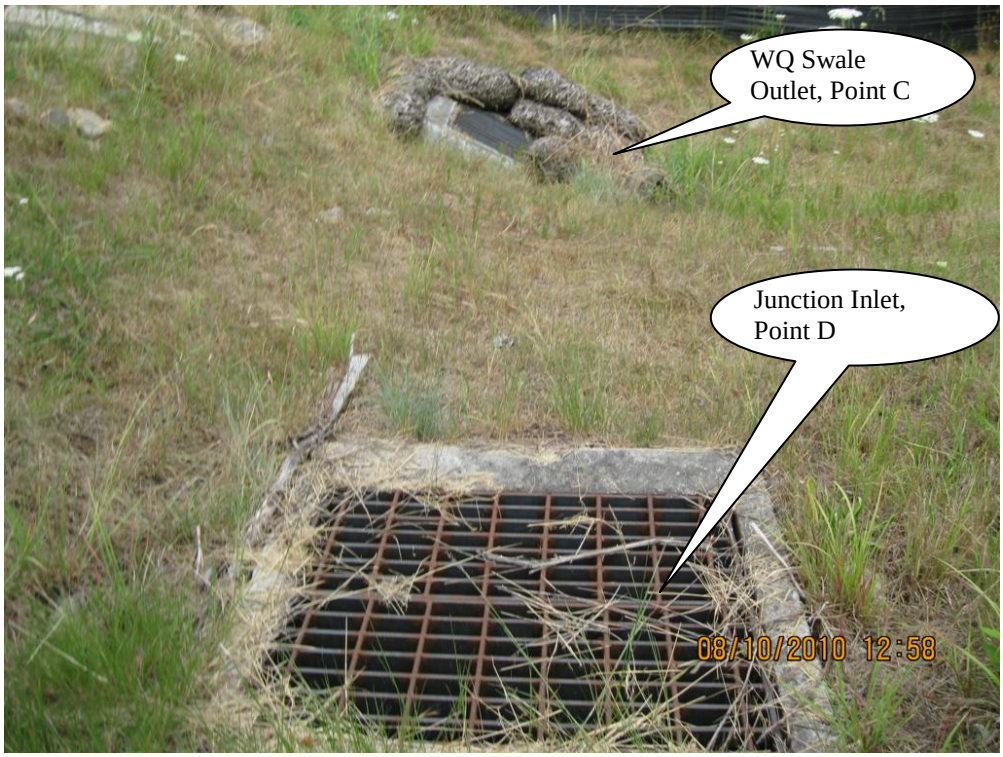


Photo 6: Junction Inlet in the foreground. Swale outlet ditch inlet in the background.

Photo 7: Swale Inlet and Riprap Basin. Tree located within basin poses potential problems including inhibiting the flow, breaking the outlet pipe, and causing erosion or possible failure of the nearby berm.

A. Maintenance equipment access:
The facility is located within the southeastern cloverleaf of the I-5 and SW Nyberg Street Interchange. A continuous concrete barrier or guard rail encloses this area. The area does not easily permit vehicular access or heavy equipment access due to the continuous concrete barrier.

B. Heavy equipment access into facility:

☐ Allowed (no limitations)
☒ Allowed (with limitations); The area does not easily permit vehicular access or heavy equipment access due to the continuous concrete barrier.
☐ Not allowed

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☒ Liners; Geotextile Liner
☐Underdrains

5. Facility Haz Mat Spill Feature(s)

The water quaility biofiltration swale is considered an online system (no flow is bypassed) and can be used to store a volume of liquid by blocking the grate of the ditch inlet which connects to a 12-inch diameter pipe and serves as the outlet from the swale. This location is noted as Point D in the Operation Plan.

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 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

☒ Other, as noted below

This swale does not contain an auxiliary outlet or overflow. Flows will overtop the swale and drain south towards the dispersion trench in the event the flow exceeds the ditch inlet or the ditch inlet becomes plugged.

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 or 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) 731-8304
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

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

Nyberg Road Eastbound

Access

Water Quality Biofiltration Swale
(DFI D00077)

± 115'

Top of swale

Bottom of swale

Mile Point
289.45

Riprap outlet
basin

12"

12"

Facility outlet

6"

Facility inlet

6"

6"

6"

6"

Dispersion
Trenches
DFI D00076

6"

6"

6"

Concrete barrier

I-5 northbound
(Hwy 1)

Northbound

On-ramp to I-5

N

On-ramp

PLAN
N.T.S.

2'
bottom
width

Conveyance flow depth

Water quality flow depth

Sl. 1:2

Sl. 1:2

1'

6"

1' topsoil

SECTION B-B
N.T.S.

LEGEND:

- Photograph location / direction
- Manhole with Sump
- Swale Inlet / Riprap Basin
- Biofiltration Swale
- Type-D Ditch Inlet / Outlet
- Type-B Junction Inlet
- Manhole
- Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Riprap

Water Quality Biofiltration Swale
(DFI D00077)

± 115'

Mile Point
289.45

Riprap

12"

12"

12"

1' topsoil

Geotextile
fabric

SECTION A-A
N.T.S.

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Bob Knorr

Drafted By: Y. Garzenelli

DFI D00077
MAINTENANCE DISTRICT 2B HWY 1
WATER QUALITY BIOFILTRATION SWALE
PACIFIC HWY MP 289.45
WASHINGTON COUNTY

Z:\Hydraulics\Hydraulics OM\Completed_Facility_Files\Dist_2B\Hwy_001\2B_001_D00077\Operational Plan\DFI_D00077.dgn :: Sheet 1/14/2014 11:59:51 AM hwyr33e

DFI_D00077.dgn

Appendix B

Content:

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

37V-6

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Std. Drg. Nos.
1B	Std. Drg. Nos. Cont'd.

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

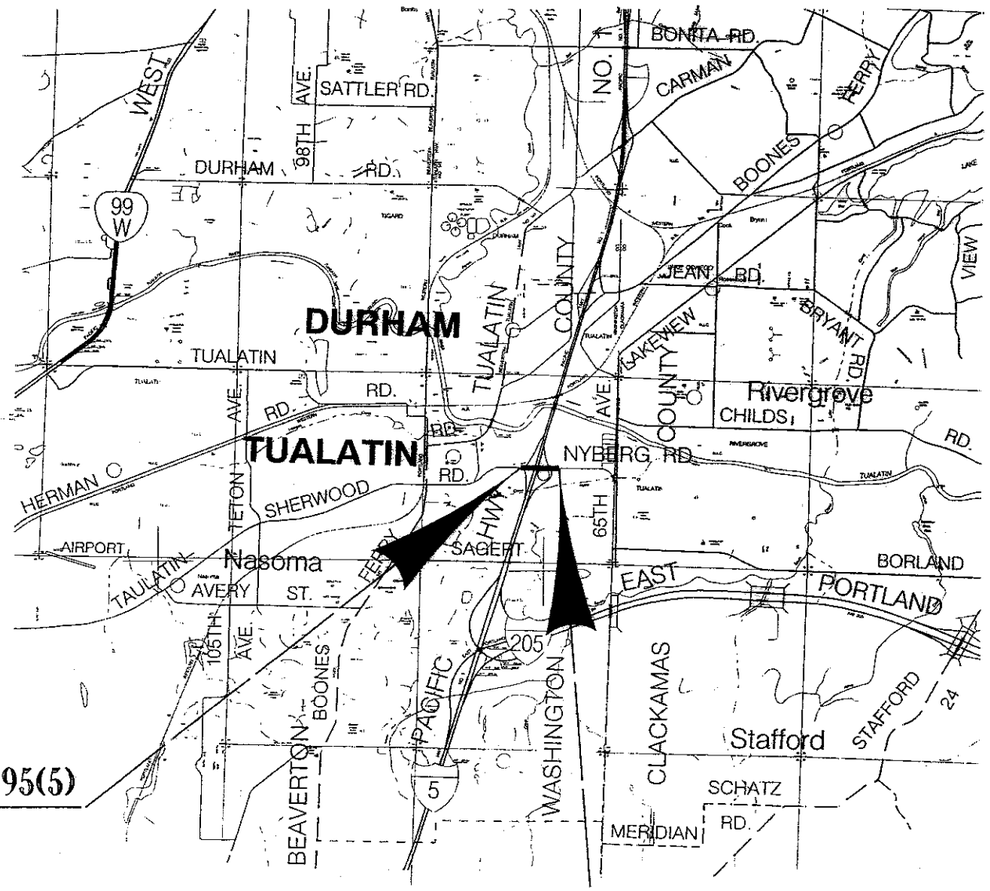
PLANS FOR PROPOSED PROJECT

GRADING, STRUCTURE, PAVING, STRIPING, SIGNING & SIGNALS

S.W. NYBERG ROAD AT I-5 SEC.

NYBERG ROAD

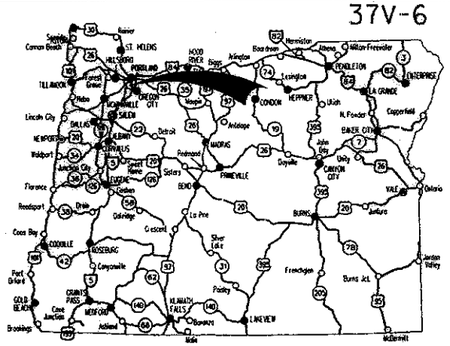
WASHINGTON COUNTY
DECEMBER 2003



T. 1 S., R. 1 W., W.M.

BEGINNING OF PROJECT X-STP-7495(5)
STA. 2+790

END OF PROJECT X-STP-7495(5)
STA. 3+275



Overall Length Of Project - 0.485 km (0.30 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.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

OREGON TRANSPORTATION COMMISSION

Stuart Foster	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Mike Nelson	COMMISSIONER
Randall Pape	COMMISSIONER
John Russell	COMMISSIONER
Bruce A. Warner	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
CITY OF TUALATIN
BY:
CH2MHILL

REGISTERED PROFESSIONAL ENGINEER
64,429
OREGON
JAN. 23, 2001
STEVEN N. KATKO
Expires June 30, 2005

OREGON DEPARTMENT OF TRANSPORTATION
CONCURRENCE

TECHNICAL SERVICES MANAGING ENGINEER — DATE 11/10/03

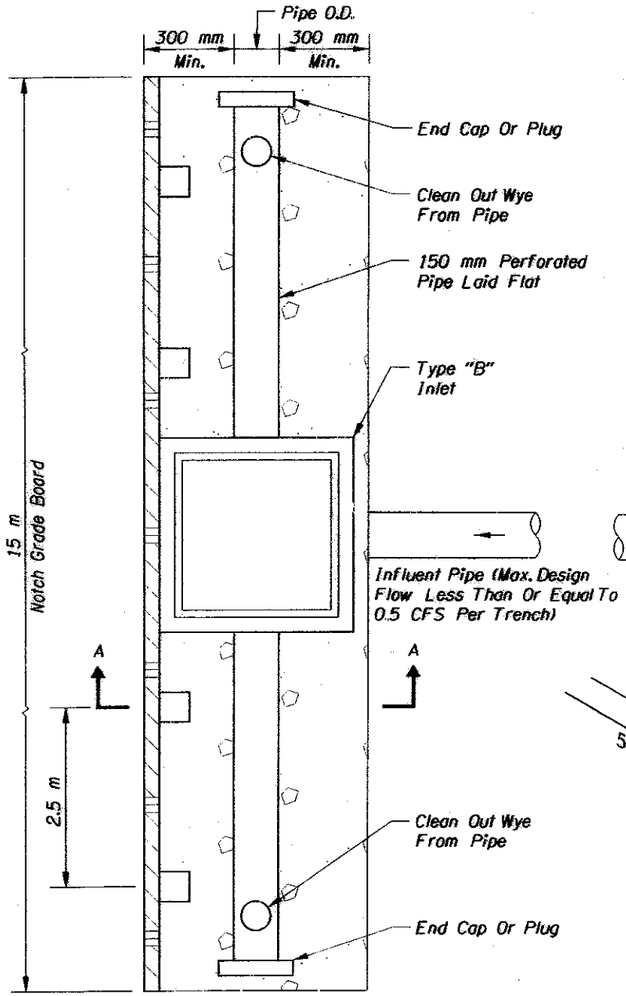
S.W. NYBERG ROAD AT I-5
NYBERG ROAD
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-STP-7495(5)	1

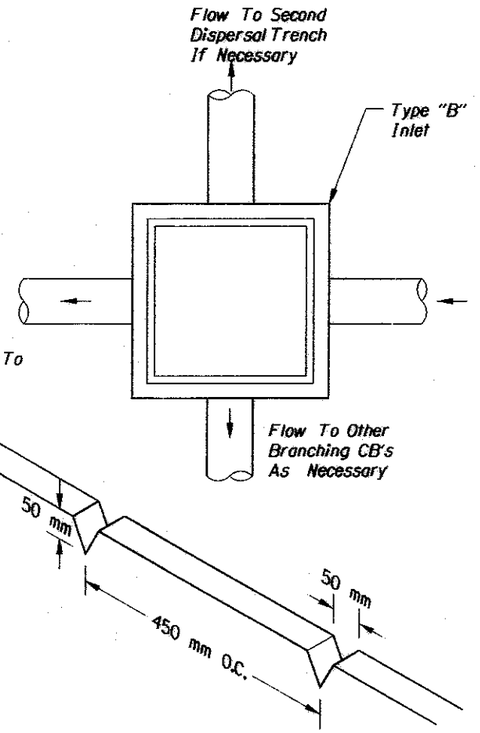
METRIC

PE000497

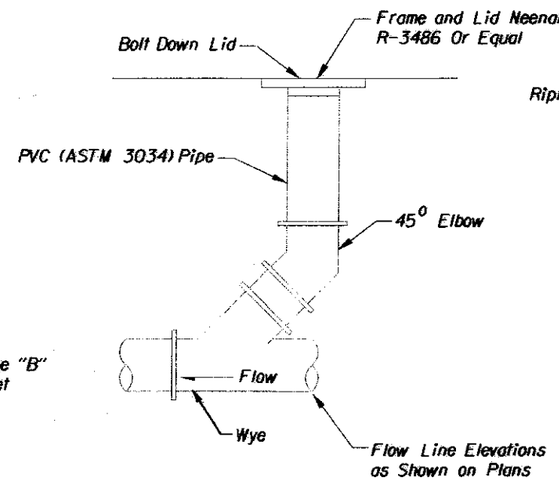
\\scdata3\hwye94p\ODOT_DATA\projects\tsheets\11435con.tsl 11/4/2003 3:14:08 PM hwye94p



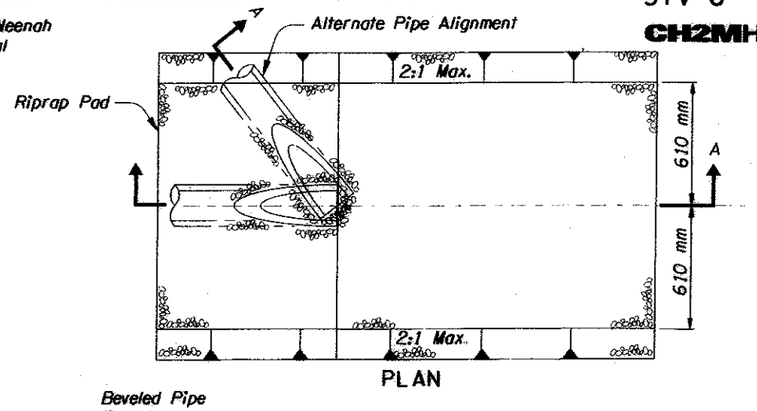
PLAN



NOTCHED GRADE BOARD



CLEANOUT



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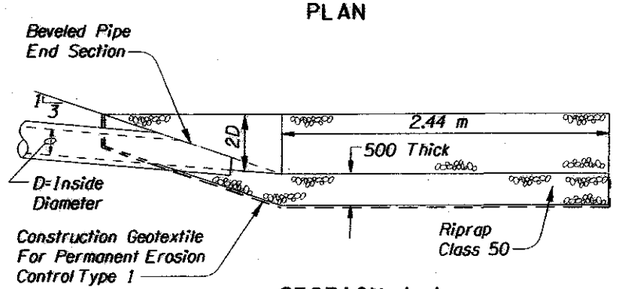
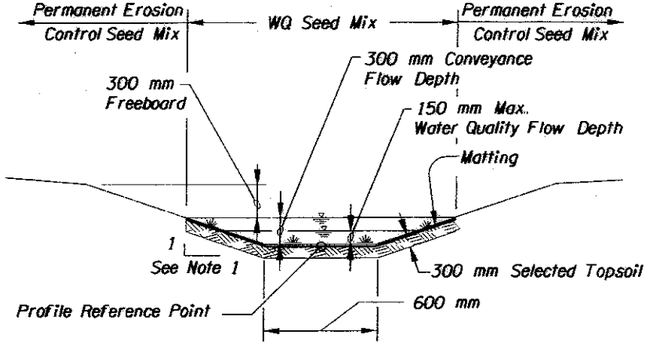


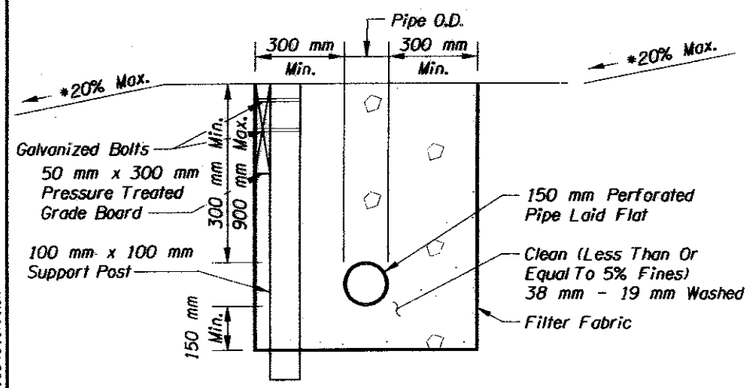
SECTION A-A

RIPRAP OUTLET BASIN



NOTE:
1. Sideslopes In The Water Quality Section Of The Swale Shall Be 4H:1V Maximum. Sideslopes Above The Water Quality Flow Depth Shall Match Roadway Embankment Slopes; 2H:1V Max.

TYPICAL BIOSWALE SECTION



SECTION A-A

NOTES:
1. This Trench Shall Be Constructed So As To Prevent Point Discharges And/Or Erosion.
2. Trenches May Be Placed No Closer Than 15 m To One Another. (30 m Along Flowline)
3. Trench And Grade Board Must Be Level. Align To Follow Contours Of Site.
4. Support Post Spacing As Required By Soil Conditions To Ensure Grade Board Remains Level.

* 15% Max. For Flow Control / Water Quality Treatment In Rural Areas.

STANDARD DISPERSION TRENCH
WITH NOTCHED GRADE BOARD

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

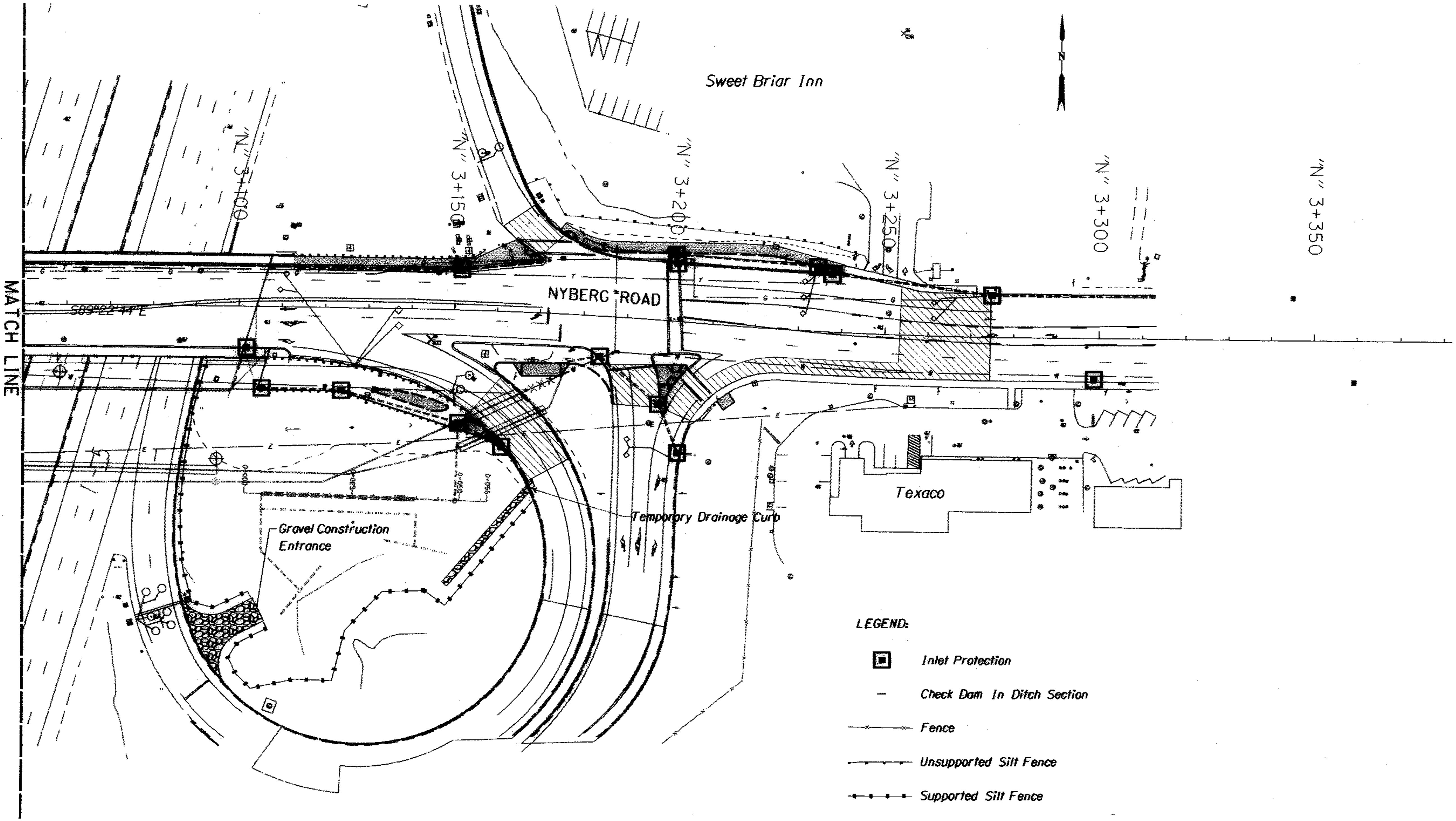
OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

Reviewed By - Dave Simmons
Designed by - Steve Katko
Drafted by - Gary Gray

DRAINAGE DETAILS

SHEET NO. 2B



LEGEND:

- Inlet Protection
- Check Dam In Ditch Section
- Fence
- Unsupported Silt Fence
- Supported Silt Fence
- Temporary Ditch
- Permitted In-Water Work Zone
- No Work Area
- Staging Area
- Riprap/Gravel

0 10 20 30 40 50
Scale In Meters

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

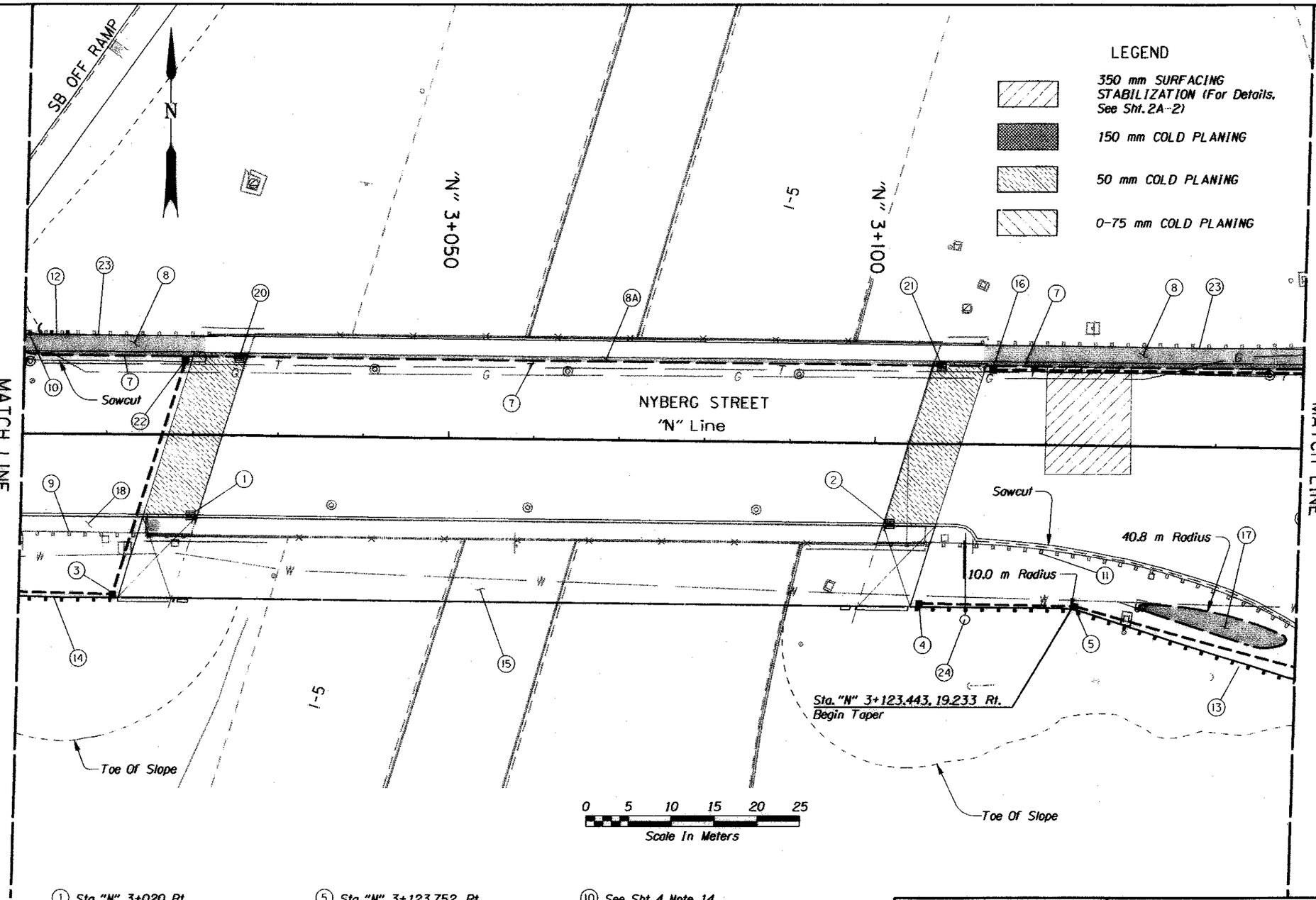
Reviewed By - Tim Yamada
Designed by - Michael Soliwoda
Drafted by - Gary Gray

EROSION CONTROL PLAN
STA. "N" 3+050 TO 3+350
STA. "CN2" 0+340 TO 0+000

SHEET NO. 2D-3

11-JUL-2003 12:34:45
NDM:168432:168431ec03.dlv

CH2MHILL



(1) Sta. "N" 3+020, Rt.
Remove Inlet

(2) Sta. "N" 3+102, Rt.
Remove Inlet

(3) Sta. "N" 3+010.904, Rt.
Const. Type "G-2" Inlet
Inst. 300 mm Sew. Pipe - 28.9 m

(4) Sta. "N" 3+105.577, Rt.
Const. Type "G-2" Inlet

(5) Sta. "N" 3+123.752, Rt.
Const. Type "G-2" Inlet
Inst. 300 Sew. Pipe - 18.2 m

(7) Const. Standard Curb

(8) Const. P.C. Conc. Walk

(8A) Const. Sidewalk Widening
(For Details, See Drg. No. 63686)

(9) See Sht. 4, Note 13
Remove Extg. Guardrail

(10) See Sht. 4, Note 14
Remove Extg. Guardrail

(11) Sta. "N" 3+100.470 To
Sta. "N" 3+154.706, Rt.
Remove Extg. Guardrail - 76 m

(12) Sta. "N" 2+998.579 To
Sta. "N" 3+006.199
Remove Extg. Guardrail - 7.62 m
Reinstall Extg. End Piece
And Guardrail - 3.81 m

(13) Sta. "N" 3+104.516, 19.233 Rt. To
Sta. "N" 3+165.811, 34.963 Rt.
Const. Guardrail - 45.46 m (Type 2A)
Const. Guardrail - 7.62 m (Type 3)
Const. Guardrail To Bridge Transition
Sta. "N" 3+104.516 To
Sta. "N" 3+148.897
Const. Drainage Curb - 45.28 m
(See Drg. No. RD470)

(14) See Sht. 4, Note 16
Const. Guardrail
Const. Guardrail To Bridge Transition
Const. Drainage Curb
(See Drg. Nos. RD410, BR209)

(15) Br. No. 07582A
Sta. "N" 3+023.362 To Sta. "N" 3+104.094
Const. Bridge Widening
(For Details, See Shts. 63680 To 63697)

(16) Sta "N" 3+113.724
Const. Type "G-2" Inlet

(17) Const. Type "C" Conc. Island (Mountable)

(18) Remove Extg. Walk

(19) Note Not Used

(20) Sta. "N" 3+025, Lt.
Remove Inlet

(21) Sta. "N" 3+108, Lt.
Remove Inlet

(22) Sta. "N" 3+019.075, Lt.
Const. Type "G-2" Inlet

(23) Protect And Maintain Guardrail

(24) Const. Cantilever Sign Support
(See Drg. Nos. BR943 Thru BR948 Incl.
And Drg. No. 63861)

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

REGISTERED PROFESSIONAL ENGINEER
64429PE
OREGON
JAN. 23, 2001
STEVEN N. KATKO
EXPIRES: 6/30/2005

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

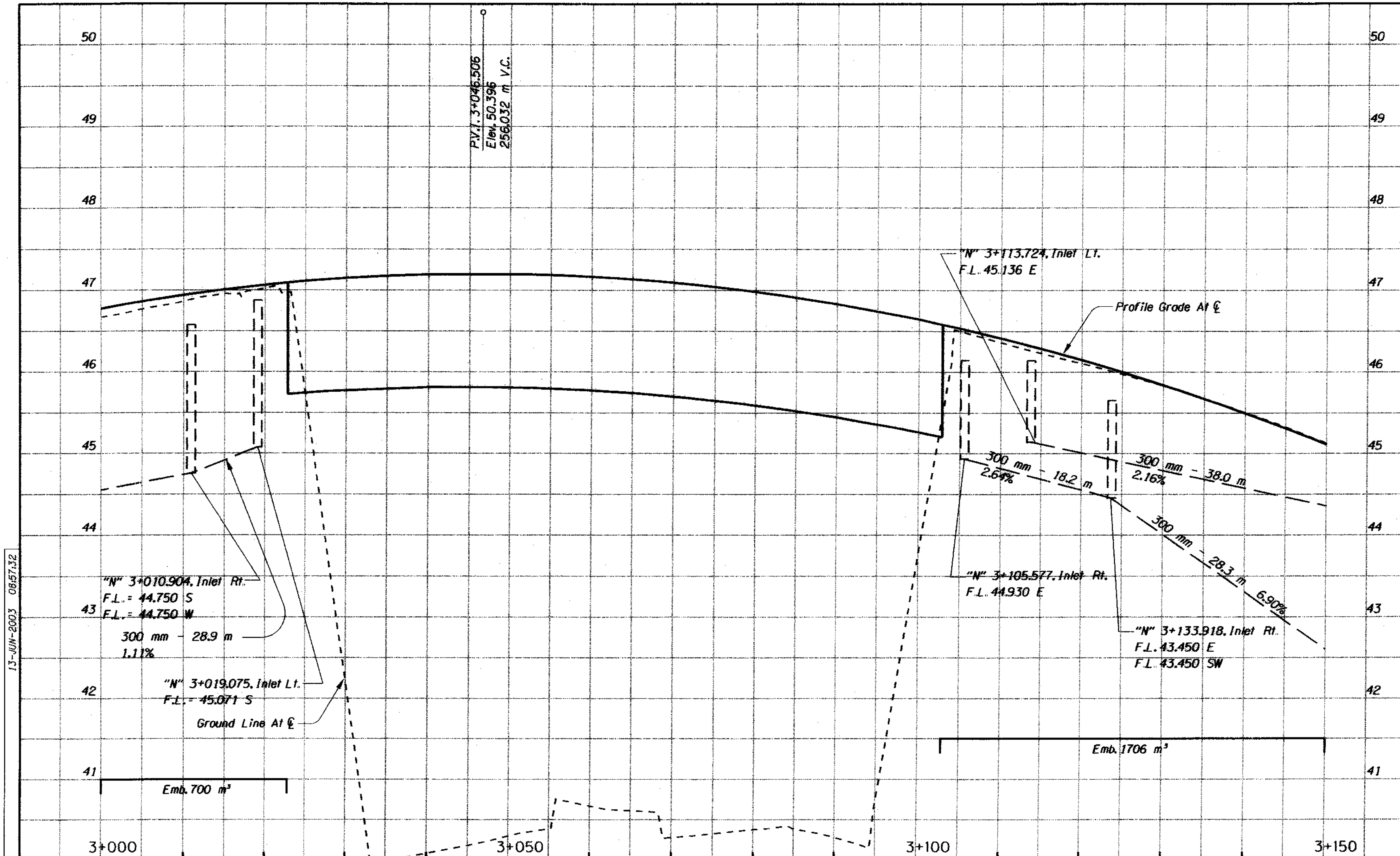
SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

Reviewed By - Dave Simmons
Designed by - Steve Katko
Drafted by - Gary Gray

ROADWAY PLAN
STA. "N" 3+000 TO 3+150

SHEET NO. 5

CH2MHILL



13-JUN-2003 08:57:32

NDM:16843I:16843Ipr05.dlv

0 5 10 15 20 25
Horizontal Scale In Meters

0.0 0.5 1.0 1.5 2.0 2.5
Vertical Scale In Meters

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

REGISTERED PROFESSIONAL ENGINEER
64429PE
OREGON
JAN. 23, 2001
STEVEN N. KATKO
EXPIRES: 6/30/2005

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

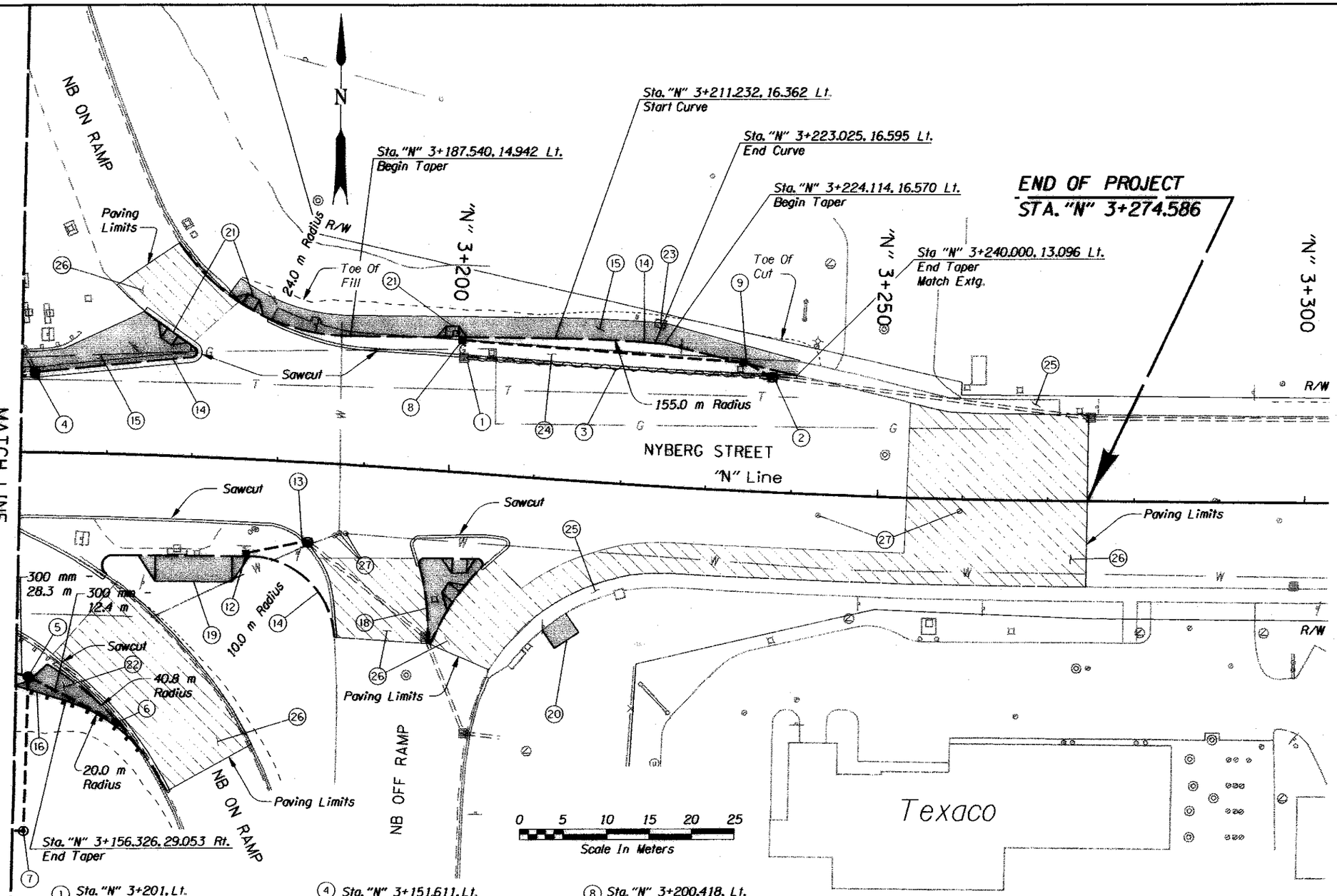
SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

Reviewed By - Dave Simmons
Designed by - Steve Katko
Drafted by - Gary Gray

ROADWAY PROFILE
STA. "N" 3+000 TO 3+150

SHEET NO. 5A

VIEW



(1) Sta. "N" 3+201. Lt.
Remove Inlet

(2) Sta. "N" 3+237.150, 13.37 Lt.
Remove Inlet
Const. Conc. Manhole
Rim El 41.092
Inst. 300mm Sew. Pipe - 3.5 m
Connect to Extg. Sew. Pipe

(3) Abandon Pipe - 35.9 m

(4) Sta. "N" 3+151.611. Lt.
Remove Inlet
Const. Type "G-2" Inlet, Lt.
Inst. 300 mm Sew. Pipe - 1.0 m
Conn. to Extg. Sew. Pipe

(5) Sta. "N" 3+153.758, 27.381 Rt.
Const. Conc. Manhole (Sumped)
Inst. 300 mm Sew. Pipe - 40.7 m
(See Drg. Nos. RD336, RD344, RD356)

(6) Sta. "N" 3+166.815, Rt.
Const. Type "G-2" Inlet

(7) See Note 1,
Sht. 6B

(8) Sta. "N" 3+200.418, Lt.
Const. Type "G-2" Inlet

(9) Sta. "N" 3+233.718, Lt.
Const. Type "G-2" Inlet
Inst. 300 mm Sew. Pipe - 32.9 m

(10) Note Not Used

(11) Note Not Used

(12) Sta. "N" 3+176.906, Rt.
Const. Type "G-2" Inlet

(13) Sta. "N" 3+183.400, 9.332 Rt.
Const. Conc. Manhole
Rim El 43.349
Inst. 300 mm Sew. Pipe - 6.1 m
Conn. to Extg. Sew. Pipe

(14) Const. Standard Curb

(15) Const. P.C. Conc. Walk

(16) See Sht. 5, Note 13
Const. Guardrail
Const. Guardrail To Conc. Barrier Transition
Const. Drainage Curb
(See Drg. No. RD530)

(17) Note Not Used

(18) Const. Type "C" Conc. Island (Mountable)
(See Drg. Nos. RD710)

(19) Sta. "N" 3+170.744, 11.549 Rt.
Const. Conc. Maint. Pad

(20) Sta. "N" 3+213.612, 16.551 Rt.
Const. Conc. Controller Maint. Pad

(21) Const. Sidewalk Ramp, Option "C"

(22) Const. Type "C" Conc. Island (Mountable)

(23) Relocate Elec. Vault (By Others)

(24) Remove Extg. Walk

(25) Protect And Maintain Extg. Walk

(26) AC Pavement Match
(See Drg. No. RD610)

(27) Adjust Box

LEGEND

- 350 mm SURFACING STABILIZATION (For Details, See Sht. 2A-2)
- 150 mm COLD PLANING
- 50 mm COLD PLANING
- 0-75 mm COLD PLANING

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

REGISTERED PROFESSIONAL ENGINEER
64429PE
OREGON
JAN. 23, 2001
STEVEN N. KATKO
EXPIRES: 6/30/2005

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

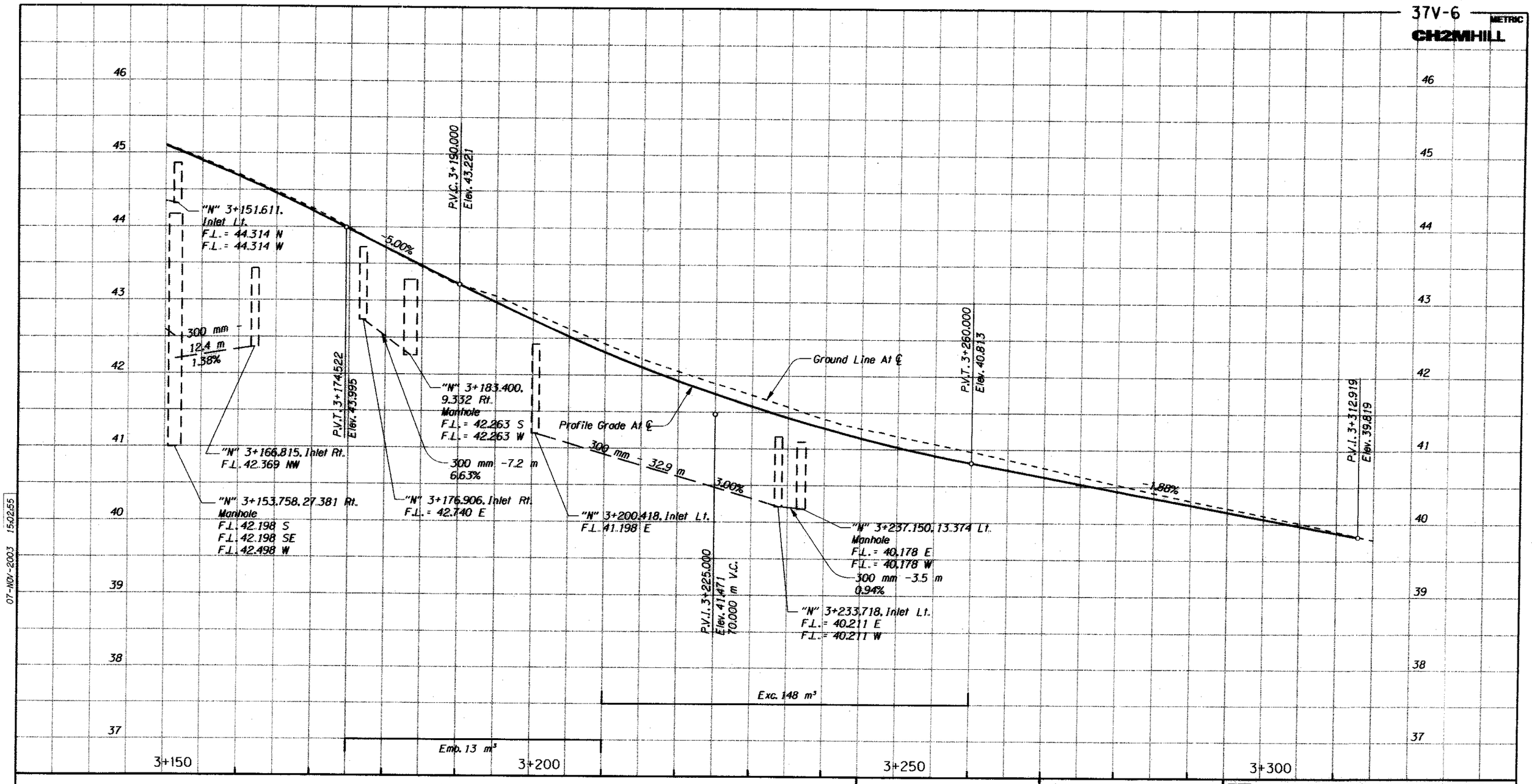
SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

Reviewed By - Dave Simmons
Designed by - Steve Katko
Drafted by - Gary Gray

ROADWAY PLAN
STA. "N" 3+150 TO 3+275

SHEET NO. 6

CH2MHILL



07-NOV-2003 15:02:55

NDM:168431; 168431pr06.dwn

0 5 10 15 20 25
Horizontal Scale In Meters

0.0 0.5 1.0 1.5 2.0 2.5
Vertical Scale In Meters

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

REGISTERED PROFESSIONAL ENGINEER
64429PE
OREGON
JAN. 23, 2001
STEVEN N. KATKO
EXPIRES: 6/30/2005

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

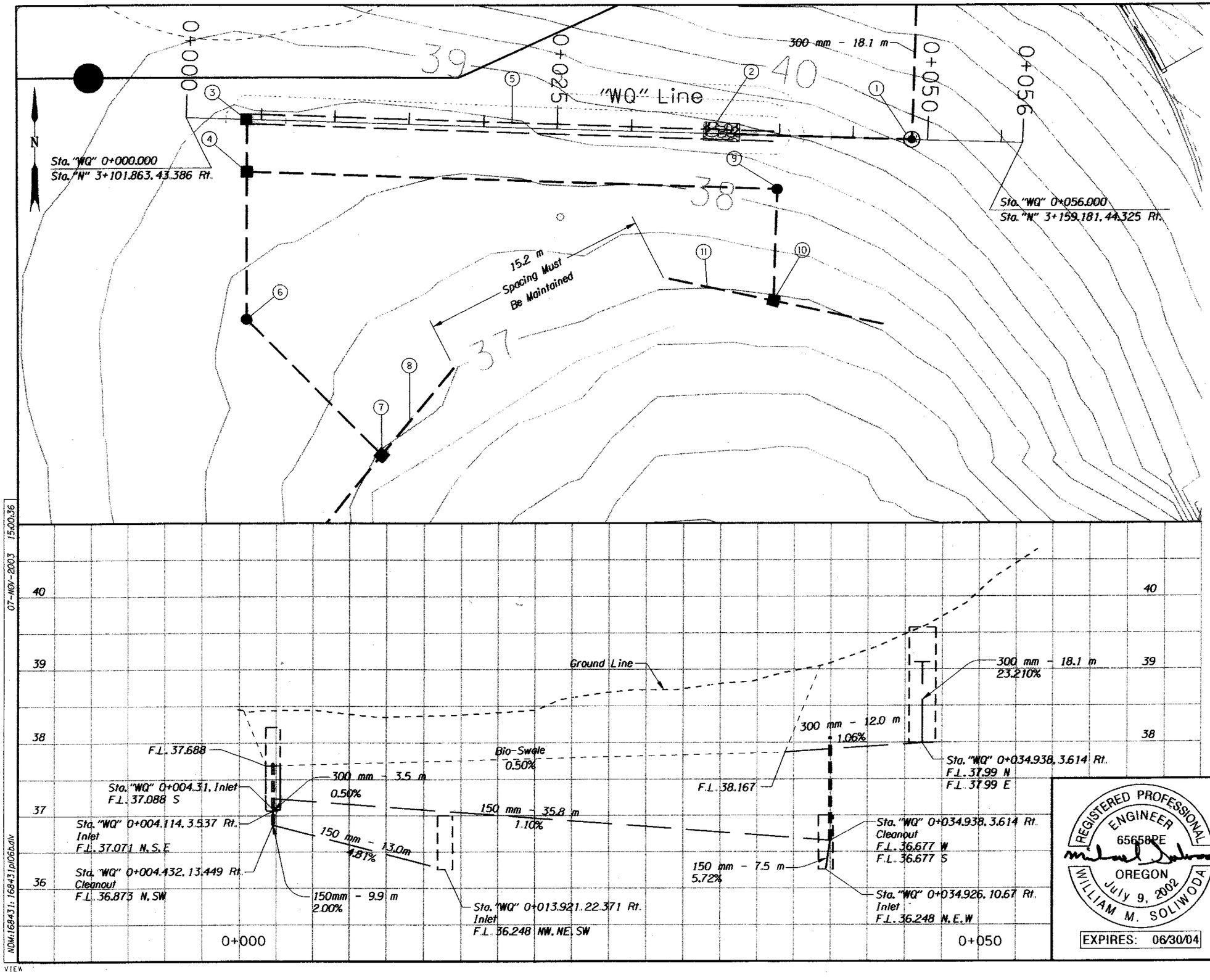
SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

Reviewed By - Dave Simmons
Designed by - Steve Katko
Drafted by - Gary Gray

ROADWAY PROFILE
STA. "N" 3+150 TO 3+275

SHEET NO. 6A

CH2MHILL



(1) Sta. "WQ" 0+048.941
Const. Conc. Manhole
Rim El. 39.611
Inst. 300 mm Sew. Pipe - 18.1 m
(See Std. Drg. Nos. RD336, RD344, RD356)

(2) Sta. "WQ" 0+036.910
Const. Riprap Outlet Basin
Inst. 300 mm Sew. Pipe - 12.0 m
(For Details, See Sht. 2B)

(3) Sta. " WQ" 0+007.23
Const. Type "D" Inlet
F.L. 37.701
(See Std. Drg. No. RD364)

(4) Sta. "WQ" 0+004.432, 13.449 Rt
Const. Type "B" Inlet
Grate El 38.214
Inst. 300 mm Sew. Pipe - 3.5 m
(See Std. Drg. No. RD368)

(5) Sta. "WQ" 0+001.782 To
Sta. "WQ" 0+036.910
Const. Bio-Swale
(For Details, See Sht. 2B)

(6) Sta. 0+004.432, 13.449 Rt.
Inst. Cleanout
F.L. 36.873
Inst. 150 mm Sew. Pipe - 9.9 m
(For Detail, See Sht. 2B)

(7) Sta. "WQ" 0+013.921, 22.371 Rt.
Const. Type "B" Inlet
Grate El 37.000
Inst. 150 mm Sew. Pipe - 13.0 m

(8) Sta. "WQ" 0+009.316, 28.442 Rt. To
Sta. "WQ" 0+018.527, 16.301 Rt.
Const. Dispersion Trench
(For Details, See Sht. 2B)

(9) Sta. "WQ" 0+039.985, 3.626 Rt.
Inst. Cleanout
F.L. 36.732
Inst. 150 mm Sew. Pipe - 35.8 m

(10) Sta. "WQ" 0+039.962, 11.11 Rt.
Const. Type "B" Inlet
Grate El 37.000
Inst. 150mm Sew. Pipe - 7.5 m

(11) Sta. "WQ" 0+032.459, 9.785 Rt. To
Sta. "WQ" 0+047.463, 12.459 Rt.
Const. Dispersion Trench

0 2.5 5 7.5 10 12.5
Scale In Meters

REGISTERED PROFESSIONAL ENGINEER
65658PE
OREGON
July 9, 2002
WILLIAM M. SOLIWODA
EXPIRES: 06/30/04

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

SW NYBERG ROAD AT I-5
PACIFIC HWY (I-5)
WASHINGTON COUNTY

Reviewed By - Dave Simmons
Designed by - Steve Katko
Drafted by - Gary Gray

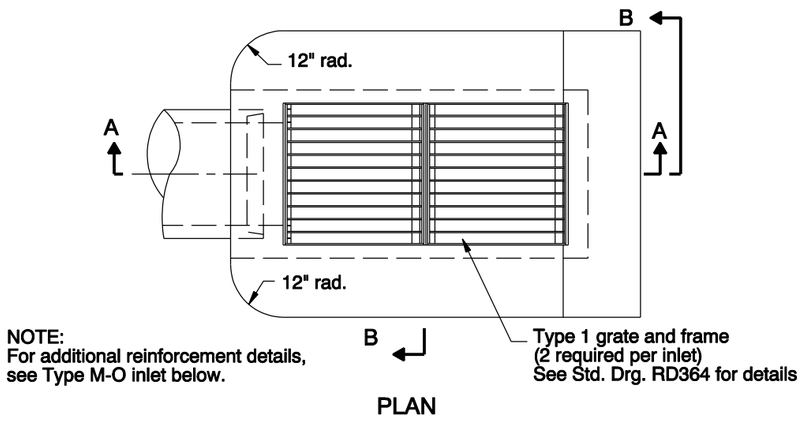
DRAINAGE DETAILS
SWALE PLAN

SHEET NO. 6B

07-NOV-2003 15:00:36
NDM:168431: 168431pl06b.dw
VIEW

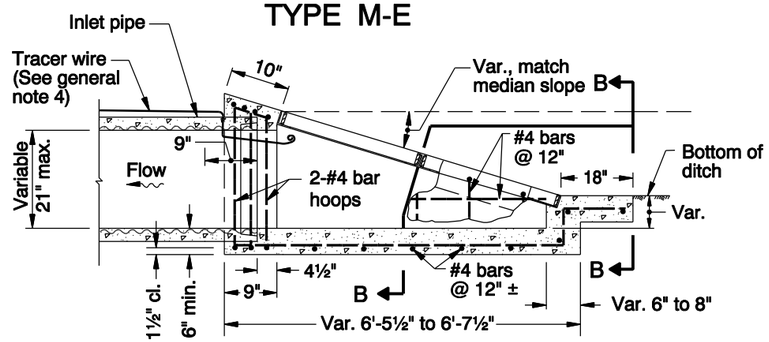
rd368.dgn 30-JUN-2009

TYPE M-E

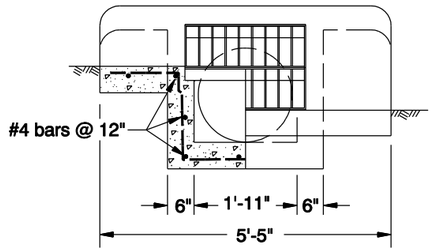


NOTE:
For additional reinforcement details, see Type M-O inlet below.

PLAN

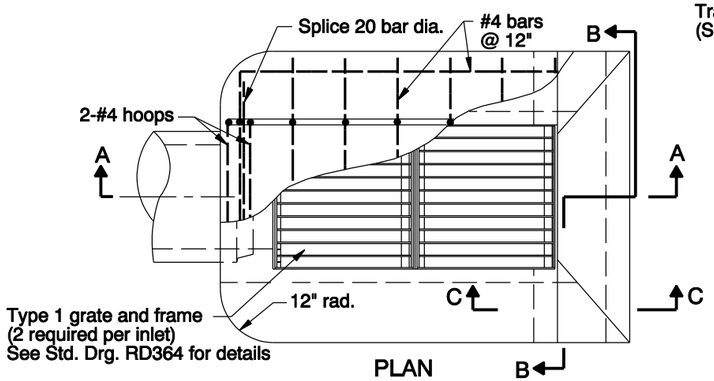


SECTION A-A

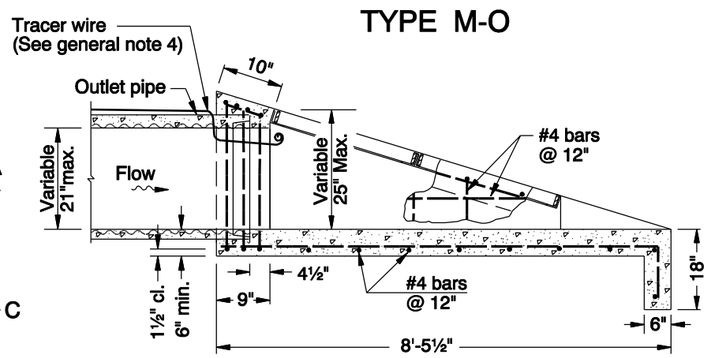


SECTION B-B

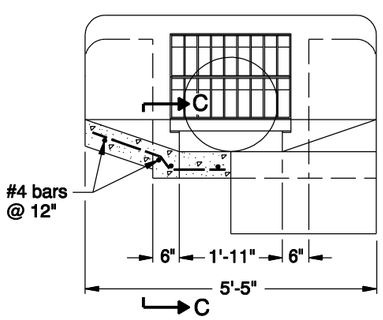
TYPE M-O



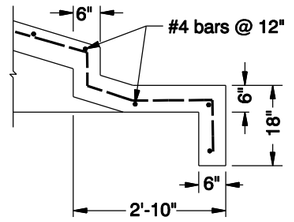
PLAN



SECTION A-A



SECTION B-B

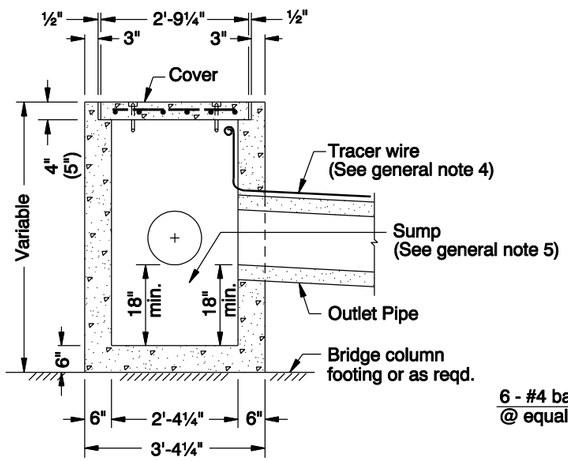


SECTION C-C

GENERAL NOTES FOR ALL DETAILS:

1. Maximum pipe sizes for use with type M-E and M-O inlets are 21" round and 21" x 15" arch pipe.
2. All reinforcement to be placed a minimum of 2" clear of nearest face of concrete unless otherwise shown or noted. Reinforcement to be lapped 20 bar diameters at splices.
3. When uncoated metal pipe or arch pipe are used, an asphaltic or similar type protective coating shall be applied to the exterior surface.
4. See Std. Drg. RD336 for tracer wire details, or approved alternate.
5. Provide sump only where shown on plans, and allowed by jurisdiction.
   For sump details, see Std. Drg. RD364.

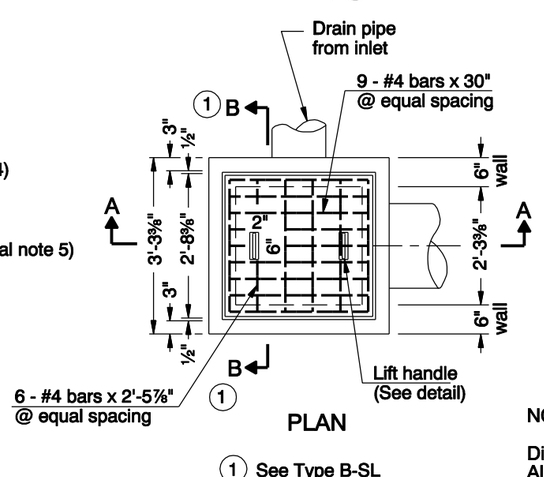
TYPE B



SECTION A-A

* All cover bars for Type B & B-SL inlets to be placed 1½" clear of nearest face of concrete unless shown or noted otherwise.

TYPE B-SL

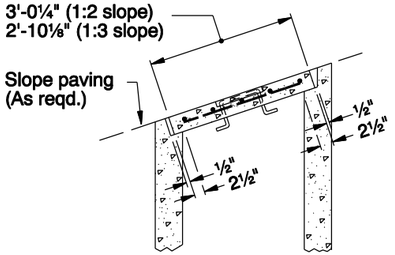


PLAN

1 See Type B-SL

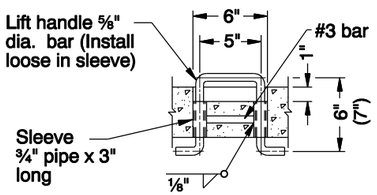
SLOPE INSTALLATION

(For details not shown, see Type B)



SECTION B-B

LIFT HANDLE



NOTE: ("TYPE B" MODIFIED INLET)

Dimensions shown in parenthesis are for Type B Modified inlet. All cover bars for "Type B" Modified inlet are to be placed 1" min. clear of bottom face of concrete and 2½" min. clear of top face of concrete. "Type B" modified inlet to be used if B inlet is under traffic.

CALC. BOOK NO. _____

BASELINE REPORT DATE _____

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON STANDARD DRAWINGS

CONCRETE INLETS
TYPE M-E, M-O, B AND B-SL

2008

DATE	REVISION DESCRIPTION
06-2009	REVISED & ADDED NOTES

RD368