OPERATION & MAINTENANCE MANUAL

Water Quantity Detention Vault

Manual prepared: November 2018

DFI No. D00609

Figure 1: DFI No. D00609, looking southeast

1. Identification

Drainage Facility ID (DFI):	D00609
Facility Type:	Water Quantity Detention Vault
Construction Drawings:	(V-File Numbers) 45V-062
Location:	District: 2B
	Highway No.: 144
	Mile Post: 0.85-0.89 [left side]

2. Manual Purpose

The purpose of this manual is to outline inspection needs and summarize maintenance actions.

3. Facility Location

The location map below details the facility location. The highway, mile posts, side streets, access location, and stormwater flow directions are noted on the map.

Facility location type: Roadway shoulder

Flow direction: South

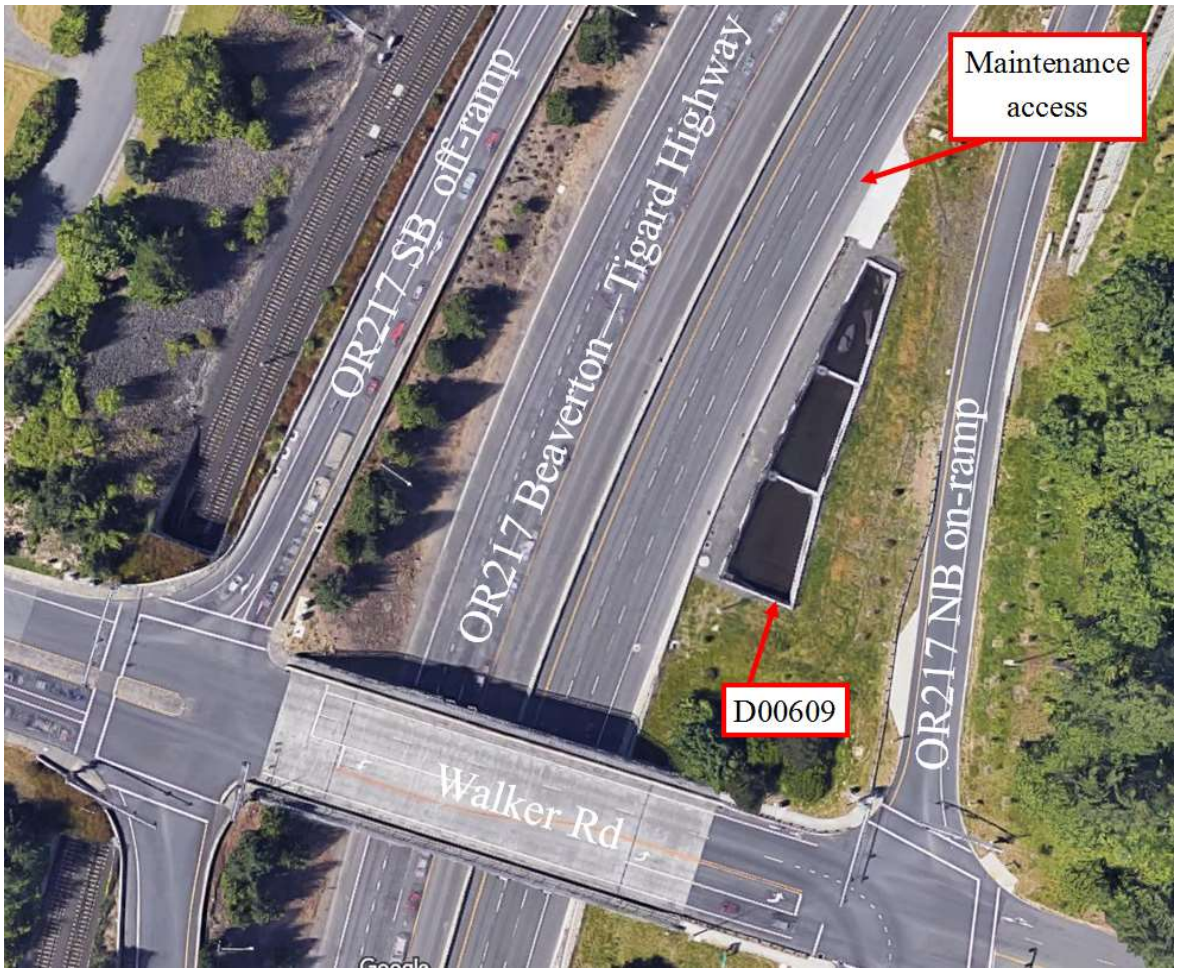
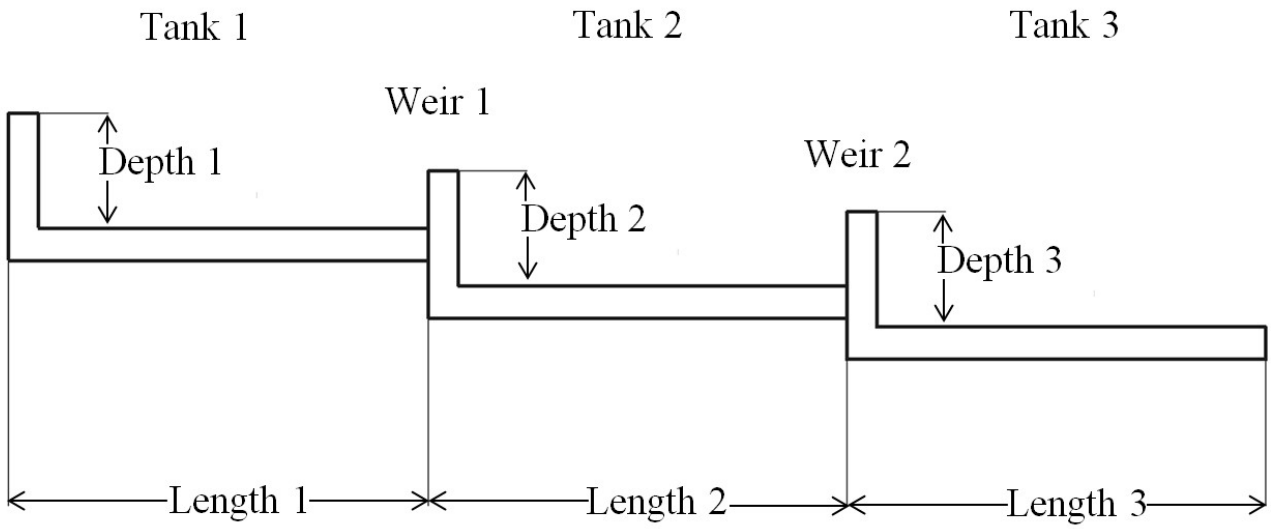


Figure 2: Facility location map

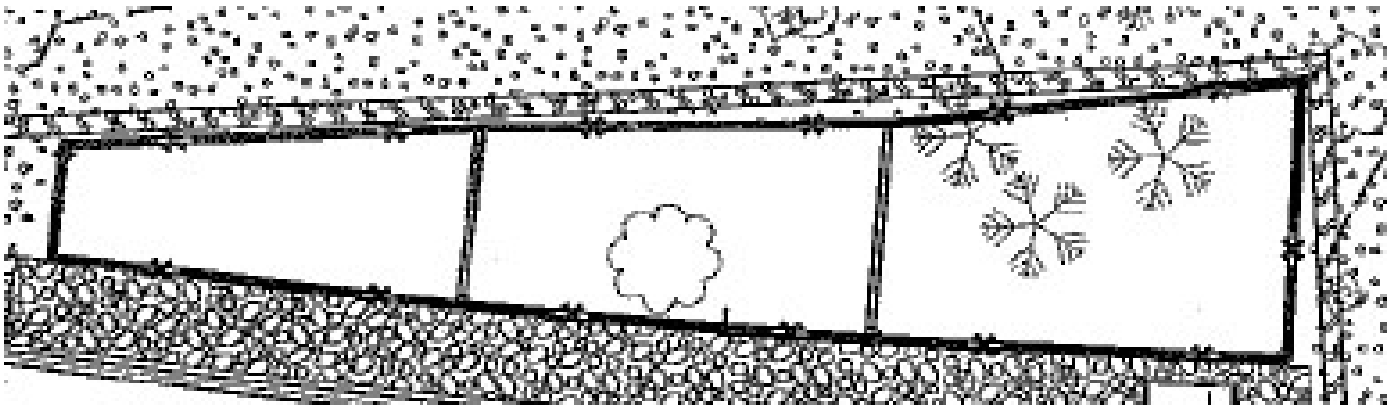
4. Facility Summary

The length of a detention vault is based on the bottom dimension. The depth of a detention vault is the vertical distance from the bottom of the tank to the top of the tank or the top of the weir. D00609 has three tanks with weirs between each one. The dimensions of each tank are given in the table below (the numbers start from the northernmost tank):

Tank Number	Bottom Length (feet)	Depth (feet)
1	60	8
2	60	6
3	60	6



The width of the detention vault varies throughout the water quality facility. The schematic below shows the varying dimensions of the detention vault.



Site Specific Information: Maintenance can access the detention vault via a roadside pad on the northbound lanes of OR217 at MP: 0.85. The pad leads to an access road that runs parallel to the detention vault. There are three maintenance platforms in the vault.

5. Facility Access

Maintenance access to the facility:

☒Roadside pad	☐Roadside shoulder
☐Access road with Gate	☐Access road without Gate

Figure 3: Access for D00609, looking south

6. Storm Drain System and Facility Overview

A detention facility is designed to control the quantity of runoff, by reducing the peak discharge and only detaining runoff for some short period of time. These facilities are designed to store and gradually release or attenuate stormwater runoff via a control structure or release mechanism, and completely drain after the design storm has passed. The most common detention facilities include:

- Dry ponds – these are depressed storage areas that store runoff during wet weather and are dry the rest of the time. Usually they are earthen depressions.
- Tanks – these are underground storage facilities that are typically constructed from large diameter pipe

- Vaults – these are enclosed underground storage facilities. They are typically constructed from reinforced concrete.

This detention vault is composed of three detentions tanks that are each approximately 60 feet long with varying widths. There are two weirs separating each tank from the others. The northernmost tank has two inlet pipes draining into it. The water flows south over the weir into the second and third tanks. The third tank has a 36" diameter stormwater outlet pipe constructed through the wall. The 36" storm sewer pipe enters a flow control manhole (Appendix A, Sheet 2). The flow control device at the facility includes a flow restricting office (16" diameter) and an overflow weir inside the manhole. The orifice, located at the base of the weir, meters stormwater flow leaving the system (Appendix B, GJ). Higher flows are detained in the manhole (those greater than what the orifice will allow to pass), but able to flow over the top of the weir if necessary. The stormwater is then directed into a 21" diameter pipe that drains to the southwest.

A. Heavy equipment access into facility:

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

B. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

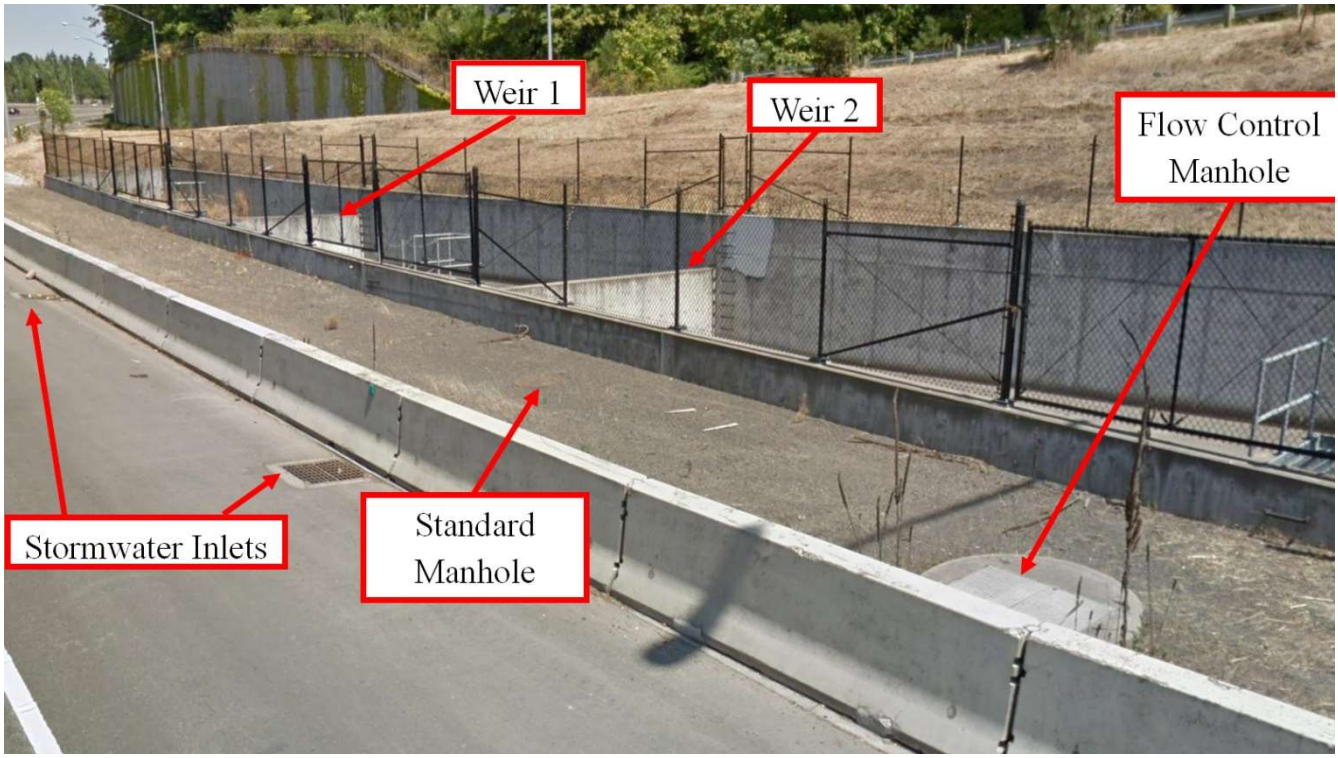


Figure 4: D00609 and its components, looking northeast

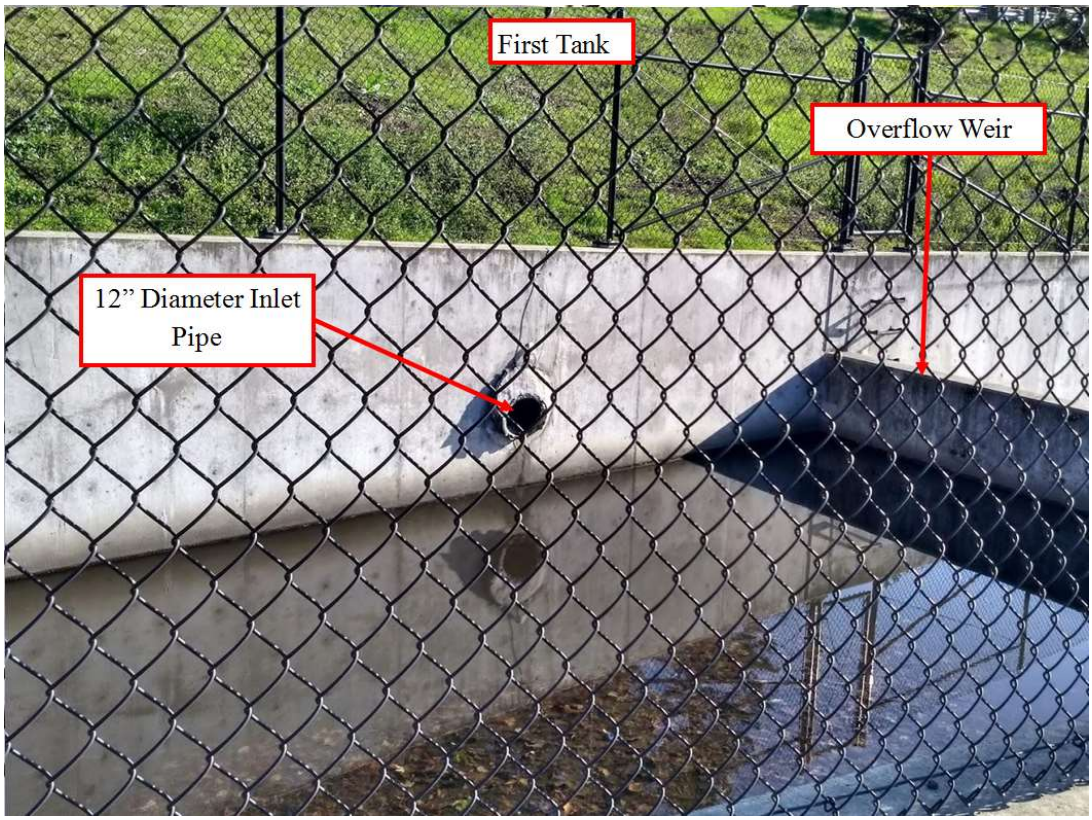


Figure 5: First tank of D00609 and one inlet pipe

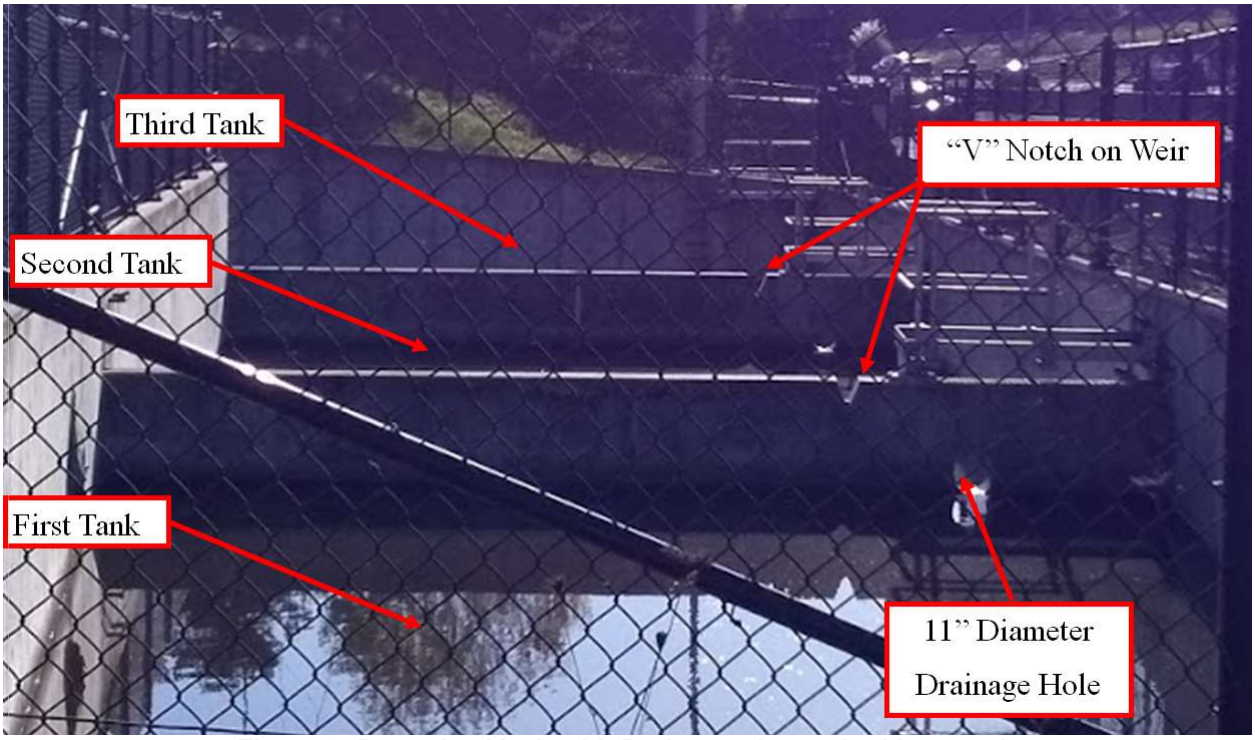
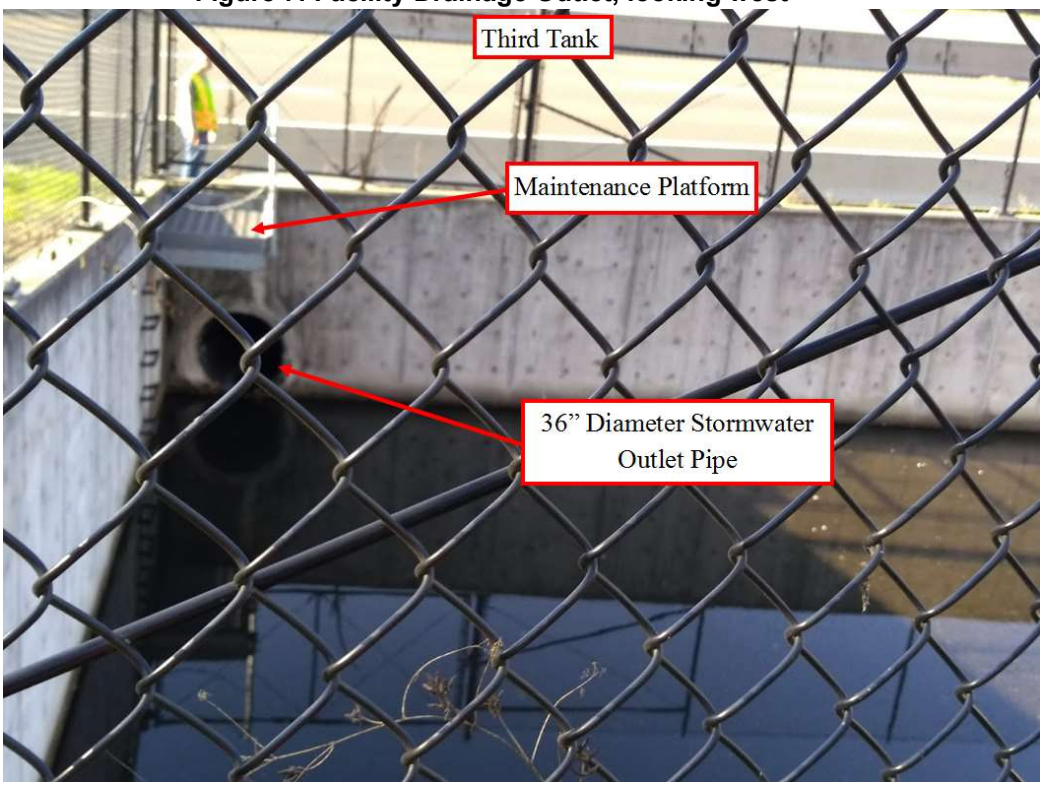


Figure 6: Detention Vault with Drainage shown, looking south

Figure 7: Facility Drainage Outlet, looking west



7. Maintenance

Maintenance Frequency/Maintain Records

a. Inspect annually. Preferably prior to the rainy season.
b. Clean and maintain as necessary. Refer to Activity 125 for conditions when maintenance is needed.
c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The ODOT Routine Road Maintenance Water Quality and Habitat Guide (the *Blue Book*) outlines the standard maintenance actions for water quality facilities under Activity 125.

There are standard maintenance tables for standard ODOT designs. The maintenance tables describe the maintenance component, the defect or problem, the condition when maintenance is needed, and the recommended maintenance to correct the problem. Use the following tables to maintain ODOT swales:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 7 (Maintenance of Detention Vault): Contains maintenance information for detention vaults.

The *Blue Book* can be viewed at the following website:
http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

8. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure cannot safety 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 are allowed to overtop the weir located within the detention manhole itself, (Operation Plan, Point “C”). In the event the restricting orifice is plugged or the flows exceed the anticipated high flow, the water can overtop the weir and exit the detention facility through the outlet pipe.

☐ Other, as noted below:

9. Waste Material Handling

Material removed from the facility is defined as waste by the Department of Environmental Quality (DEQ). Refer to the road waste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

http://www.oregon.gov/ODOT/Maintenance/Documents/ems_manual.pdf

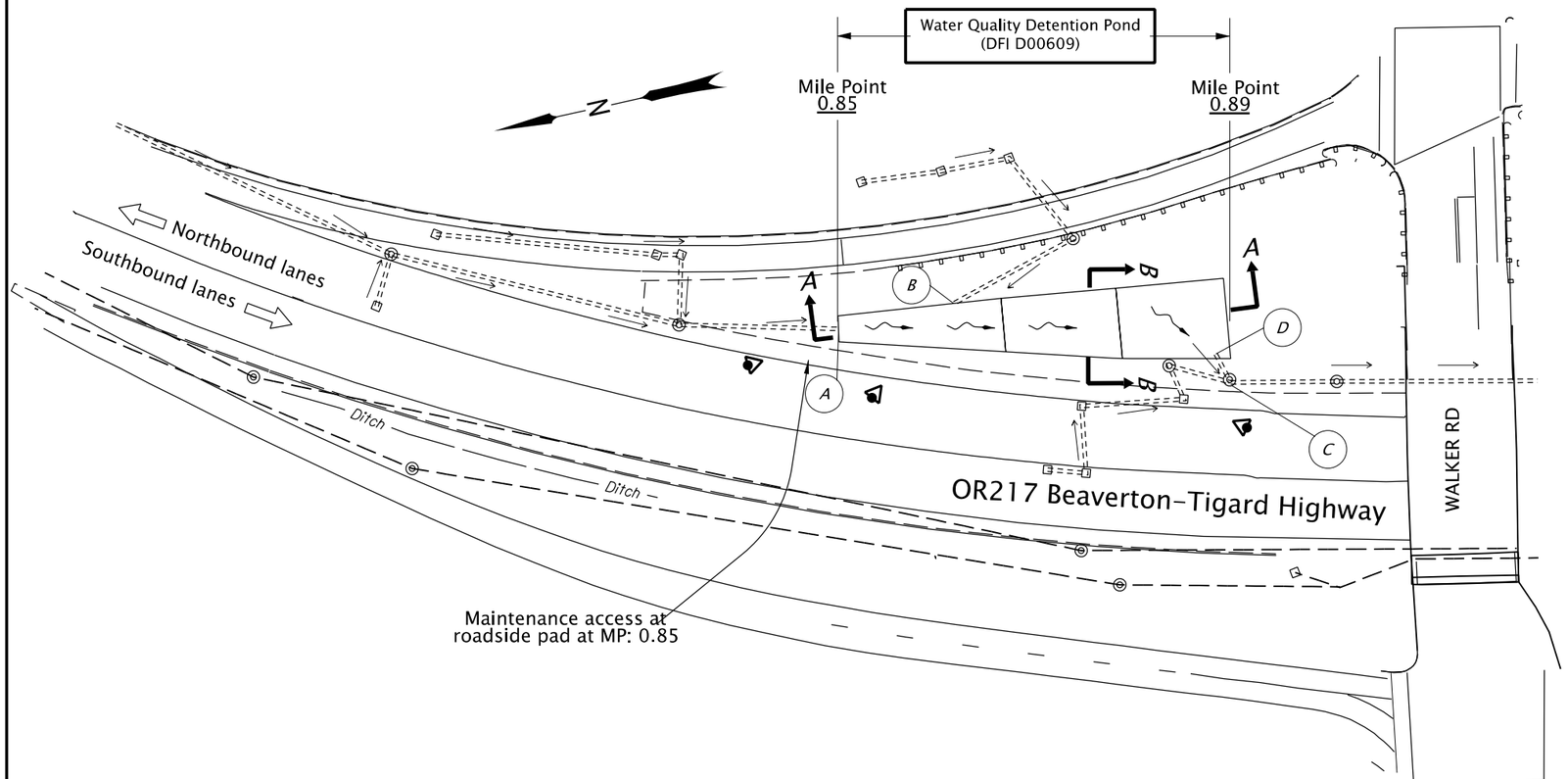
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator	(541) 963-1590
ODEQ Northwest Region Office	(503) 229-5263

A Appendix A – Site Specific Operational Plan

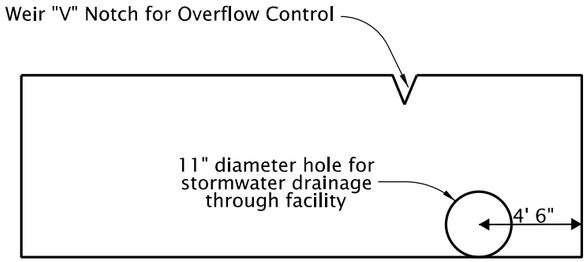
Contents:

Operational Plan: DFI D00609

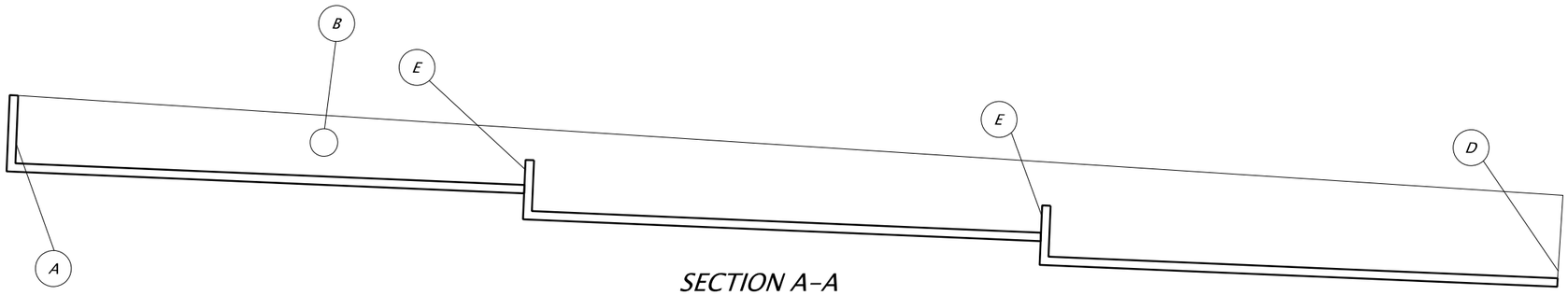


Legend

- A — 18" HDPE Stormwater Inlet Pipe
- B — 12" HDPE Stormwater Inlet Pipe
- C — Flow Control Manhole
- D — 36" HDPE Stormwater Outlet Pipe
- E — Flow Control Weir
- Manhole
- Inlet
- Water Flow Direction
- Conveyence Direction
- Traffic Flow Direction
- Photo Location/Direction



SECTION B-B
N.T.S.



SECTION A-A
N.T.S.

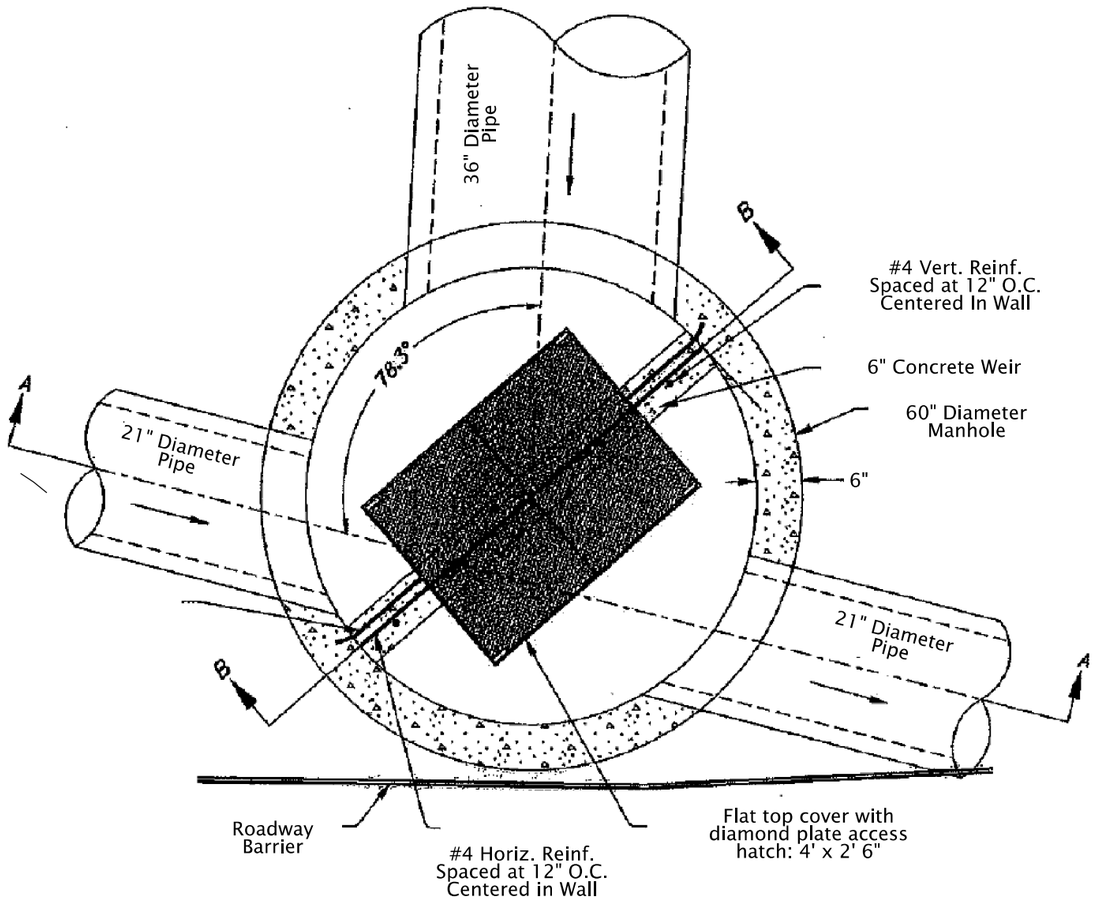
OREGON DEPARTMENT
OF TRANSPORTATION

Sht. 01 of 02

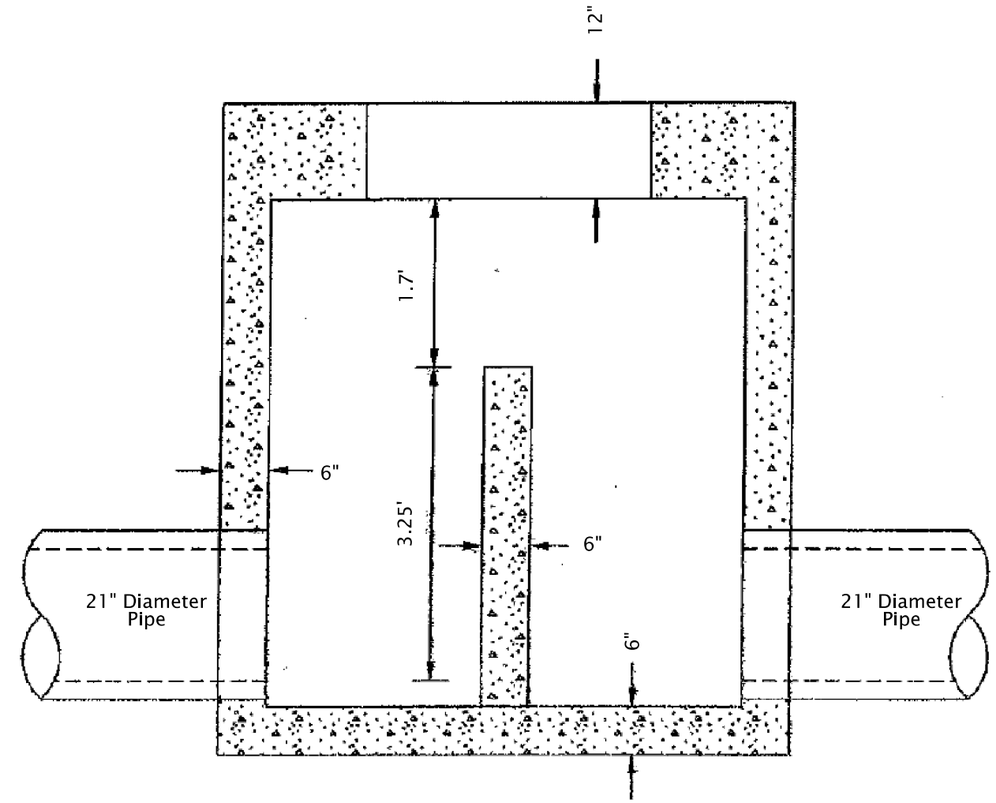
Prepared By:
Katrina Sepulveda

Drafted By:
Katrina Sepulveda

DFI D00609
MAINTENANCE DISTRICT 1 HWY 144
Water Quantity Detention Vault
Beaverton-Tigard Highway MP 0.85-0.89
Washington County



SCHEMATIC OF FLOW CONTROL MANHOLE
N.T.S.



SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Sht. 02 of 02

Prepared By: Katrina Sepulveda

Drafted By: Katrina Sepulveda

DFI D00609
MAINTENANCE DISTRICT 1 HWY 144
Water Quantity Detention Vault
Beaverton-Tigard Highway MP 0.85-0.89
Washington County

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 45V-062

45V-062

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

STATE OF OREGON
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, STRUCTURES & ILLUMINATION

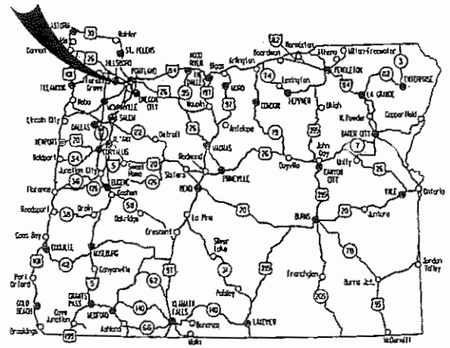
OR 217: SUNSET HWY - TV HWY DETENTION FACILITY

BEAVERTON - TIGARD HIGHWAY

WASHINGTON COUNTY

MAY 2012

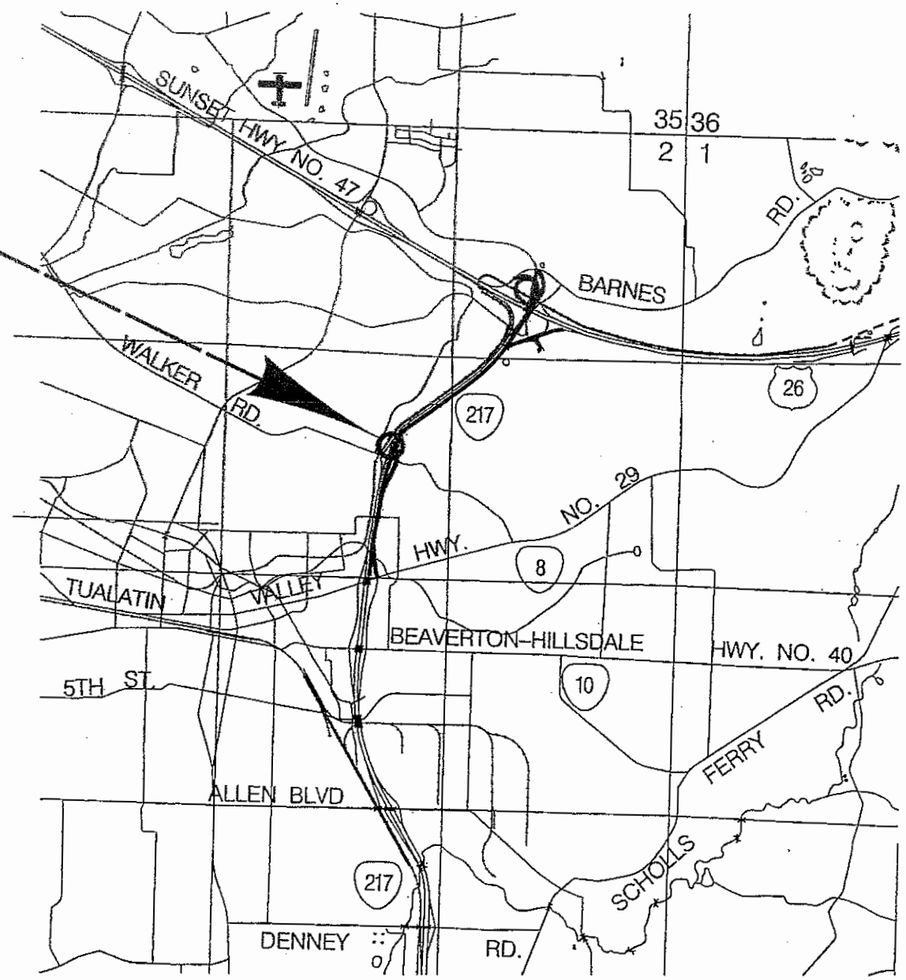
Ronald A. Lasson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



Overall Length Of Project - 0.17 Miles

PROJECT SITE

Sta. "L217NB" 139+80 (M.P. 0.86)



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.)

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
David Lohman	COMMISSIONER
Mary F. Olson	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tommy Boney	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
ODOT
BY:
DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: Jerry M. Stone 3-20-12
Signature & date
Terrence M. Stones
Print name and title Seg. Assoc.
Concurrence by ODOT Chief Engineer

OR 217: SUNSET HWY - TV HWY DETENTION FACILITY
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STP-S144(023)	1

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INDEX OF SHEETS, CONT'D	
SHEET NO.	DESCRIPTION
2	Typical Sections
2A	Details
2A-2	Grading Plan
2B	Traffic Control Plan
2C	Pipe Data Sheet
3	Alignment And General Construction
3A	Construction Notes
3B	Drainage & Utilities
3B-2	Drainage & Utilities Notes
3C	Drainage Profile
4	Drainage & Utilities
4A	Drainage Profile
GEO/HYDRO	
GA	Erosion Control Details
GA-2, GA-3	Erosion Control Plans
GJ Thru GJ-3 Incl.	Drainage Details
STRUCTURE NO. 21676 TV HWY DETENTION FACILITY	
88092	Plan And Elevation
88093	General Notes
88094	Foundation Data
88095	Wall Details
88096	Weir Details
88097	Maintenance Platform Details 1 of 2
88098	Maintenance Platform Details 2 of 2
ILLUMINATION	
IL	Illumination Plan
IL-2	Illumination Legend And Pole Table

Standard Drg. Nos.

RD300	- Trench Backfill, Bedding, Pipe Zone And Mult. Installations
RD302	- Street Cut
RD336	- Standard Storm Sewer Manhole
RD344	- Standard Manhole Base Section
RD346	- Manholes
RD356	- Manhole Cover & Frames
RD364	- Concrete Inlets Type G-1, G-2, G-2M, & G-2MA
RD380, RD384, RD386, RD390	- Pipe Fill Height Tables
RD500	- Precast Conc. Bar. Pin & Loop Assembly
RD700	- Curbs
RD815	- Chain Link Fence
RD1000	- Construction Entrances
RD1010	- Inlet Protection (Type 1, 2 and 3)
BR240	- Protective Fencing
BR241	- Protective Fencing Details - 1
BR242	- Protective Fencing Details - 2
TM200	- Sign Installation Details
TM570	- Traffic Delineators
TM571	- Traffic Delineators, Steel Post Details
TM629	- Slip Base and Fixed Base Luminaire Supports (Details and Design Criteria)
TM630	- Slip Base and Fixed Base Luminaire Supports (Base Plate and Footing Details)
TM653	- Traffic Signal Supports
TM670	- Wood Post sign Supports
TM671	- 3 Second Gust Wind Speed Isotach
TM676	- Perforated Steel Square Tube (PSST) Sign Support Installation
TM681	- Sign Attachments
TM687	- Perforated Steel Square Tube (PSST) Anchor Foundation
TM800	- Tables, Abrupt Edge And PCMS Details
TM820	- Temporary Barricades
TM821	- Temporary Sign Supports
TM831	- Temporary Impact Attenuators
TM860	- Freeway Sections

No R/W Map

Ronald G. Larson
NOT REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.

OR 217: SUNSET HWY - TV HWY DETENTION FACILITY

BEAVERTON - TIGARD HIGHWAY

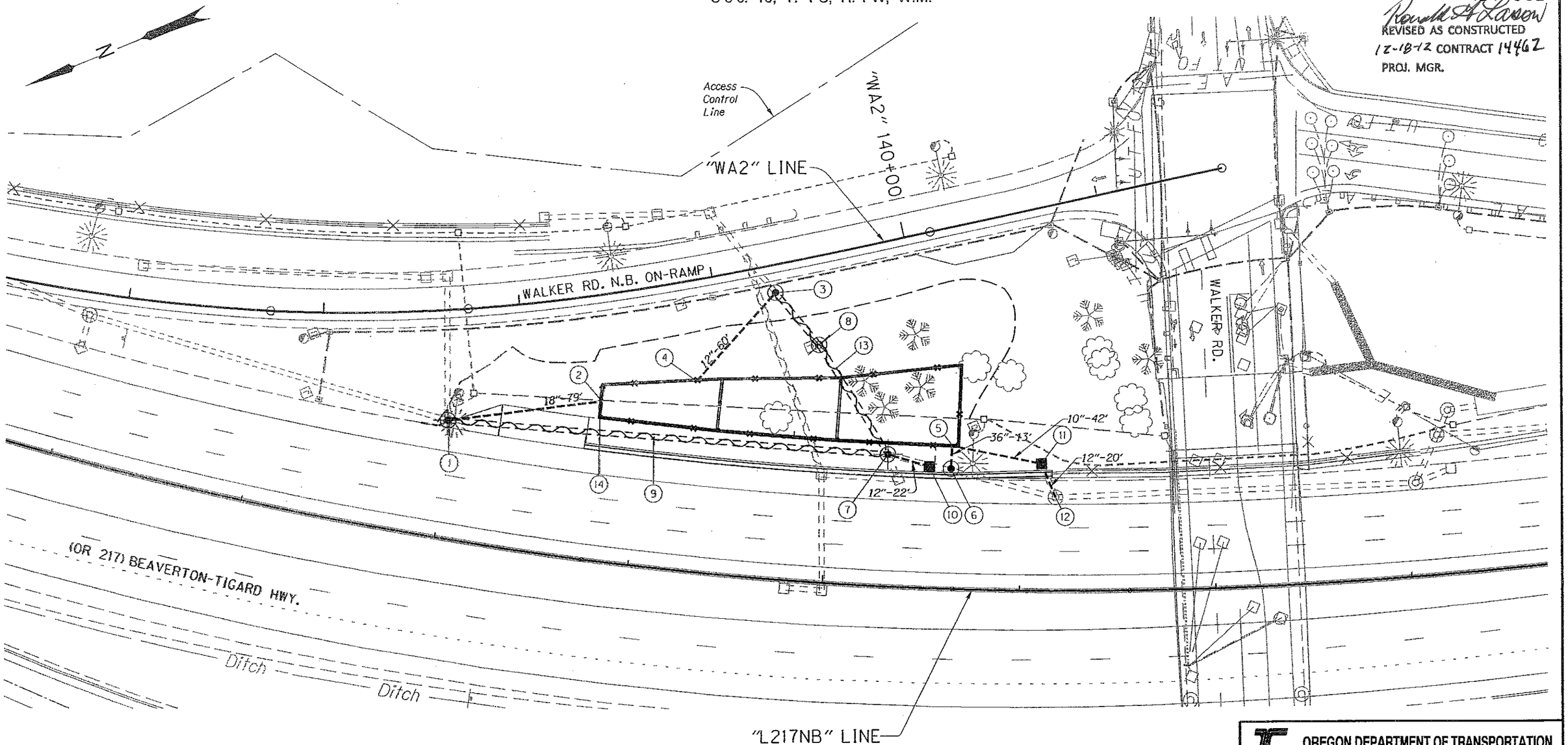
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STP-S144(023)	1A

Sec. 10, T. 1S, R. 1W, W.M.

45V-062

Ronald A Larson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



Notes:

1. *Contractor to design and construct a temporary Drainage facility in conformance with section 00240 Of the specifications.*
2. *The estimated 25 year flow at manhole (3) is 2 CFS.*

Remove abandoned storm sewer pipe filled with cdf

Remove or abandon storm sewer pipe

REGISTERED PROFESSIONAL ENGINEER
58552
OREGON
JULY 21, 1998
CHRISTINE J. HIGGINS
EXPIRES 06-30-13

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

OR 217: SUNSET HWY - TV HWY DETENTION FACILITY

BEAVERTON - TIGARD HIGHWAY

WASHINGTON COUNTY

Reviewed By - Terry Wheeler
Designed By - Karina Nordahl
Drafted By - Mike Youngs

DRAINAGE AND UTILITIES

SHEET NO. 3B

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45V-062

Ronald L. Larson
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12-18-12 CONTRACT 14462
PROJ. MGR.

(1) Sta. "L217NB" 137+96.21, ~~65.87'~~ 59.99' Lt.
Protect extg. manhole
Connect 18" storm sew. pipe to extg. manhole

(2) Sta. "L217NB" 138+76.45, 80.92' Lt. =
Sta. "DT" 0+00.07, 7.90' Lt.
Connect 18" storm sew. pipe through wall
Inst. 18" storm sew. pipe - 79'
10' depth
(For details, see drawing 88095)
(See drg. no. RD300)

(3) Sta. "L217NB" 139+65.48, 140.45' LT ~~139+64.28, 144.87' Lt.~~
Const. manhole over extg. pipe
(See drg. nos. RD336, RD344 & RD356)

(4) Sta. "L217NB" 139+26.06, 96.49' Lt. =
Sta. "DT" 0+47.60, 23.27' Lt.
Connect 12" storm sew. pipe through wall
Inst. 12" storm sew. pipe - 60'
5' depth
(For details, see drawing 88093)

(5) Sta. "L217NB" 140+63.61, 73.07' Lt. =
Sta. "DT" 1+80.41, 0.00' Rt.
Connect 36" storm sew. pipe through wall
(For details, see drawing 88093)

(6) Sta. "L217NB" 140+61.51, 62.50' LT ~~140+63.42, 61.07' Lt.~~
Const. flow control manhole over extg. sew. - 60" dia.
Inst. 36" storm sew. pipe - 13'
10' depth
(For details, see sht. GJ)
(See drg no. RD346)

(7) Sta. "L217NB" 140+31.48 67.53' LT ~~140+30.30, 67.05' Lt.~~
Minor adjust manhole
Inst. 12" ductile iron storm sew. pipe - 22'
5' Depth
Connect to extg. manhole

(8) Remove extg. manhole

(9) Pipe to remain functioning during construction to maintain conveyance for stormwater

(10) Sta. "L217NB" 140+52.60, 60.88' LT ~~140+52.19, 61.78' Lt.~~
Const. type G-2 inlet
(See drg. no. RD364)

(11) Sta. 141+10.46, 64.89' LT ~~141+10.74, 64.52' Lt.~~
Remove extg. inlet
Const. type G2-MA inlet
Inst. 10" storm sew. pipe - 42'
10' Depth
(For details, see drawings 88092 and 88095)
(See drg. no. RD364)

(12) Sta. 141+19.00, 46.39' LT ~~141+18.27, 47.50' Lt.~~
Inst. 12" storm sew. pipe - 20'
10' depth
Connect to extg. manhole
(See drg. no. RD302)

(13) Construct temporary drainage facility

(14) Inst. field facility marker, Type S1 Red
Inst. field facility marker, Type S1 Green
Inst. field facility marker, Type S2
(For details, see sht. GJ-2)

REGISTERED PROFESSIONAL ENGINEER
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BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

Reviewed By - Terry Wheeler
Designed By - Karina Nordahl
Drafted By - Mike Younga

DRAINAGE AND UTILITY NOTES

SHEET NO. 3B-2

45V-062

Ronald D. Larson

REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.

STRUCTURAL DETAILS CHECKED _____

"L217NB" Line

+65.48
~~+64.26~~ M.H. F.L. { 227.63 (Rim)
219.94 (12" E.) (Extg.)
219.70 (12" W.)

Extg. Ground @ ℄

Extg. Ground (Gutter Line)
@ 56' Lt.

Structure No. 21676
Detention Tank
@ "DT" Line ℄

12"-60'
-13.66%

+31.48
~~+30.30~~ M.H. F.L. { 209.65 (Rim)
206.24 (12" S.W.)
203.50 (18" N.E.) (Extg.)
203.40 (21" S.W.) (Extg.)

12"-22'
-0.50%

+52.60
~~+52.12~~ Inlet F.L. { 208.10 (Rim)
206.35 (12" N.E.)

+62.50
~~+63.42~~ M.H. F.L. { 208.70 (Rim)
202.75 (21" N.E.) (Extg.)
202.75 (21" E.)
202.75 (21" S.W.) (Extg.)

18"-79'
-3.29%

+96.21 Extg. M.H. F.L. { 220.27 (Rim)
216.84 (12" E.) (Extg.)
213.20 (18" N.) (Extg.)
213.10 (18" S.)

+63.61 36" F.L. (202.75)

+10.46 { 206.65 (Rim)
~~+10.74~~ Inlet F.L. 201.70 (10" N.)
Inlet F.L. 201.70 (12" W.)

+76.45 18" F.L. (210.50)

+26.06 12" F.L. (211.50)

+19.00
~~+19.21~~ M.H. F.L. { 201.67 (21" N.) (Extg.)
201.60 (12" E.)
201.57 (21" S.) (Extg.)

36"-13'
-0.00%

10"-42'
-0.50%

~~Extg. 21"~~
18" Pipe

12"-20'
-0.50%

Exc. 4100
Emb. 10

230 225 220 215 210 205 200 195 190 185

138+00 140+00 142+00

REGISTERED PROFESSIONAL ENGINEER
58552
OREGON
JULY 21, 1998
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BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

Reviewed By - Terry Wheeler
Designed By - Karina Nordahl
Drafted By - Mike Youngs

DRAINAGE PROFILE

SHEET NO. 3C

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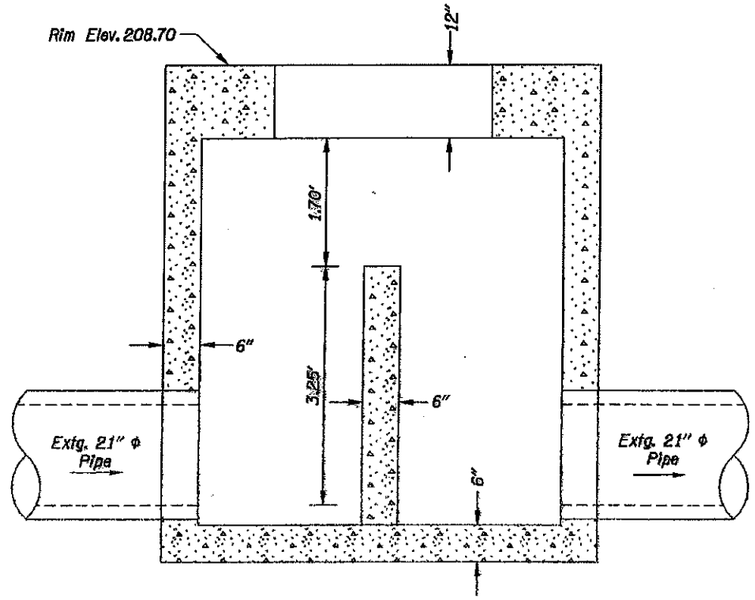
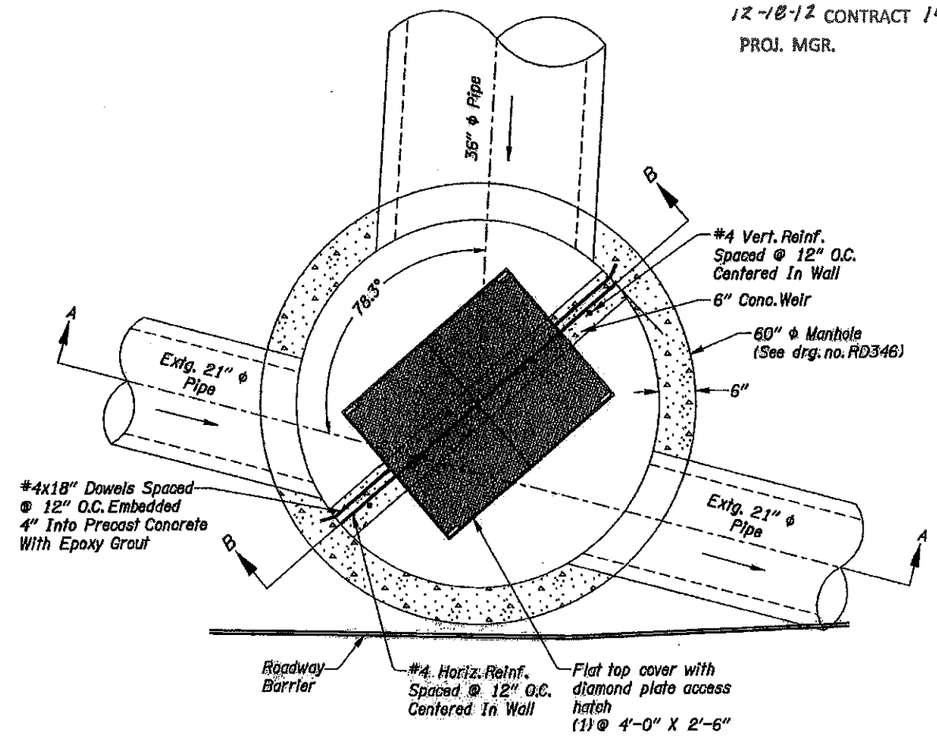
45V-062

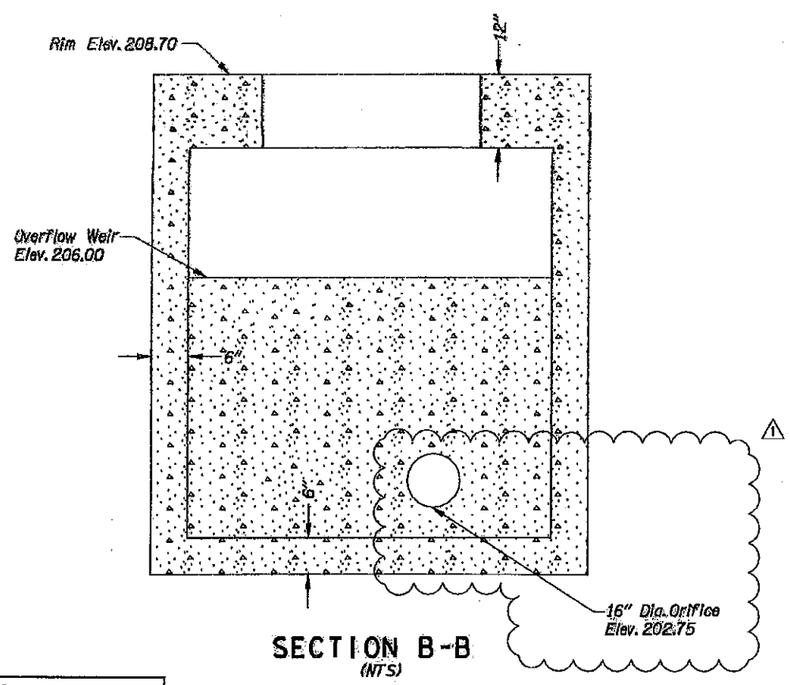
Ronald W. Larson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



SECTION A-A
(NTS)



FLOW CONTROL MANHOLE PLAN VIEW
(NTS)



SECTION B-B
(NTS)

Revisions
⚠1 Revised 4-13-2012 Storm Sewer Modifications

REGISTERED PROFESSIONAL ENGINEER
58552
OREGON
JULY 21, 1998
CHRISTINE J. HIGGINS
EXPIRES 06.30.13

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

OR 217: SUNSET HWY - TV HWY DETENTION FACILITY
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

Reviewed By - Terry Wheeler
Designed By - Karina Nordahl
Drafted By - Mike Youngs

DRAINAGE DETAILS

SHEET NO. GJ

P:\0\0D0T00000749\0400CAD\EC\Sheets\17919_Detention Tank.dt2 4/12/2012 11:48:26 AM mjy

45V-062

REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.

SEE NOTE AT TOP OF STANDARD DETAIL #020. FOR LARGE DIAMETER MANHOLES SEE STANDARD DETAIL #160

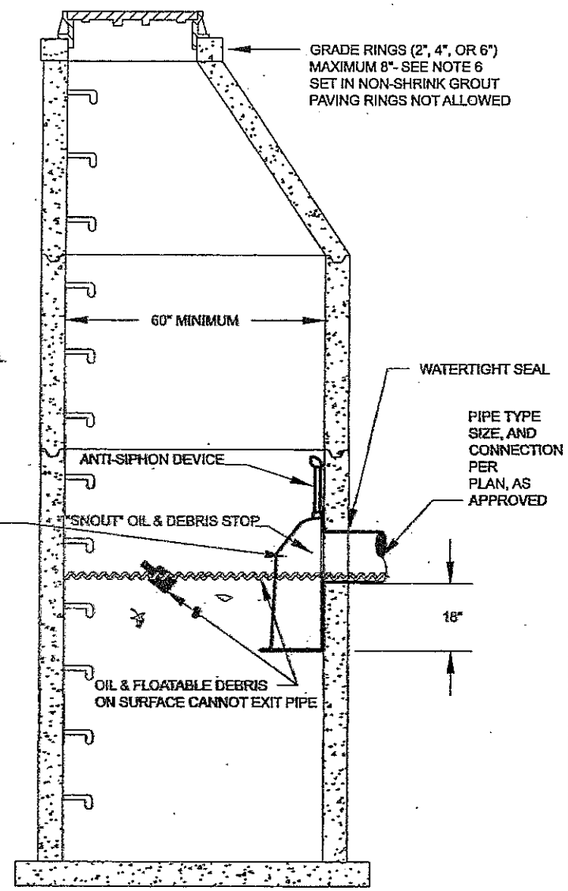
NOTES:
1. ALL MANHOLE SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478 AND APPLICABLE PROVISIONS OF STD. MANHOLE DRAWING NO. 010
2. INLET AND OUTLET PIPE NOT TO EXCEED 18"DIA.
3. PROVIDE SPECIAL DETAIL FOR OUTLET FLOW CONTROL EXCEEDING 18" DIA.
4. ALL OUTLETS SHALL HAVE FLOW CONTROL DEVICE.

ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:
BEST MANAGEMENT PRODUCTS, INC.
53 MT. ARCHER RD.
LYME, CT 06371
(860) 434-0277, (860) 434-3195
FAX TOLL FREE: (800) 504-8008
OR (888) 354-7585
WEB SITE: WWW.BESTMP.COM
OR PRE-APPROVED EQUAL

SUMP VOLUME AVAILABLE

MINIMUM	MAXIMUM	
60" M.H.=	58.9 CF	98.1 CF
72" M.H.=	84.8 CF	141.3 CF
84" M.H.=	115.4 CF	192.3 CF

PROVIDE SPECIAL DETAIL FOR VOLUME REQUIREMENTS EXCEEDING 192.3 CF



SUMP VOLUME REQUIREMENTS
20 CF/1.0 CFS OF INFLOW

58.9 CF MINIMUM REQUIRED

WATER QUALITY MANHOLE (SNOUT) A

DRAWING NO. 250 REVISED 12-06

Clean Water Services
Our commitment is clear.

REGISTERED PROFESSIONAL ENGINEER
58552
OREGON
JULY 21, 1998
CHRISTINE J. HIGGINS

EXPIRES 06-30-13

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

OR 217: SUNSET HWY - TV HWY DETENTION FACILITY
BEAVERTON - TIGARD HIGHWAY
WASHINGTON COUNTY

Reviewed By - Terry Wheeler
Designed By - Christine Higgins
Drafted By - Mike Youngs

DRAINAGE DETAILS

SHEET NO. GJ-3

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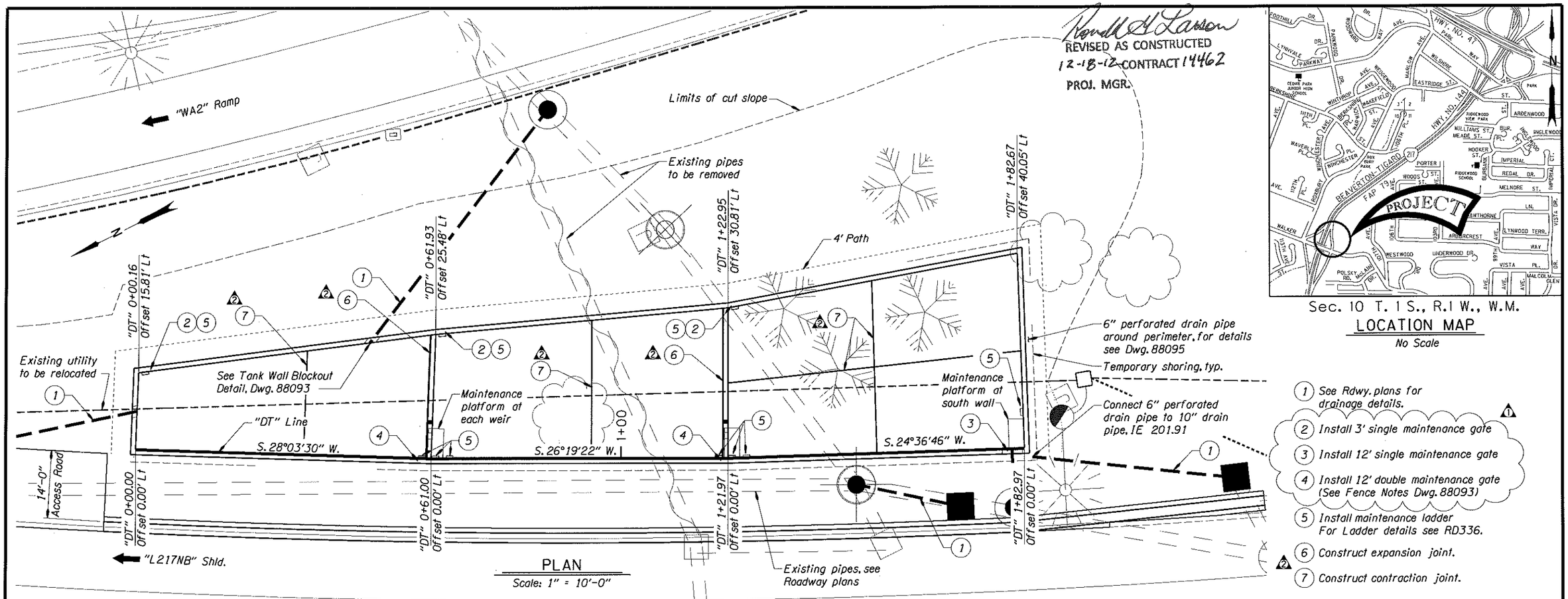
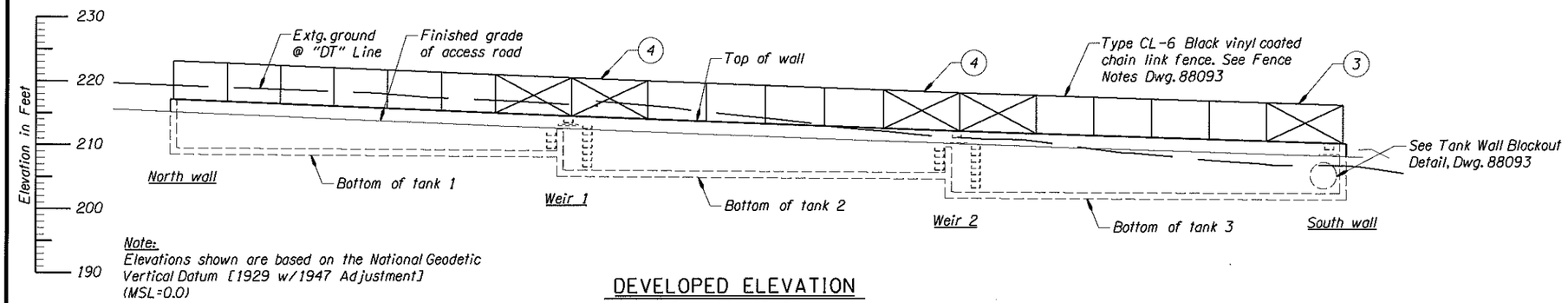
Ronald A. Larson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



PLAN
Scale: 1" = 10'-0"

1. See Rdwy. plans for drainage details.
2. Install 3' single maintenance gate
3. Install 12' single maintenance gate
4. Install 12' double maintenance gate (See Fence Notes Dwg. 88093)
5. Install maintenance ladder For Ladder details see RD336.
6. Construct expansion joint.
7. Construct contraction joint.



Note:
Elevations shown are based on the National Geodetic Vertical Datum [1929 w/1947 Adjustment] (MSL=0.0)

DEVELOPED ELEVATION
Scale: 1" = 10'-0"

	DATE	REVISION	BY
1	4-13-12	FORMATTING	AMB
2	7-08-13	As Constructed	AMB

ACCOMPANIED BY DWGS. 88093-88098, BR240-BR242, RD336, RD815

DRAFTER: Alan Mitchell
DESIGNER: Laura Barker
CHECKER: Amanda Blankenship
REVIEWER: Terry Stones

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES:

OREGON DEPARTMENT OF TRANSPORTATION

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 505
Salem Oregon 97301
Phone: 503.361.8635

STRUCTURE NO. 21676
DATE March - 2012
CALC. BOOK 6484

DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

PLAN AND ELEVATION

SHEET 1 OF 7
DRAWING NO. 88092

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GENERAL NOTES:

All material and workmanship shall conform to the 2008 Oregon Standard Specifications for Highway Construction of the Oregon Department Transportation (ODOT), as supplemented by the Special Provisions.

Foundation excavations shall be examined and approved by the Soils Engineer or his Representative. See Project Specifications and the Geotechnical Report for material and method of compaction and backfill.

Walls are designed in accordance to the 2010 AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications.

	Density	Internal friction angle
Foundation soils:	120 pcf	30°
Wall backfill:	135 pcf	34°

Factored Bearing Resistance = 2500 psf

For lateral pressure and other design criteria, see Geotechnical Engineering Memo by GeoDesign.

All reinforcing steel shall conform to AASHTO M31, Grade 60, ASTM Specification A706 or A615, grade 60. Use the following splice lengths (unless shown otherwise):

Reinforcing Splice Lengths (Class B)										
Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#18
Uncoated	1'-5"	1'-10"	2'-4"	2'-9"	3'-5"	4'-6"	5'-9"	7'-3"	8'-11"	Not Permitted	

Splice reinforcing steel at alternate bars, staggered at least one splice length or as far as possible, unless shown otherwise.

All reinforcing shall have 2" of concrete cover unless shown otherwise.

All reinforcing spacing is intended to be maximum unless otherwise noted.

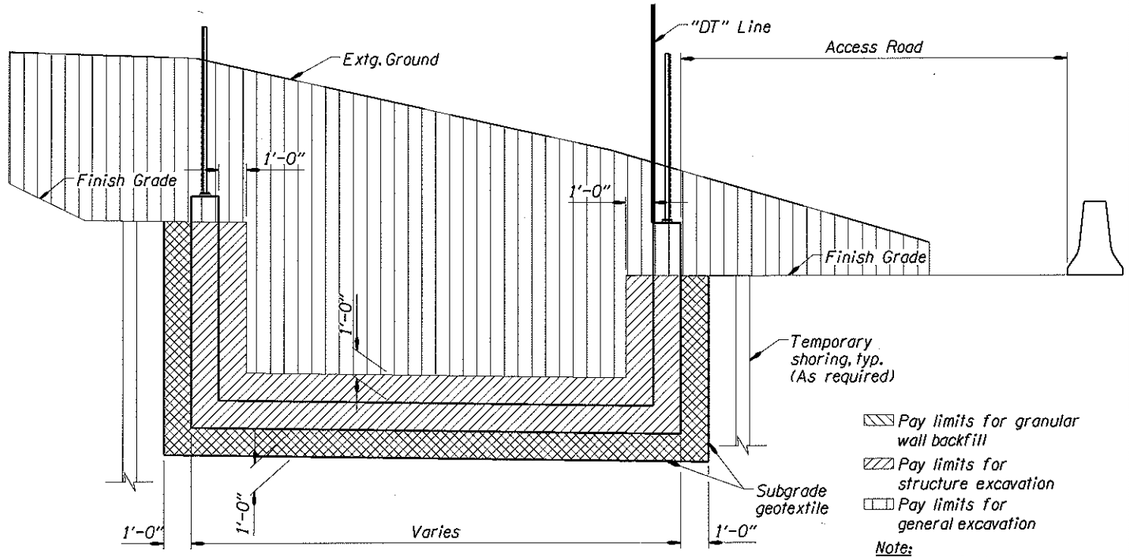
Provide a ¾" chamfer on all exposed concrete edges unless noted otherwise.

Provide Class 4000 - 1½", 1", or ¾" Foundation Concrete in base 1'-0" slabs.

Provide Class 4000 - 1½", 1", or ¾" General Structure Concrete for all other concrete.

Fence Notes:

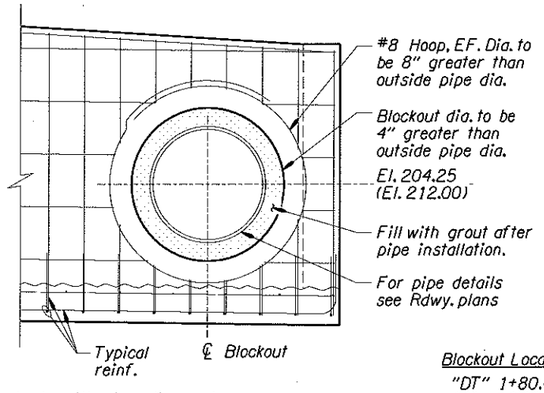
1. Type CL-6 Black Vinyl Coated Chain Link Fence, see RD815 for details. Use 3½" fabric w/2" dia. std. steel pipe line post, 2½" dia. std. steel pipe end/corner post. Provide pipe conforming to ASTM A53 Grade B.
2. Concrete anchors will be ¾" x 10" grade 36 anchor bolts. Install according to Type "B" fence specifications. See BR240-BR242 for details.
3. Chain link fencing shall be black vinyl coated over galvanizing. Galvanize posts and base plates after fabrication. Field coat installed anchors and nuts.



TYPICAL TRANSVERSE SECTION

Note:
Place backfill behind walls at equal lifts.

Ronald G. Larson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



Notes:
Align blockouts with pipe alignment.

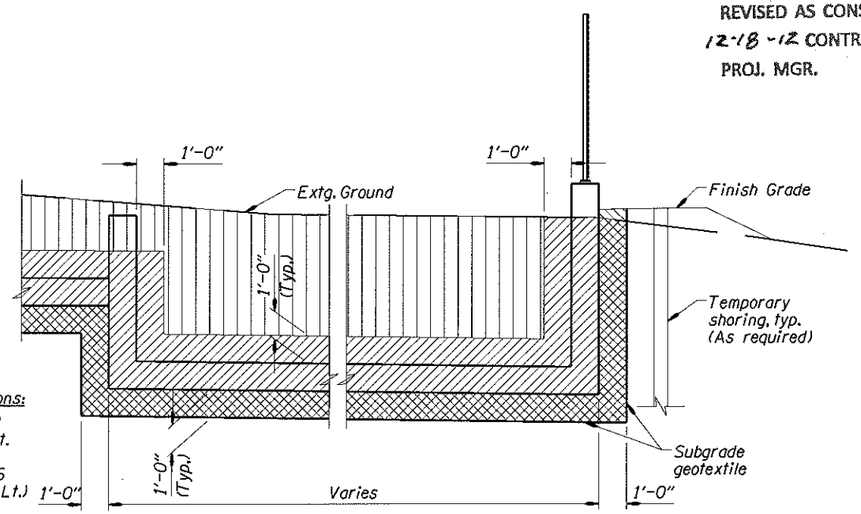
Adjust all reinf. to maintain 2" clear of blockout.

() = Dimensions and elevations for blockout in tank 1 east wall.

TANK WALL BLOCKOUT DETAIL
Scale: ½" = 1'-0"

Blockout Locations:
"DT" 1+80.42
Offset 0.00' Lt.

("DT" 0+47.66
Offset 23.35' Lt.)



TYPICAL LONGITUDINAL SECTION

EXCAVATION/BACKFILL DIAGRAM
No Scale

△	DATE	REVISION	BY
	7-08-13	As Constructed	AMB

ACCOMPANIED BY DWGS. See Sheet 1 for this structure

DRAFTER: Alan Mitchell
DESIGNER: Laura Barker
CHECKER: Amanda Blankenship
REVIEWER: Terry Stones

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES:

OREGON DEPARTMENT OF TRANSPORTATION

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

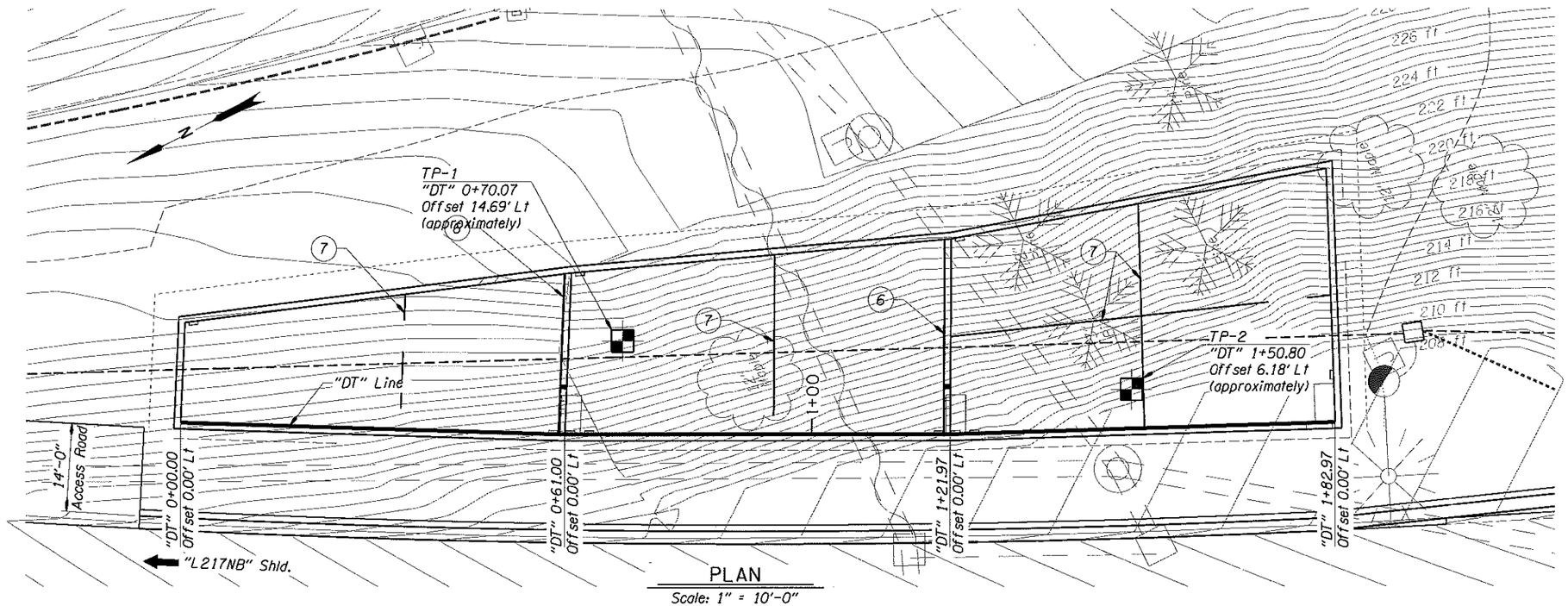
STRUCTURE NO. 21676
DATE March - 2012
CALC. BOOK 6484

DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

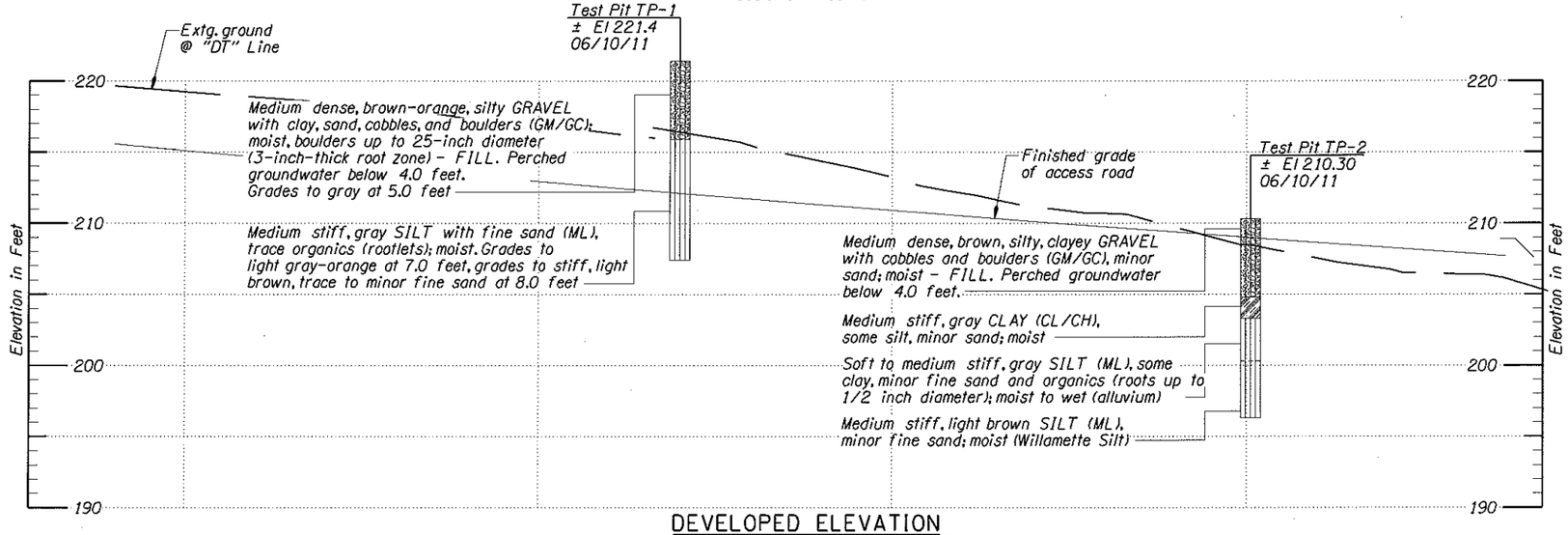
GENERAL NOTES

SHEET 2 OF 7
DRAWING NO. 88093

REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR. Ronald A. Larson



PLAN
Scale: 1" = 10'-0"



DEVELOPED ELEVATION
Scale: 1" = 10'-0" (Horiz.)
1" = 5'-0" (Vert.)

LEGEND OF MATERIALS

- CLAY
- SILT
- SILTY GRAVEL

Notes:
Contours shown are existing.

Geotechnical data shown on this drawing are a consolidation of and/or revision in terminology from the drill logs. The drill logs and any other exploration data used in compiling this drawing are available upon request. Contractor shall refer to the Geotechnical Reports and drill logs and the information contained therein.

	DATE	REVISION	BY
	7-08-13	As Constructed	JDF

ACCOMPANIED BY DWGS. See Sheet 1 for this structure

DRAFTER: Alan Mitchell
DESIGNER: Christopher Ell
CHECKER: Joe Heidgerken
REVIEWER: Jeff Tucker

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES: 6-30-2012

OREGON DEPARTMENT OF TRANSPORTATION

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

STRUCTURE NO. 21676
DATE March - 2012
CALC. BOOK 6484

DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

FOUNDATION DATA

SHEET 3 OF 7
DRAWING NO. 88094

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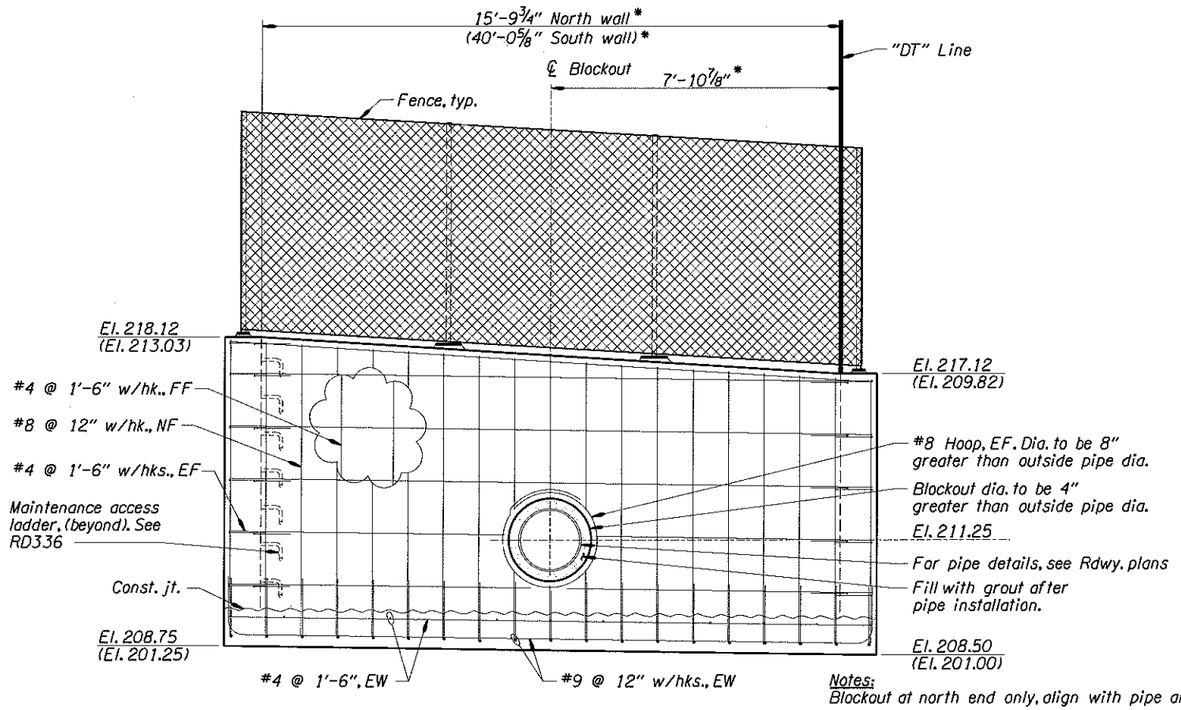
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 1462
PROJ. MGR.



(South wall similar - opposite hand)

NORTH END WALL ELEVATION

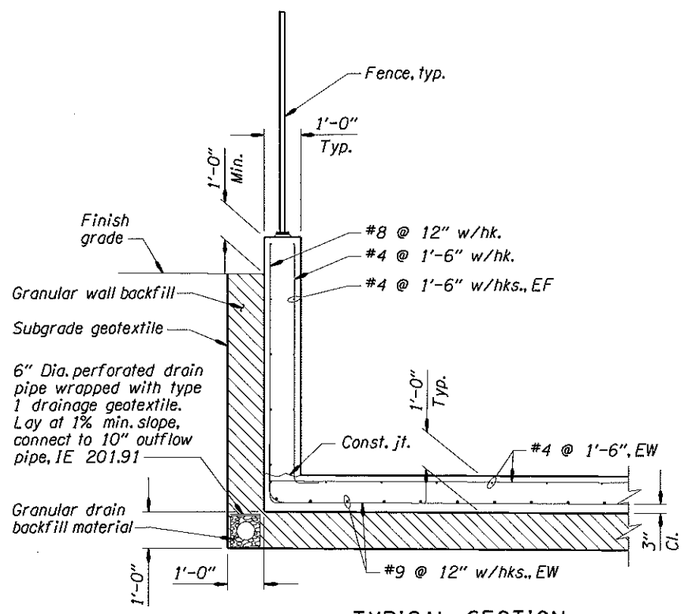
Scale: ½" = 1'-0"

Notes:
Blockout at north end only, align with pipe alignment.

Adjust all reinf. to maintain 2" clear of blockout.

( ) = Dimensions and elevations for south wall.

*Measured along inside face of tank.



TYPICAL SECTION

Scale: ½" = 1'-0"

△	DATE	REVISION	BY
	7-08-13	AS CONSTRUCTED	AMB

ACCOMPANIED BY DWGS. See Sheet 1 for this structure

DRAFTER: Alan Mitchell
DESIGNER: Laura Barker
CHECKER: Amanda Blankenship
REVIEWER: Terry Stones

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES:

OREGON DEPARTMENT OF TRANSPORTATION

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

STRUCTURE NO. 21676
DATE March - 2012
CALC. BOOK 6484

DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

WALL DETAILS

SHEET 4 OF 7
DRAWING NO. 88095

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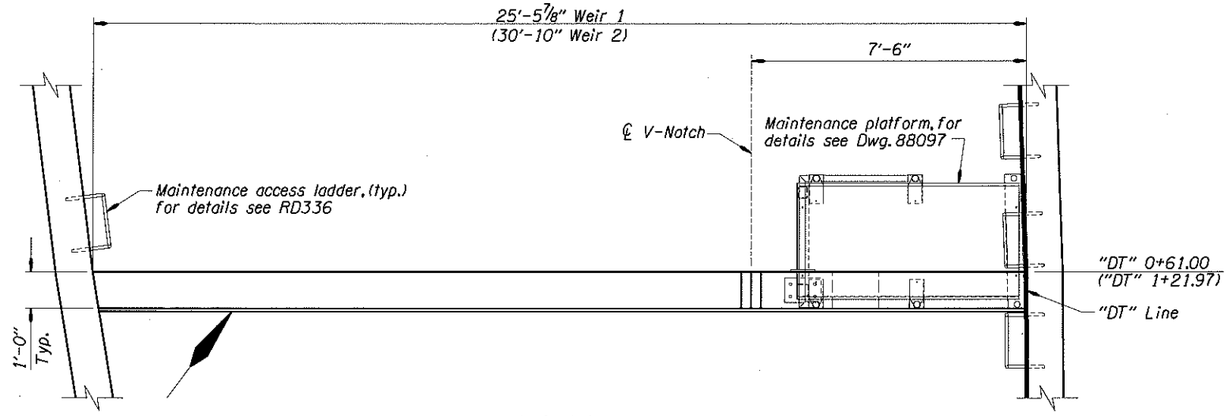
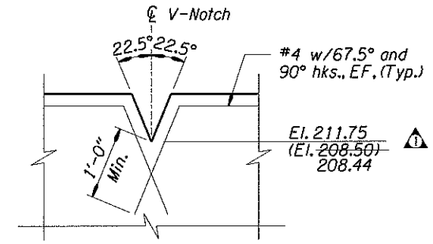
Ronald L. Larson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



(Weir 2 similar)

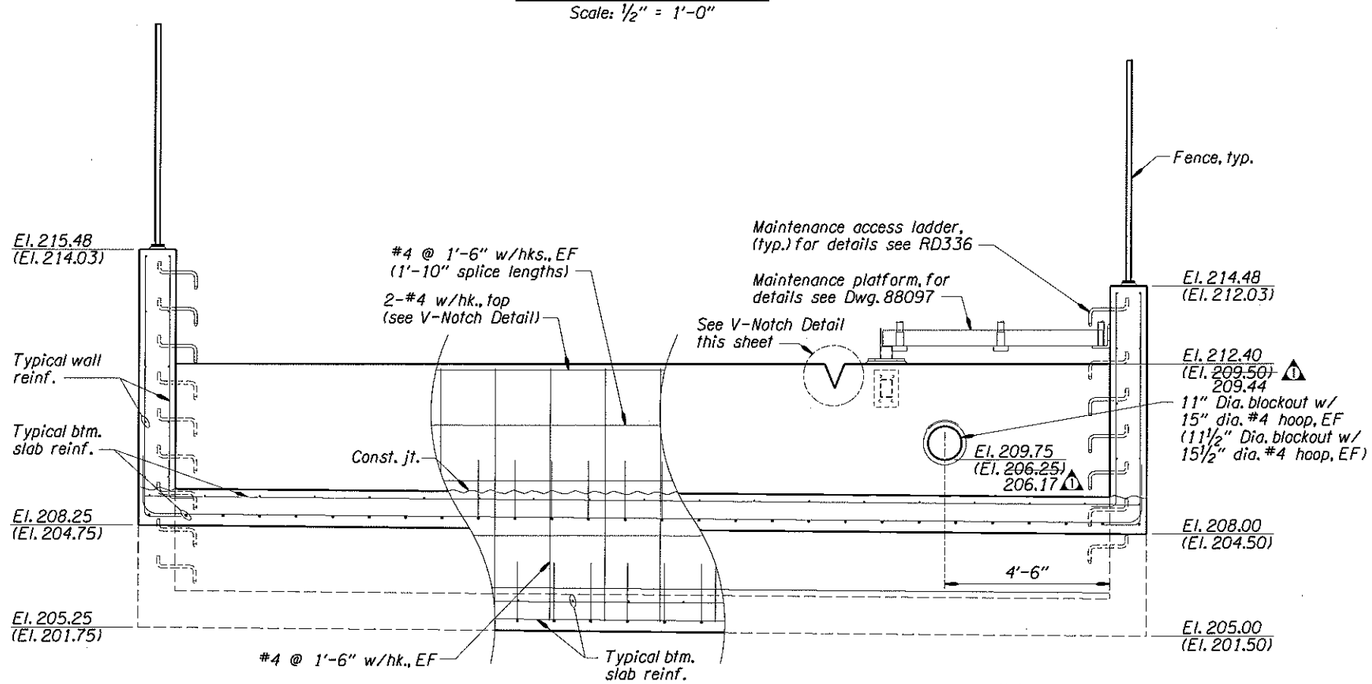
WEIR 1 PLAN

Scale: ½" = 1'-0"



V-NOTCH DETAIL

Scale: 1" = 1'-0"



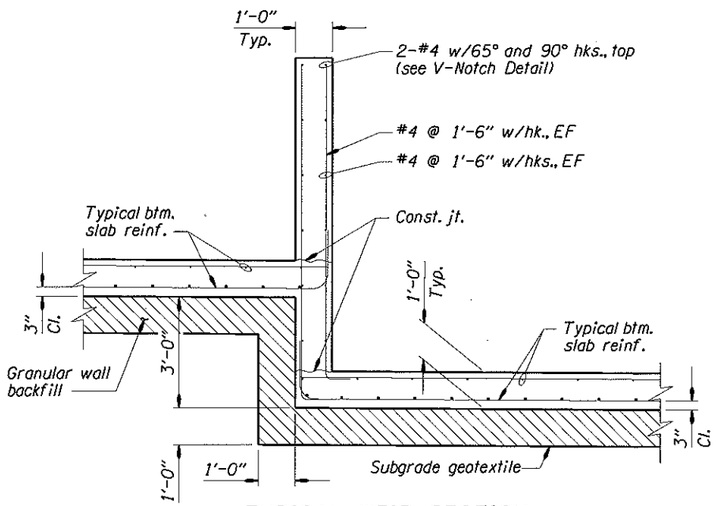
(Weir 2 similar)

WEIR 1 ELEVATION

Scale: ½" = 1'-0"

Notes:
Adjust all reinf. to maintain 2" clear of blockouts.

( ) = Dimensions and elevations for Weir 2.



TYPICAL WEIR SECTION

Scale: ½" = 1'-0"

	DATE	REVISION	BY
1	7-08-13	As Constructed	AMB

ACCOMPANIED BY DWGS. See Sheet 1 for this structure

DRAFTER: Alan Mitchell
DESIGNER: Laura Barker
CHECKER: Amanda Blankenship
REVIEWER: Terry Stones

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES:

OREGON DEPARTMENT OF TRANSPORTATION

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

DAVID EVANS AND ASSOCIATES INC.
530 Center Street N.E., Suite 605
Salem Oregon 97301
Phone: 503.361.8635

STRUCTURE NO. 21676
DATE March - 2012
CALC. BOOK 6484

DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

WEIR DETAILS

SHEET 5 OF 7
DRAWING NO. 88096

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REVISED AS CONSTRUCTED
12-8-12 CONTRACT 14462
PROJ. MGR. Ronald A. Larson

General Notes:
Use Hilti: HIT-HY 150 Max + HAS, ⅜" dia. high strength resin bonded anchors with washer and self locking nut, or approved equal. Embed 4".

Use Cooper B-Line 36" Heavy Duty Grip Strut Walkway x 6'-0", 11 gauge, or approved equal.

Use Cooper B-Line Heavy-Duty Grip Strut Hold-Down Clip with ⅜" dia. square-shank carriage bolts, nuts, and washers, or approved equal.

**Field drill ½" dia. holes through angles and HSS as shown.*

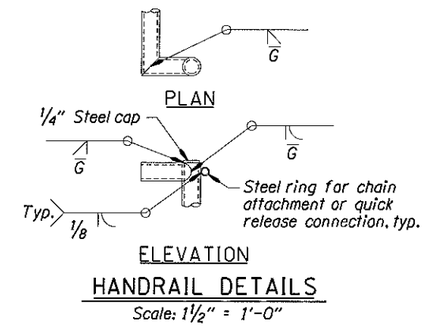
Provide all steel angles and plates conforming to ASTM Grade 36.

Provide all HSS sections conforming to ASTM A500 Grade B steel.

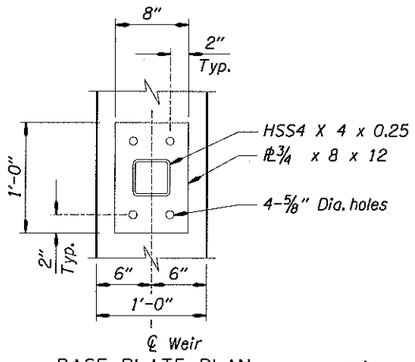
Provide 1½" dia. Schedule 40 pipe conforming to ASTM A53, Grade B for handrail posts and rails.

Provide Galvanized Chain with quick release connections one end of each length of chain.

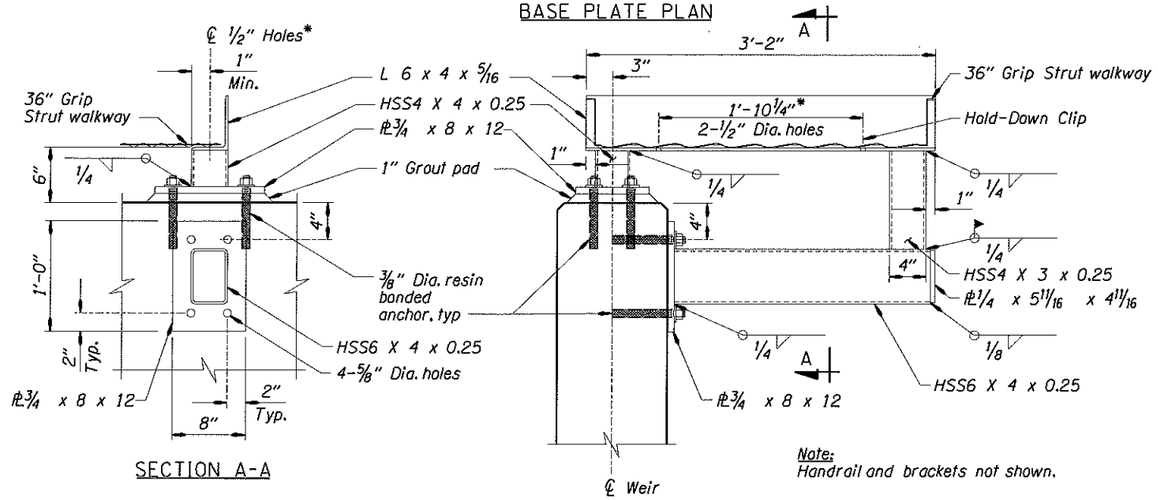
Hot-dip galvanize all steel material after fabrication.



HANDRAIL DETAILS
Scale: 1½" = 1'-0"

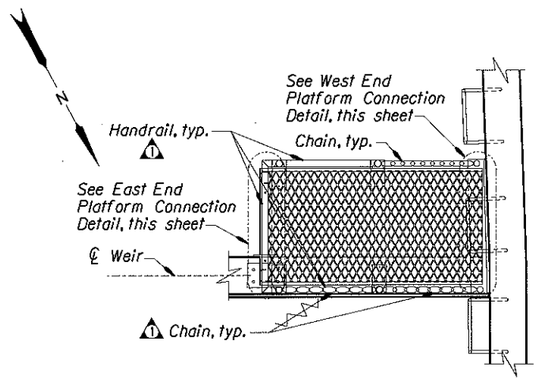


BASE PLATE PLAN

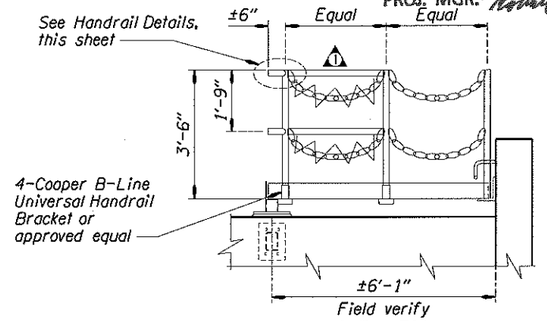


Note:
Handrail and brackets not shown.

EAST END PLATFORM CONNECTION DETAIL
Scale: 1½" = 1'-0"

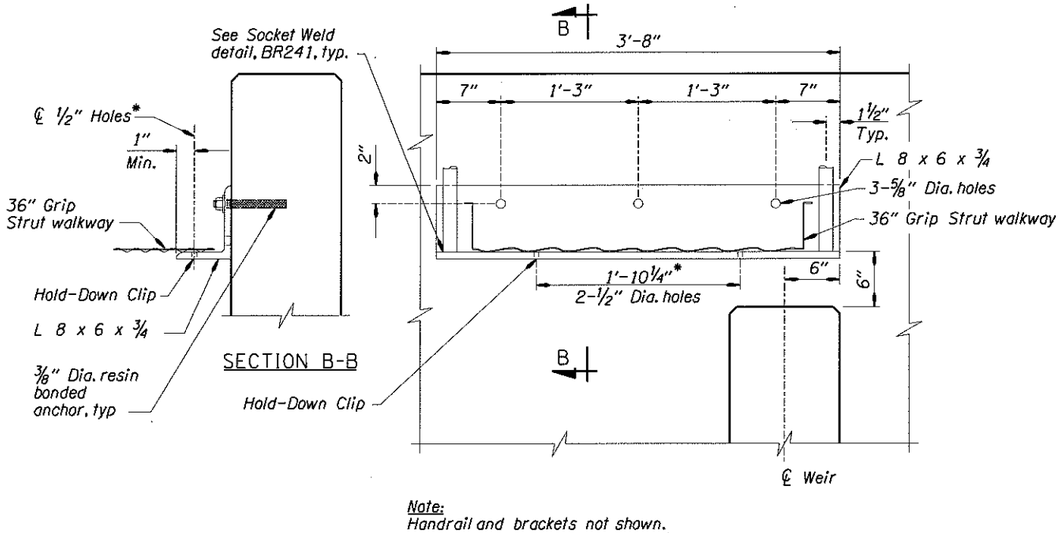


PLAN



ELEVATION

MAINTENANCE PLATFORM - AT WEIR
Scale: ½" = 1'-0"



Note:
Handrail and brackets not shown.

WEST END PLATFORM CONNECTION DETAIL
Scale: 1½" = 1'-0"

	DATE	REVISION	BY
1	07-08-13	As Constructed	AMB

ACCOMPANIED BY DWGS. See Sheet 1 for this structure

DRAFTER: Alan Mitchell
DESIGNER: Laura Barker
CHECKER: Amanda Blankenship
REVIEWER: Terry Stones

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES:

OREGON DEPARTMENT OF TRANSPORTATION
SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

STRUCTURE NO. 21676
DATE March - 2012
CALC. BOOK 6484

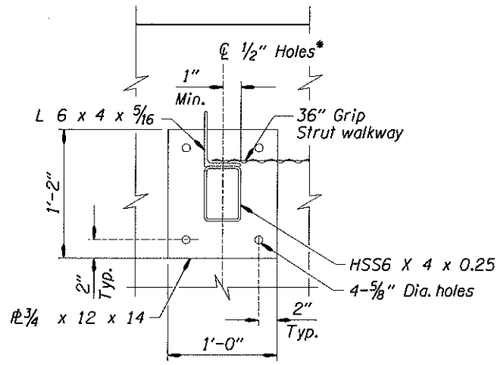
DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

MAINTENANCE PLATFORM DETAILS 1 of 2

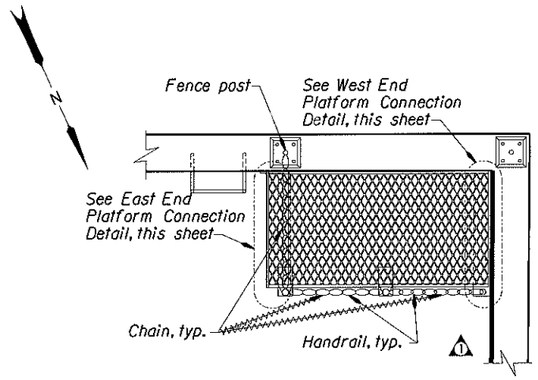
SHEET 6 OF 7
DRAWING NO. 88097

\\PDXFS1\project\0\0DOT00000749\0800REC\0830Deliverables\17919 ENGINEERING ARCHIVES\Sheets\EB1060DOT00749-MD01.dgn 7/8/2013 1:37:27 PM jxc

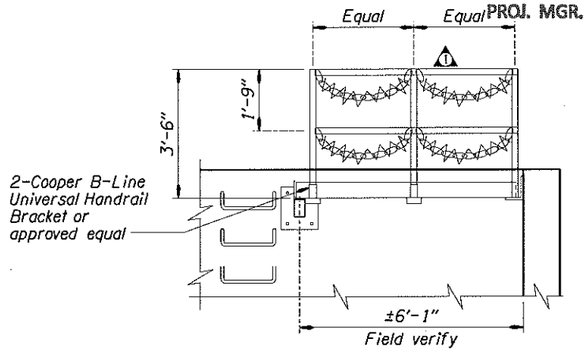
Ronald H. Larson
REVISED AS CONSTRUCTED
12-18-12 CONTRACT 14462
PROJ. MGR.



SECTION A-A



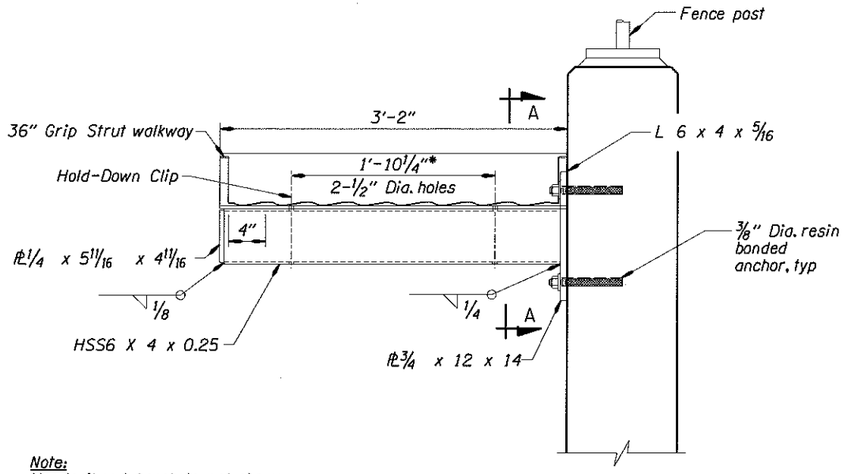
PLAN



ELEVATION

MAINTENANCE PLATFORM - AT SOUTH WALL

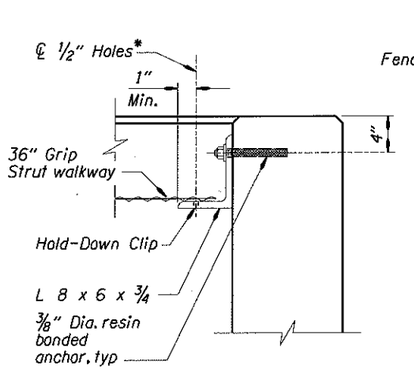
Scale: 1/2" = 1'-0"



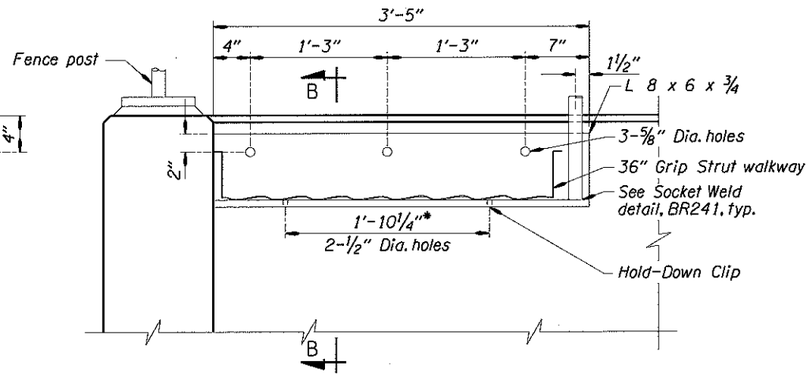
Note:
Handrail and brackets not shown.

EAST END PLATFORM CONNECTION DETAIL

Scale: 1 1/2" = 1'-0"



SECTION B-B



Note:
Handrail and brackets not shown.

WEST END PLATFORM CONNECTION DETAIL

Scale: 1 1/2" = 1'-0"

△	DATE	REVISION	BY
1	7-08-13	As Constructed	AMB

ACCOMPANIED BY DWGS. See Sheet 1 for this structure

DRAFTER: Alan Mitchell
DESIGNER: Laura Barker
CHECKER: Amanda Blankenship
REVIEWER: Terry Stones

As Constructed
This drawing has had as-contructed comments added. Original stamped & signed design mylar is stored at Salem Headquarters.
EXPIRES:

OREGON DEPARTMENT OF TRANSPORTATION

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

STRUCTURE NO.	21676
DATE	March - 2012
CALC. BOOK	6484

DETENTION STRUCTURE, HWY 144 NB AT M.P. 0.85, LEFT
OR217: SUNSET HWY-TV HWY DETENTION FACILITY
BEAVERTON-TIGARD HWY NO. 144 M.P. 0.85
WASHINGTON COUNTY

MAINTENANCE PLATFORM DETAILS 2 OF 2

SHEET 7 OF 7
DRAWING NO. 88098

\\PDXFS1\project\0\0D0T00000749\0800REC\0830Deliverables\17919 ENGINEERING ARCHIVES\Sheets\EB1070D0T00749-MD02.dgn 7/8/2013 1:37:32 PM jxc