OPERATION & MAINTENANCE MANUAL

DFI No. D00159
Facility Type: Water Quality Vault

JUNE, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00159**
Facility Type:	Water Quality Vault
Construction Drawings:	(V-File Number) 27V-026
Location:	District: 2B
	Highway No.: 141
	Mile Post: 5.12 (beg. / end)
	Description: Access to this facility can be obtained from Hall Blvd. - Beaverton-Tigard Hwy. (Hwy 141) at the intersection of Hall and SW Knoll Drive.

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 Lulay, P.E. (Mngr.), 503-731-8200
Facility construction:	1996
Contractor:	N/A/

4. Storm Drain System and Facility Overview

This water quality vault is an underground media filter facility designed to treat stormwater runoff. The system is a proprietary product manufactured in 1996 by an earlier subsidiary of Contech Construction Products, Inc. The underground media filter type facility is an earlier prototype of the current Stormwater Management StormFilter Treatment System. Treatment is provided by filtration through a compost media filter. This facility contains an Operational and Maintenance manual as prepared by the manufacturer and is provided in Appendix C.

This model for this facility is a 12'x6' 'Drop-in' compost stormwater filter. It is basically a 12-ft by 6-ft concrete vault with a layer of compost media, wrapped in filter fabric, placed along the bottom.

The facility is located at the intersection of Hall Blvd. and SW Knoll Drive within the center median (See Photo 1). Access to the facility can be obtained from Hall Blvd and will require traffic management precautions. The drainage area for the facility includes Hall Blvd from the facility at SW Knoll Dr. to approximately 700 feet north. The stormwater runoff is collected by a series of inlets and conveyed by a 12-inch storm pipe located on the west side of Hall Blvd. The stormwater is pretreated through two online pollution control manholes. After pretreatment, the stormwater is directed to the media filter through a 15-inch storm pipe with no diversion manhole. After treatment through the media filter the stormwater is directed to a manhole and conveyed towards the northeast across SW Knoll Drive.

Both the media filter facility and the pollution control manholes were constructed in 1996. Based on the as-built data and maintenance information, it is questionable whether these facilities are properly treating the stormwater. Future retrofit may be required of these facilities.

A. Maintenance equipment access:
   This facility is a 12-foot by 6-foot vault accessible by three manhole lids and rims. Access to the facility can easily be obtained from Hall Blvd.

B. Heavy equipment access into facility:

   ☐ Allowed (no limitations)
   ☒ Allowed (with limitations); traffic control required.
   ☐ Not allowed

C. Special Features:

   ☐ Amended Soils
   ☐ Porous Pavers

☐ Liners
☐ Underdrains

Photo 1: Looking northwest, this photo depicts the open manhole and lids of the water quality vault located within Hall Blvd. at Knoll Drive.

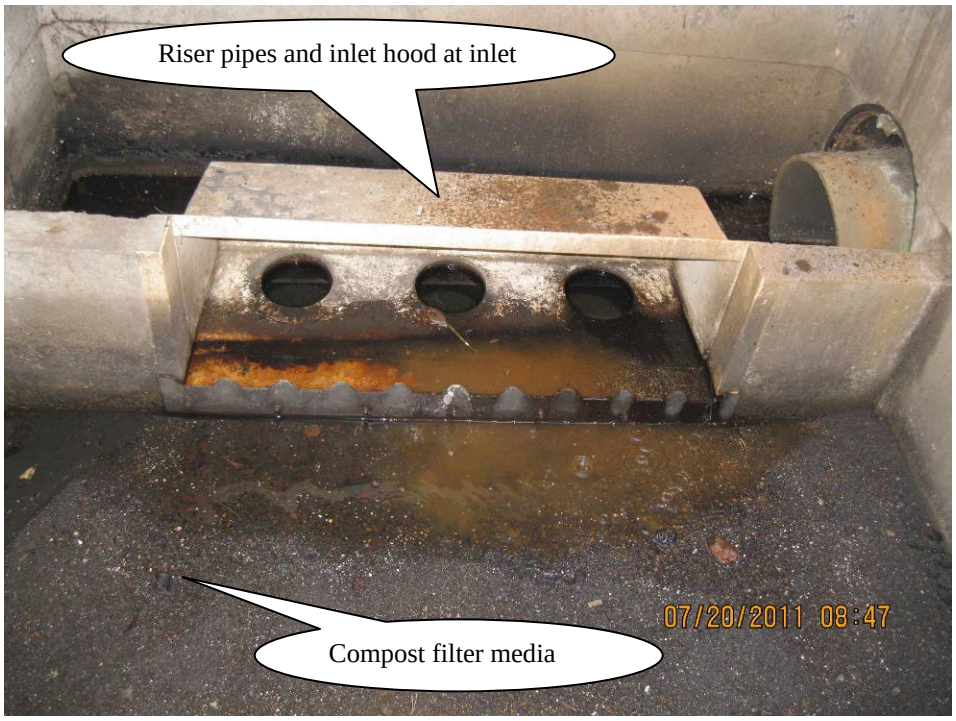


Photo 2: Internal view of water quality vault at the inlet; Point B Operational Plans.

Photo 3: Internal view of water quality vault of the riser pipes and outlet hood near the outlet; Point C Operational Plans.

Photo 4: Internal view of water quality vault at the backside of the outlet; Point C Operational Plans.

5. Facility Haz Mat Spill Feature(s)

This water quality vault is not ideal for storing a volume of liquid in case of a hazardous spill. It may be more feasible to consider blocking the 15-inch diameter outlet pipes located at the upstream and downstream manholes on either side of the water quality vault facility. See the Pollution Control Manhole, Point A, and the downstream manhole near Point C, on the Operational Plan, Appendix A.

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
High flows bypass the treatment features and exit the treatment zone of the media filter by overtopping an interior high flow bypass weir wall.

☐ 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:

Maintenance Component	Defect or Problem	Conditions When Maintenance Is Needed	Recommended Maintenance to Correct Problem
Media Filter	Sediment Loading	Facility has trapped sufficient sediment and debris that system is utilizing overflow	Remove sediment and debris
	Channeling, rutting, or lacking media filter material	Media Filter contains obvious channeling, rutting, or lacking adequate depth	Apply additional media filter and energy dissipaters to system

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

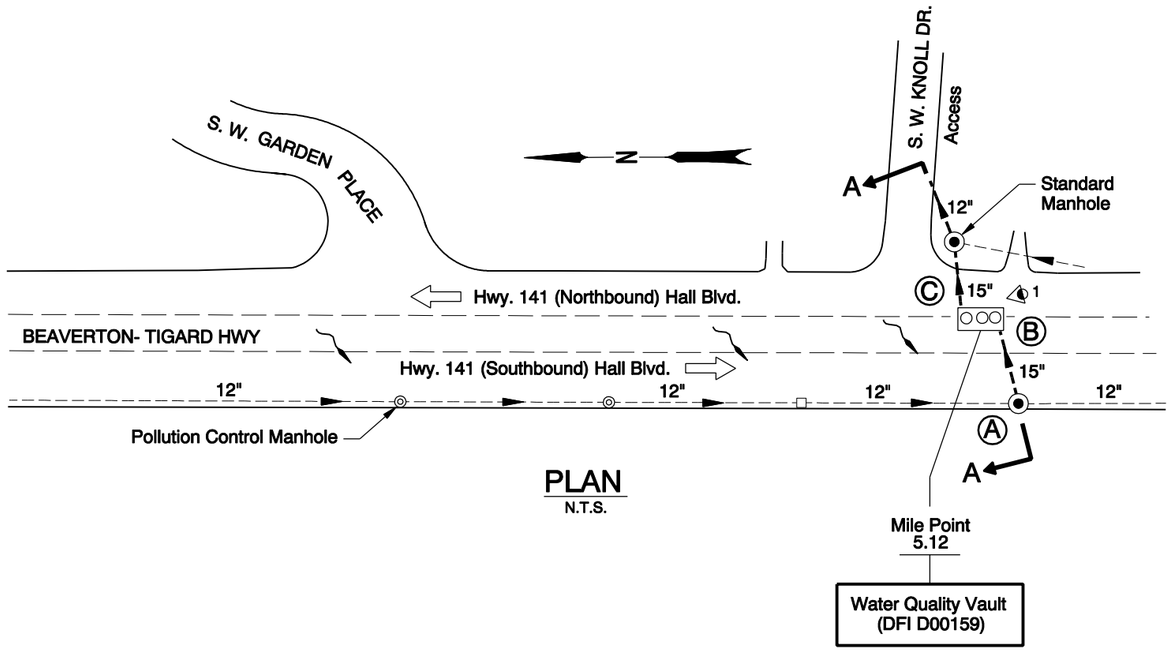
Contact any of the following for more detailed information about management of waste materials found on site:

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

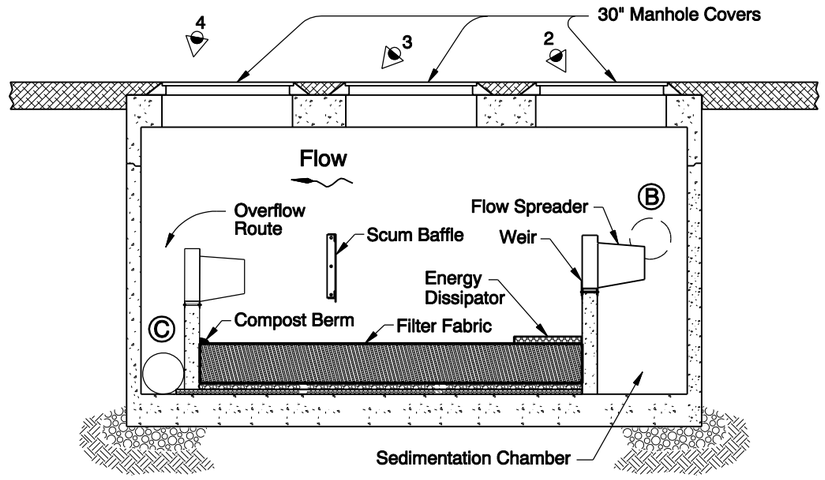
Appendix A

Content:

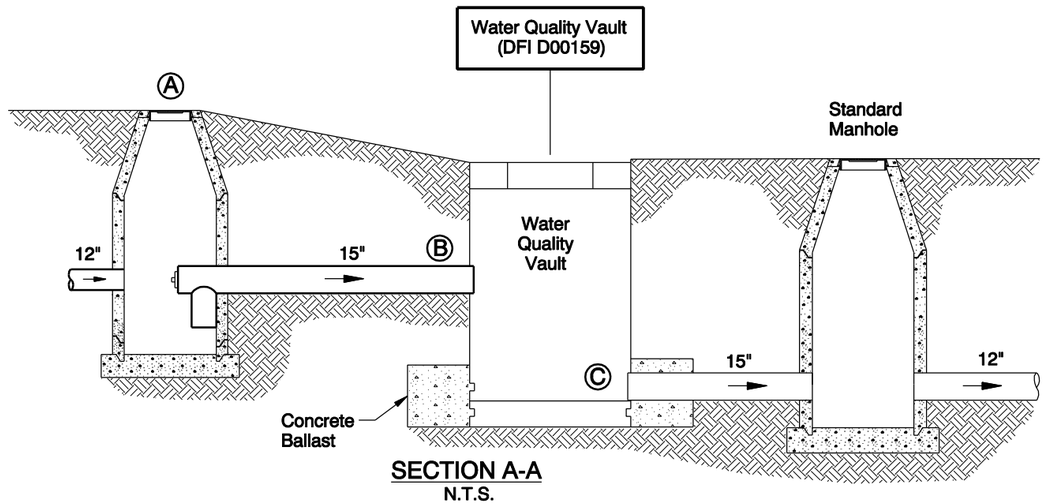
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



12 Ft. x 6 Ft. x 7.5 Ft. +/- DEEP
WATER QUALITY VAULT DETAIL
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- Photo Location / Direction
- (A) Pollution Control Manhole
- (B) Water quality vault inlet, 15" Dia.
- (C) Water quality vault outlet, 15" Dia.
- Manhole and/or
- Inlet and/or
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Bob Knorr

Drafted By: Bob Knorr

DFI D00159
MAINTENANCE DISTRICT 2B HWY 141
WATER QUALITY VAULT
BEAVERTON-TUALATIN HIGHWAY MP 5.12
WASHINGTON COUNTY

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Appendix B

Content:

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

27V-26

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Standard Drawing Nos.
2, 2A	Typical Sections
2B Thru 2B-5 Incl.	Details
2C Thru 2C-6 Incl.	Erosion Control Plans
2D	Pipe Data
2E	Summary
3	Alignment & General Construction
3A	Drainage & Utilities
4	Alignment & General Construction
4A	Drainage & Utilities
5	Alignment & General Construction
5A	Drainage & Utilities
6, 7	Alignment & General Construction
7A	Drainage & Utilities
8	Alignment & General Construction
8A	Drainage & Utilities
9 Thru 19 Incl.	Striping Plan
R-1 Thru R-3 Incl.	Railroad Grade Crossing

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

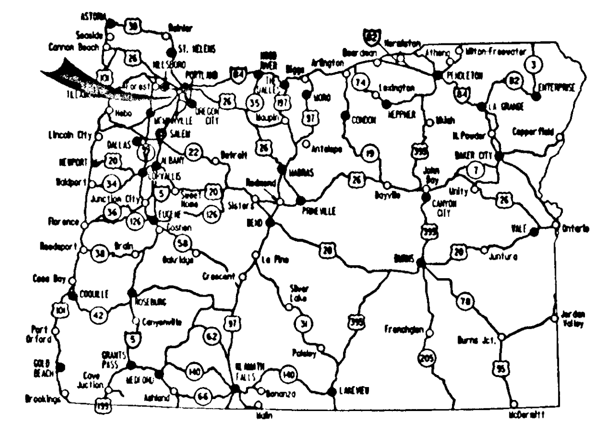
PLANS FOR PROPOSED PROJECT

GRADING, PAVING, SIGNING, & SIGNALS LOOPS

PACIFIC HWY. W. -
S.W. McDONALD ST. (BIKEWAY) SEC.

BEAVERTON - TUALATIN HIGHWAY

WASHINGTON COUNTY
FEBRUARY 1996



Overall Length Of Project - 1.0 Mile

THE TRAFFIC CONTROL YOU PROVIDE PROTECTS YOU AS WELL AS THE PUBLIC. LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE.

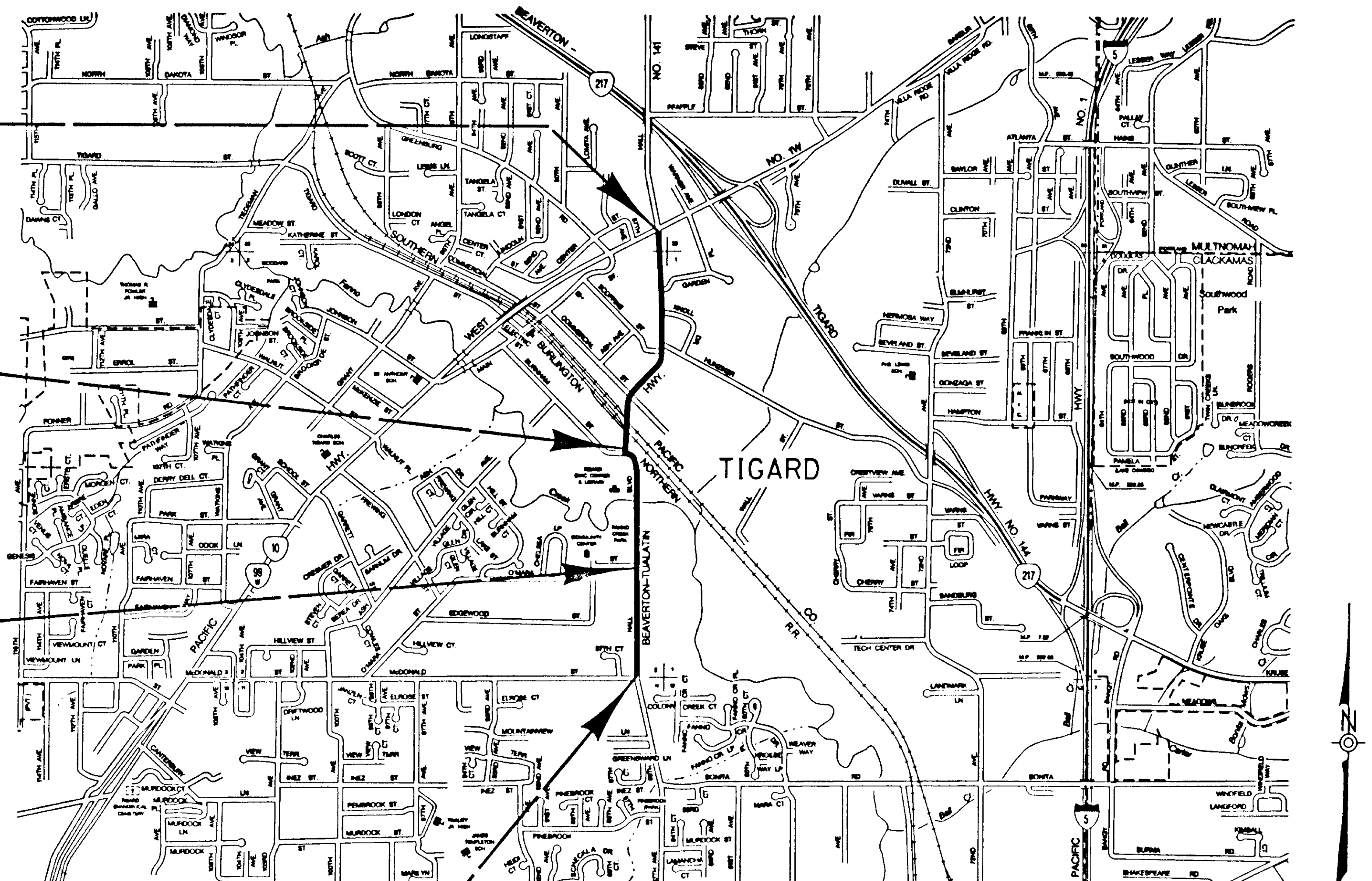
BEGINNING OF PROJECT
STA. 104 + 35 (M.P. 5.05)

STA. 127 + 08 (M.P. 5.50)

STRIPING ONLY

STA. 143 + 94 (M.P. 5.81)

END OF PROJECT
STA. 157 + 45 (M.P. 6.05)



T. 1, 2 S., R. 1 W., W.M.

OREGON TRANSPORTATION COMMISSION

Henry H. Hewitt	CHAIRMAN
Susan Brody	VICE CHAIRMAN
Cynthia J. Ford	COMMISSIONER
Steven H. Corey	COMMISSIONER
Stuart Foster	COMMISSIONER
Kenneth E. Husby	INTERIM DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 8491 OREGON AUGUST 22, 1975 THOMAS D. LULAY Expires Dec. 31, 1996

Thomas D. Lulay

TECHNICAL SERVICES MANAGING ENGINEER

PACIFIC HWY. W. -
S.W. McDONALD ST. (BIKEWAY) SEC.
BEAVERTON - TUALATIN HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION	STATE	1

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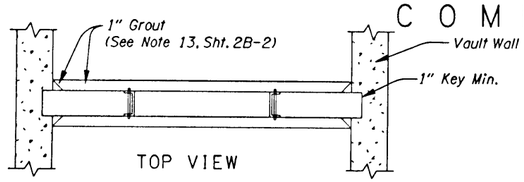
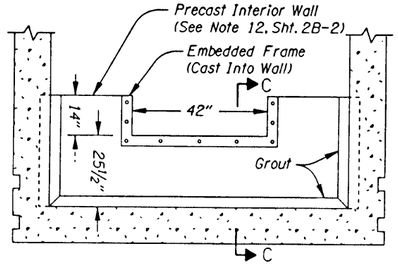
VIEW A1 C834-1410

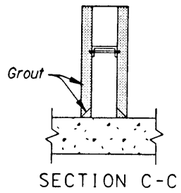
COMPOST STORMWATER FILTER DETAILS



TOP VIEW

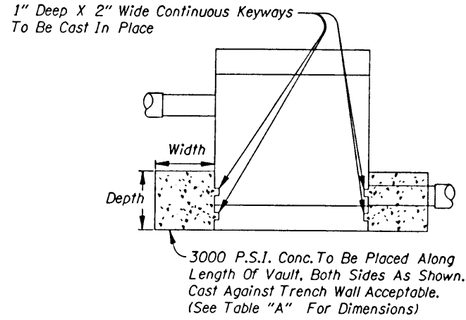


FRONT VIEW



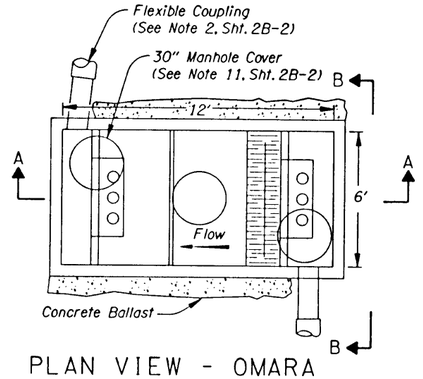
SECTION C-C

UPSTREAM INTERIOR WALL

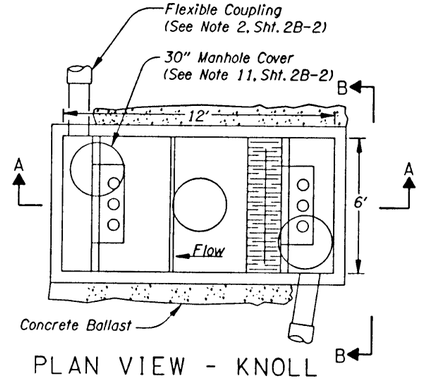


SECTION B-B

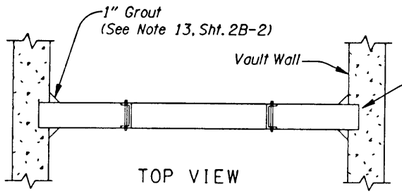
BALLAST DETAIL



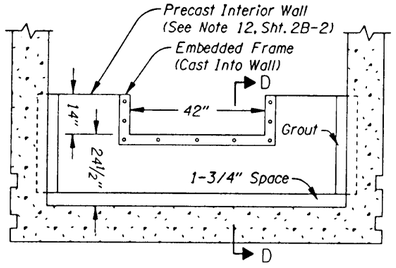
PLAN VIEW - OMARA



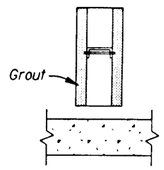
PLAN VIEW - KNOLL



TOP VIEW



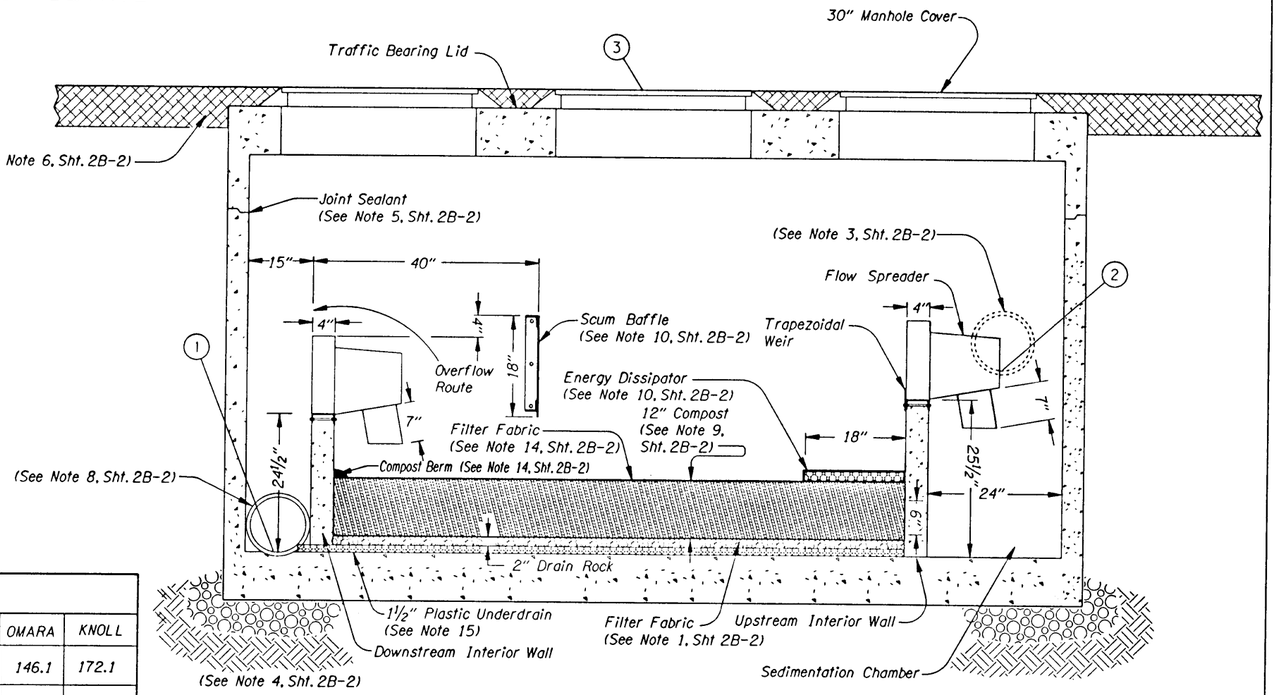
FRONT VIEW



SECTION D-D

DOWNSTREAM INTERIOR WALL

TABLE "A"			
	DESCRIPTION	OMARA	KNOLL
①	IE Out And Vault Floor At Downstream End (See Note 7)	146.1	172.1
②	IE In	148.3	174.3
③	Rim Elevation	151.6	179.6
	Inlet And Outlet Pipe Diameter	12"	15"
WIDTH	Width Of Concrete Ballast	12"	15"
DEPTH	Depth Of Concrete Ballast	12"	15"



12'x6' "DROP IN" COMPOST STORMWATER FILTER
SECTION A-A

PACIFIC HWY. W. -
S.W. McDONALD ST. (BIKEWAY) SEC.
BEAVERTON - TUALATIN HIGHWAY
WASHINGTON COUNTY

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

A1

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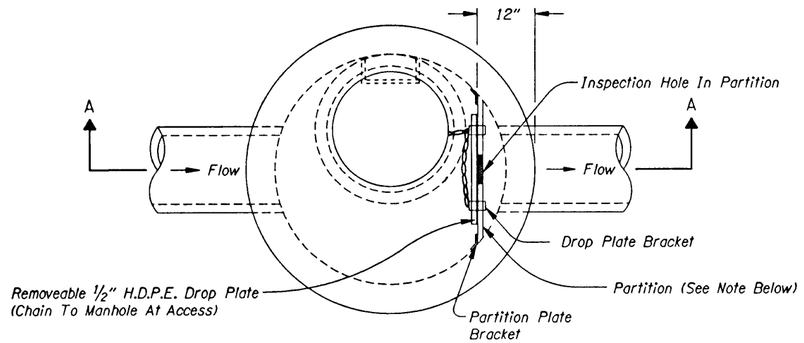
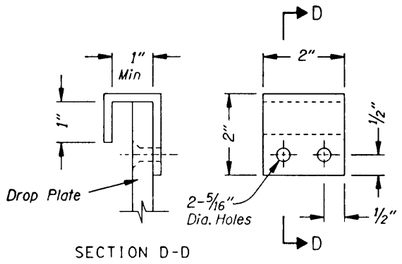
VIEW A1

POLLUTION CONTROL MANHOLE DETAILS



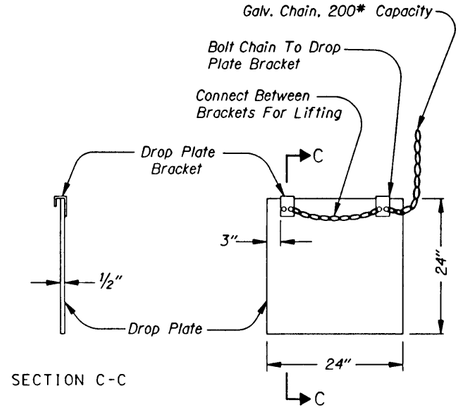
PLAN



SECTION D-D

(14 Ga. Stainless Steel)

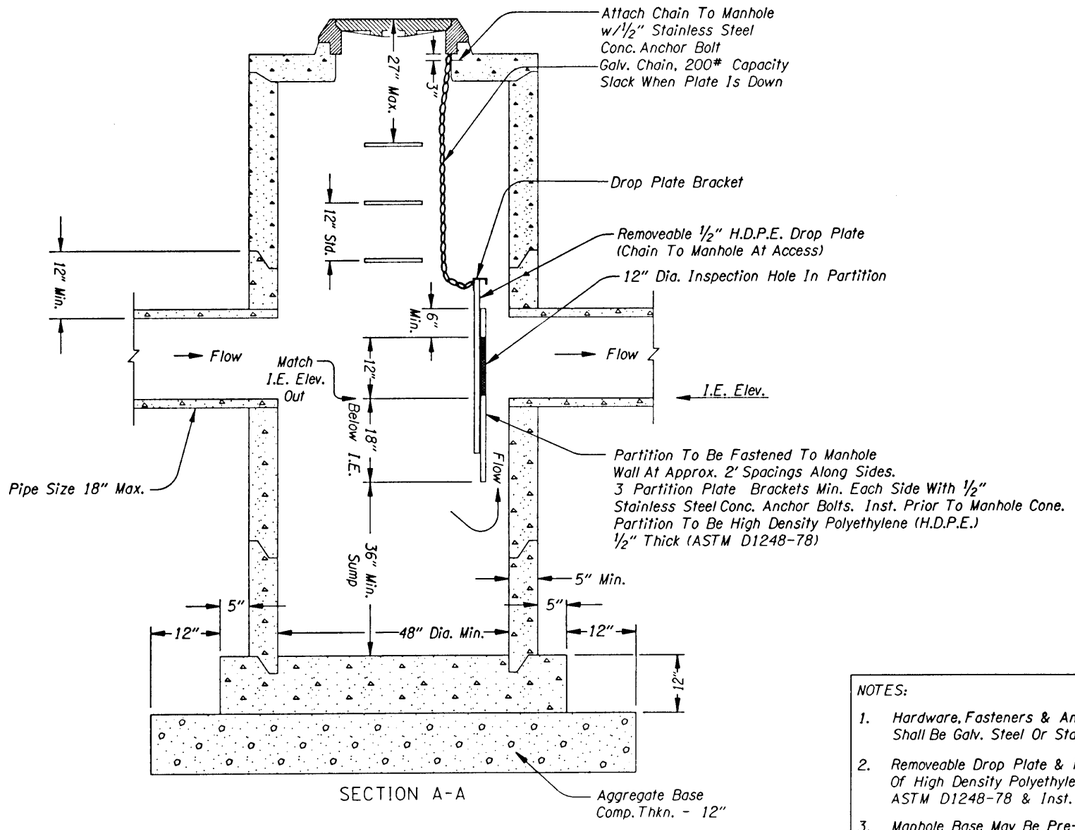
DROP PLATE BRACKET



SECTION C-C

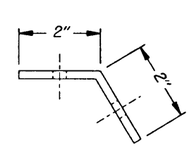
NOTE:
Connect Drop Plate Brackets & Chain To Drop Plate With 1/4" x 1 1/4" Stainless Steel Bolts W/Lock Washers

DROP PLATE

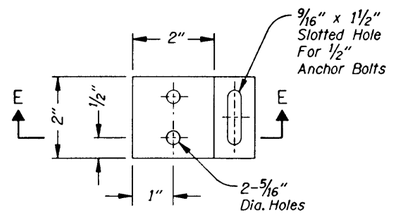


SECTION A-A

MANHOLE

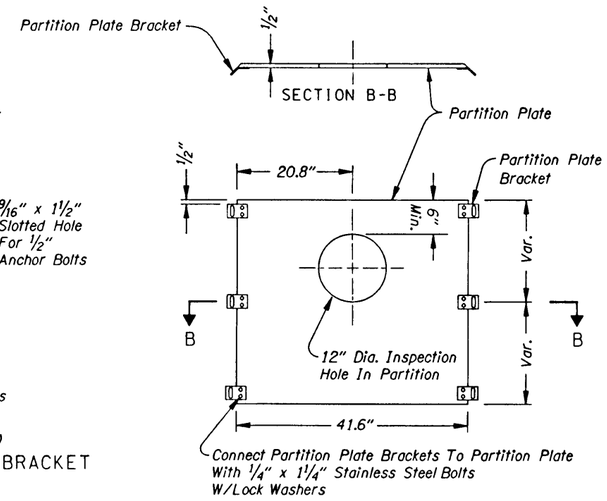


SECTION E-E



(12 Ga. Stainless Steel)

PARTITION PLATE BRACKET



PARTITION PLATE

NOTES:

1. Hardware, Fasteners & Anchors To Chain Shall Be Galv. Steel Or Stainless Steel.
2. Removeable Drop Plate & Partition To Be Constructed Of High Density Polyethylene (H.D.P.E.) 1/2" Thick ASTM D1248-78 & Inst. Prior To Manhole Cone Or Top.
3. Manhole Base May Be Pre-Cast Or Cast-In-Place. Pre-Cast Base Must Be Submitted For Approval Before Using. (For Manhole Details Not Shown, See Drg. Nos. 2050, 2050A & 2137)

PACIFIC HWY. W. - S.W. McDONALD ST. (BIKEWAY) SEC.
BEAVERTON - TUALATIN HIGHWAY
WASHINGTON COUNTY

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

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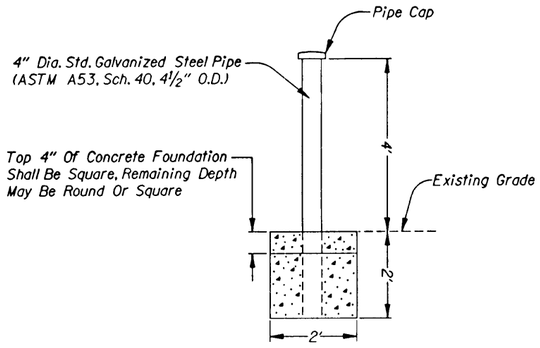
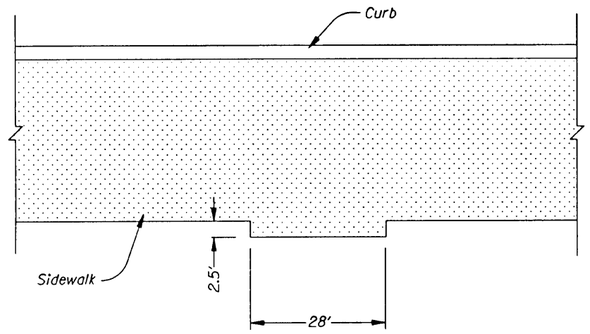
D E T A I L S



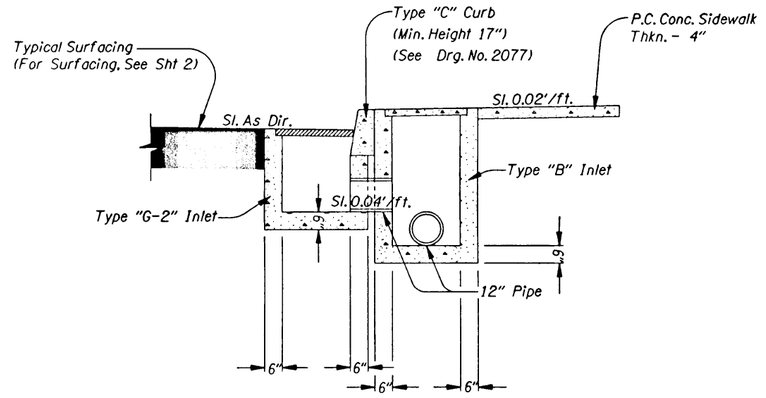
BOLLARD

(See Sht. 4 Note 10)

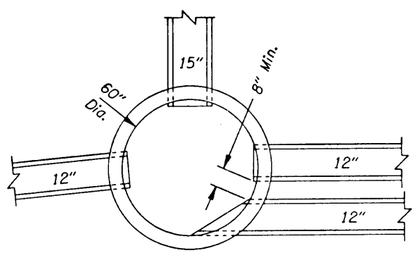


SIDEWALK WIDENING FOR BUS PAD

(See Sht. 7, Note 6 & sht. 8, Note4)



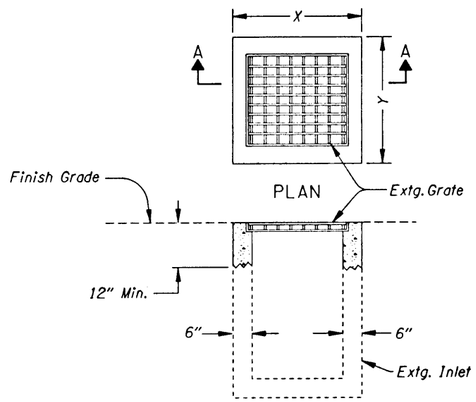
TYPE "G-2" INLET CONNECTION
TO TYPE "B" INLET



PIPE SPACING AT MANHOLE

(See Sht. 3A Note 4)

NOTE:
X & Y Dimensions To Be Determined
By Field Measurments.

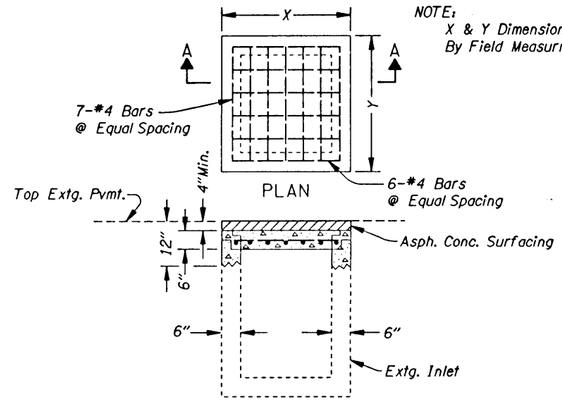


SECTION A-A

(For Details Not Shown, See Drg. No. 2105)

ADJUST INLET

NOTE:
X & Y Dimensions To Be Determined
By Field Measurments.



SECTION A-A

INLET CAP

(For Location, See Plans)

PACIFIC HWY. W. -
S.W. McDONALD ST. (BIKEWAY) SEC.
BEAVERTON - TUALATIN HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2B-5

B2

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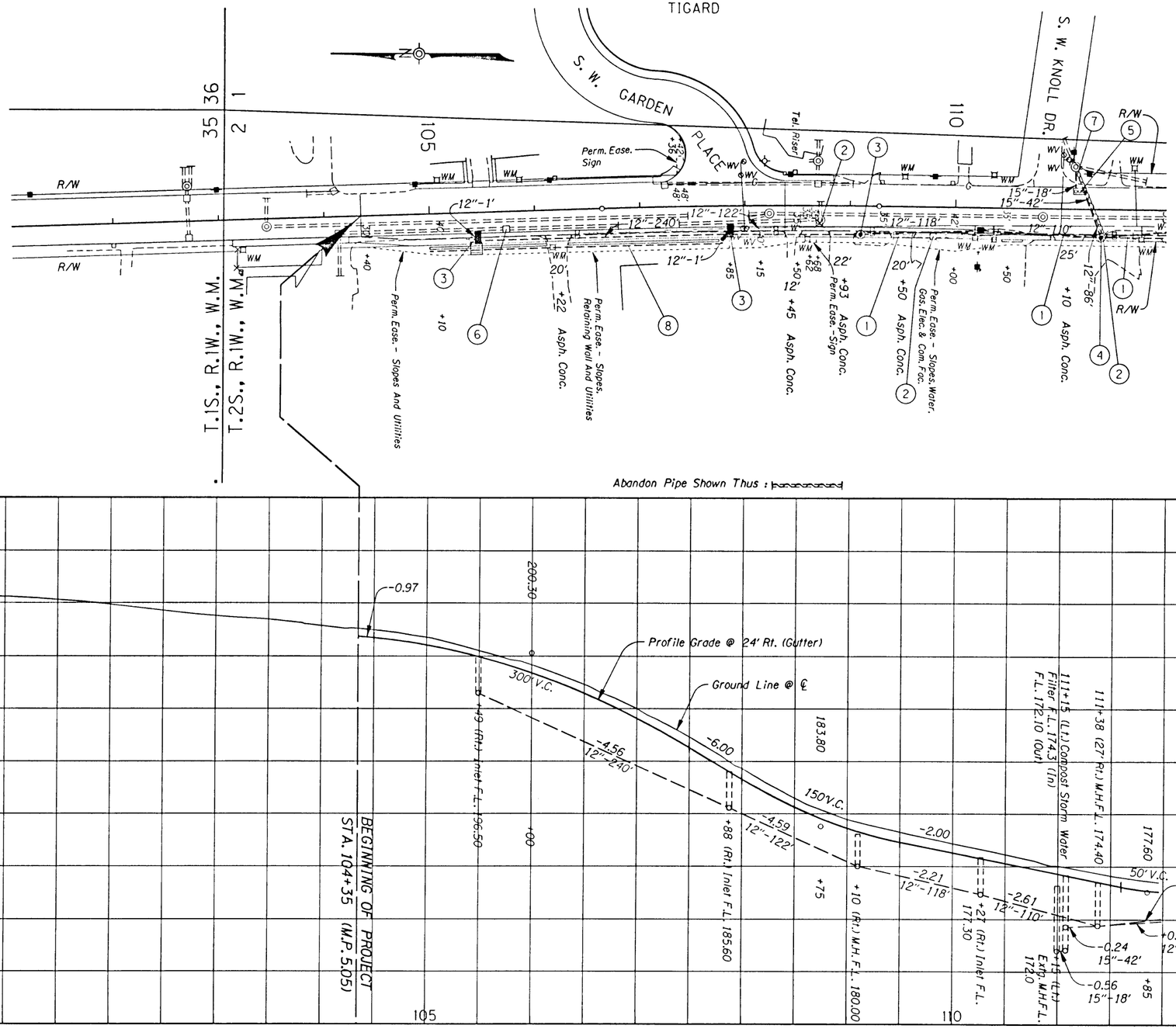
VIEW B2

EXTG. UTILITIES & DRAINAGE PLAN

T.2S., R.1W., W.M.

TIGARD



(1) Sta. 109+42 To Sta. 111+70
Remove Pipe - 228'
Tr. Exc. - 63 C.Y.

(2) Remove Inlet - 3

(3) Sta. 109+10, 27' Rt.
Const. Pollution Control Manhole
Const. Type "B" Inlet - 2
Const. Type "G-2" Inlet - 2
Inst. 12" Sew. Pipe - 364'
Tr. Exc. - 121 C.Y.
(For Details, See Shts. 2B-4 & 2B-5)
(See Drg. Nos. 2105 & 2105A)

(4) Sta. 111+38, 27' Rt.
Const. Pollution Control Manhole
Const. Type "G-2" Inlet
Inst. 12" Sew. Pipe - 502'
Tr. Exc. - 190 C.Y.
(For Details, See Shts. 2B-4 & 2B-5)

(5) Sta. 111+15, 16' Lt.
Const. Compost Storm Water Filter
Inst. 15" Sew. Pipe - 42'
Under Pvmt. - 40'
Tr. Exc. - 28 C.Y.
(For Details, See Sht. 2B)

(6) Sta. 105+73
Cap Inlet
(For Details, See Sht. 2B-5)

(7) Inst. 15" Sew. Pipe - 18'
Connect To Extg. Manhole
Tr. Exc. - 9 C.Y.

(8) Sta. 105+06 To Sta. 107+85
Inst. 8" Perf. Pipe - 288'
Connect To Inlet
(For Details, See Drg. No. 52430)

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BEAVERTON - TUALATIN HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		3A

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Appendix C

Content:

- **Proprietary Structure Maintenance Requirements**

The availability of the proprietary O&M Manual is pending as of October 2011. Contact Contech Construction Products at the following address:

Contech Construction Products
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