OPERATION & MAINTENANCE MANUAL

DFI No. : D00264
Facility Type: Water Quality Biofiltration Swale

August, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00264**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 38V-129
Location:	District: 2B
	Highway No.: 064
	Mile Post: 10.26/10.30 (beg./end)
	Description: This facility is located on the east side of OR213 (Hwy.063) at the Park Place intersection and overcrossing of I-205 (Hwy 064). The swale is in between the northbound lanes and the on-ramp to the same. Access can be made from either northbound I-205 or the on-ramp adjacent to the OR213 overcrossing.

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:	Murray, Smith & Assoc. Inc., Kevin M. Thelin, (503) 225-9010
Facility construction:	2006
Contractor:	N/A

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 is located on the east side of OR213 (Hwy.063) at the Park Place intersection and overcrossing of I-205 (Hwy 064). The swale is in between the northbound lanes and the on-ramp to the same.

This swale collects sheet flow runoff from the surrounding overcrossing, the on ramp and the northbound lanes of I-205. The water is conveyed to a manhole located southwest of the facility via a 12 inch pipe. The stormwater flows into the facility from the west and is directed overtop a riprap flow spreader at the swale's inlet. From here the water is treated while flowing through the swale before passing overtop another rip rap flow spreader (Point B) and exiting through the outlet (Point C). Once out of the swale the stormwater is directed through a 12-inch pipe and an 18-inch pipe, prior to reaching a ditch outfall located along the east side of the on-ramp; see Point E of the Operational Plan, Appendix A.

A. Maintenance equipment access:
   Access can be made from either northbound I-205 or the on-ramp, leading to NB I-205 adjacent to the OR213 overcrossing.

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: Looking west at the water quality swale and its outlet structure, Point C.

5. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the 12 inch-diameter outlet pipe located at the outlet of the water quality biofiltration swale. This pipe is noted as Point C on the Operational Plans, Appendix A.

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
There are no auxiliary outlets present in this facility.

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

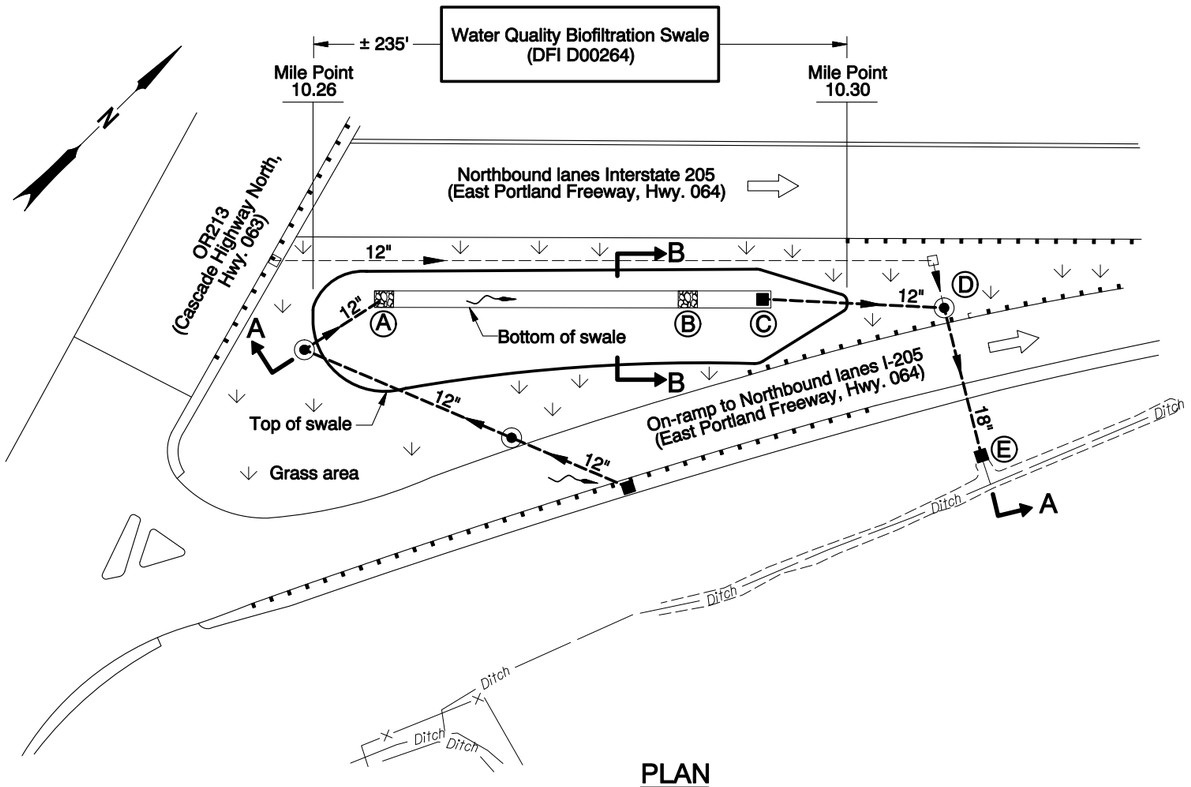
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 731-8304
ODEQ Northwest Region Office	(503) 229-5263

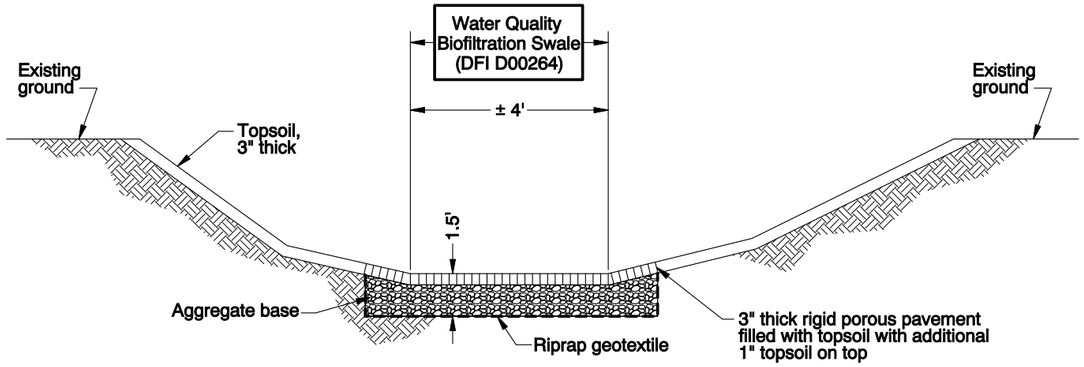
Appendix A

Content:

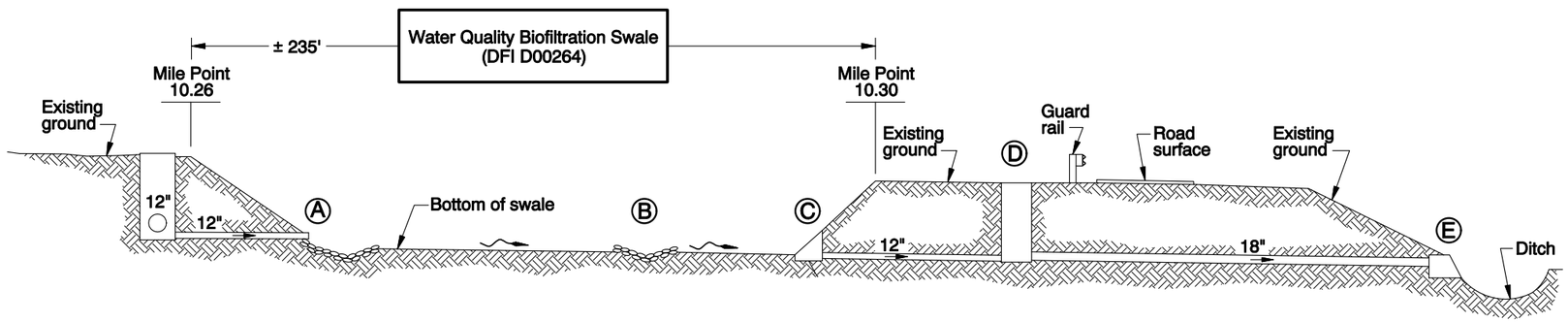
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



SECTION B-B
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- Photo Location / Direction
- Ⓐ Pipe Outfall onto Riprap Flow Spreader at Swale Inlet
- Ⓑ Riprap Flow Spreader
- Ⓒ Swale Outlet Structure
- Ⓓ Manhole Connecting Facility to Conveyance Line
- Ⓔ Outfall into Ditch
- Fence, Right of Way Boundary
- Guard Rail
- Manhole (and or)
- Inlet (and or)
- Traffic Flow / Direction
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Riprap

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wynee Hu

Drafted By: S. Wolfer

DFI D00264
MAINTENANCE DISTRICT 2B HWY 064
WATER QUALITY BIOFILTRATION SWALE
EAST PORTLAND FREEWAY MP 10.26-10.30
CLACKAMAS COUNTY

Appendix B

Content:

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

38V-129

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

PROJECT SITES	
SITE NO.	LOCATION
1	I-205 SB @ N.E. Glisan St. (M.P. 21.12) (Portland)
2	I-205 NB @ Park Place (M.P. 10.24) (Oregon City)

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

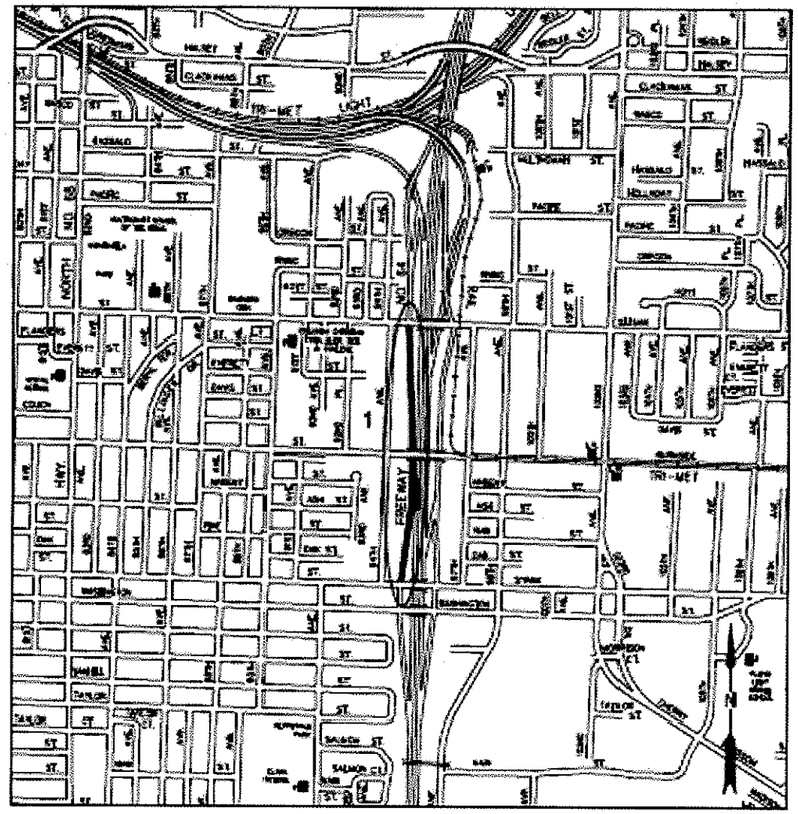
PLANS FOR PROPOSED PROJECT

GRADING, PAVING, DRAINAGE & RAMP METERS

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE

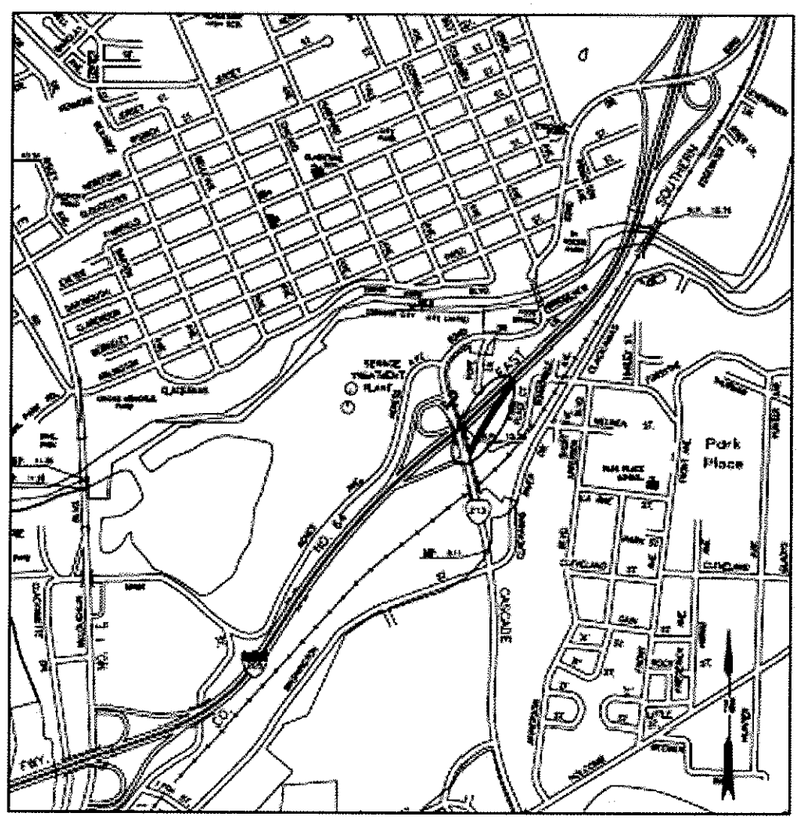
EAST PORTLAND FREEWAY

CLACKAMAS & MULTNOMAH COUNTIES
OCTOBER 2005



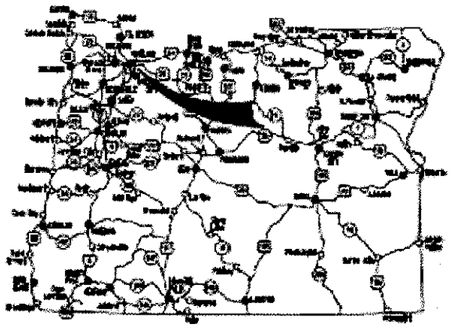
PORTLAND

T. 1 N., R. 2 E., W.M.



OREGON CITY

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



ATTENTION:
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules By Calling The Center. (Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

OREGON TRANSPORTATION COMMISSION

Stuart Foster	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Mike Nelson	COMMISSIONER
Randal Pape	COMMISSIONER
Janice J. Wilson	COMMISSIONER
Lorna Youngs	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION
BY:
MURRAY, SMITH & ASSOC., INC.

REGISTERED PROFESSIONAL ENGINEER
19313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION CONCURRENCE

TECHNICAL SERVICES MANAGING ENGINEER _____ DATE _____

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-1X-5064(031)	1

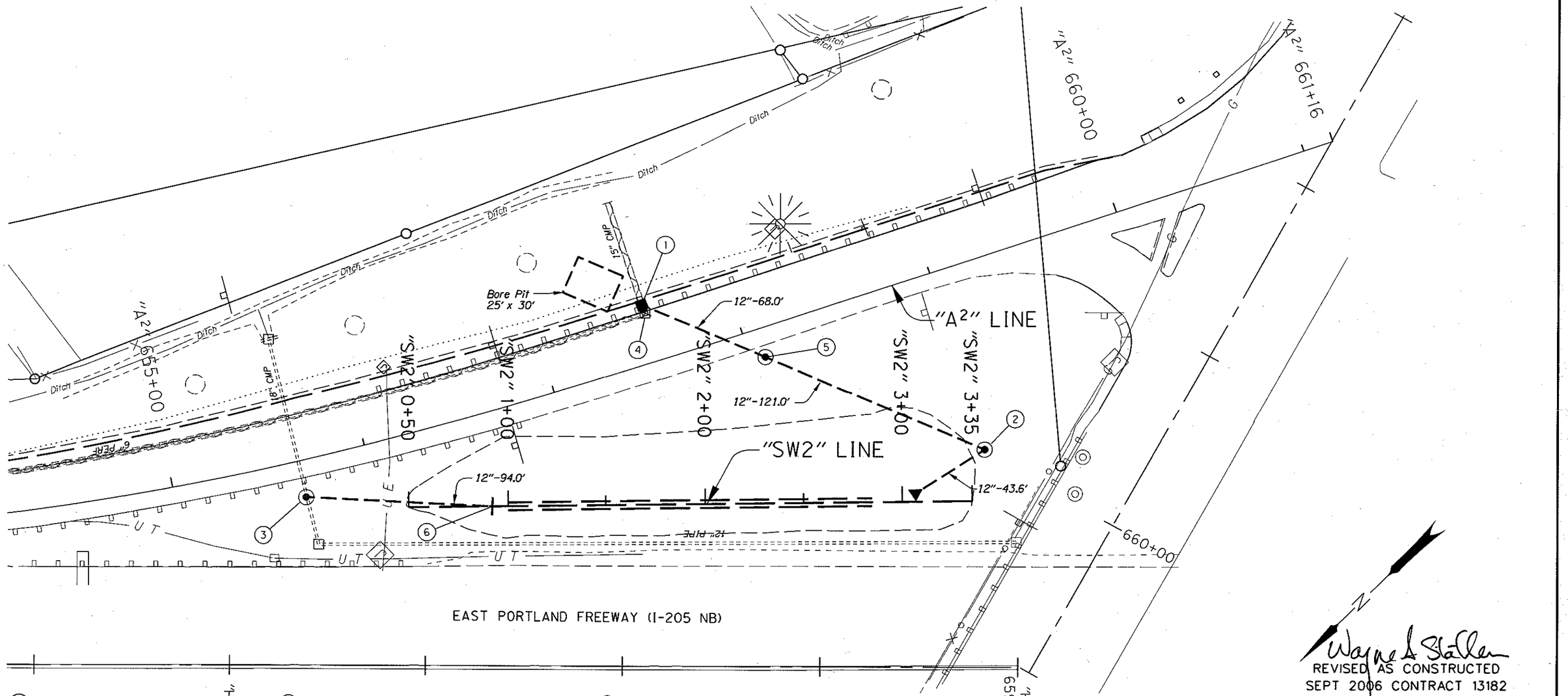
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182
PROJ. MGR. WAYNE STATLER

G:\D4\0693\3130\CAD\OUTGOING\DESIGN\MSA\ADD-1\13464.cvl 10/13/2005 9:11:12 AM hcm

1:100 - 1

SEC. 20,29, T.2S., R.2E., W.M.

38V-129



Wayne L Stallen

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SEPT 2006 CONTRACT 13182

(1) *Sta. "A2" 657+56.22 - 30' Lt.*
Const. Type "G-2" Inlet
Inst. 12" Storm Sew. Pipe - 68.0'
5' Depth
(See Drg. No. RD364)

(2) *Sta. "A2" 658+97.89 - 95' Rt.*
Const. 48" Manhole
Rim Elev = 66.2'±
Inst. 12" Storm Sew. Pipe - 43.6'
10' Depth
Const. Paved End Slope - 33 ft²
(See Drg. No. RD336)

(3) *Sta. "A2" 655+65.55 - 20' Rt.*
Const. 48" Manhole
Rim Elev = ~~53.5'±~~ 54.9'
Connect To Extg. 18" Storm Sew. Pipe (NW And SE)
Inst. 12" Storm Sew. Pipe - 94.0' 10' Depth
(See Drg. No. RD336)

(4) *Sta. "A2" 657+56.48 - 25' Lt.*
Remove Inlet

(5) *Sta. "A2" 658+07.38 - 15' Rt.*
Const. 48" Manhole
Rim Elev = 67.5'±
Inst. 12" Storm Sew. Pipe - 121.0'
10' Depth
(See Drg. No. RD364)

(6) *Sta. "A2" 656+53.62 - 47' Rt.*
Const. Type "M-E" Inlet
(See Drg. Nos. RD366 And RD368)

Plug Or Abandon Extg. Pipe Shown Thus:
Remove Inlet Shown Thus: ☒

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
Portland, Oregon

REGISTERED PROFESSIONAL ENGINEER
19,313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE

EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

DRAINAGE & UTILITIES

SHEET NO. 7A

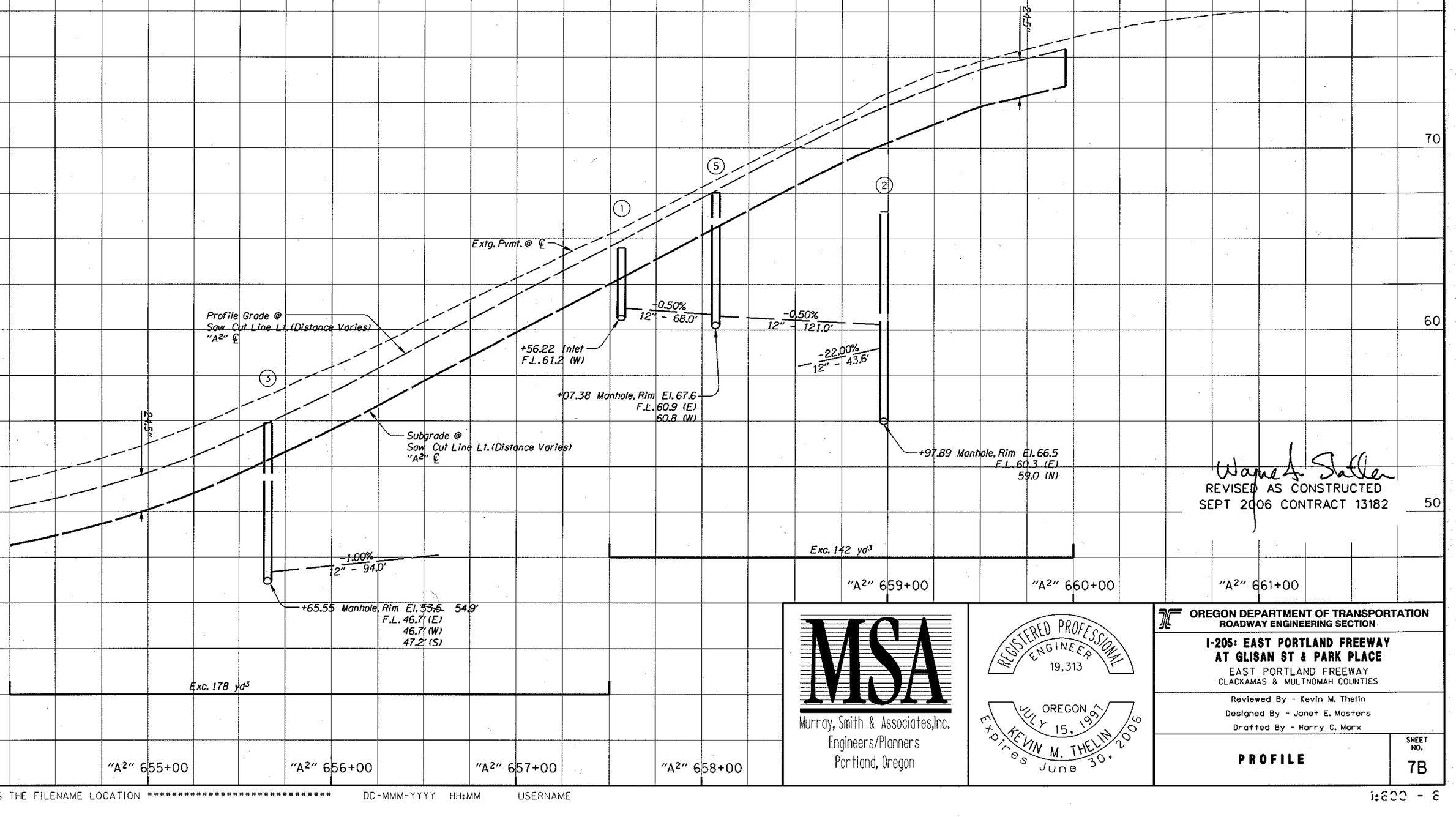
THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

1:600 - 3

"A2" LINE PROFILE

(See Shts. 7 And 7A For Plan View)

38V-129



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CLACKAMAS & MULTNOMAH COUNTIES

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Designed By - Janet E. Masters
Drafted By - Harry C. Marx

PROFILE

SHEET NO. 7B

THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

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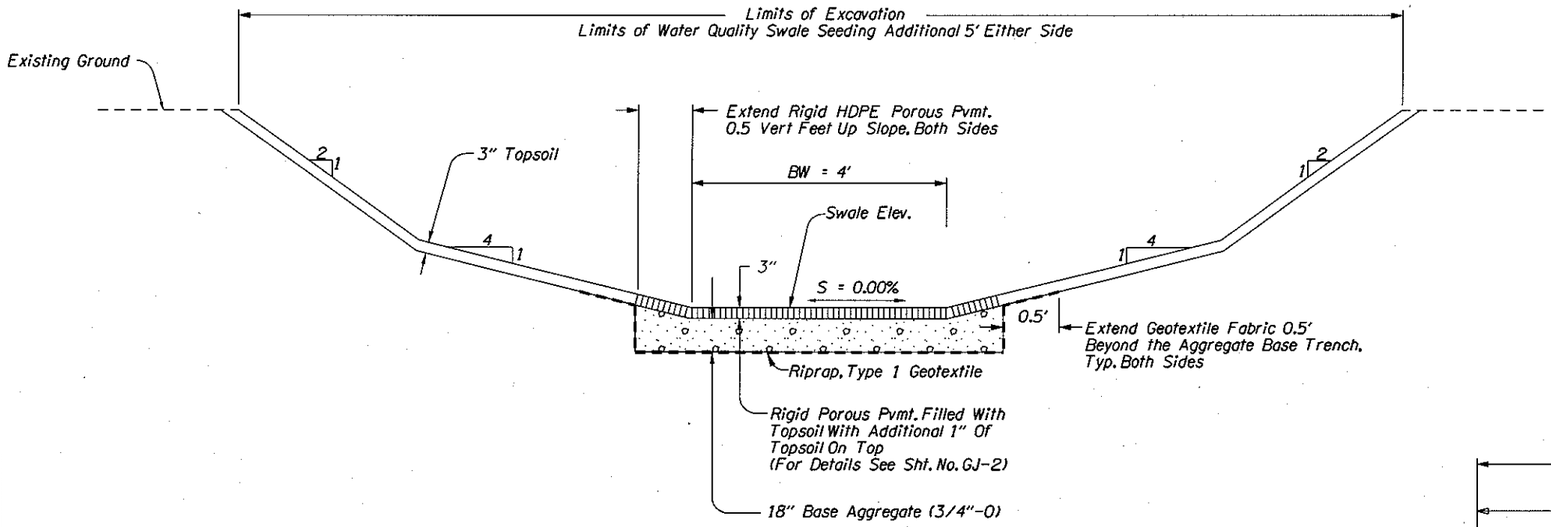
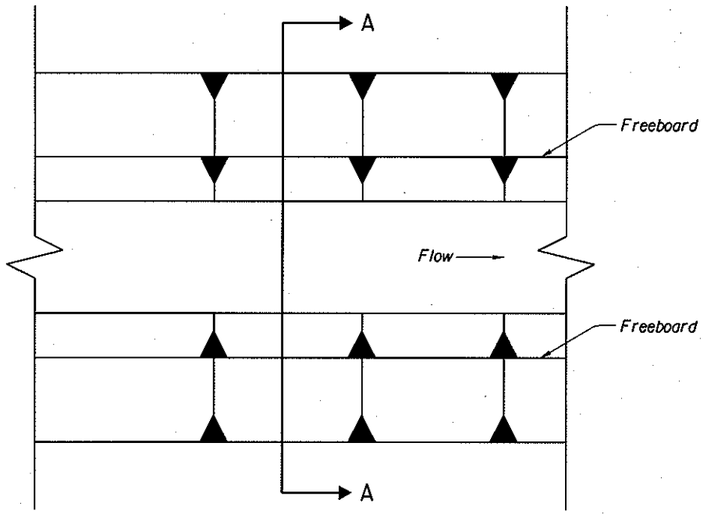
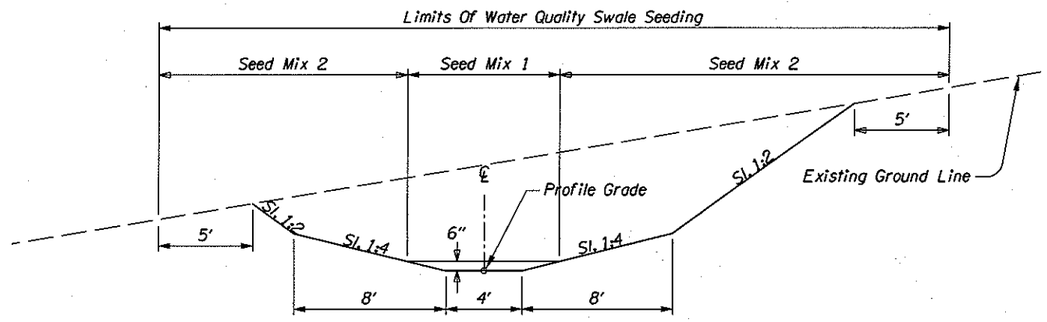


SECTION A-A
SWALE SOIL STRUCTURE



PLAN
GENERAL SWALE LAYOUT



STA. "SW1" 1+00 to STA. "SW1" 3+25
STA. "SW2" 1+00 to STA. "SW2" 2+85

SECTION A-A
SWALE SEEDING LIMITS
(For Seed Mix Details, See Sht. GN)

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ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY
AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

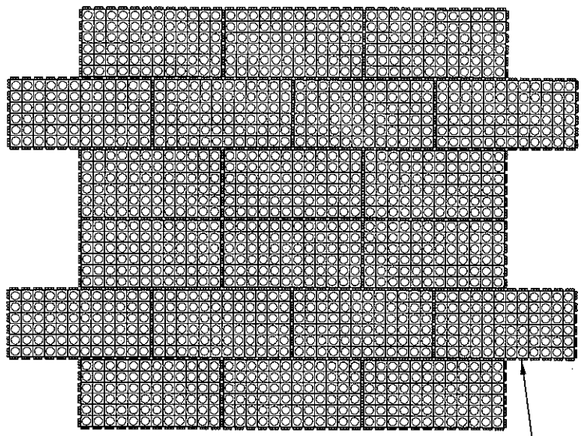
Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

WATER QUALITY DETAILS

SHEET NO. GJ

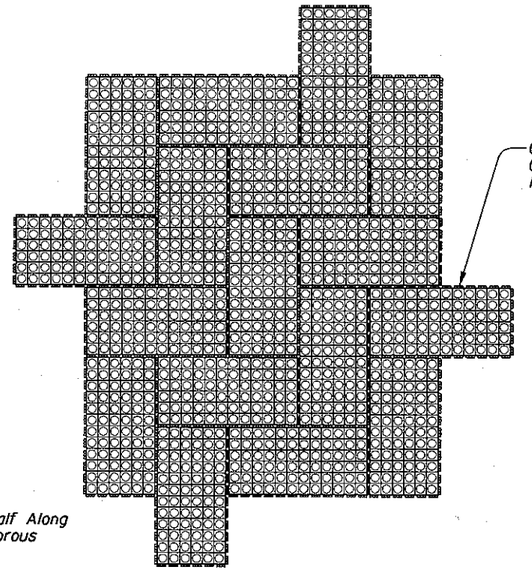
POROUS PAVEMENT DETAILS

38V-129



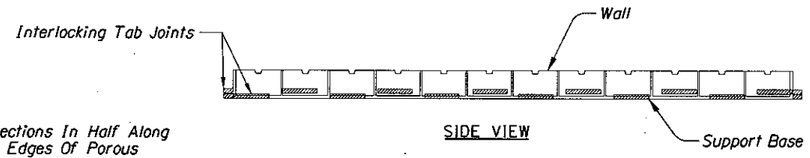
LAYOUT OPTION A- BRICKLAYER PATTERN

Cut Sections In Half Along Outer Edges Of Porous Pavement System

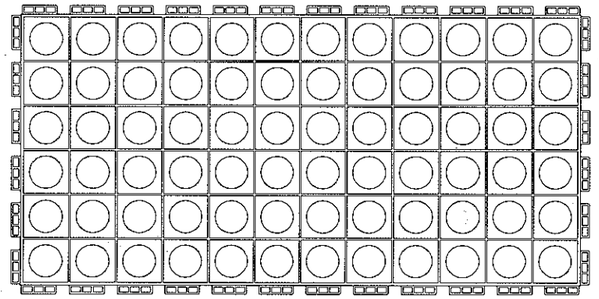


Cut Sections In Half Along Outer Edges Of Porous Pavement System

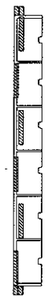
LAYOUT OPTION B - HERRINGBONE PATTERN



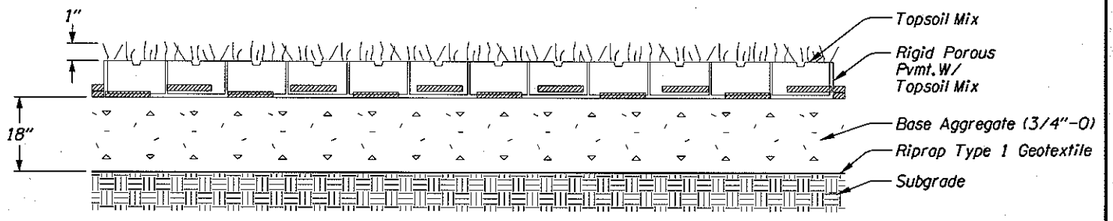
SIDE VIEW



TOP VIEW



END VIEW



TYPICAL CROSS SECTION

Wayne A. Statler

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Portland, Oregon

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19,313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY
AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

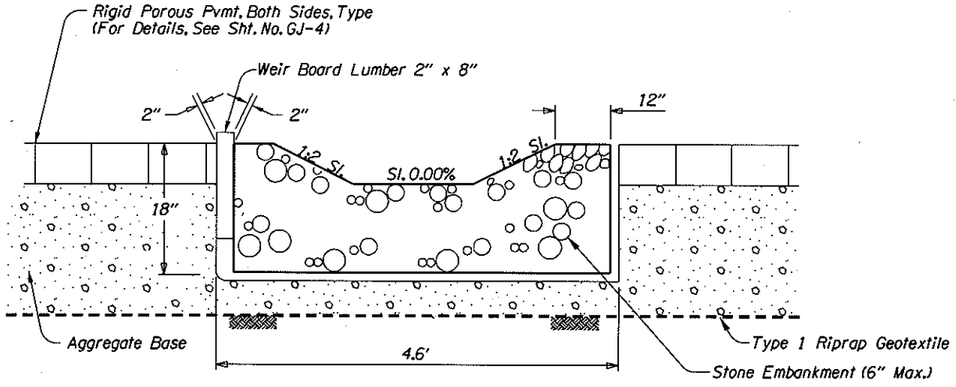
Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

WATER QUALITY DETAILS

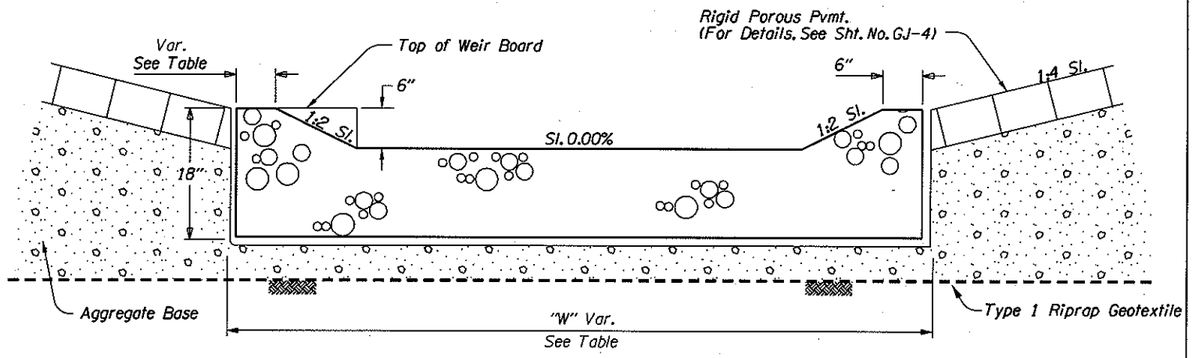
SHEET NO. GJ-2

THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

1:600 - 4

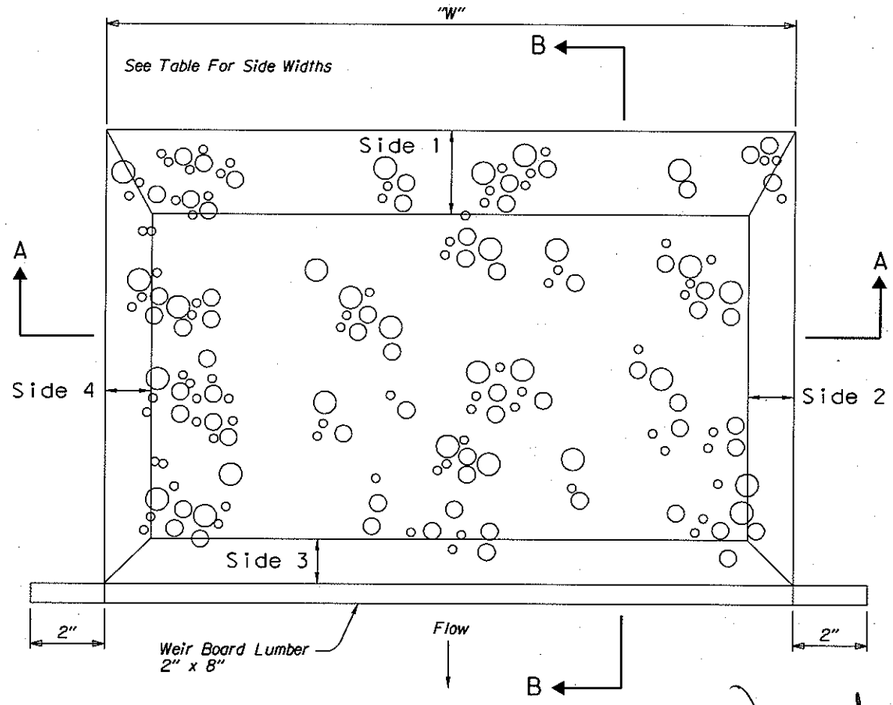


SECTION B-B



SECTION A-A

Station	Side Widths (in) 1	2	3	4	Pipe Outfall Side	"W"	Top of Weir Board Elev.
"SW1" 1+00	12	6	6	12	1	7.0'	278.1'
"SW1" 1+65	12	6	6	8	1.4	6.8'	277.7'
"SW2" 2+85	12	6	6	12	1.4	6.5'	47.1'
"SW2" 1+40	12	6	6	12	-	6.5'	46.8'



PLAN
SWALE FLOW SPREADER

Wayne A. Statler
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182

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Portland, Oregon

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Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE

EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

WATER QUALITY DETAILS

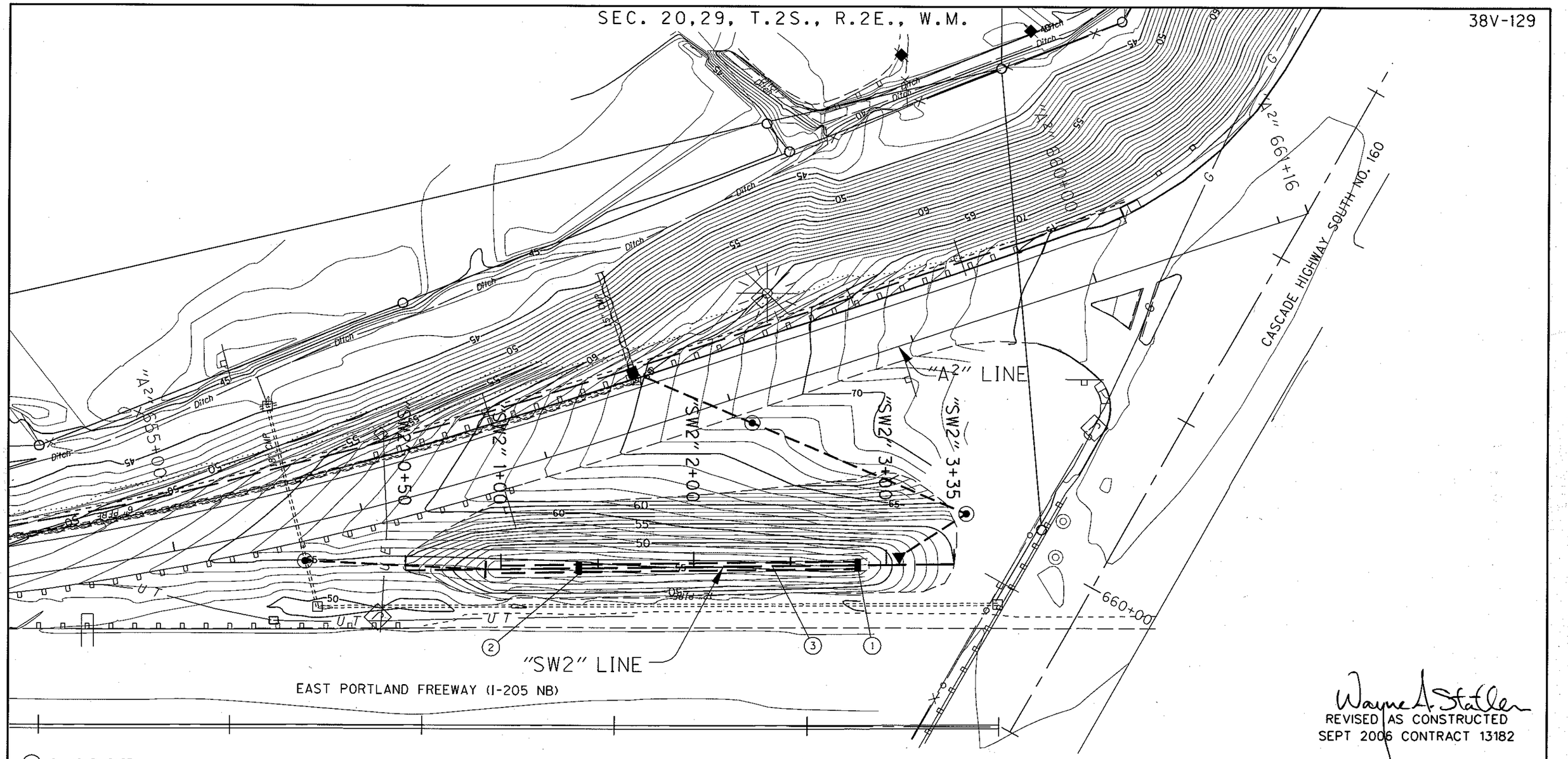
SHEET NO. GJ-3

THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

1:600 - 3

SEC. 20,29, T.2S., R.2E., W.M.

38V-129



(1) *Sta. "SW2" 2+85*
Const. Swale Flow Spreader
Stone Emb. Matl. - 1.5 C.Y.
(For Details, See Sht. GJ-3)

(2) *Sta. "SW2" 1+40*
Const. Swale Flow Spreader
Stone Emb. Matl. - 1.5 C.Y. (For Details, See Sht. GJ-3)

(3) *Sta. "SW1" 1+00 to "SW1" 2+85*
Const. Water Quality Swale
Porous Pavers - 1500 ft²
Riprap, Type 1 Geotextile - 185 ft²
Base Aggregate - 160 Ton
Ditch Exc. - 2450 C.Y.
(For Details, See Shts. GJ & GJ-2)

Wayne A. Statler
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
Portland, Oregon

REGISTERED PROFESSIONAL ENGINEER
19,313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY
AT GLISAN ST & PARK PLACE
EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

WATER QUALITY PLAN

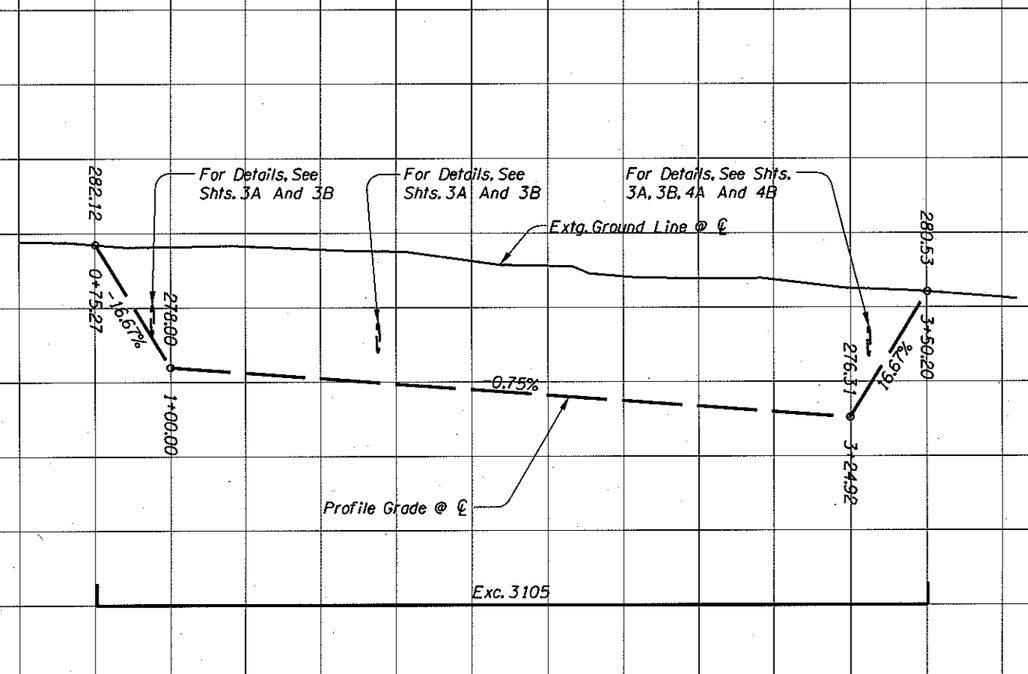
SHEET NO. GJ-5

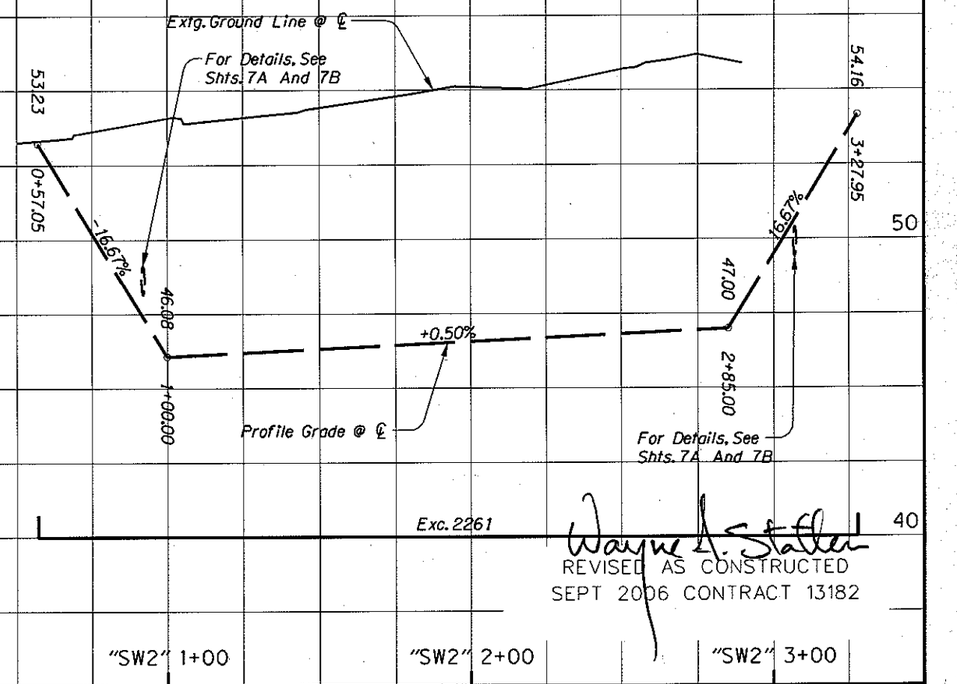
THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

1:600 - 2

"SW1" & "SW2"" LINE PROFILES

(See Sheet GJ-4 For "SW1" Line Plan View
See Sheet GJ-5 For "SW2" Line Plan View)





Wayne L. Stalter
REVISED AS CONSTRUCTED
SEPT 2006 CONTRACT 13182

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
Portland, Oregon

REGISTERED PROFESSIONAL ENGINEER
19,313
OREGON
JULY 15, 1997
KEVIN M. THELIN
Expires June 30, 2006

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: EAST PORTLAND FREEWAY AT GLISAN ST & PARK PLACE

EAST PORTLAND FREEWAY
CLACKAMAS & MULTNOMAH COUNTIES

Reviewed By - Kevin M. Thelin
Designed By - Janet E. Masters
Drafted By - Harry C. Marx

PROFILE

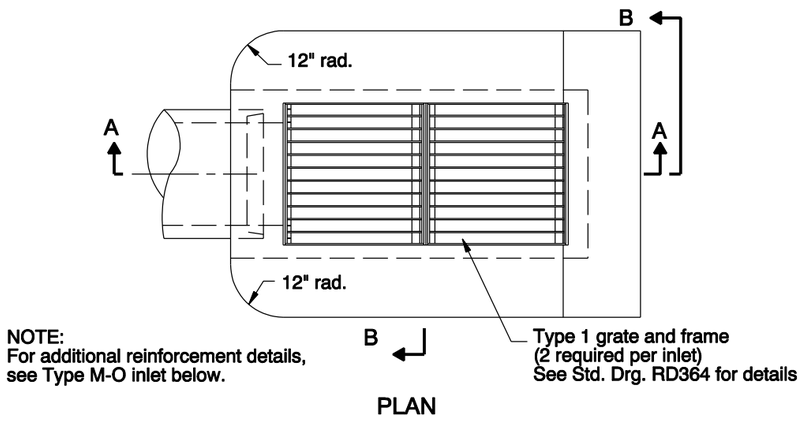
SHEET NO. GJ-6

THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

i:600 - i

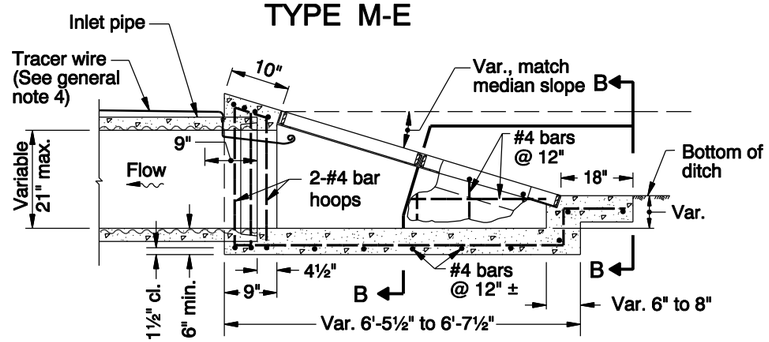
rd368.dgn 30-JUN-2009

TYPE M-E

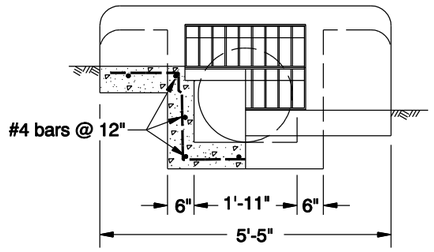


NOTE:
For additional reinforcement details, see Type M-O inlet below.

PLAN

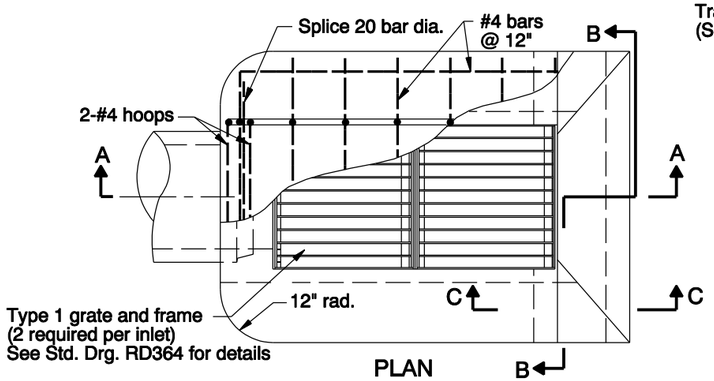


SECTION A-A

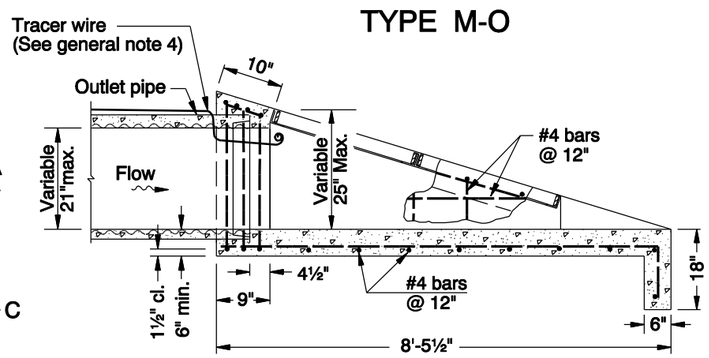


SECTION B-B

TYPE M-O



PLAN



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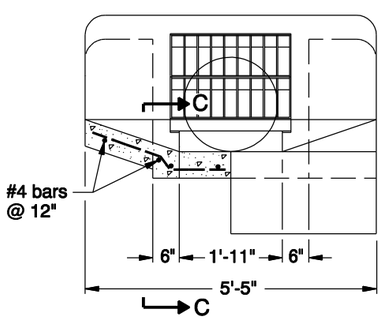
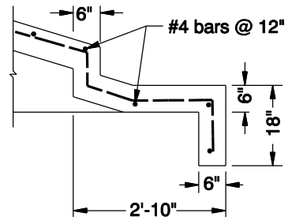


SECTION B-B

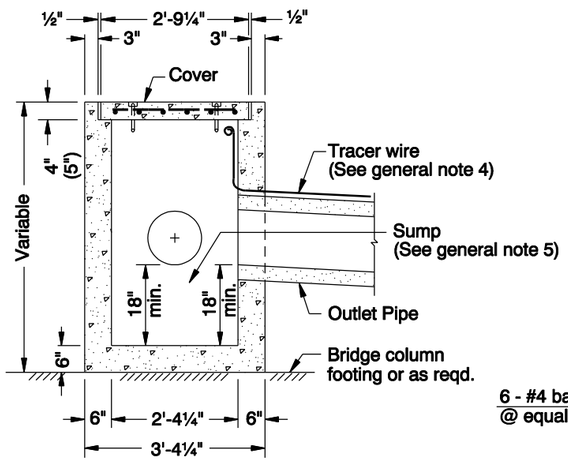


SECTION C-C

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.

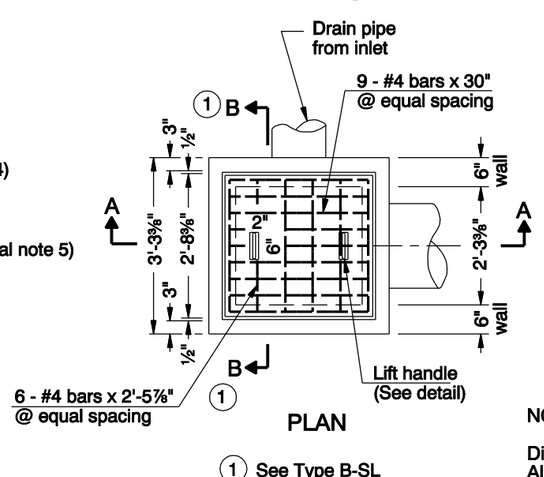
TYPE B



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

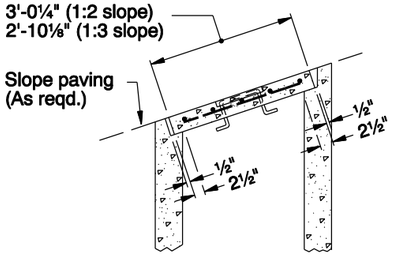


PLAN

1 See Type B-SL

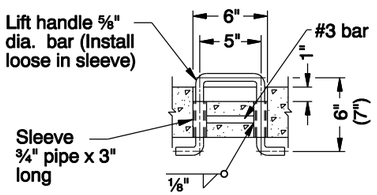
SLOPE INSTALLATION

(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