OPERATION & MAINTENANCE MANUAL

DFI No.: D00120
Facility Type: Water Quality Biofiltration Swale

MARCH, 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00120**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 32V-022
Location:	District: 2B (Old 2A)
	Highway No.: 217
	Mile Post: 6.70 (beg./end)]
	Description: This facility is located just west of the I-5 (Hwy 001) and OR 217 (Hwy 144) Interchange between S.W. 72nd Avenue and the circular-shaped on and off ramps, leading to and from northbound OR 217 (Hwy 144).

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, Jeffrey Scheick, P.E., Managing Engineer, 503-781-8200
Facility construction:	1999
Contractor:	Kiewitt Construction Company

4. Storm Drain System and Facility Overview

A water quality swale is a flat-bottomed open channel designed to treat stormwater runoff from highway pavement areas. This type of facility is lined with grass. Treatment by trapping sedimentation occurs when stormwater runoff flows through the grass.

This facility is located along the north side of northbound OR 217 (Hwy 144) at S.W. 72nd Avenue. The facility treats some of the drainage from the S.W. 72nd Avenue overpass and the off-ramp and on-ramp of northbound OR 217 (Hwy 144). Runoff from the northbound lanes of S.W. 72nd Avenue is captured by inlets near the swale and directed into a 12-inch storm pipe that outfalls at the northeastern most part of the swale (Photo 1). Additionally drainage from the off-ramp of OR 217 (Hwy 144) is collected by inlets and discharged into the swale through either the 12-inch inlet (Inlet A), or a 10-inch storm pipe that discharges into the swale approximately midway (Inlet B; Photo 4).

All stormwater runoff is directed into the swale with no high flow bypass. The swale is approximately 200 feet in length. After treatment, the water is collected by an inlet and discharged into a 12-inch storm system (Photo 6). This system eventually discharges the water into a ditch west of S.W. 72nd Avenue; see Point C of the Operational Plan; Appendix A.

A. Maintenance equipment access:
Maintenance crew can access the facility directly from the shoulder area alongside the SW 72nd Avenue off-ramp. There are no barriers present between the swale and the roadway itself.

B. Heavy equipment access into facility:

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

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

Photo 1: WQ Swale looking towards the west along the northbound onramp of OR 217 (Hwy 144).

Photo 2: View of northbound onramp of OR 217 looking west. Swale inlet is located in background.

Photo 3: WQ Swale looking east.

Photo 4: WQ Swale Inlet B at midpoint of swale.

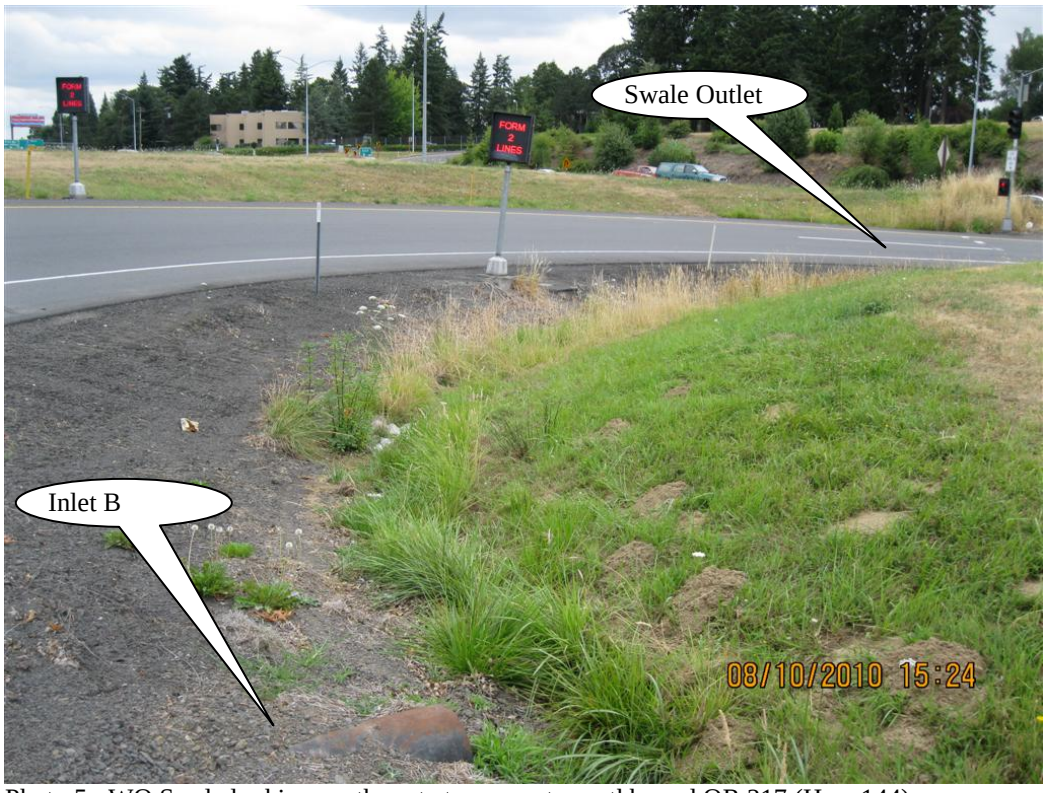


Photo 5: WQ Swale looking southwest at onramp to northbound OR 217 (Hwy 144). Inlet B is located in foreground.

Photo 6: Outlet to WQ Swale looking south to southwest.

5. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the 12-inch diameter outlet pipe located at the outlet of the water quality biofiltration swale. The use of a metal plate or sandbags may be considered when blocking either the outlet structure or the pipe itself. This pipe and the outlet structure are noted as point C on the Operational Plan; Appendix A.

6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure can not safely pass the projected high flows. Broad-crested spillway weirs and over flow risers are the two most common auxiliary outlets used in stormwater treatment facility design. The auxiliary outlet feature is either a part of the facility or an additional storm drain feature/structure.

The auxiliary outlet feature for this facility is:

☐ Designed into facility

☒ Other, as noted below
There is no auxiliary outlet for this facility.

7. Maintenance Requirements

Routine maintenance table for non-proprietary stormwater treatment and storage/detention facilities have been incorporated into ODOT's Maintenance Guide. These tables summarize the maintenance requirements for ponds, swales, filter strips, bioslopes, and detention tanks and vaults. Special maintenance requirements in addition to the routine requirements are noted below when applicable.

The ODOT Maintenance Guide can be viewed at the following website:

http://www.oregon.gov/ODOT/HWY/OOM/MGuide.shtml

Maintenance requirements for proprietary structures, such as underground water quality manholes and/or vaults with filter media are noted in Appendix C when applicable.

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual or follow the Maintenance requirements outlined in Appendix C when proprietary structure is selected below:

☒ Table 1 (general maintenance)
☐ Table 2 (stormwater ponds)
☒ Table 3 (water quality biofiltration swales)
☐ Table 4 (water quality filter strips)
☐ Table 5 (water quality bioslopes)
☐ Table 6 (detention tank)
☐ Table 7 (detention vault)
☐ Appendix C (proprietary structure)
☐ Special Maintenance requirements:

Note: Special maintenance Requirements Require Concurrence from ODOT SR Hydraulics Engineer.

8. Waste Material Handling

Material removed from the facility is defined as waste by DEQ. Refer to the roadwaste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options: http://egov.oregon.gov/ODOT/HWY/OOM/EMS.shtml

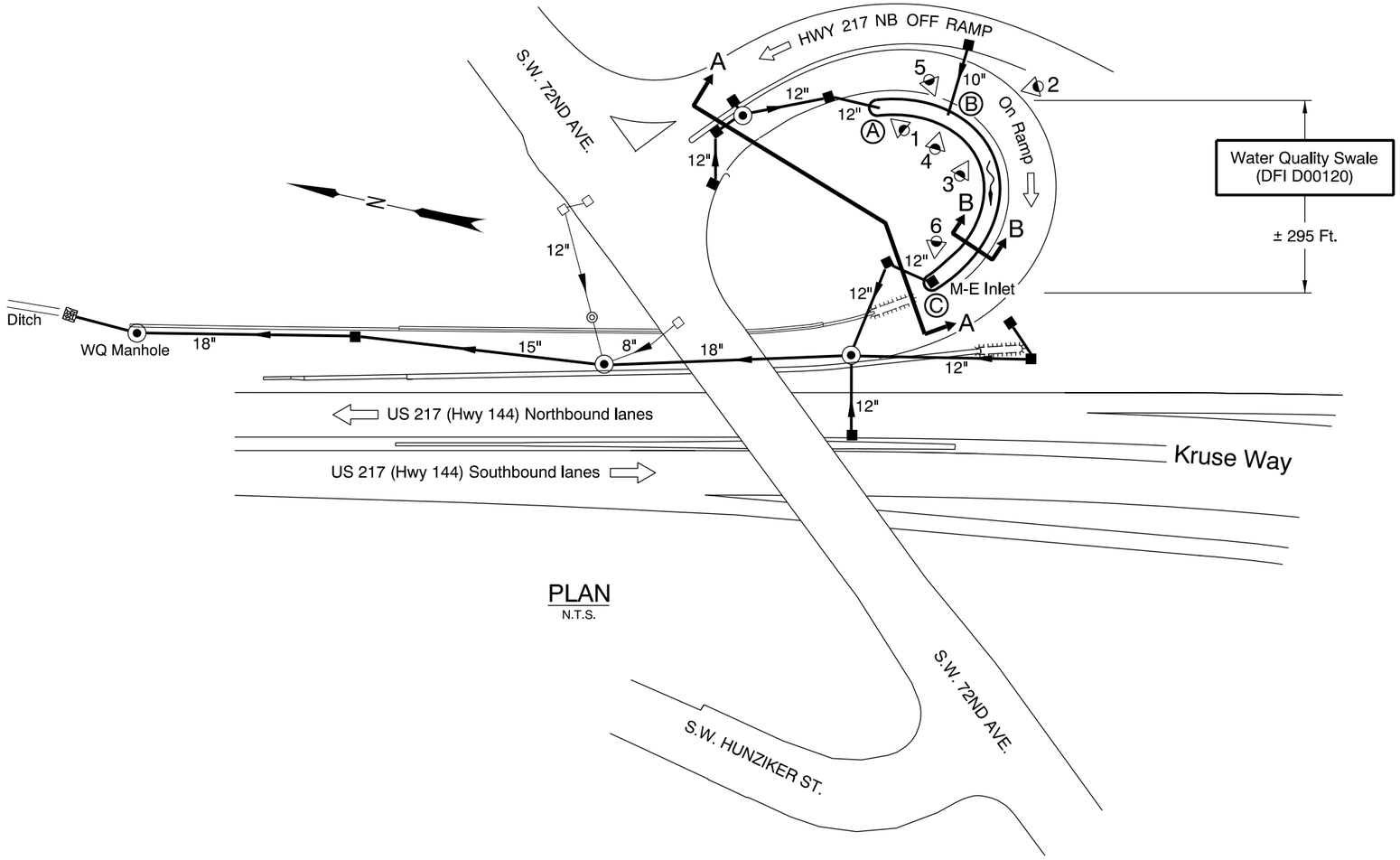
Contact any of the following for more detailed information about management of waste materials found on site:

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

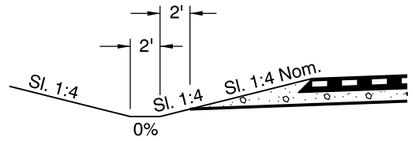
Appendix A

Content:

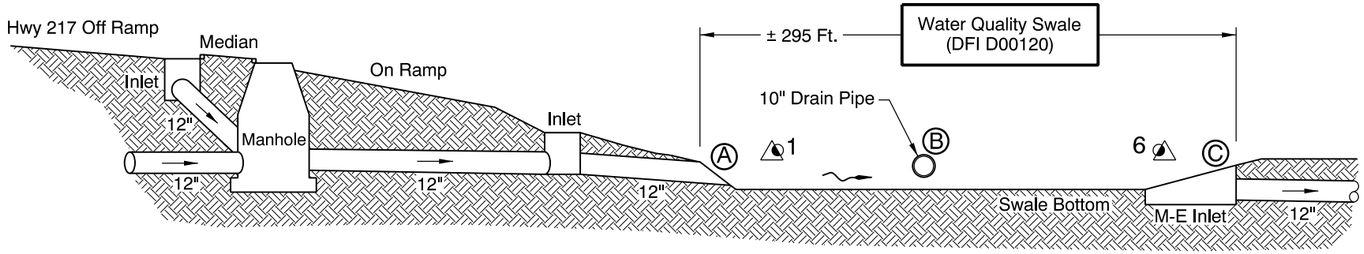
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



SECTION B-B
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- Photograph location / direction
- Swale Inlet A
- Swale Inlet B
- Swale Outlet
- Manhole
- Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: M. Wittenbrink

Drafted By: Jim Holeman

DFI D00120
MAINTENANCE DISTRICT 2B HWY 144
WATER QUALITY BIOFILTRATION SWALE
BEAVERTON-TIGARD HIGHWAY MP 6.70
WASHINGTON COUNTY

DFI_D00120.dgn

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	Offsite Wetland Mitigation Vicinity Map & Index Of Sheets Contd.
1A-2	Index Of Sheets Contd. & Standard Drawing Nos.
1A-3	Standard Drawing Nos.
1B	Signature Sheet
1C	Colored Sheet Layout
1D	Colored Photo
2, 2A Thru 2A-30 Incl.	Typical Sections
2B Thru 2B-21 Incl.	Details
2C, 2C-2	Traffic Control Details
2C-3	Traffic Control Detour Plan
2C-4 Thru 2C-26 Incl., 2C-26A, 2C-7 Thru 2C-35 Incl., 2C-35A, 2C-36 Thru 2C-95 Incl.	Traffic Control Plans
2D Thru 2D-4 Incl., 2D-4A, 2D-5, 2D-6	Water Quality Details
2D-7 Thru 2D-14 Incl.	Water Quality Plans
2E, 2E-2, 2E-2A, 2E-3	Erosion Control Details
2E-4 Thru 2E-22 Incl.	Erosion Control Plans
2F Thru 2F-5 Incl.	Pipe Data
3	Alignment Plan
3A	General Construction Plan
3B	Utility & Drainage Plan
3C	Profile & Super Rate Chart
4	Alignment Plan
4A	General Construction Plan
4B	Utility & Drainage Plan
5	Alignment Plan
5A	General Construction Plan
5B	Utility & Drainage Plan
6	Alignment Plan
6A	General Construction Plan
6A-2	Construction Notes
6B	Utility & Drainage Plan
6C	Profile
7	Alignment & Plan
7A	General Construction Plan
7A-2	Construction Notes
7B, 7B-2,	Utility & Drainage Plan & Notes
7C, 7C-2, 7D	Profile & Super Rate Charts
8	Alignment Plan
8A	General Construction Plan
8A-2	Construction Notes
8A-3	Intersection Construction Plan
8B	Utility & Drainage Plan
8B-2, 8B-3	Sanitary Sewer Relocate Plans And Details
8C	Contour Grading Plan
8D, 8D-2, 8E, 8F, 8F-2, 8F-3, 8G	Profile & Super Rate Charts

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

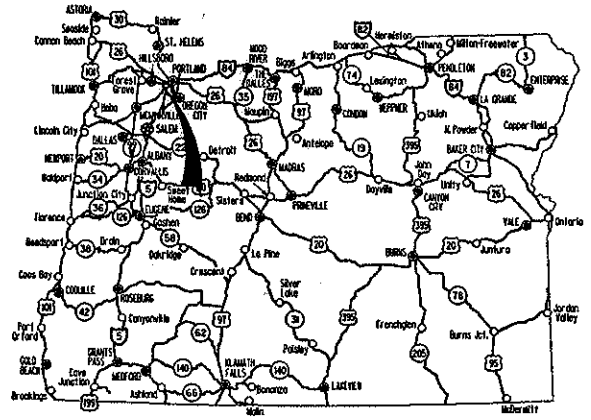
GRADING, STRUCTURES, PAVING, SIGNING, SIGNALS, & ILLUMINATION

I-5 AT HWY. 217/ KRUSE WAY (UNIT 1) SEC.

PACIFIC HIGHWAY

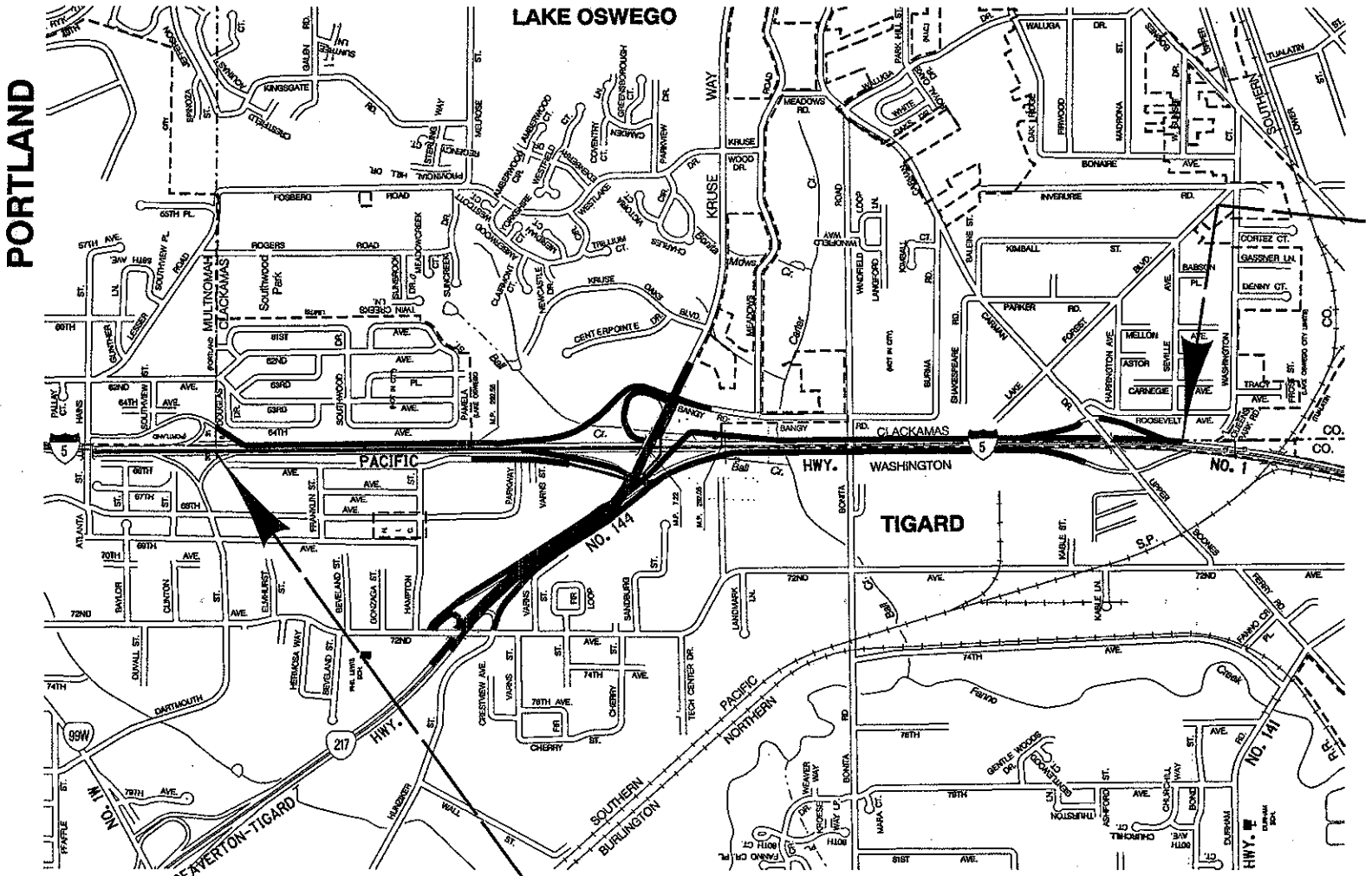
CLACKAMAS & WASHINGTON COUNTIES

NOVEMBER 1999



Overall Length Of Project - 3.13 km (1.95 Miles)
Overall Length Of Work Area - 4.80 km (2.98 Miles)

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, Or Answers To Questions About The Rules By Calling (503) 232-1987.



BEGINNING OF PROJECT HPP-ACHPP-ACNH-S001(80)
STA. "L5" 24+673 (M.P. 293.05)

HPP-ACHPP-ACNH-S001(80)
END OF PROJECT
STA. "L5" 27+730.500 (M.P. 291.15)

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

METRIC

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 16,458 OREGON MAY 14, 1998 JEFFREY SCHEICK Expires Jun. 30, 2000

Jeffrey Scheick

TECHNICAL SERVICES MANAGING ENGINEER

I-5 AT HWY. 217/ KRUSE WAY (UNIT 1) SEC.
PACIFIC HIGHWAY
CLACKAMAS & WASHINGTON COUNTIES

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION	HPP-ACHPP-ACNH-S001(80)	1

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WATER QUALITY PLAN

(1) Const. Water Quality Swale
Sta. "72A" 10+800 To Sta. "72A" 10+898
(Earthwork Included In Main Rdwy. Distr.)
(For Details, See Sht. 2D-5)

(2) Const. Type "M-E" Inlet
Inst. 300 mm Pipe - 8 m
Tr. Exc. - 7 m^3

(3) Const. Fill
Embankment - 3 m^3
(Earthwork Included In Main Rdway. Distr.)

LEGEND

- Construct Fill
- Water Quality Swale
- Abandon Pipe
- Place 300 mm Type CG-2 Pipe
- Place Inlet

NOTE:
All Dimensions Are Shown In Meters Unless Otherwise Noted

I-5 AT HWY. 217/KRUSE WAY (UNIT 1) SEC.			
PACIFIC HWY. (I-5)			
CLACKAMAS AND WASHINGTON COUNTIES			
FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D-14

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VIEW 6

VIEW 6