OPERATION & MAINTENANCE MANUAL

DFI No. D00113
Facility Type: Water Quality Extended Detention Dry Pond

JUNE, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00113**
Facility Type:	Water Quality Extended Detention Dry Pond
Construction Drawings:	(V-File Number) 29V-066
Location:	District: 2B
	Highway No.: 144
	Mile Post: MP 4.97 - 5.00 (beg./end)
	Description: The facility is located in the northeast corner of the Greenburg Road, US217 (Hwy. 144) northbound off-ramp intersection, and is located south of Oak Street. Beaverton, Washington County, Oregon.

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 1 Tech. Center, Thomas D. Lulay, P.E., Tech. Services Mngr., (503) 731-8200
Facility construction:	1998 (Revised 03/13/01)
Contractor:	N/A

4. Storm Drain System and Facility Overview

A water quality extended detention dry pond is a basin that is designed to detain stormwater for a sufficient time to allow particles and attached pollutants to settle. The outlet control structure limits the rate of runoff leaving the pond by using an orifice. These facilities are designed to completely drain over a 48 hour period. The size of these facilities depends on the location and the amount of contributing impervious area.

This facility consists of water quality storage, freeboard storage, an inlet pipe, and an outlet control structure. Treated water from this pond is released to a drainage ditch and eventually flows into Ash Creek. The facility is located at the intersection of Greenburg Road and Oak Street, treating a portion of drainage from the Greenburg Road Overpass. The extended detention dry pond is fed from two separate points; see Point B and C, respectively, of the Operational Plan, Appendix A.
Point B depicts a 12-inch diameter pipe from the north. Point C is a 15-inch diameter pipe that allows water to flow to the facility from the south.

The drainage area from the north includes roadway drainage along the eastside of Greenburg Road from the facility to a point approximately 820 feet to the north. A split-flow manhole located upstream of the facility (Point A in the Operational Plan, Appendix A; see Photo 3) is designed to either direct the water quality flows into the facility, or bypass the high flows through a separate conveyance system which discharges into Ash Creek. The high flows do not receive treatment. Additionally, stormwater drainage is collected from south of the facility to the centerline of the Greenburg I-217 Overpass. This portion is discharged into the 15-inch storm pipe which flows into the facility at the southwest corner.

Photo 1: Extended detention dry pond looking west towards Greenburg Road.

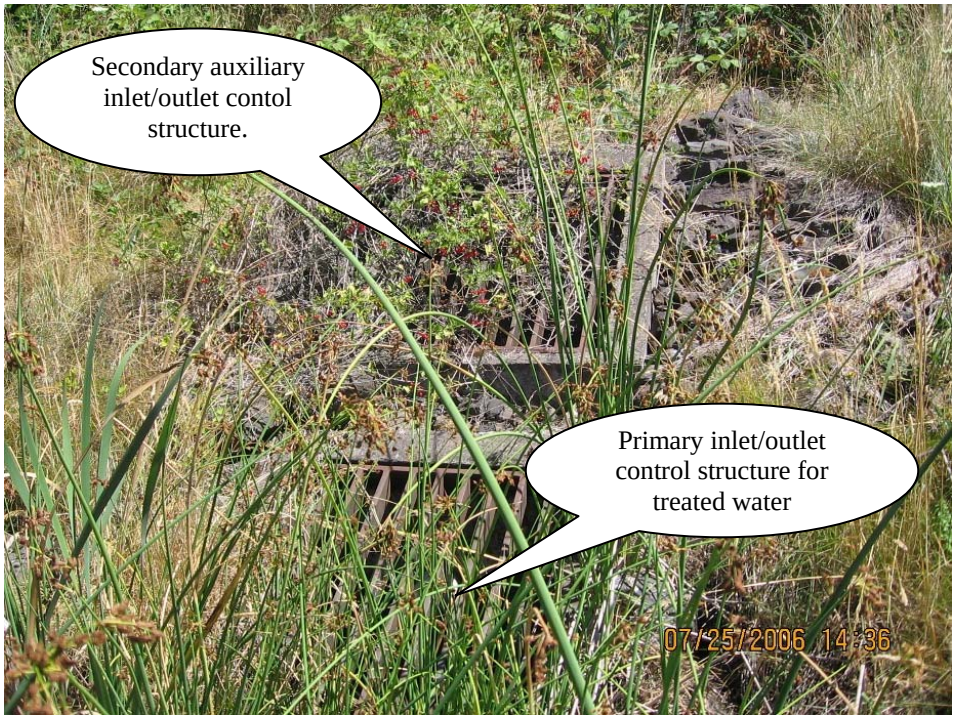


Photo 2: WQ Extended Dry Detention Pond Control Outlet Structure

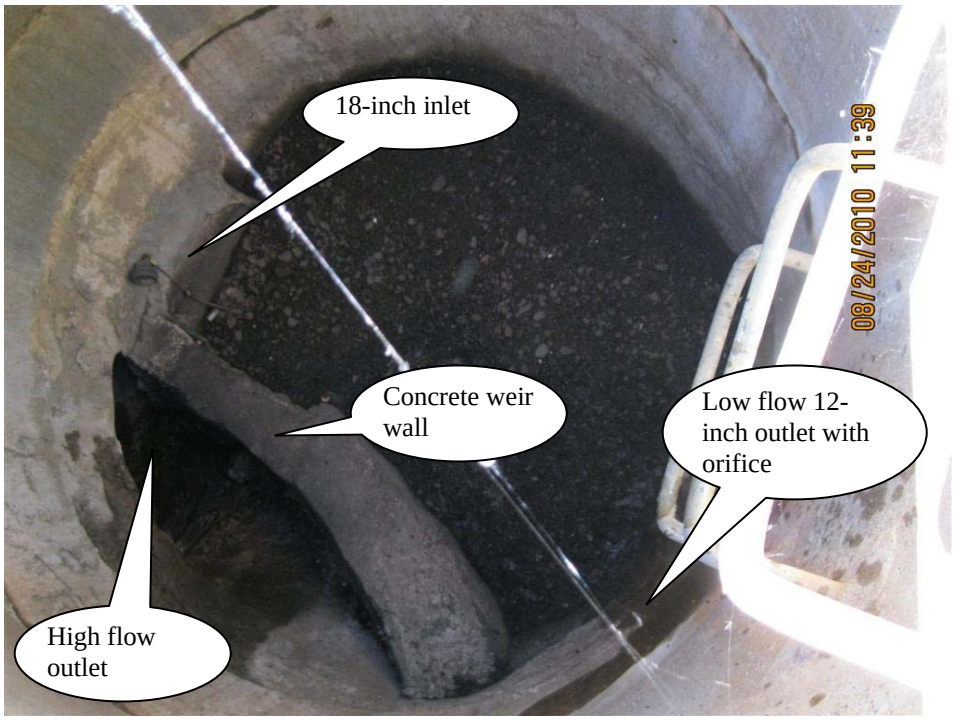


Photo 3: High-split flow manhole looking down. The weir wall is constructed to keep the water quality flow directed through an orifice and the 12-inch outlet. Once the flows exceed the water quality flow level, the water is directed over the weir wall and into the high flow outlet. This picture depicts substantial sediment which appears to be pluging the orfice of the low flow outlet pipe.

A. Maintenance equipment access:
The facility can be accessed for maintenance along Oak Street.

B. Heavy equipment access into facility:

☐ Allowed (no limitations)
☒ Allowed (with limitations)
☐ Not allowed

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☒ Liners
Armored Bank Protection System consisting of cell concrete units paved along bottom of pond; Riprap Geotextile.
☐ Underdrains

5. Facility Haz Mat Spill Feature(s)

The Water Qualtiy Extended Dry Detention Pond can be used to store a volume of liquid by blocking the 12-inch diameter pipe of the outlet control structure at the primary and emergency outlets to the facility (See Photo 2 and Detail A of the Operational 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
A broad crested spillway has been designed as part of the facility's outlet control structure, and acts as an emergency overflow in the event in which the outlet control device is plugged.

Before flows ever reach that high of a level, however, they can be released through the specialized auxiliary inlet/outlet control structure. If runoff should ever exceed the water quality event, where flows normally are directed to the lower primary outlet of the pond, the pond level will rise and release through a secondary auxiliary inlet/outlet located just above the primary outlet.

☒ Other, as noted below
High flows bypass the extended detention dry pond via a high flow split-flow manhole and an 18-inch storm pipe located at the northeast corner of the facility. The high flows are directed into a conveyance line that ultimately discharges into a ditch southeast of the 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 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

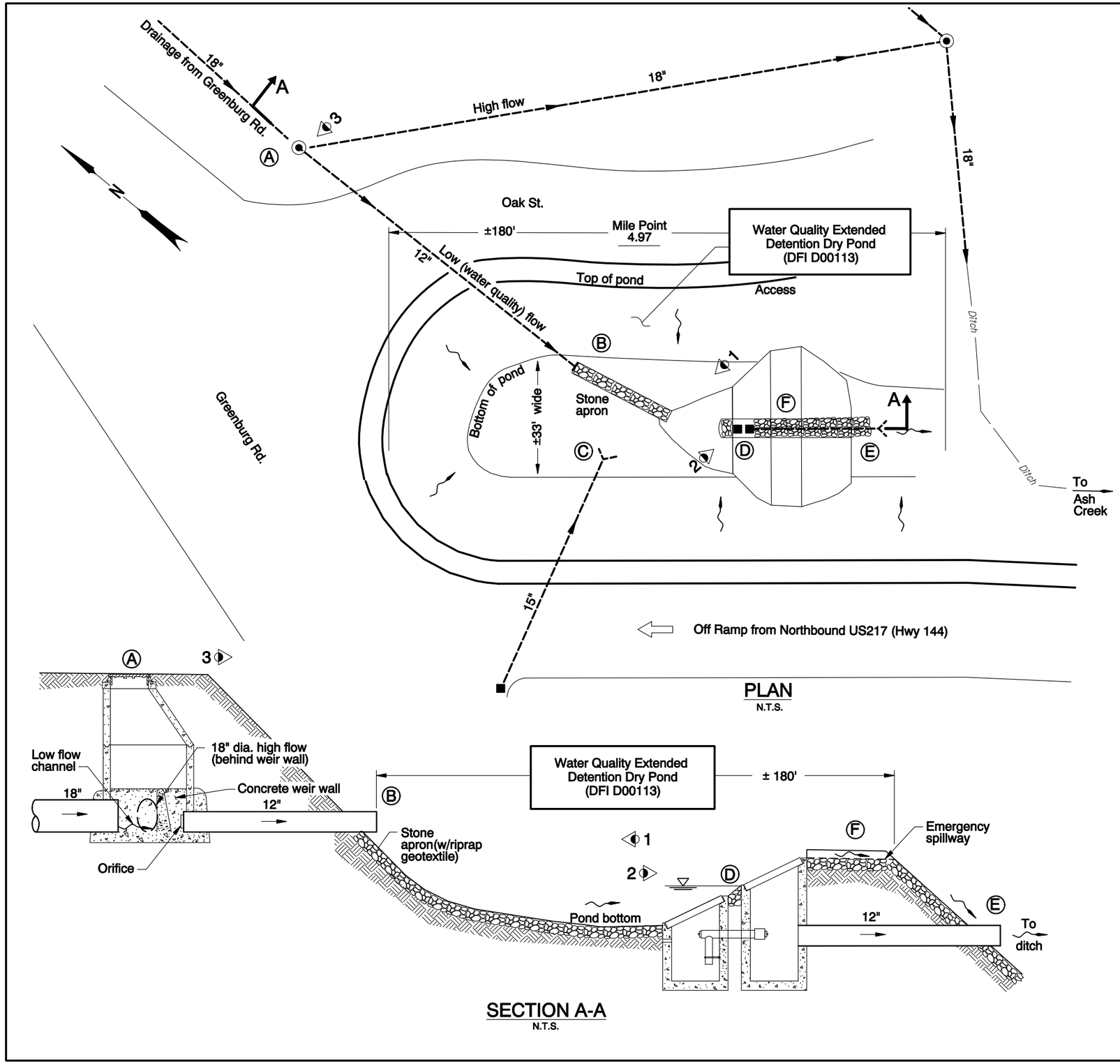
Contact any of the following for more detailed information about management of waste materials found on site:

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

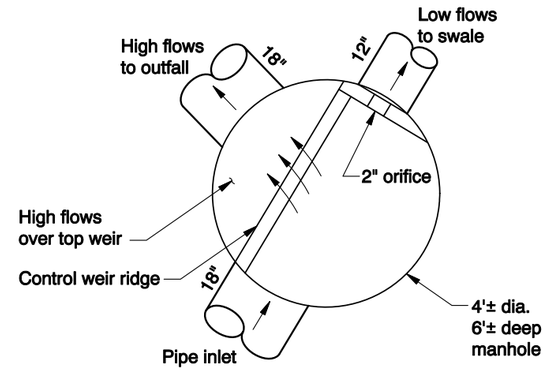
Content:

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

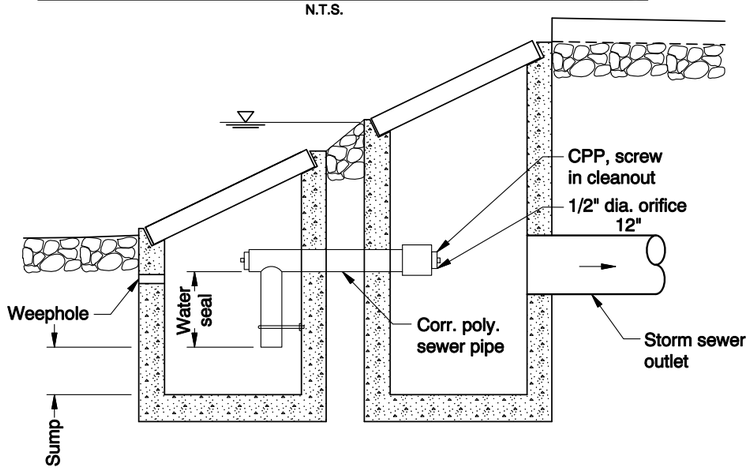


PLAN
N.T.S.

SECTION A-A
N.T.S.



HIGH-LOW SPLIT FLOW MANHOLE AT POINT Ⓐ
N.T.S.



OUTLET CONTROL STRUCTURE DETAIL AT POINT Ⓓ
N.T.S.

LEGEND:

- Photo Location / Direction
- Ⓐ High-low split flow manhole
- Ⓑ Pond Facility Inlet, 12" dia. Pipe
- Ⓒ Pond Facility Inlet, 15" dia. Pipe
- Ⓓ Outlet control structure
- Ⓔ Outlet pipe
- Ⓕ Containment berm and emergency spillway
- Manhole (and/or)
- Inlet (and/or)
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Traffic direction/flow

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Bob Knorr

Drafted By: Jim Holeman/OBEC

DFI D00113
MAINTENANCE DISTRICT 2B HWY 144
WATER QUALITY EXTENDED
DETENTION DRY POND
BEAVERTON-TIGARD HWY 144 MP 4.97
WASHINGTON COUNTY

Appendix B

Content:

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

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Standard Drawing Nos.
2, 2A, 2A-2	Typical Sections
2B Thru 2B-6 Incl.	Details
2C Thru 2C-5 Incl.	Traffic Control Plans
2D Thru 2D-5 Incl.	Water Quality
2E Thru 2E-6 Incl.	Erosion Control Plans & Details
2F	Pipe Data
2G, 2G-2	Summary
3	Plan
3A	Plan & Profile
4, 4A, 4B	Plans
4C	Profile
5, 6	Plans
7, 7A, 7B, 7C	Striping Plans
8, 8A, 8B, 8C, 8D	Landscaping Plans

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

REVISED AS CONSTRUCTED
03-13-01 CONTRACT 12007
PROJ. MGR. _____

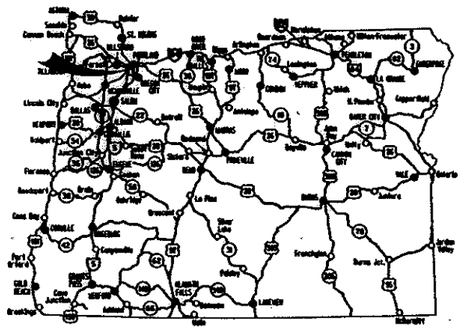
GRADING, STRUCTURE, PAVING, SIGNING, ILLUMINATION, SIGNALS, & LANDSCAPING

GREENBURG ROAD O'XING SEC.

GREENBURG ROAD & BEAVERTON - TIGARD HIGHWAY

WASHINGTON COUNTY

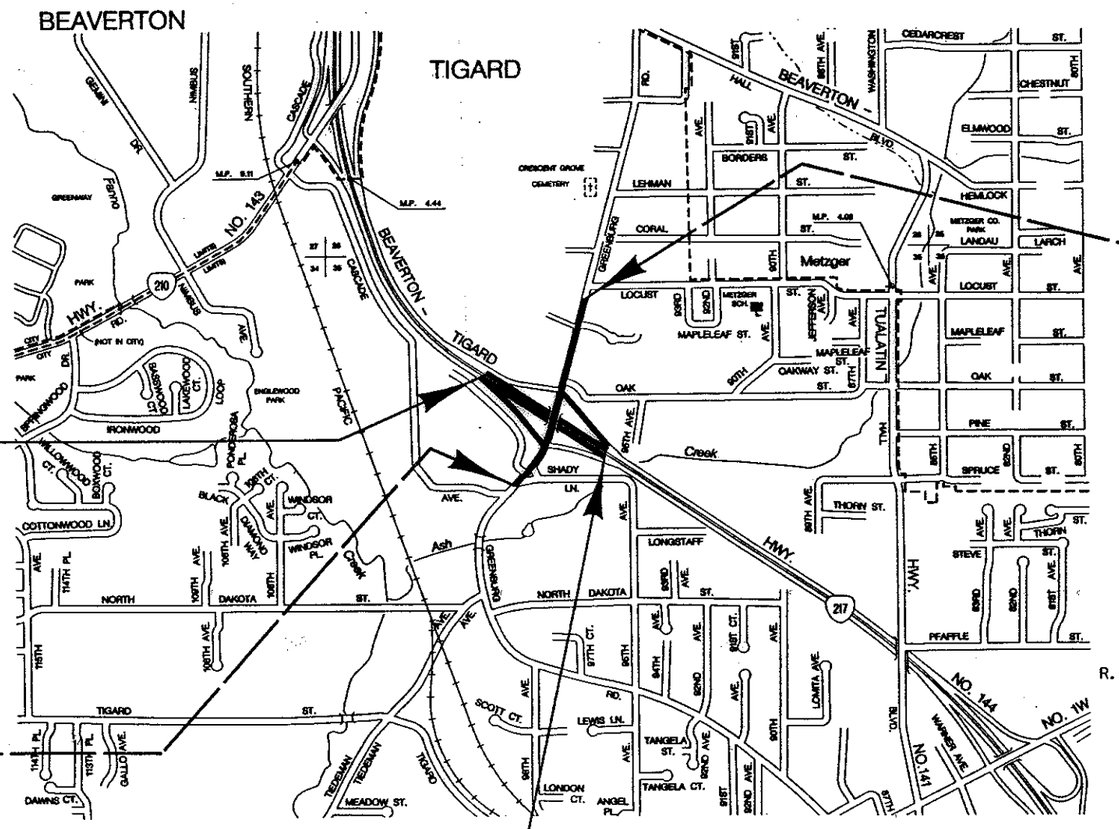
JANUARY 1998



Overall Length Of Project - 0.505 km (0.31 Mile)
Overall Length Of Work Area - 0.925 km (0.57 Mile)

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 From The Center.

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE



N. LIMITS - HWY. 217
STA. "L" 10 + 600 (M.P. 4.80)

X-STP-LOC-C067(18)
END OF PROJECT
STA. "G" 0 + 800

S. LIMITS - HWY. 217
STA. "L" 11 + 020 (M.P. 5.06)

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

X-STP-LOC-C067(18)
BEGINNING OF PROJECT
STA. "G" 0 + 295

OREGON TRANSPORTATION COMMISSION

Henry H. Hewitt	CHAIRMAN
Susan Brody	VICE CHAIRMAN
Steven H. Corey	COMMISSIONER
Stuart Foster	COMMISSIONER
John Russell	COMMISSIONER
Grace Crunican	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 8428 OREGON AUGUST 22, 1975 THOMAS D. LULAY Expires Dec. 31, 1998

Thomas D. Lulay

TECHNICAL SERVICES MANAGING ENGINEER

GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION	X-STP-LOC-C067(18)	1

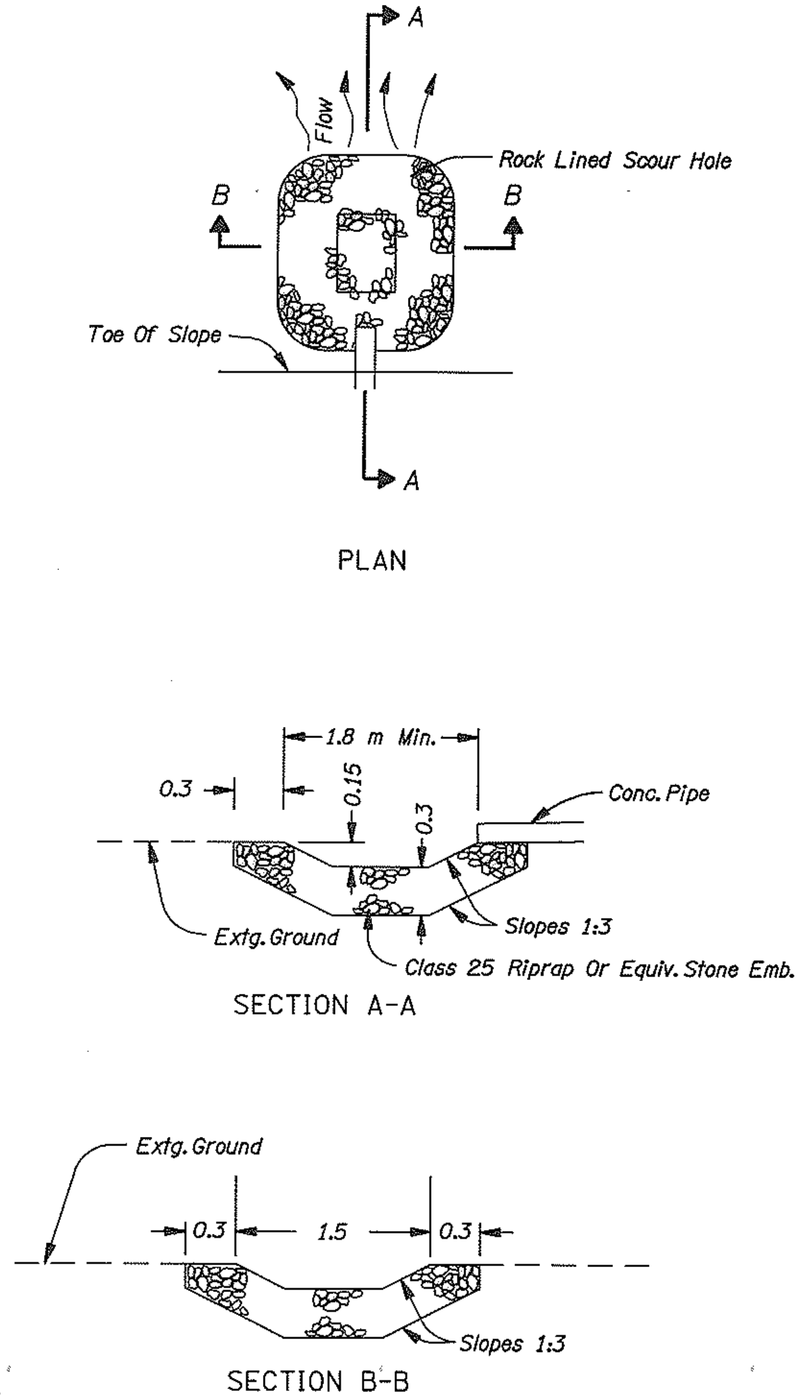
METRIC

25-AUG-1997 09:10
c:\usr\projects\08575gl.met
VIEW A1 C534-1601

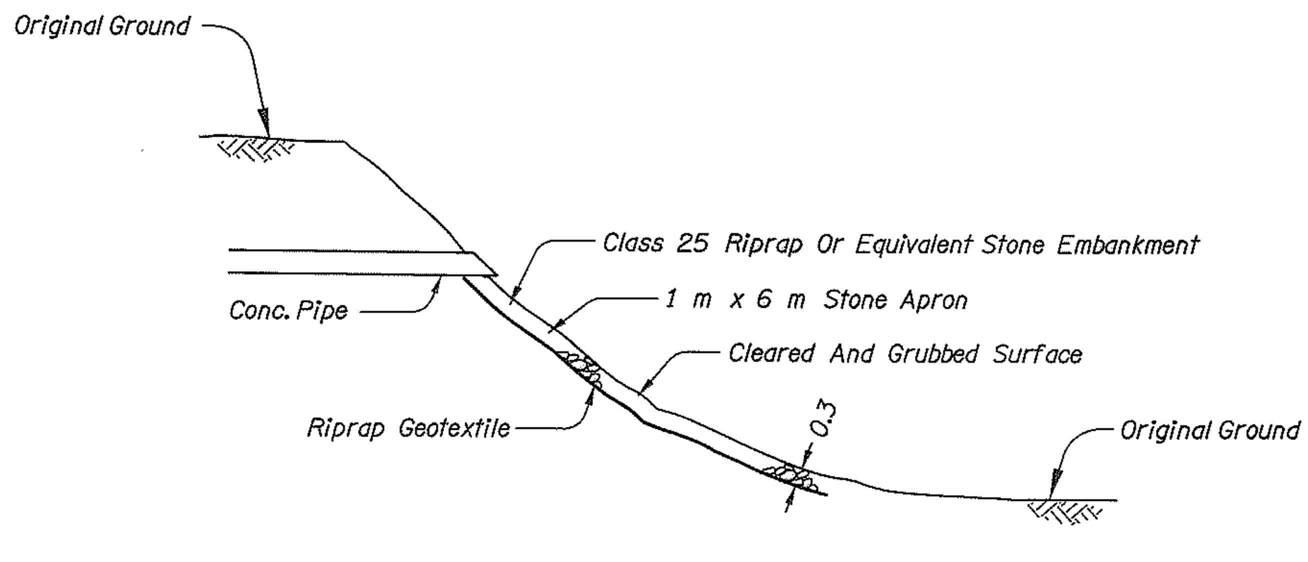
DETAILS

REVISED AS CONSTRUCTED 3-13-01 CONTRACT 12007

METRIC



STONE BASIN



STONE APRON ON SLOPE

NOTE: All Dimensions Are Shown In Meters Unless Otherwise Noted.

GREENBURG ROAD O'XING SEC. BEAVERTON - TIGARD HIGHWAY WASHINGTON COUNTY				
FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2B-5

17-APR-2001 11:39

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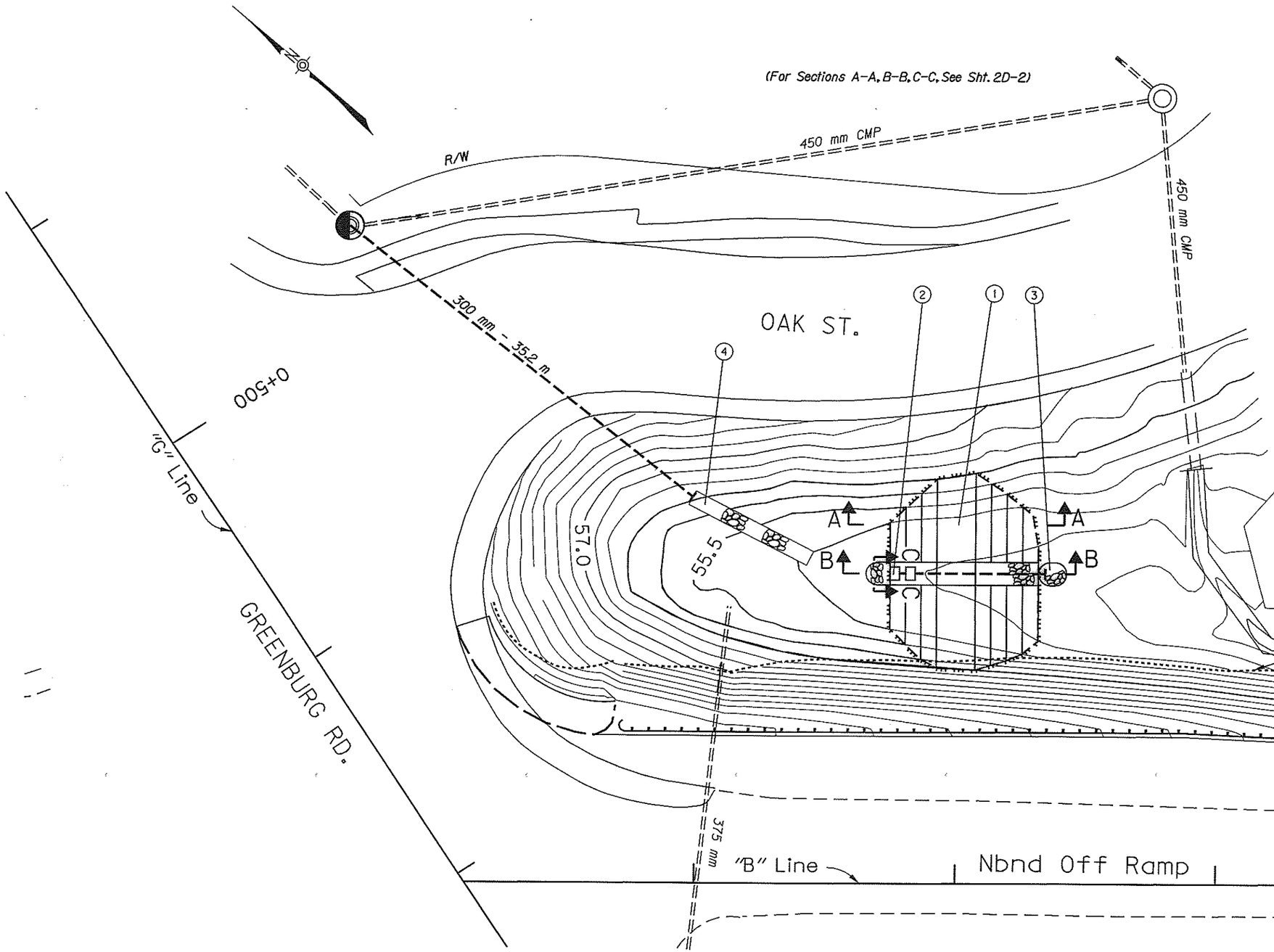
VIEW 5

WATER QUALITY PLAN

REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

(See Sht. 4B, Note 16)

(For Sections A-A, B-B, C-C, See Sht. 2D-2)



① Const. Earth Embankment - 110 m³
(For Details, See Sht. 2D-2)

② Const. Special Inlet - 2
Inst. 300 mm Sew. Pipe - 8.4 m
Tr. Exc. - 8.6 m³
(For Details, See Sht. 2D-2 & 2D-3)

③ Const. Stone Basin
(For Details, See Sht. 2B-5)

④ Const. Stone Apron On Slope
(For Details, See Sht. 2B-5)

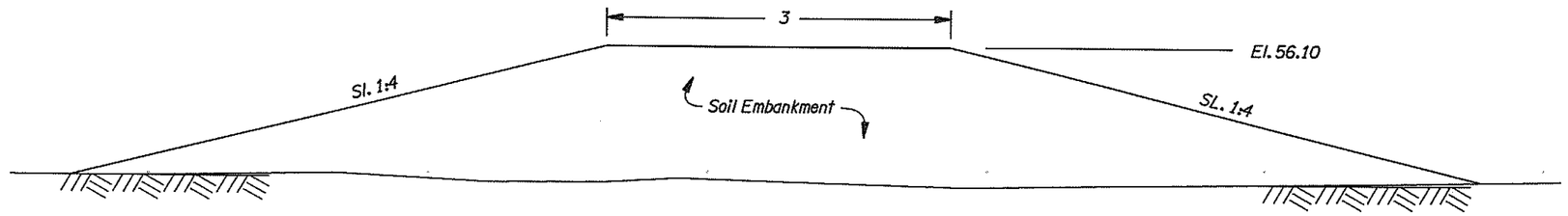
Note: All Dimensions Are In Meters Unless Shown Otherwise.

GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

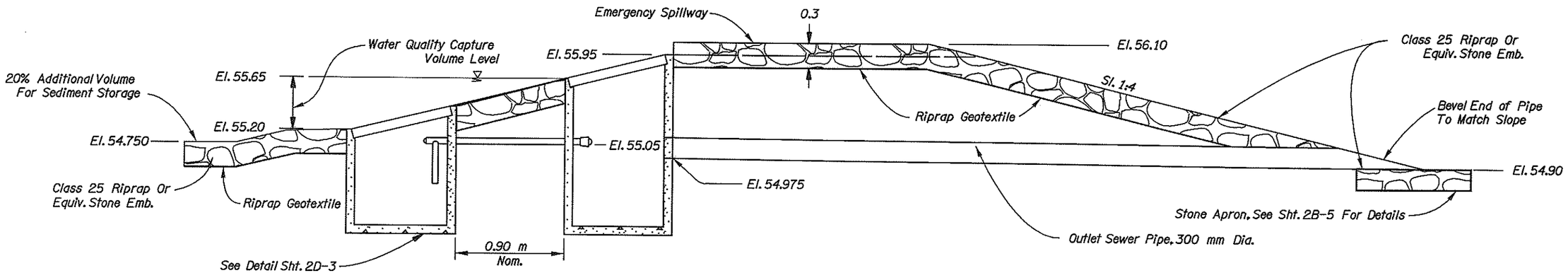
FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D

REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

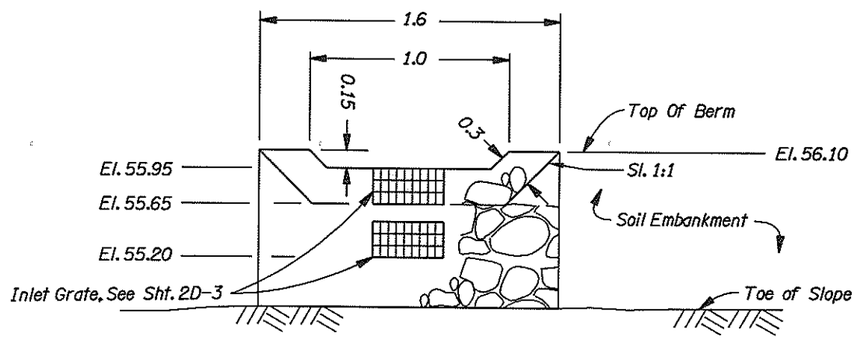
WATER QUALITY PLAN



SECTION A - A



SECTION B - B



SECTION C - C

Note: All Dimensions Are In Meters Unless Shown Otherwise.

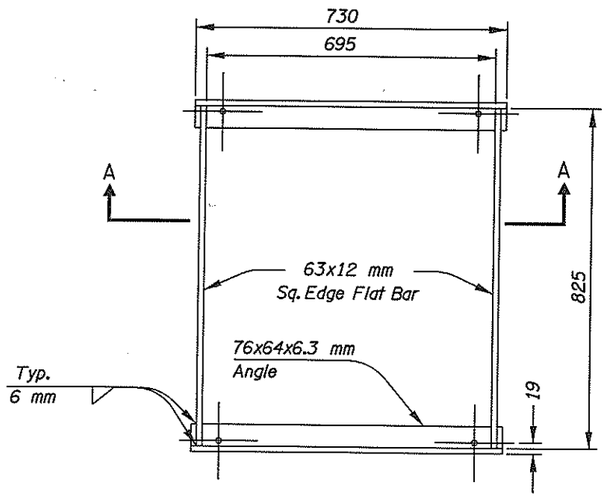
GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D-2

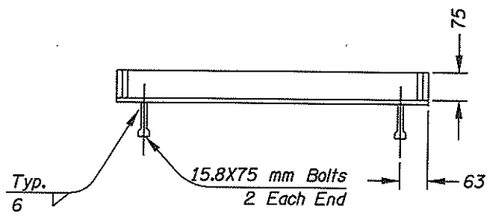
REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

METRIC

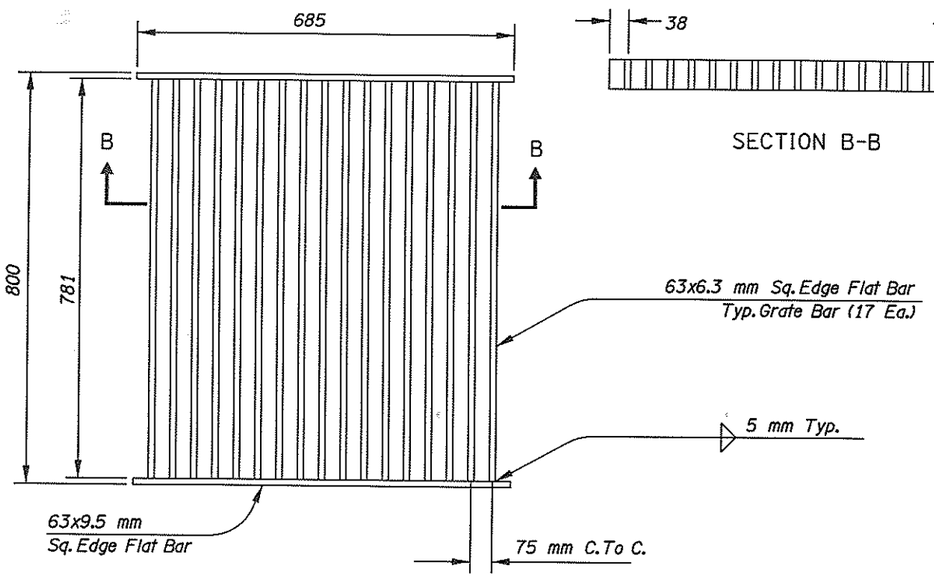
WASHINGTON COUNTY DITCH INLET FRAME AND GRATE



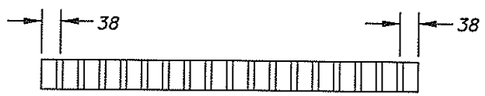
PLAN



SECTION A-A



PLAN

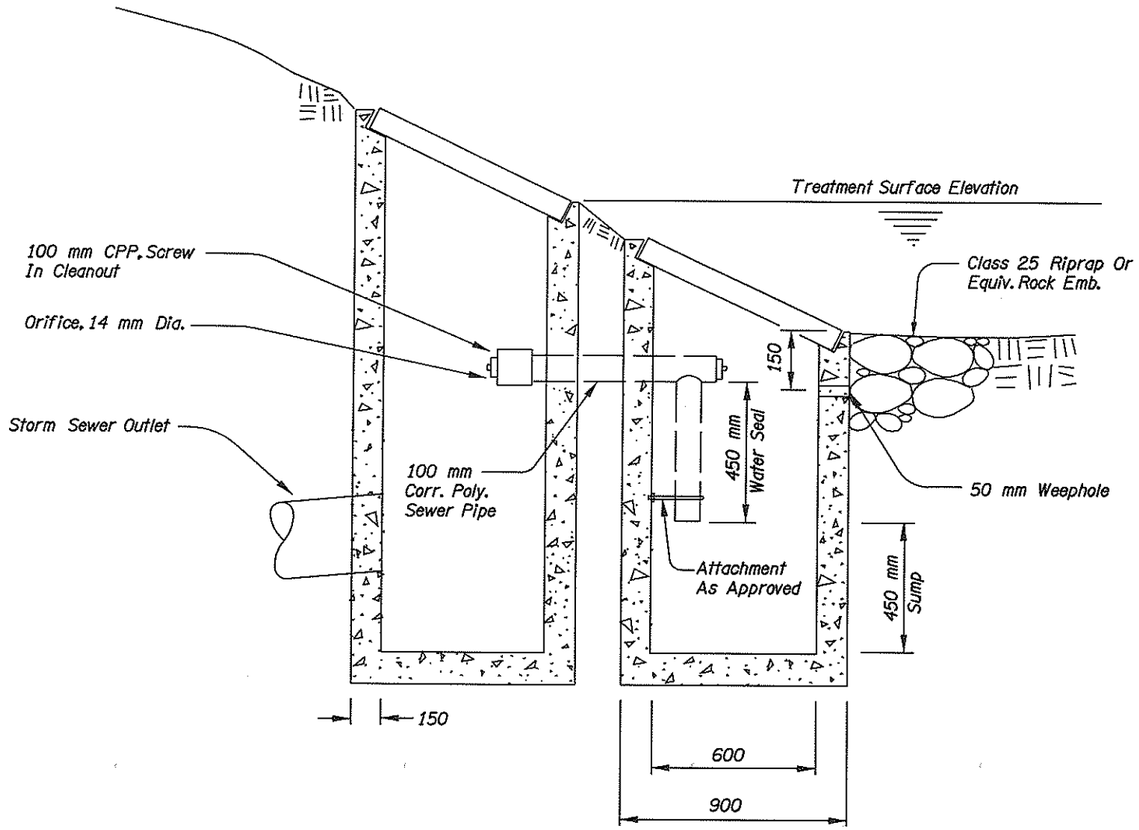


SECTION B-B

Note: Frame And Grate To Be Flat Bar Steel Or Approved Equal.

WATER QUALITY EXTENDED DRY POND OUTFLOW DEVICE

(Special Inlets)



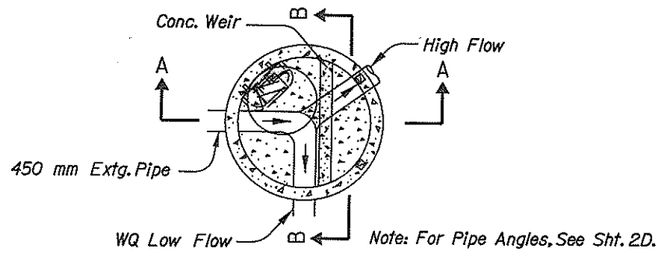
Note: All Dimensions Are In mm Unless Otherwise Noted.

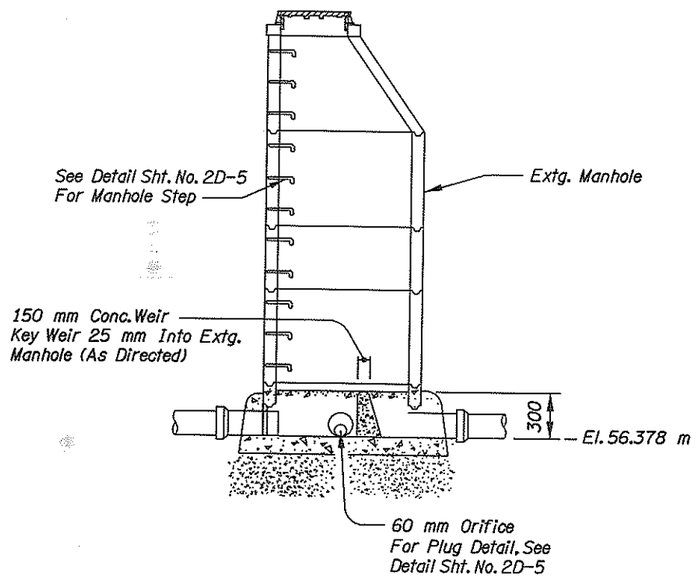
GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

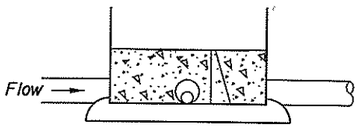
FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D-3

SPLIT FLOW RETROFIT MANHOLE

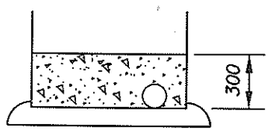
"All Dimensions Are In mm Unless Otherwise Noted"







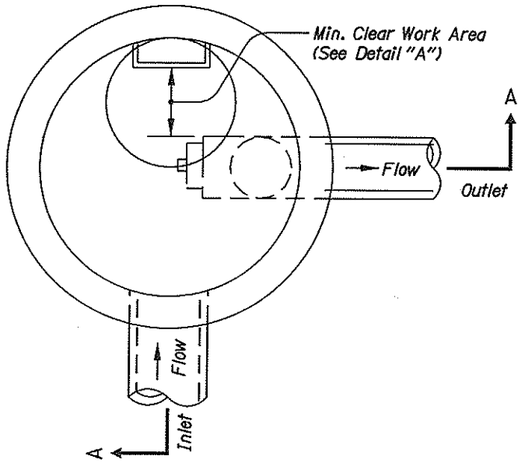
Section A-A



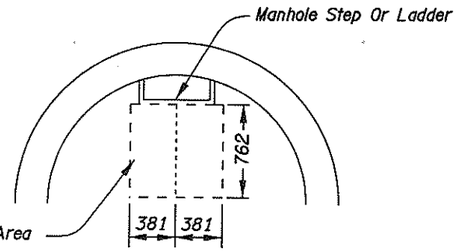
Section B-B

WATER QUALITY MANHOLE

(For Location, See Sht. 4A & 4B)

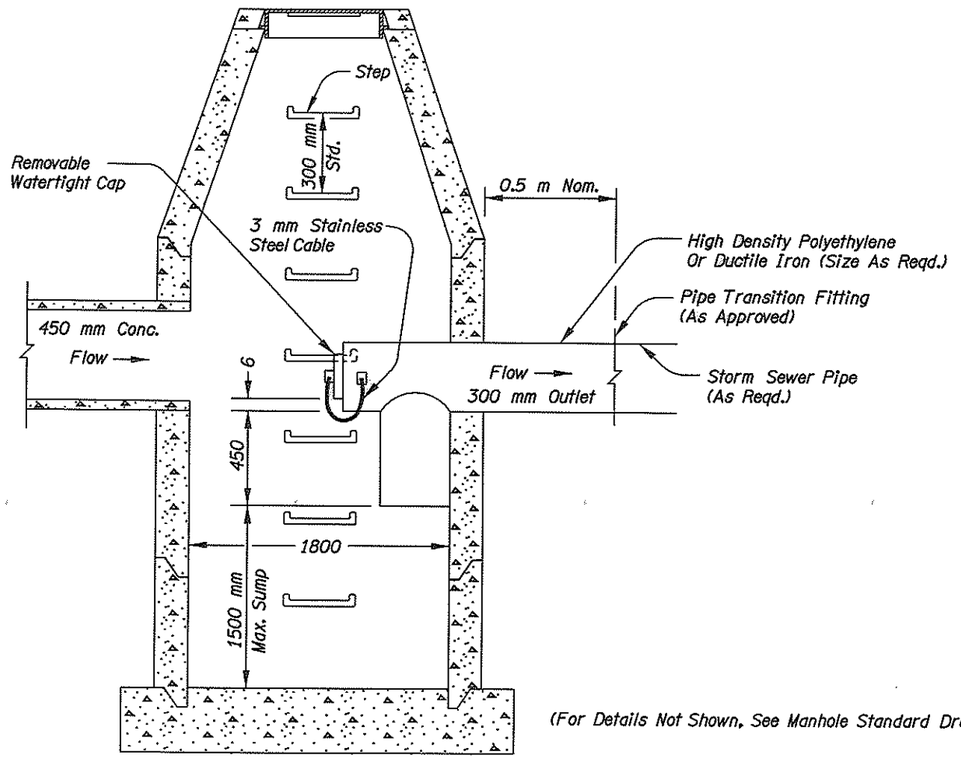


PLAN



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

DETAIL "A"



SECTION A-A

(For Details Not Shown, See Manhole Standard Drawings)

NOTES:

1. *Hardware, Fasteners And Anchors To Be Stainless Steel; Use 3 mm Stainless Steel Cable*
2. *See Pipe Data Sheet And Plan Sheets For Pipe Size(s).*
3. *See Pipe Data Sheet And Plan Sheets For Manhole Size(s).*
4. *See Pipe Data Sheet And Plan Sheets For Sump Depth.*
5. *Manhole And Base Per Manhole Standard Drawings.*
6. *Hardware, Fasteners, Anchors, Fittings, Appurtenances, Labor And Equipment Is Incidental To Water Quality Manhole Item.*

SUMP VOLUME REQUIREMENTS

Single Family Residential	*.245 m^3/hectare*
Multi Family Residential	*1.539 m^3/hectare*
Commercial/Industrial	*6.577 m^3/hectare*

Note: All Dimensions Are In mm Unless Otherwise Noted.

GREENBURG RD. O-XING SEC.
BEAVERTON-TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D-4

EROSION CONTROL PLAN

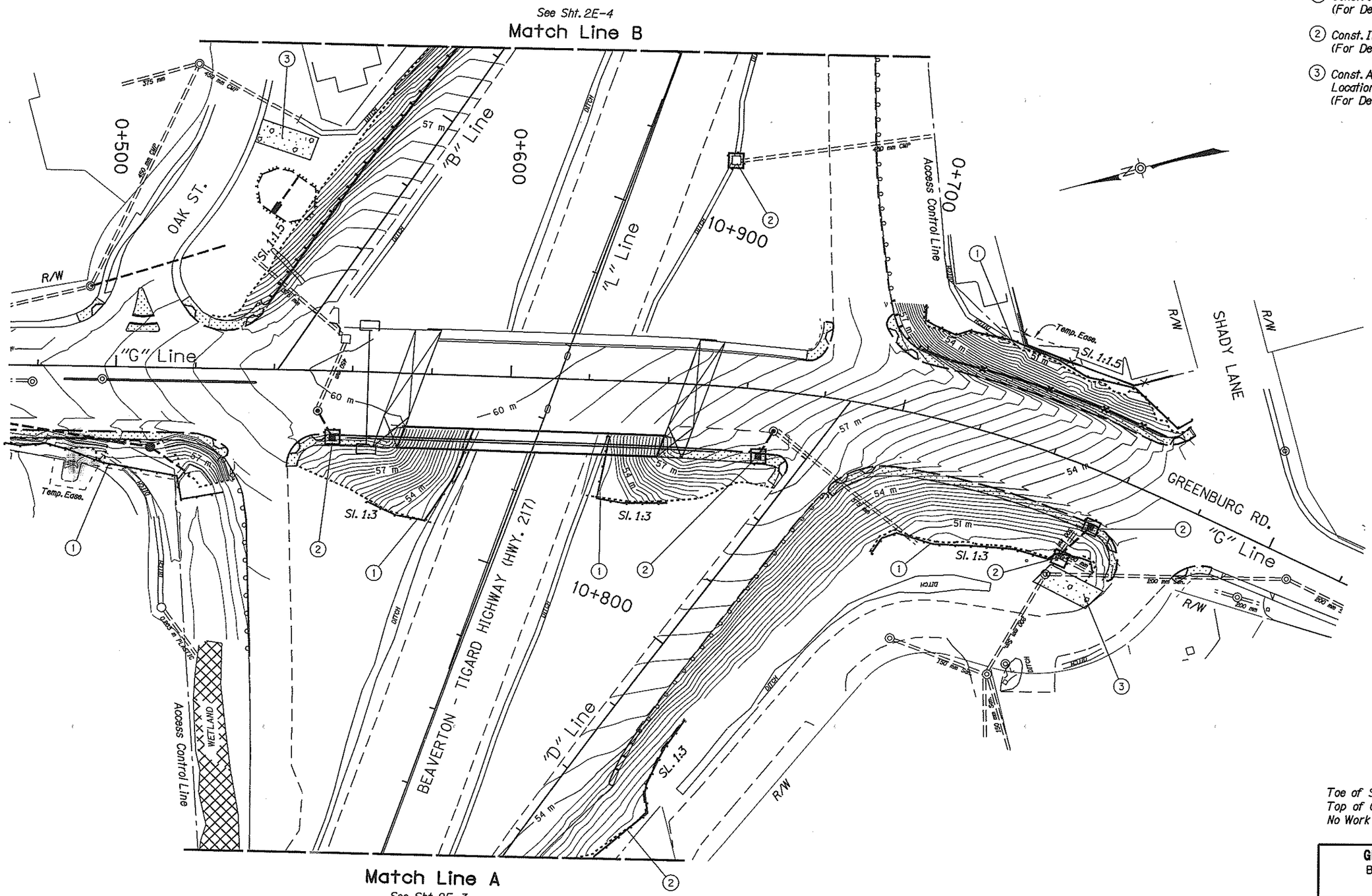
NOT REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

METRIC

(1) *Const. Unsupported Silt Fence - 316 m*
(For Details, See Sht. 2E-6)

(2) *Const. Inlet Protection - 5*
(For Details, See Sht. 2E-6)

(3) *Const. Aggregate Construction Entrance - 2*
Location To Be As Dir.
(For Details, See Sht. 2E-6)



Toe of Slope, Shown Thus: ----------
Top of Cut, Shown Thus: — — — —
No Work Area, Shown Thus: ⊠⊠⊠⊠

NOTE:
1) All Dimensions Are In Meters Unless Shown Otherwise.
2) Wetlands Are Not To Be Disturbed.

GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2E-2

CONSTRUCTION & DRAINAGE PLAN

Sec. 35, T.1S., R.1W., W.M.

TIGARD

METRIC

REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

See Sht. 6

Match Line B

END OF PROJECT X-FTP-LOC-C067(18) STA. "G" 0+800

0+500

OAK ST.

12 R.

R/W

"B" Line

0+600

10+900

HWY. 217 SB ON-RAMP

Access Control Line

0+700

Paving Limit

13 R.

16 R.

SHADY LANE

R/W

Temp. Ease.

10 R.

Begin Taper +877.50

"G" Line

Paving Limit

GREENBURG RD.

10 R.

Temp. Ease.

15 R.

8 R.

3 R.

20 R.

10 R.

10+800

"D" Line

HWY. 217 NB ON-RAMP

BEAVERTON-TIGARD HIGHWAY (HWY. 217)

HWY. 217 SB OFF-RAMP

Access Control Line

WETLAND

R/W

Match Line A

See Sht. 5

Note: All Dimensions Are In Meters Unless Otherwise Noted.

GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		4A

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VIEW 2

REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

METRIC

(1) Const. Type A Curb

(2) Const. Type C Curb
(2A) Const. Curb End - 9

(3) Const. P.C. Walk

(4) Const. Sidewalk Ramps - 16
(For Details, See Sht. 2B)

(6) Const. Type "C" Mountable Island - 39 m^2
With "Cut-Through" Walk
(For Details, See Sht. 2B)
(See Drg. No. RD705 & RD710)

(7) Const. Type "B" Traffic Separator - 31.9 m
(For Details, See Sht. 2B-3)
(See Drg. No. RD705.)

(8) Plug and Abandon Pipe

(9) Sta. "G" 0+512 Rt.
Const. Water Quality Manhole
Inst. 450 mm Sew. Pipe - 61.1 m
Tr. Exc. - 145.6 m^3
(For Details, See Sht. 2D-4)

(10) Sta. "G" 0+551.3 Rt.
Const. Manhole
Const. Type CG-48 Inlet
Inst. 300 mm Sew. Pipe - 7.8 m
Tr. Exc. - 6.5 m^3
(For Details, See Sht. 2B-4)

(11) Sta. "G" 0+667.8 Rt.
Const. Manhole
Const. Type CG-48 Inlet
Inst. 300 mm Sew. Pipe - 7.5 m
Tr. Exc. - 6.6 m^3
(For Details, See Sht. 2B-4)

(12) Sta. "G" 0+756 Rt.
Const. Type CG-48 Inlet
Inst. 300 mm Sew. Pipe - 11.4 m
Open Outlet
Tr. Exc. - 9.1 m^3
(For Details, See Sht. 2B-4)

(13) Sta. "G" 0+493
Retrofit Manhole To Split Flow Manhole
Inst. 300 mm Sew. Pipe - 35.2 m
Under Pvmt. - 14.2 m
Tr. Exc. - 37.4 m^3
(For Details, See Sht. 2D-4)

(14) Sta. "B" 10+860 Lt.
Const. Water Quality Facility
(For Details, See Sht. 2D, 2D-2, 2D-3 & 2D-4)

(15) Sta. "D" 10+763.5 To "D" 10+778.7 Rt.
Const. Guard Rail - 11.43 m (Type 2A)
Flare Rate: 15:1, W=2.49 m, E=0
Connect to Extg. Guard Rail
Const. SRT-350 End Terminal
(See Drg. Nos. RD400, RD405, RD415, RD420, & RD440)

(16) Const. Anchor (Type 1 Mod.)
Inst. End Piece (Type B)

(17) Sta. "G" 0+691 To "G" 0+701 Lt.
Const. Guard Rail - 19.05 m (Type 2A)
Flare Rate =0, W=0, E=0
Connect To Extg. Guard Rail
Const. Anchor (Type 1)
Inst. End Piece (Type C)

(18) Const. Anchor (Type 1)
Inst. End Piece (Type C)

(19) Sta. "B" 10+834 To "B" 11+069 Lt.
Const. Guard Rail - 236 m (Type 2A)
Inst. Anchor (Type 1 Mod.)
Inst. End Piece (Type B)

(20) Sta. "G" 0+701 To "G" 0+764 Lt.
Const. Fence (Type CL-4R) - 63 m
(See Drg. No. RD815)

(21) Sta. "G" 0+559.0 To "G" 0+566.5 &
Sta. "G" 0+645.20 To "G" 0+652.7
Const. Conc. Barrier Transition To Curb - 15 m
Connect To Bridge Rail
(For Details, See Sht. 2B-3)
(See Drg. Nos. RD520 & RD540)

(22) Sta. "L" 10+796.5 To "L" 10+834.9
Const. Conc. Barrier (Modified) - 38.5 m
X=60 m, Y=10 m, Z=72 m, a=0
(For Details, See Sht. 2B-6)
(See Drg. No. RD535)

(23) Const. Bridge Widening
(For Drg. Nos., See Sht. 1A)

(24) Sta. "G" 0+564
Const. Sign Bridge
(See Sht. 55633)

GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		4B

VIEW 6

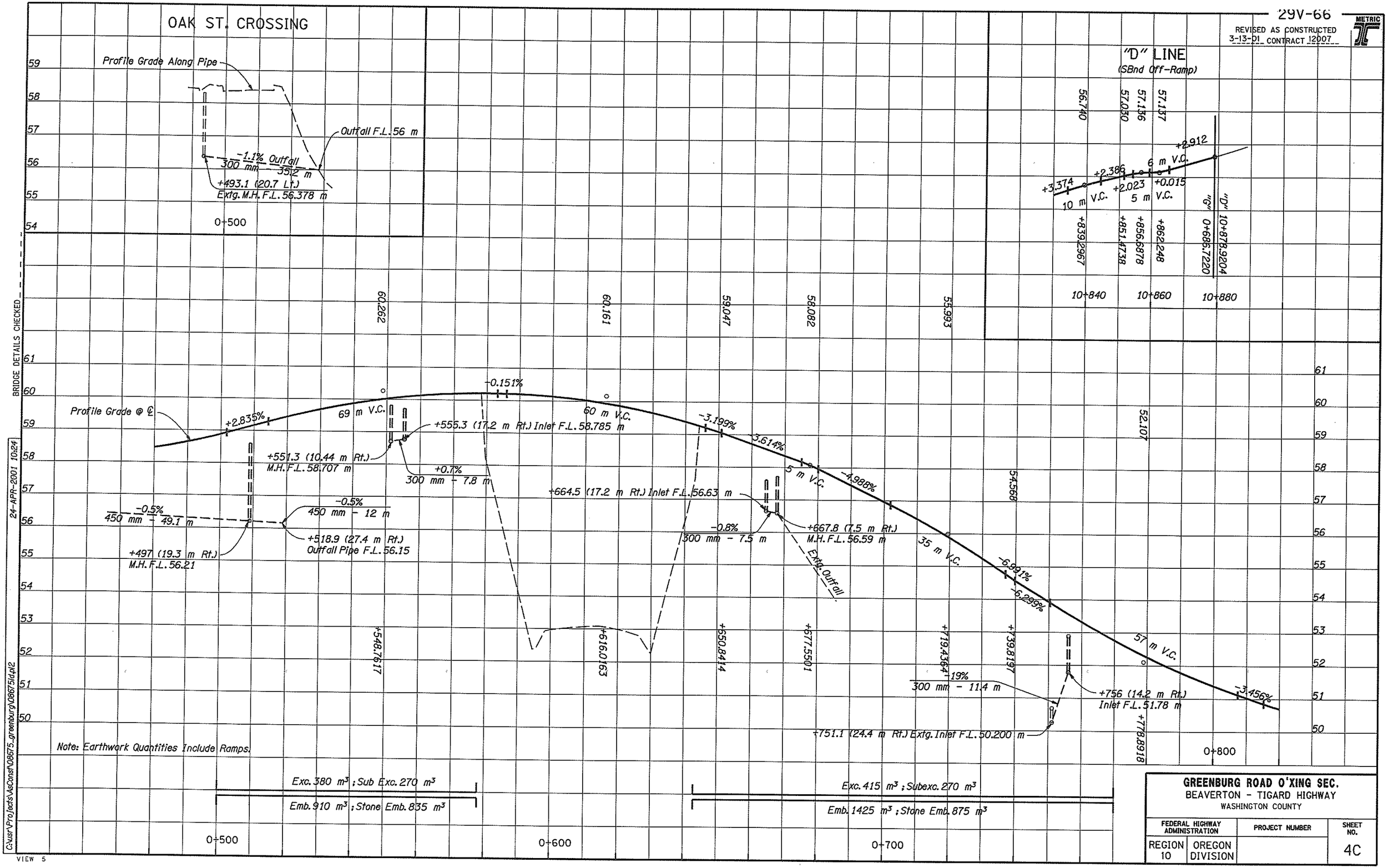
29V-66

REVISED AS CONSTRUCTED
3-13-01 CONTRACT 12007

METRIC

OAK ST. CROSSING

"D" LINE
(SBnd Off-Ramp)



Note: Earthwork Quantities Include Ramps.

Exc. 380 m³ ; Sub Exc. 270 m³
Emb. 910 m³ ; Stone Emb. 835 m³

Exc. 415 m³ ; Subexc. 270 m³
Emb. 1425 m³ ; Stone Emb. 875 m³

BRIDGE DETAILS CHECKED

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VIEW 5

GREENBURG ROAD O'XING SEC.
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		4C