OPERATION & MAINTENANCE MANUAL

DFI No.: D000114
Facility Type: Water Quality Extended Det. Dry Pond

MARCH, 2011

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1. Identification

Drainage Facility ID (DFI):	**D00114**
Facility Type:	Water Quality Extended Det. Dry Pond
Construction Drawings:	(V-File Number) 36V-116
Location:	District: 2B (Old 2A)
	Highway No.: 144
	Mile Post: 4.3 (beg./end)
	Description: This facility is located between the off-ramp for US217 (Hwy 144) to the east and Scholls Ferry Road to the west.

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, Timothy P. Fredette, 503-731-8340.
Facility construction:	2004
Contractor:	All Concrete Specialties, Inc.

4. Storm Drain System and Facility Overview

A water quality extended det. dry pond is a water quality treatment facility designed to treat the stormwater by controlling the release rate of the facility. The outlet control facility for the pond restricts the flow to allow for the particulates and attached pollutants to settle. This facility is designed to handle only the smaller water quality flows. The extended det. dry pond temporarily stores the water quality storm volume and releases the water over a 48 hour period. Suspended solids are removed by settling during this detention period.

The facility is located just west of the Washington Square Mall between the off-ramp for US217 (Hwy 144) and Scholls Ferry Road. This facility serves the roadway drainage via sheet flow from the off-ramp within the immediate vicinity and a portion of the drainage from Scholls Ferry Road. There are no inlet pipes into the water quality extended det. dry pond.

This facility consists of two separate treatment areas that discharge into outlet control structures (Point A and Point B as shown in the Operational Plan in Appendix A and the Project Plan Sheets). The grade breakline separates the facility into two separate treatment areas where flow within the north portion is directed towards the north and the south portion is directed towards the south. The outlet control structure (Point A) for the north treatment area ties into a 12-inch concrete storm pipe that connects to an existing storm conveyance system to the north. The outlet control structure (Point B) for the south treatment area directs water into a 12-inch outlet which discharges into a ditch.

The facility is a grass lined facility with HDPE porous pavers lining the bottom of the pond(s). The facility is groomed in conjunction with the adjacent grass landscaping areas.

A. Maintenance equipment access:
   The facility can be accessed from the off ramp of US217 (Hwy 144).

B. Heavy equipment access into facility:

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

C. Special Features:

   ☐ Amended Soils
   ☒ Porous Pavers – HDPE Porous Pavers
   ☐ Liners

☐ Underdrains

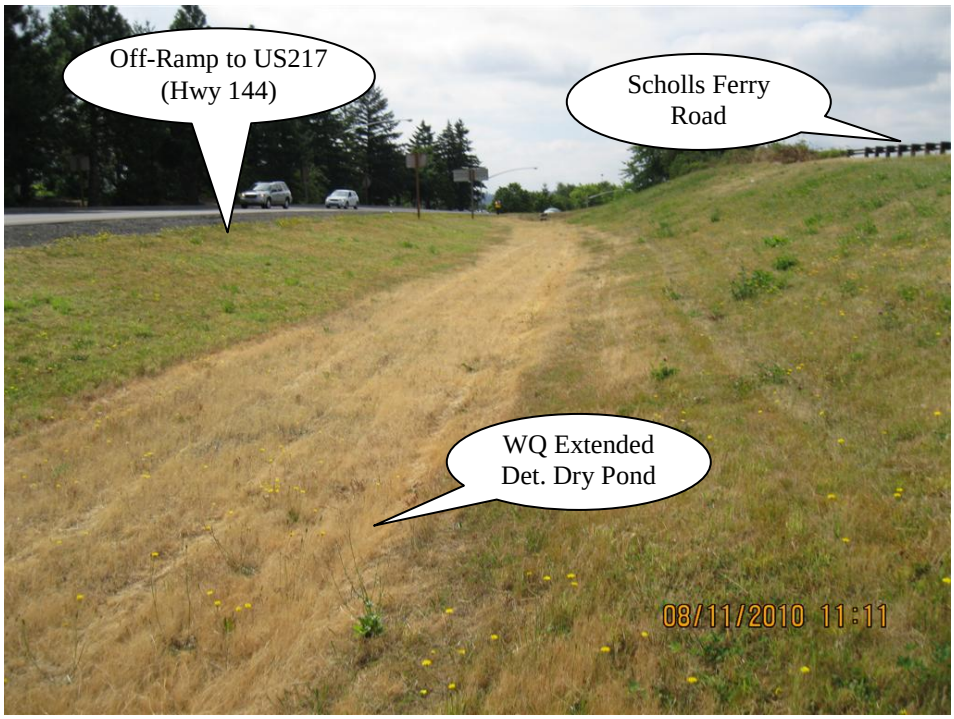


Photo 1: WQ extended det. dry pond looking towards the south.

Photo 2: South outlet control structure, Point B, looking towards the south.

Photo 3: South outlet control structure, Point B, for the south treatment area.

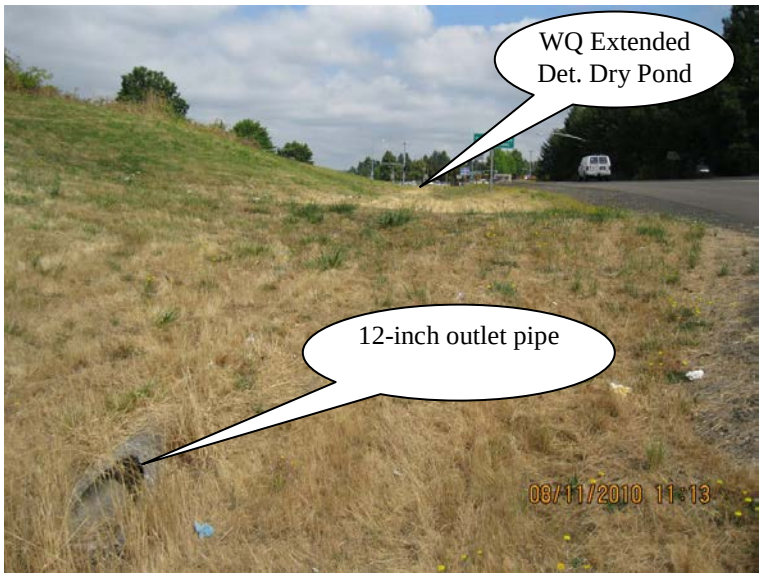


Photo 4: 12-inch outlet pipe discharging from control structure, Point B. Photo is looking to the north.

Photo 5: North outlet control structure, Point A, looking north.

5. Facility Haz Mat Spill Feature(s)

The extended det. dry pond can be used to store a volume of liquid by blocking either one of the outlet control structures with either a plate or sandbags. See Figures 3 and 5 and 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 – This facility is an online facility where all runoff is directed into the extended det. dry pond. If the flow exceeds the water quality flow then the second ditch inlet grate is used where runoff is allowed to enter 12-inch storm pipes on both the north and south ends of the facility.

☐ 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:

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

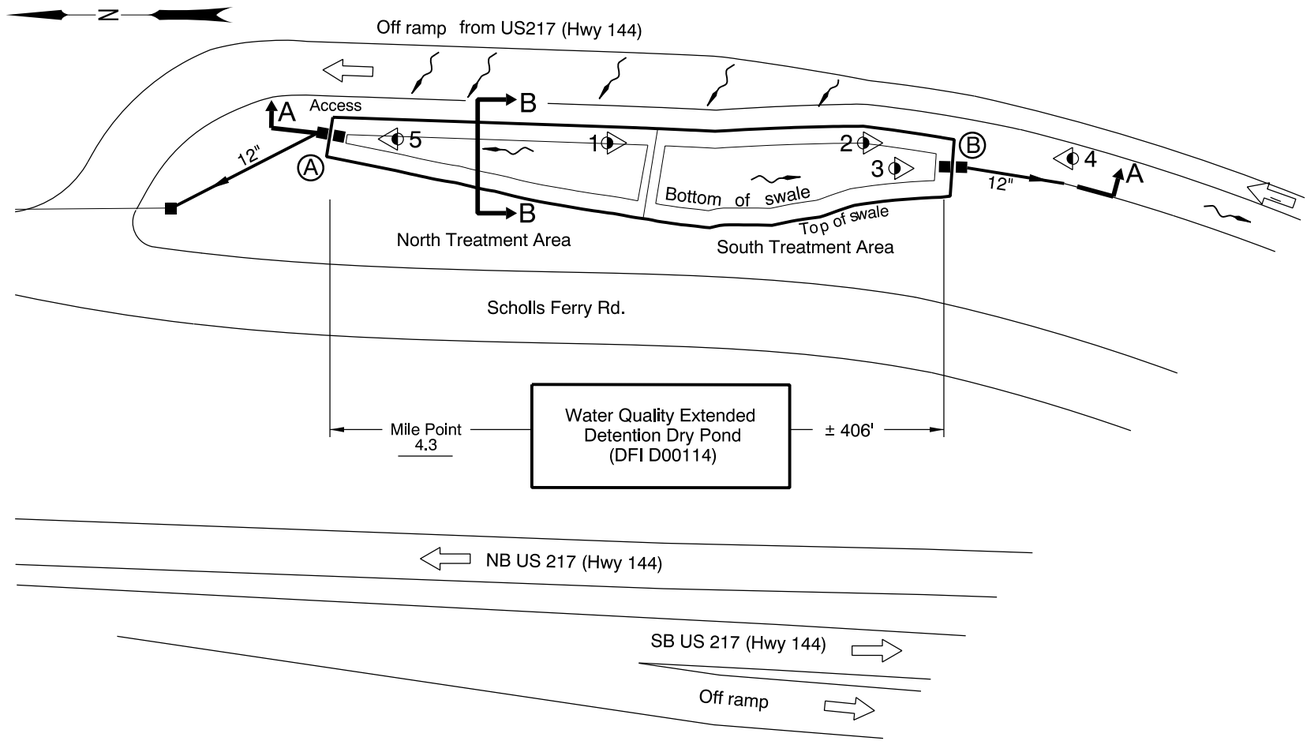
Contact any of the following for more detailed information about management of waste materials found on site:

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

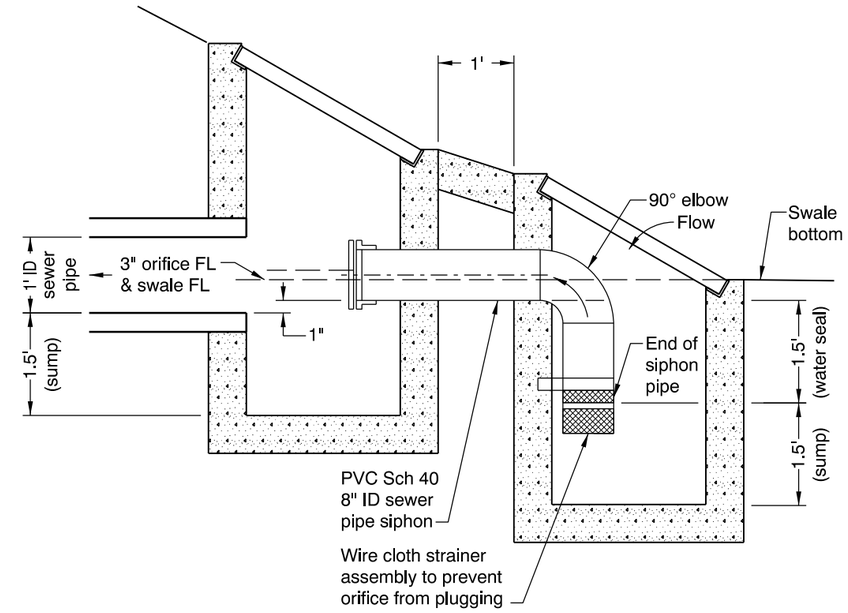
Appendix A

Content:

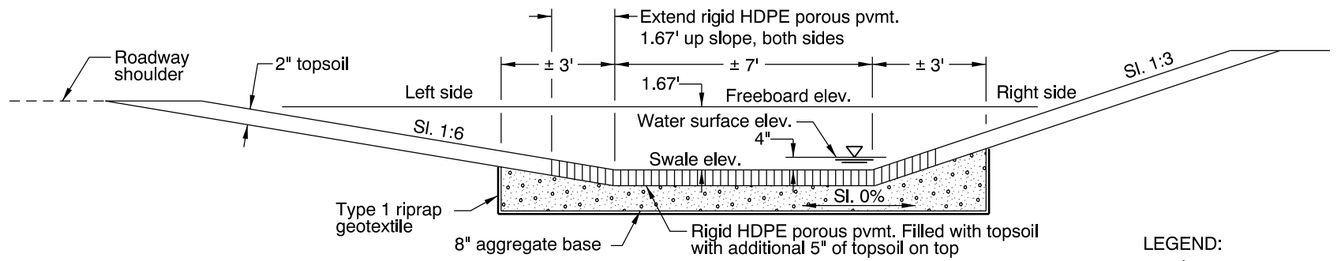
- **Operational Plan and Profile Drawing(s)**



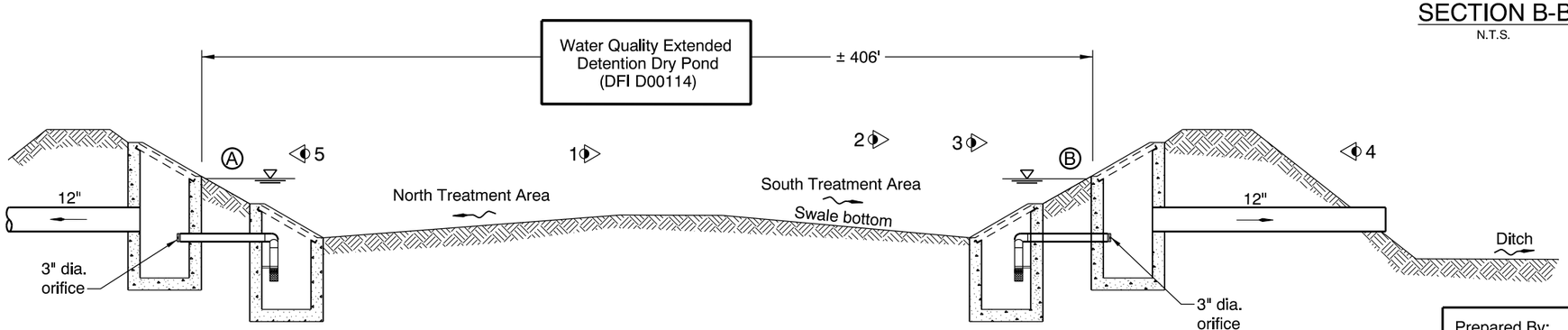
PLAN
N.T.S.



OUTLET CONTROL STRUCTURE DETAIL AT POINTS Ⓐ & Ⓑ
N.T.S.



SECTION B-B
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- Photo Location / Direction
- Ⓐ Outlet Control Structure, North
- Ⓑ Outlet Control Structure, South
- 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 D00114
MAINTENANCE DISTRICT 2B HWY 144
WATER QUALITY EXTENDED DETENTION DRY POND
BEAVERTON-TIGARD HWY MP 4.3
WASHINGTON COUNTY

Appendix B

Content:

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

36V-116

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index of Sheets Cont'd. & Standard Drg. Nos.
2, 2A Thru 2A-3 Incl.	Typical Sections
2B, 2B-2	Details
2C Thru 2C-4 Incl.	Traffic Control Plans
2D, 2D-2	Pipe Data
3	Alignment
3A	General Construction
3B	Drainage & Utilities
4	Alignment
4A	General Construction
4B	Profile
GEO/HYDRO	
GHA-1	Erosion Control Plan
GHJ-1	Water Quality Plan
GHJ-2 Thru GHJ-4 Incl.	Water Quality Details

DRAWING NO.	DESCRIPTION
RETAINING WALL (BRIDGE NO. 19617)	
61996	Bridge #19617 Drawing

SHEET NO.	DESCRIPTION
PERMANENT PAVEMENT MARKINGS	
ST-1 Thru ST-3 Incl.	Striping Plan

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

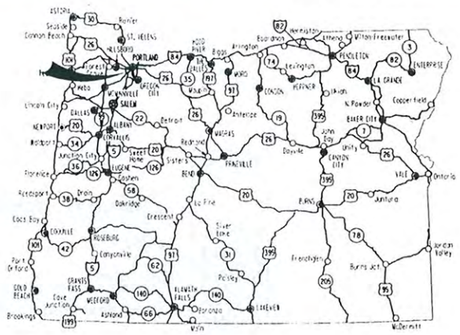
GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, & SIGNAL

BEAVERTON/TUALATIN HWY. & TIGARD HWY. AT SCHOLLS

BEAVERTON/TUALATIN & SCHOLLS HWYS. & BEAVERTON - TIGARD HWY.

WASHINGTON COUNTY

SEPTEMBER 2003



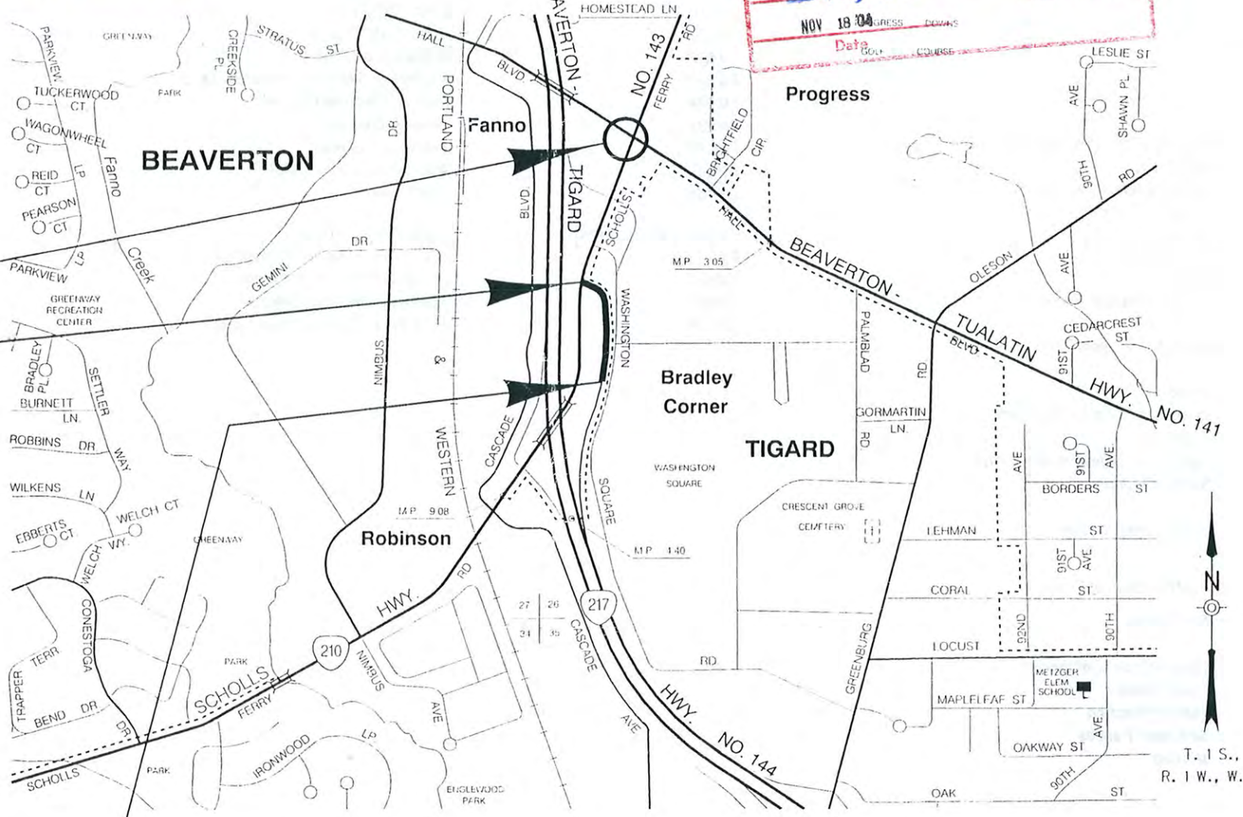
Approx. Overall Length Of Hwy. 141 Project - 209.89 m (688.62 Ft.)
Approx. Overall Length Of Ramp Project - 0.21 km (0.13 Mile)

RECEIVED
ODOT CREW 1802
OCT 27 2003
PROJECT MANAGER

"AS CONSTRUCTED"
Bill Edmunson
Project Manager
NOV 18 04
Date

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



PROJECT
STA. "Hall" 9 + 060
STA. "SF" 9 + 147

BEGINNING OF PROJECT
X-STP-S000(190)
STA. "E3" 10 + 008 (M.P. 4.80 - OR217)

END OF PROJECT X-STP-S000(190)
STA. "E3" 10 + 200 (M.P. 4.67 - OR217)

OREGON TRANSPORTATION COMMISSION

Steven H. Corey	CHAIRMAN
Gail L. Achterman	COMMISSIONER
Stuart Foster	COMMISSIONER
Randall Papé	COMMISSIONER
John Russell	COMMISSIONER
Bruce A. Warner	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
13,704
OREGON
JULY 16, 1987
CATHERINE M. NELSON
Expires Dec. 31, 2004

Catherine M. Nelson

TECHNICAL SERVICES MANAGING ENGINEER

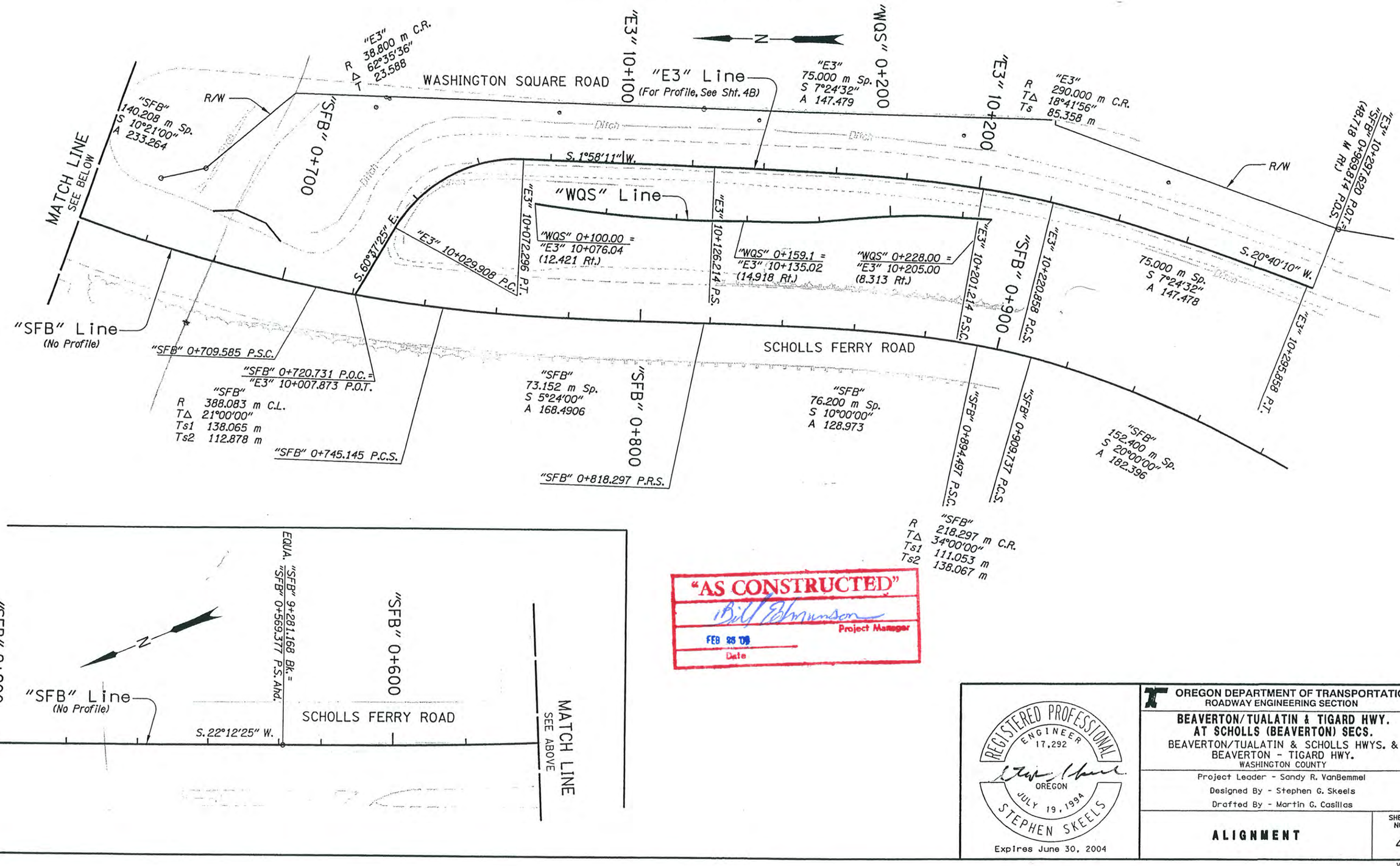
BEAVERTON/TUALATIN HWY & TIGARD HWY AT SCHOLLS
BEAVERTON/TUALATIN & SCHOLLS HWYS. & BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-STP-S000(190)	1

METRIC

VIEW A1 C134-1408/C134-1401-011

Sec. 26, T. 1 S, R. 1 W, W.M.



"AS CONSTRUCTED"
Bill Edmunson
Project Manager
FEB 25 '09
Date

REGISTERED PROFESSIONAL ENGINEER
17,292
OREGON
JULY 19, 1994
STEPHEN SKEELS
Expires June 30, 2004

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

BEAVERTON/TUALATIN & TIGARD HWY.
AT SCHOLLS (BEAVERTON) SECS.
BEAVERTON/TUALATIN & SCHOLLS HWYS. &
BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

Project Leader - Sandy R. VanBemmel
Designed By - Stephen G. Skeels
Drafted By - Martin G. Casillas

ALIGNMENT

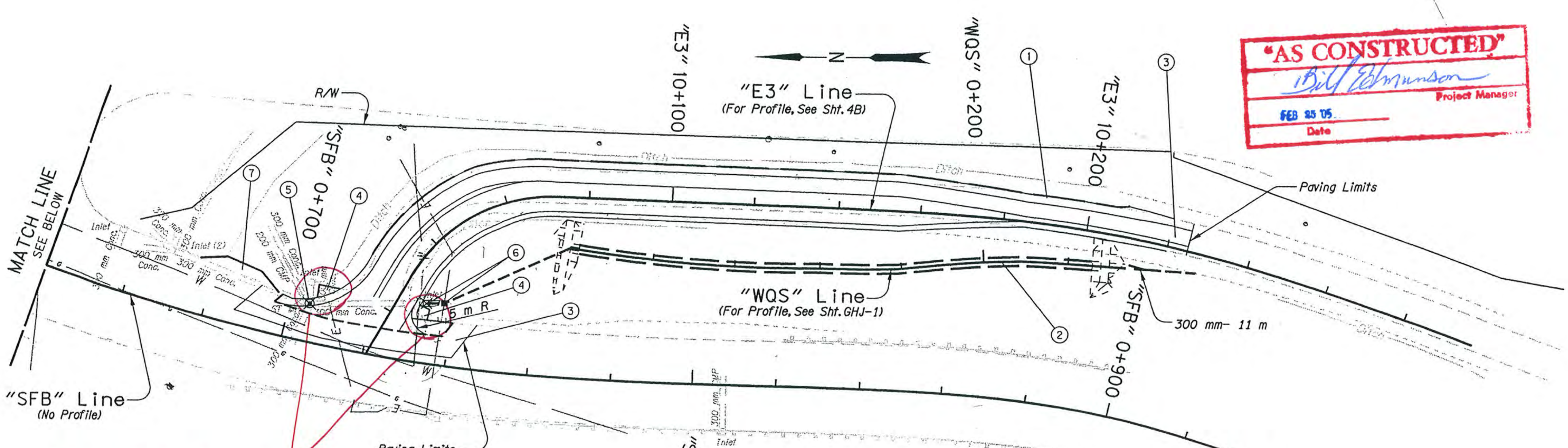
SHEET NO. 4

14-JUL-2003 13:30

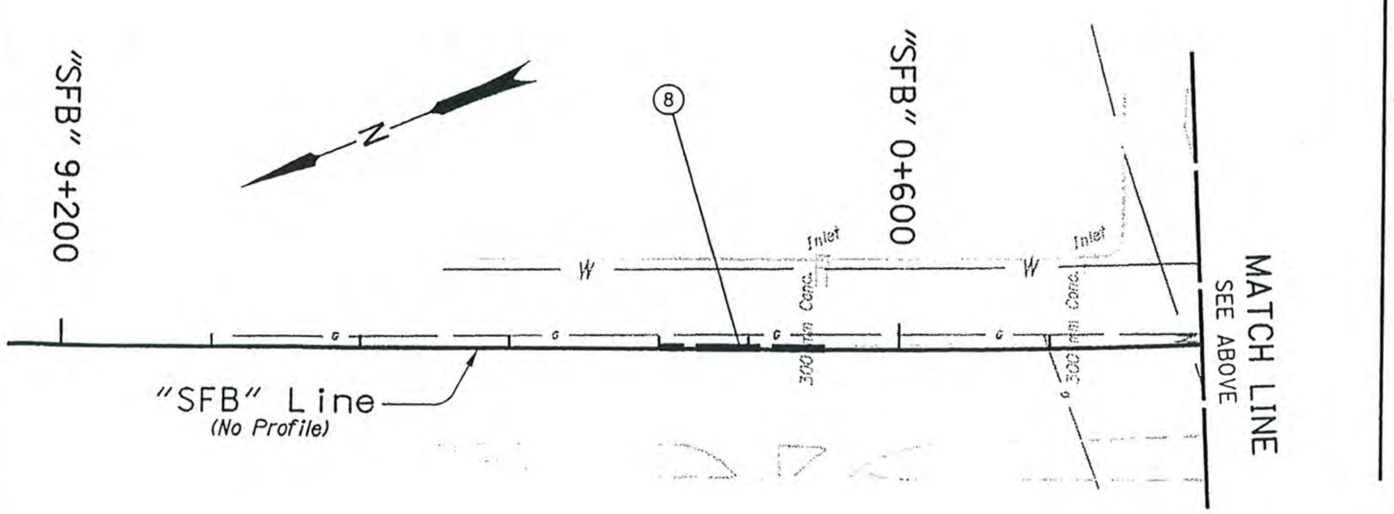
VIEW 2

VIEW 2

"AS CONSTRUCTED"
Bill Edmunson (signature)
Project Manager
FEB 25 05
Date



The ped landing details call for the entire area to be filled with "trauncated domes". After a discussion with R1 Bike & Peds Coordinator, Basil Christopher, We decided to Install one dome on each side.



1. Sta. "E3" 10+030 To Sta. "E3" 10+209 Lt.
   Const. Standard Curb - 192 m
   (See Drg. No. RD700)
2. Const. Water Quality Swale
   (For Details, See Shts. GHJ-1 Thru GHJ-4)
3. Grind & Inlay
   (For Details, See Sht. 2B-2)
4. Const. Pedestrian Landing - 2
   (For Details, See Sht. 2B-2)
5. Adjust Manhole
   (See Drg. No. RD360)
6. Remove Inlet
   Const. Type "G-2MA" Inlet
   Inst. 300 mm Sewer Pipe - 5 m
   Conn. To Extg. Pipe
   (See Drg. No. RD364) - INLET
7. Const. Maintenance Pad
   (See Drg. No. TM434)
8. Sta. "SFB" 9+280.0 To "SFB" 0+590.1
   Const. Type "B" Traffic Separator - 14.3 m²
   Match Extg.
   (See Drg. No. RD705)

All Dimensions Are In Meters (m) Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER
17,292
OREGON
JULY 19, 1994
STEPHEN SKEELS
Expires June 30, 2004

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

BEAVERTON/TUALATIN & TIGARD HWY. AT SCHOLLS (BEAVERTON) SECS.
BEAVERTON/TUALATIN & SCHOLLS HWYS. & BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

Project Leader - Sandy R. VanBemmel
Designed By - Stephen G. Skeels
Drafted By - Martin G. Casillas

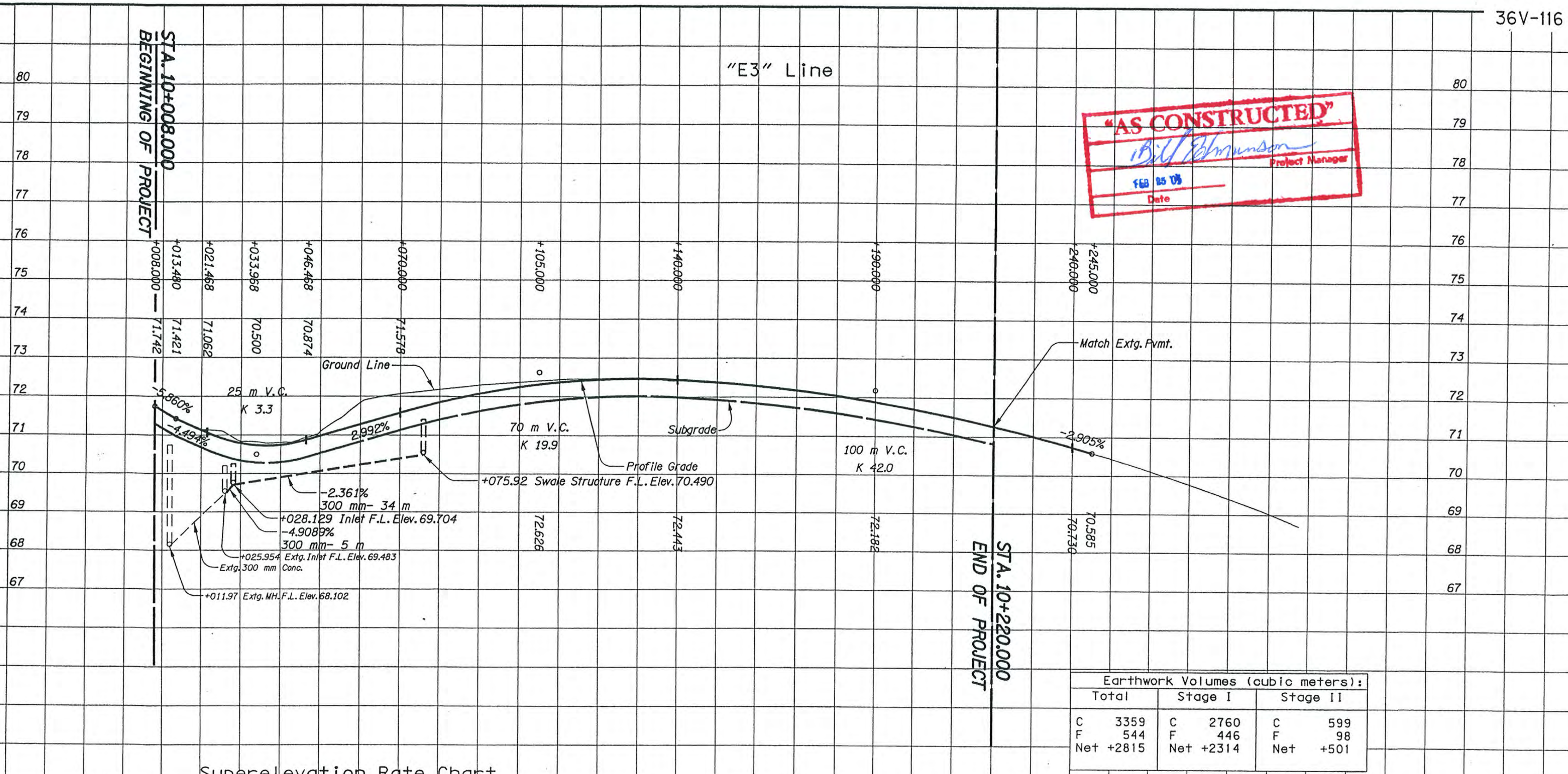
GENERAL CONSTRUCTION

SHEET NO. 4A

14-JUL-2003 13:30

VIEW 3

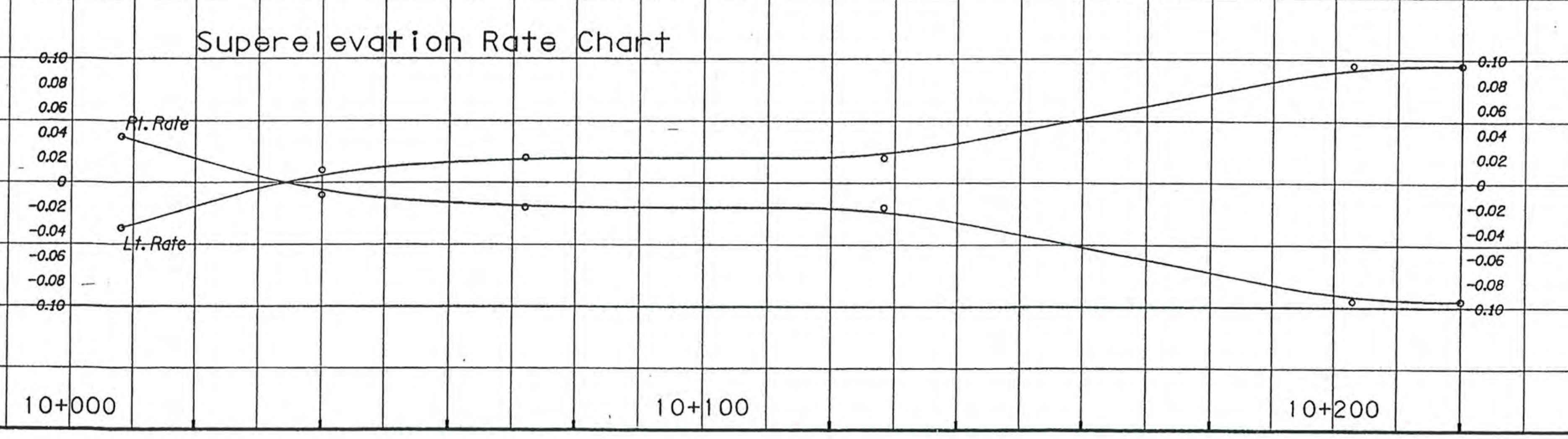
36V-116



"AS CONSTRUCTED"
Bill Edmunson
Project Manager
FEB 05 09
Date

Earthwork Volumes (cubic meters):

Total	Stage I	Stage II
C 3359 F 544 Net +2815	C 2760 F 446 Net +2314	C 599 F 98 Net +501



All Dimensions Are In Meters (m) Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER 17,292
OREGON
JULY 19, 1994
STEPHEN SKEELS
Expires June 30, 2004

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

BEAVERTON/TUALATIN & TIGARD HWY. AT SCHOLLS (BEAVERTON) SECS.

BEAVERTON/TUALATIN & SCHOLLS HWYS. & BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

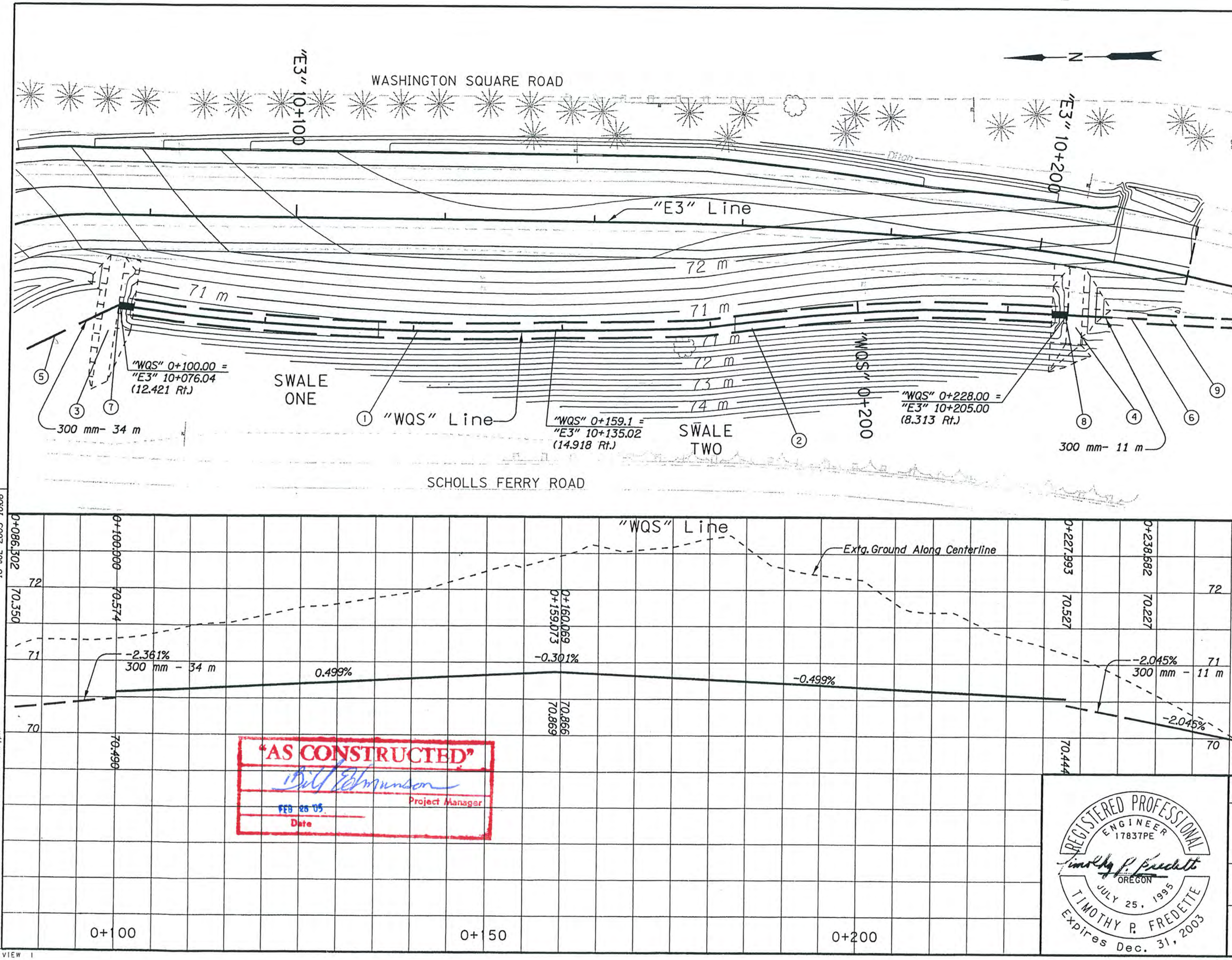
Project Leader - Sandy R. VanBemmel
Designed By - Stephen G. Skeels
Drafted By - Martin G. Casillas

PROFILE

SHEET NO. 4B

14-JUL-2003 13:27

VIEW 1



① Const. Swale "ONE"
To Line And Grade As Shown In Plans, Typicals, And Profiles
Earthwork In Roadway Quantities
(For Details, See Shts. GHJ-2, GHJ-3 & GHJ-4)

② Const. Swale "TWO"
To Line And Grade As Shown In Plans, Typicals, And Profiles
Earthwork In Roadway Quantities
(For Details, See Shts. GHJ-2, GHJ-3 & GHJ-4)

③ Const. Closure Berm For Swale "ONE"
Earthwork In Roadway Quantities
(For Details, See Sht. GHJ-3)

④ Const. Closure Berm For Swale "TWO"
Earthwork In Roadway Quantities
(For Details, See Sht. GHJ-3)

⑤ Sta "E3" 10+058.94, 9.168 Rt = "P1" 0+000
Inst. 300 mm Sew. Pipe - 34 m
1.5 m Depth
Outfall FL = 69.704 m

⑥ Sta "E3" 10+215.80, 7.012 Rt = "P2" 0+000
Inst. 300 mm Sew. Pipe - 11 m
1.5 m Depth
Outfall FL = 70.227 m

⑦ Sta. "E3" 10+075.92, 12.421 Rt.
Const. Swale Outlet Structure, FL = 70.490 m
(For Details, See Sht. GHJ-4)

⑧ Sta. "E3" 10+205, 8.313 Rt
Const. Swale Outlet Structure, FL = 70.444 m
(For Details, See Sht. GHJ-4)

⑨ Sta. "E3" 10+228.28, 4.992 Rt = "D" 0+000
Const. "V" Ditch - 12.5 m
Ditch Slopes - 1V:4H
Outfall El. = 69.973
Ditch Exc. = 5 m^3

All Dimensions Are In Meters (m) Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER 17837PE
OREGON
JULY 25, 1995
TIMOTHY P. FREDETTE
Expires Dec. 31, 2003

OREGON DEPARTMENT OF TRANSPORTATION
GEO / HYDRO SECTION

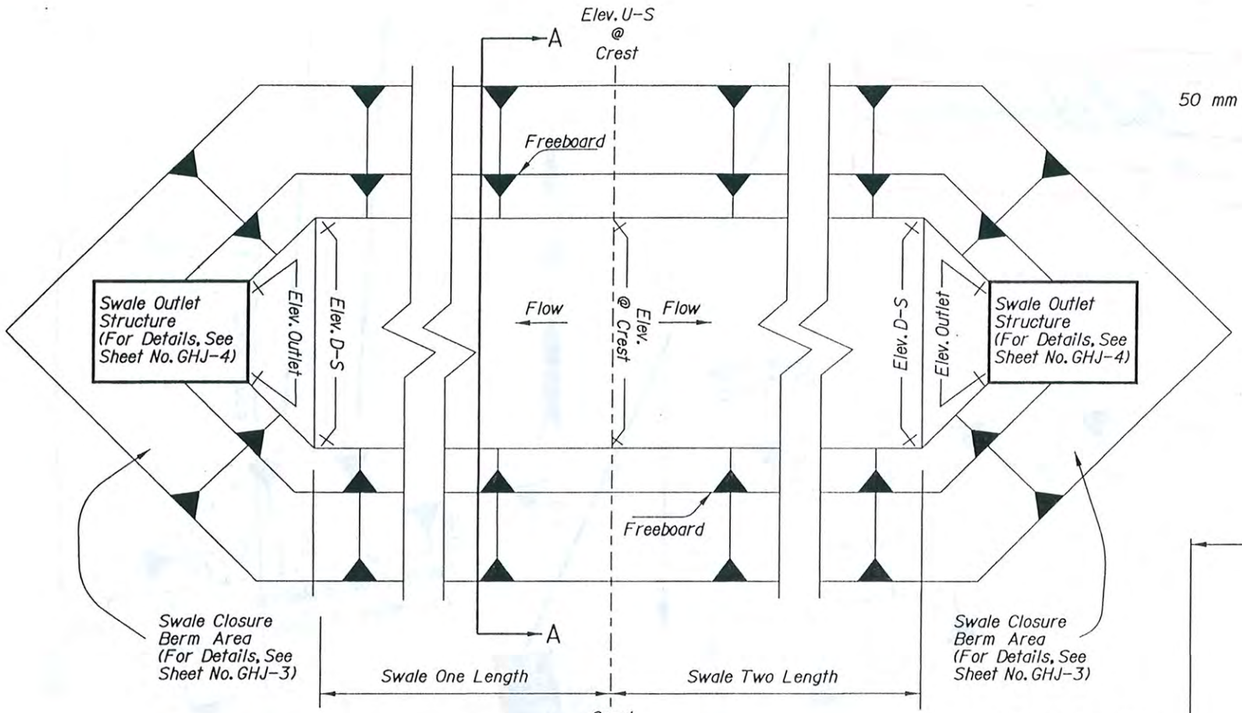
BEAVERTON/TUALATIN & TIGARD HWY. AT SCHOLLS (BEAVERTON) SECS.
BEAVERTON/TUALATIN & SCHOLLS HWYS. & BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

Project Leader - Sandy R. VanBemmel
Designed By - Timothy P. Fredette
Drafted By - Martin G. Casillas

WATER QUALITY PLAN

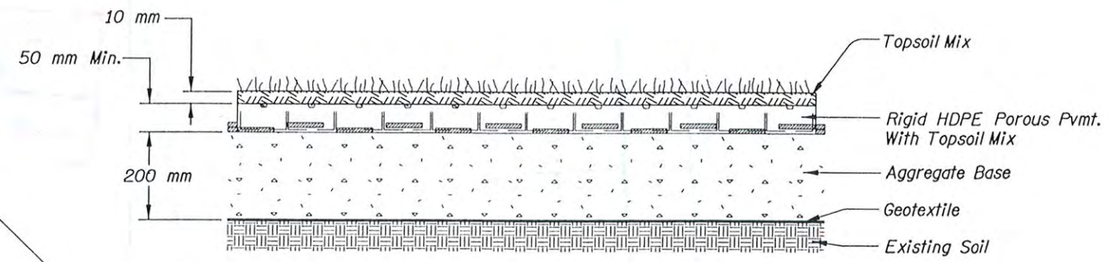
SHEET NO. GHJ-1

VIEW 1



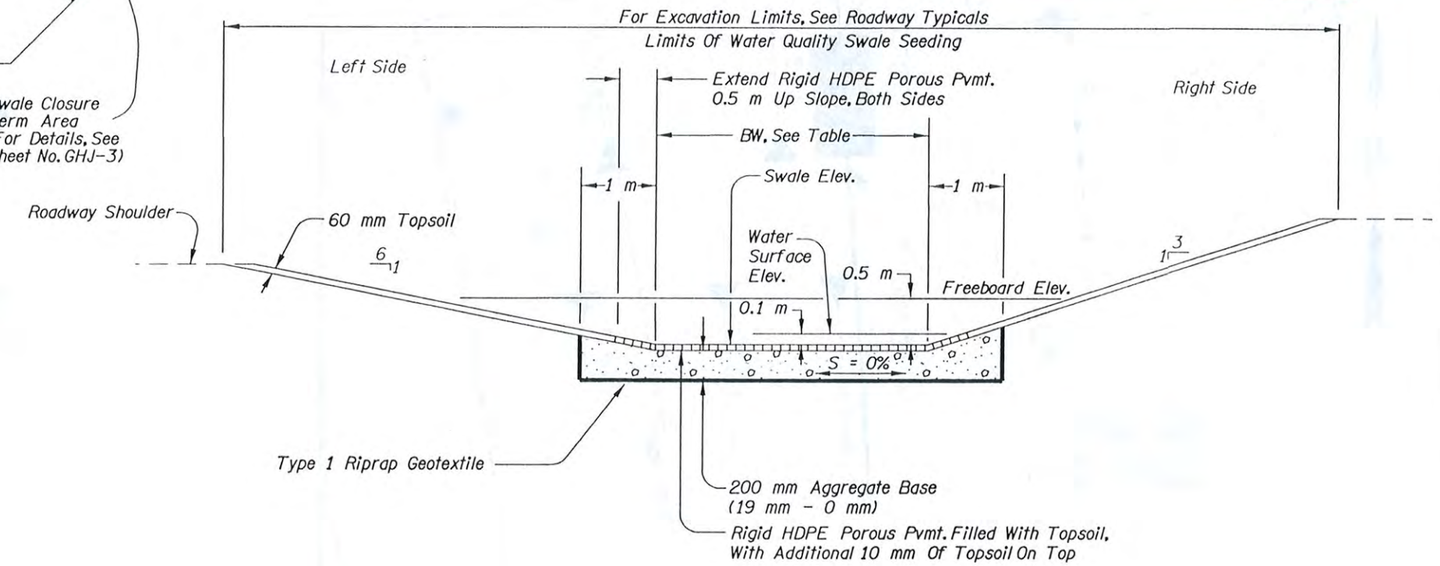
PLAN

						Side Slopes	
Swale ID	Length	BW	Elev. U-S	Elev. D-S	Elev. Outlet	Left Side	Right Side
One	57 m	2.25 m	70.869 m	70.574 m	70.490 m	1:6	1:3
Two	66.8 m	2.25 m	70.869 m	70.527 m	70.444m	1:6	1:3



COMPONENTS

"AS CONSTRUCTED"
Bill Edmundson
Project Manager
NOV 18 '04
Date



SECTION A-A

Notes:
1) Aggregate Base: 19.0 mm - 0
2) Bottom Of Aggregate Is Level In X-section And Extends 0.5 m Past Ends Of Rigid HDPE Porous Pvmt.
3) Swale Elevation Shown On Profile Is At Top Of Topsoil Above Rigid HDPE Porous Pvmt.
4) If Rock Is Encountered, Maintain Slopes And Soil Structure Up To Freeboard Elevation As Shown. Above Freeboard, Slopes May Assume Stable Slope For Rock Formation.

All Dimensions Are In Meters (m)
Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER
17837PE
Timothy P. Fredette
OREGON
JULY 25, 1995
TIMOTHY P. FREDETTE
Expires Dec. 31, 2003

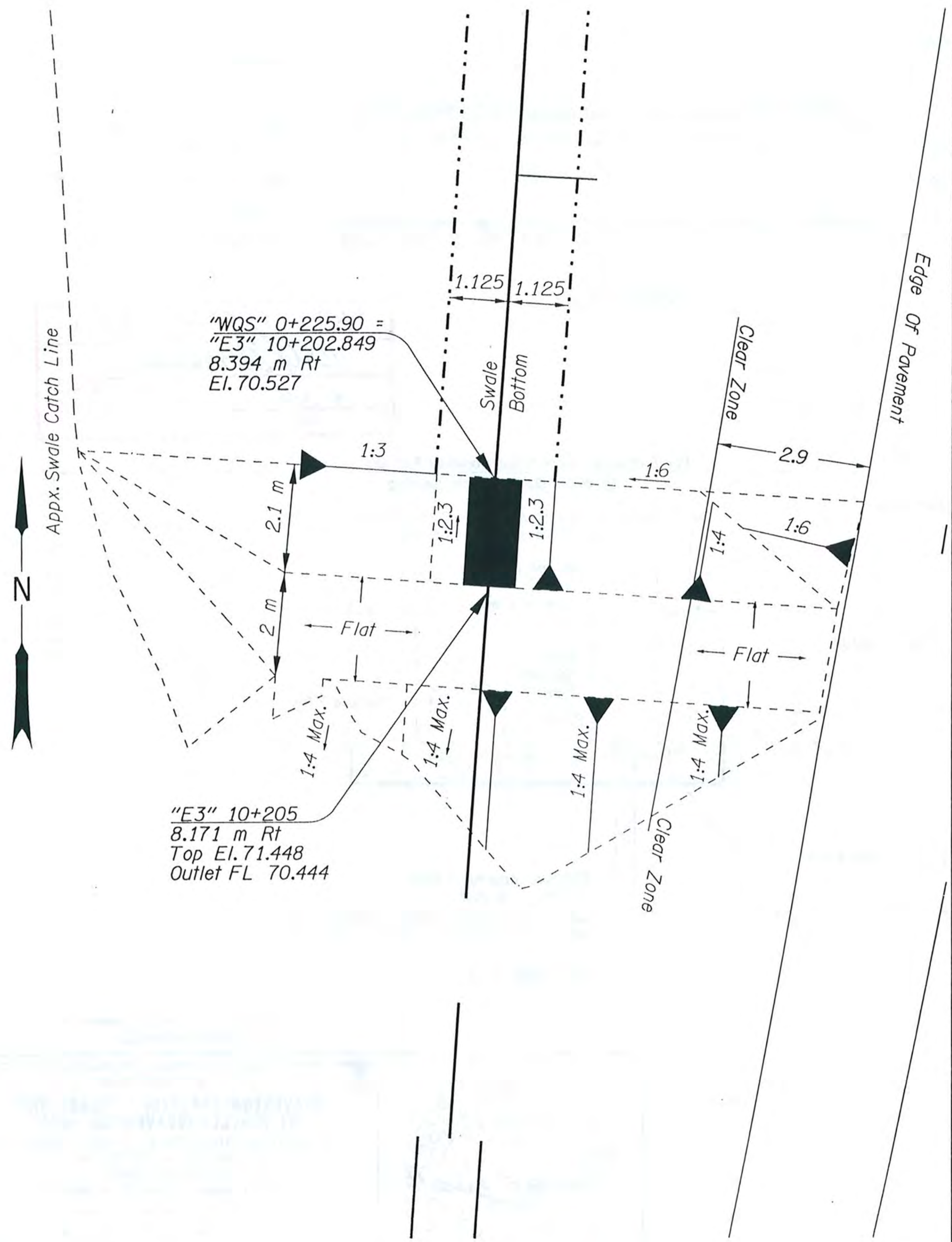
OREGON DEPARTMENT OF TRANSPORTATION
GEO / HYDRO SECTION

BEAVERTON/TUALATIN & TIGARD HWY.
AT SCHOLLS (BEAVERTON) SECS.
BEAVERTON/TUALATIN & SCHOLLS HWYS. &
BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

Project Leader - Sandy R. VanBemmel
Designed By - Timothy P. Fredette
Drafted By - Martin G. Casillas

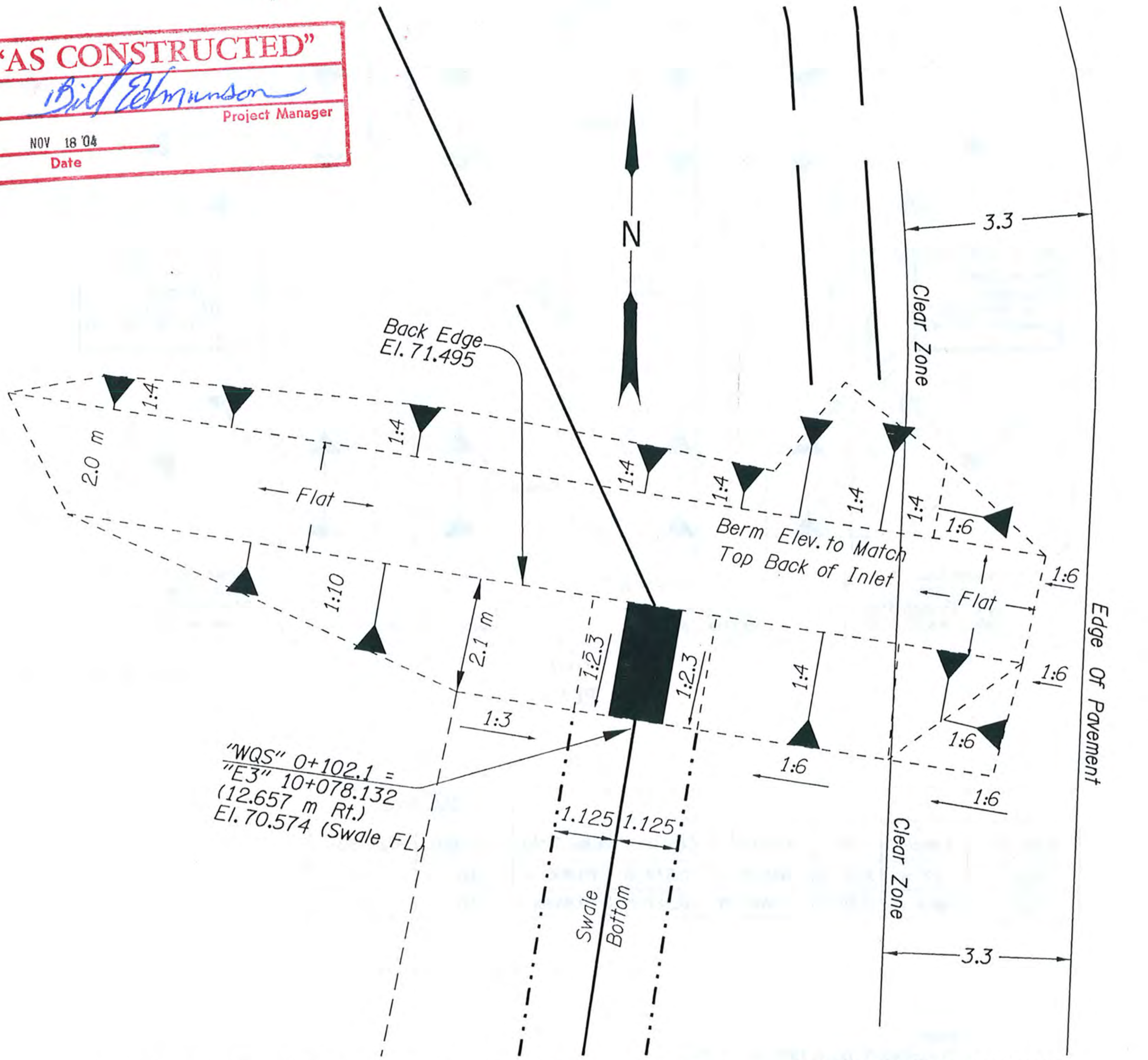
WATER QUALITY DETAILS

SHEET NO.
GHJ-2



CLOSURE BERM FOR SWALE "TWO"

"AS CONSTRUCTED"
Bill Edmunson
Project Manager
NOV 18 '04
Date



CLOSURE BERM FOR SWALE "ONE"

All Dimensions Are In Meters (m)
Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER
17837PE
Timothy P. Fredette
OREGON
JULY 25, 1995
TIMOTHY P. FREDETTE
Expires Dec. 31, 2003

OREGON DEPARTMENT OF TRANSPORTATION
GEO / HYDRO SECTION

BEAVERTON/TUALATIN & TIGARD HWY.
AT SCHOLLS (BEAVERTON) SECS.
BEAVERTON/TUALATIN & SCHOLLS HWYS. &
BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

Project Leader - Sandy R. VanBemmel
Designed By - Timothy P. Fredette
Drafted By - Martin G. Casillas

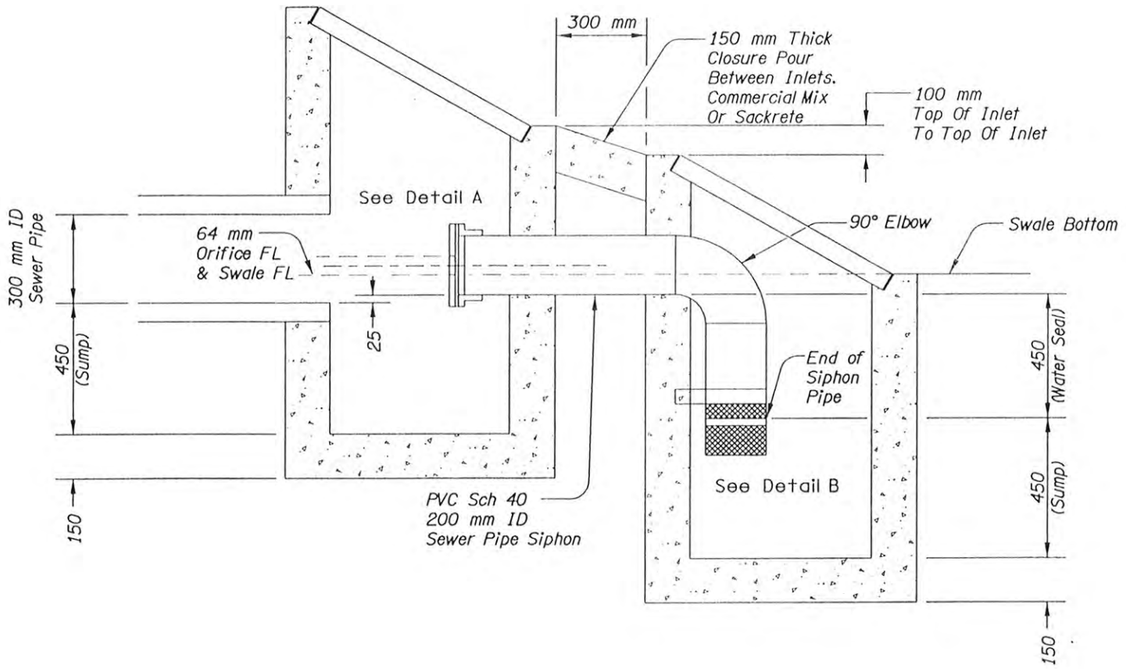
WATER QUALITY DETAILS

SHEET NO.
GHJ-3

16-JUL-2003 10:08
C:\usr\Projects\3\07Scholls\OF010Scholls\WQ\O6010fwq.dtl

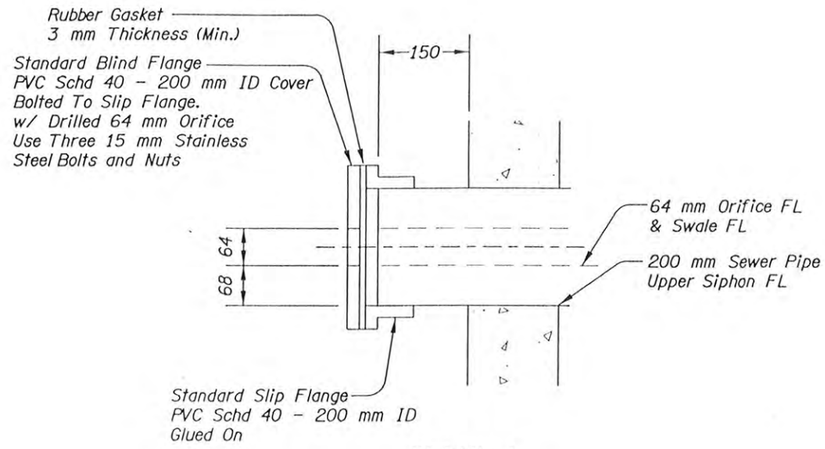
VIEW 4
VIEW 4

"AS CONSTRUCTED"
Bill Edmunson
Project Manager
NOV 18 '04
Date

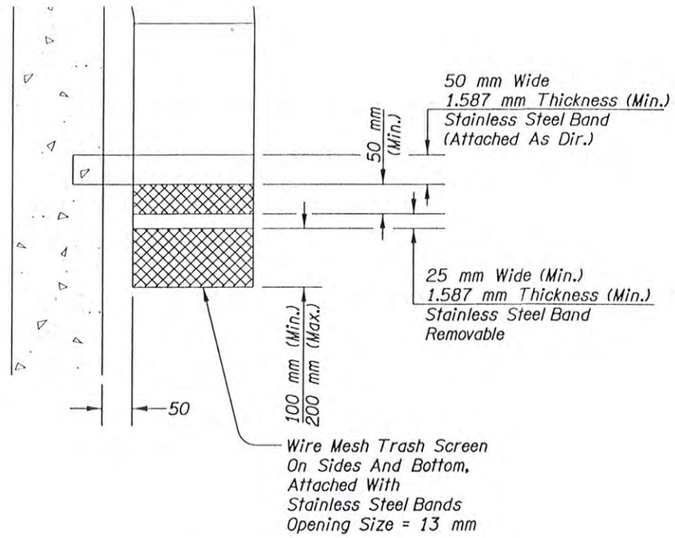


(For Details Not Shown, See Drawing No. RD336)

SWALE OUTLET STRUCTURES
TYPE "D" SPECIAL INLETS



DETAIL A



DETAIL B

All Dimensions Are In Millimeters (mm)
Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER
17837PE
OREGON
JULY 25, 1995
TIMOTHY P. FREDETTE
Expires Dec. 31, 2003

OREGON DEPARTMENT OF TRANSPORTATION
GEO / HYDRO SECTION

BEAVERTON/TUALATIN & TIGARD HWY.
AT SCHOLLS (BEAVERTON) SECS.
BEAVERTON/TUALATIN & SCHOLLS HWYS. &
BEAVERTON - TIGARD HWY.
WASHINGTON COUNTY

Project Leader - Sandy R. VanBemmel
Designed By - Timothy P. Fredette
Drafted By - Martin G. Casillas

WATER QUALITY DETAILS

SHEET NO.
GHJ-4

VIEW 5

VIEW 5