OPERATION & MAINTENANCE MANUAL

DFI No. : D00161
Facility Type: Water Quality Biofiltration Swale

March 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00161**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 32V-022
Location:	District: 2B (Old 2A)
	Highway No.: 001
	Mile Post: 291.83; 291.90 (beg./end)
	Description: This facility is located behind the concrete barrier along the right shoulder west of the southbound lanes of I-5 (Hwy 001). This facility has no vehicular access. Personnel can access the facility by climbing over the concrete barrier.

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, Theodore Armstrong
Facility construction:	1999
Contractor:	Kiewit Pacific Co.

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 behind the concrete barrier along the right shoulder west of southbound lanes of I-5 (Hwy 001) between mileposts 291.83 and 291.90. The S.W. Bonita Road overpass is slightly more than 66 feet south of the facility. The swale portion of the facility is roughly 296 feet long between a G-2 split flow inlet and pollution control manhole near its south end and an inlet to a 12-inch diameter pipe at its north end (**Points B, C , E on Operational Plan in Appendix A; Photos 1, 2, 3**). This conveyance pipe extends 111.5 feet north to a riprap basin upstream of an outfall to a wetland area, which is associated with Ball Creek (**Point F**).

The facility has no vehicular access. Personnel can access the facility by climbing over the concrete barrier adjacent to the facility. Vehicles can be parked on the right shoulder of the adjacent southbound lanes of I-5 (Hwy 001) (**Photo 4**).

This facility receives stormwater runoff from impervious areas comprised mostly of the southbound lanes of I-5 (Hwy 001,) a relatively small portion of the northbound lanes of I-5 (Hwy 001,) the off ramp from I-5 (Hwy 001) to Carman Drive and a small portion of Carman Drive. The drainage area includes the southbound lanes of I-5 (Hwy 001) adjacent to the swale and extends south from the swale inlet over half a mile. Water quality flows from Carman Drive are treated by facility DFI D00119 before being discharged into a series of conveyance pipes leading to this facility, DFI D00161. High flows from Carman Drive are also discharged into conveyance pipes leading to DFI D00161 (**Pages 10B, 11B, 12B, 13B of 32V-022 in Appendix B**).

Flow through the facility is generally from south to north. A 21-inch diameter pipe receives stormwater from the system of conveyance pipes upstream of the facility. The 21-inch diameter pipe discharges to a G-2 split flow inlet, which separates and directs water quality flows from high flows (**Point B**).

Water quality flows are discharged from the inlet through a 4-inch diameter orifice (**Operational Plan in Appendix A**). The water then enters a 12-inch diameter, 5-foot long pipe, which discharges to a pollution control manhole (**Point C; Photo 2**). The pollution control manhole discharges to a 12-inch diameter, 11.5-foot long pipe, which discharges the water onto a flow spreader made of riprap (**Point D**). Subsequently,

the water flows through the swale 296 feet before being discharged into a ditch inlet structure (**Point E; Photo 3**). From the ditch inlet structure, the water is conveyed by a 12-inch diameter, 111.5-foot long pipe to a riprap basin (**Point F**). The water is then discharged to the facility's outfall into a wetland area associated with Ball Creek.

After separation by the G-2 split flow inlet (**Point B**), high flows enter a series of 24-inch diameter conveyance pipes totaling 418 feet. At the end of the series, high flows are discharged onto the riprap basin and subsequently discharged to the facility's outfall into a wetland area associated with Ball Creek (**Point F**).

A. Maintenance equipment access:

The facility has no vehicular access. Personnel can access the facility by climbing over the concrete barrier along the right shoulder west of the southbound lanes of I-5 (Hwy 001). Vehicles can be parked on the shoulder of the adjacent southbound lanes (**Photo 4**).

B. Heavy equipment access into facility:

☐ Allowed (no limitations)
☒ Allowed (with limitations)

Although heavy equipment is allowed in the facility, there is no means for heavy equipment to enter the facility. It is obstructed by a concrete barrier on I-5 (Hwy 001) to the east and by private property to the west.

☐ Not allowed

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

Photo 1: View along swale length looking north.

Photo 2: Pollution control manhole near the south end of the swale.

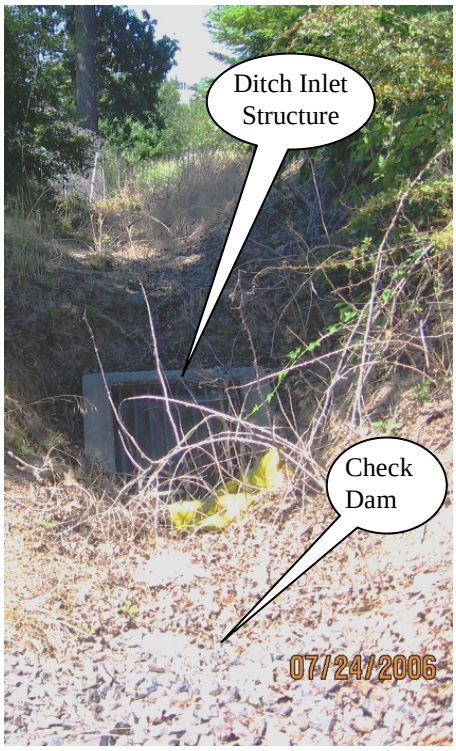


Photo 3: Ditch inlet structure near the north end of the swale.

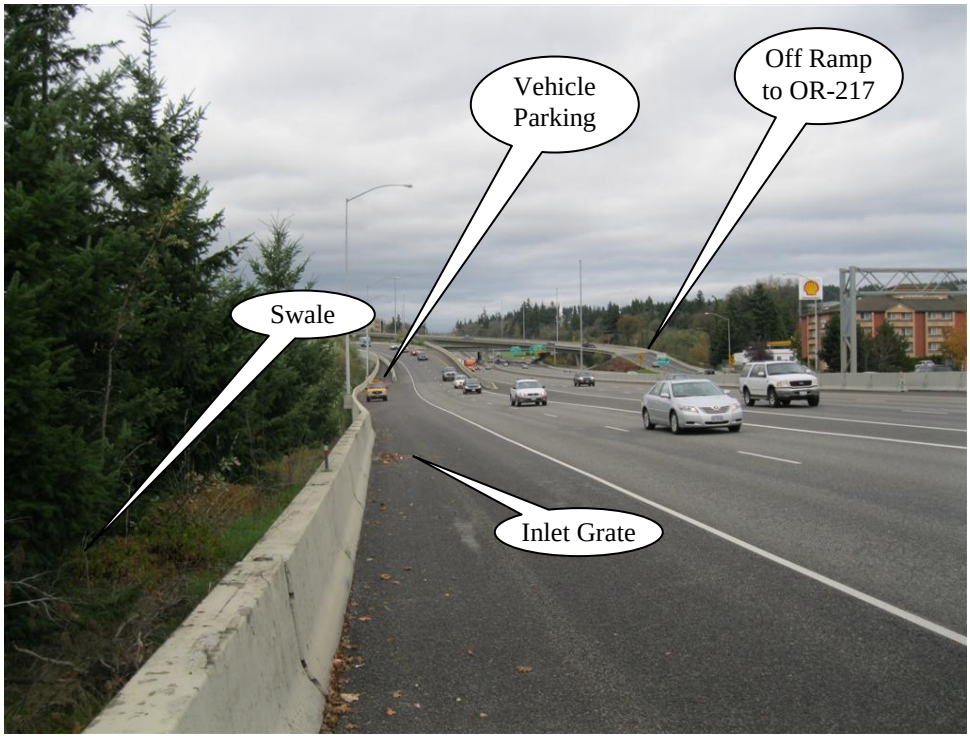


Photo 4: Personnel can access the facility by climbing over the concrete barrier along the right shoulder west of the southbound lanes of I-5 (Hwy 001). Vehicles can be parked on the shoulder of the adjacent southbound lanes

5. Facility Haz Mat Spill Feature(s)

The swale can be used to store a volume of liquid by blocking the outlet of the swale. A barrier such as a temporary berm made of sandbags could be used to prevent liquid from draining from the swale.

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

The auxiliary outlet for this facility begins at the G-2 split flow inlet near the southern end of the swale (**Point B**). The split flow inlet separates high flows from water quality flows and sends high flows into a 418-foot long series of 24-inch diameter conveyance pipes. At the end of the series, high flows are discharged onto a riprap basin and then discharged to the facility's outfall into a wetland area associated with Ball Creek (**Point F**).

☐ 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:

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

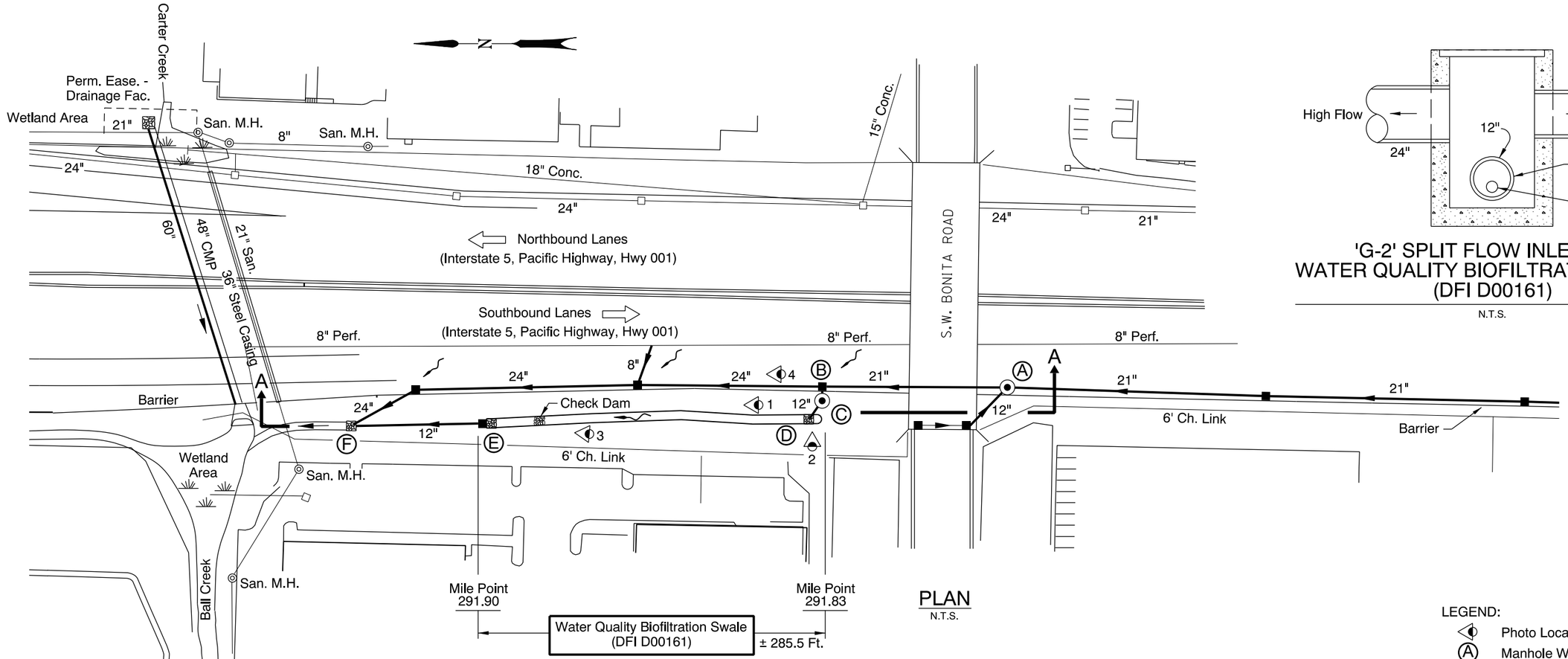
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 731-8290
ODEQ Northwest Region Office	(503) 229-5263

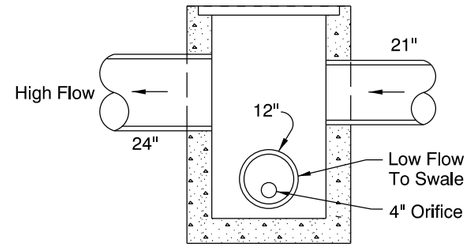
Appendix A

Content:

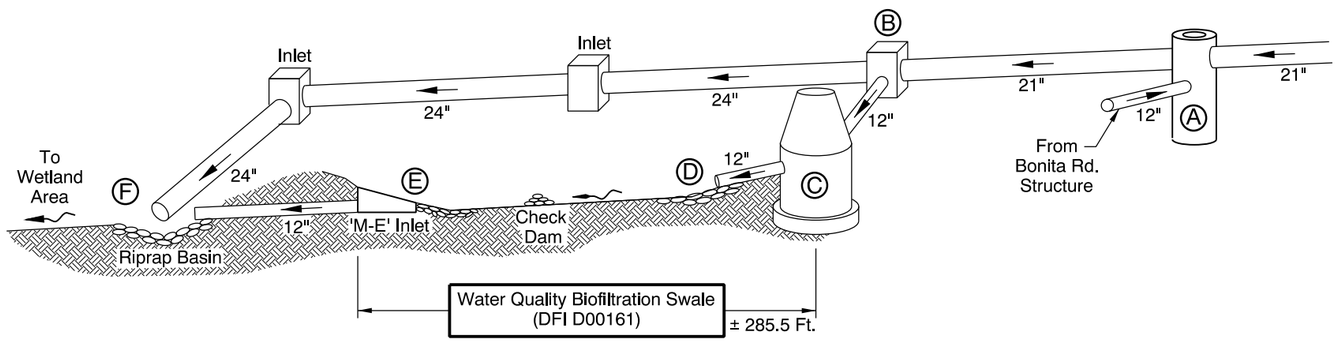
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



'G-2' SPLIT FLOW INLET FOR WATER QUALITY BIOFILTRATION SWALE (DFI D00161)
N.T.S.



SCHEMATIC OF PIPE DRAINAGE SYSTEM SECTION A-A
N.T.S.

LEGEND:
- Photo Location / Direction
- Manhole With Inlet Top
- 'G-2' Split Flow Inlet
- Pollution Control Manhole
- Pipe Outfall Onto Riprap
- Swale Outlet
- Riprap Basin
- Manhole
- Inlet
- Flow Spreader
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Fence

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wynee Hu

Drafted By: Jim Holeman

DFI D00161
MAINTENANCE DISTRICT 2B HWY 001
WATER QUALITY BIOFILTRATION SWALE
PACIFIC HIGHWAY MP 291.83-291.90
WASHINGTON COUNTY

Z:\Hydraulics\Hydraulics OM\Completed_Facility_Files\Dist_2B\Hwy_001\2B_001_D00161\Operational Plan\DFI_D00161.dgn :: Sheet 1/14/2014 3:00:13 PM hwyr33e

DFI_D00161.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

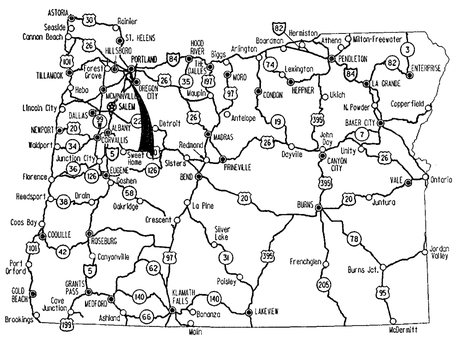
GRADING, STRUCTURES, PAVING, SIGNING, SIGNALS, & ILLUMINATION

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

PACIFIC HIGHWAY

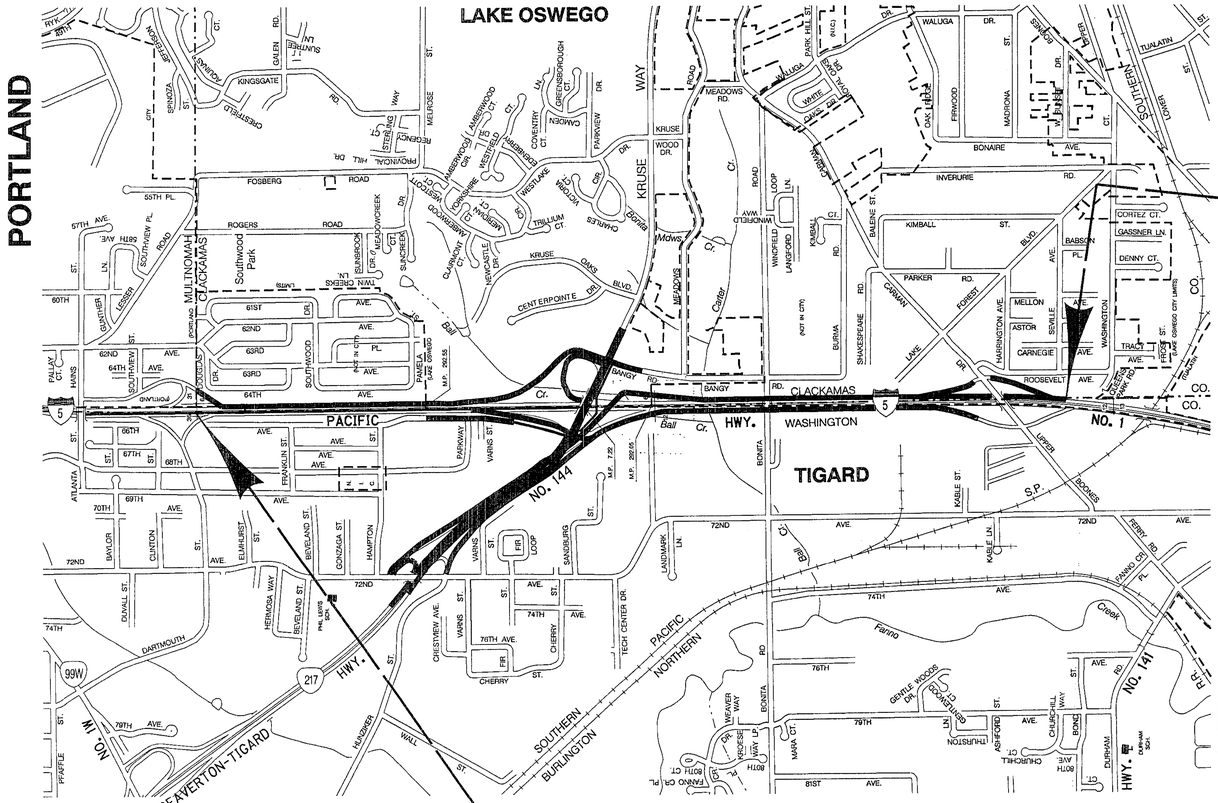
CLACKAMAS & WASHINGTON COUNTIES

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

AS CONSTRUCTED
PROJECT MANAGER
DATE 12/11/12

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
18,458
OREGON
MAY 14, 1996
JEFFREY SCHEICK
Expires: Jun. 30, 2000

Jeffrey Scheick

TECHNICAL SERVICES MANAGING ENGINEER

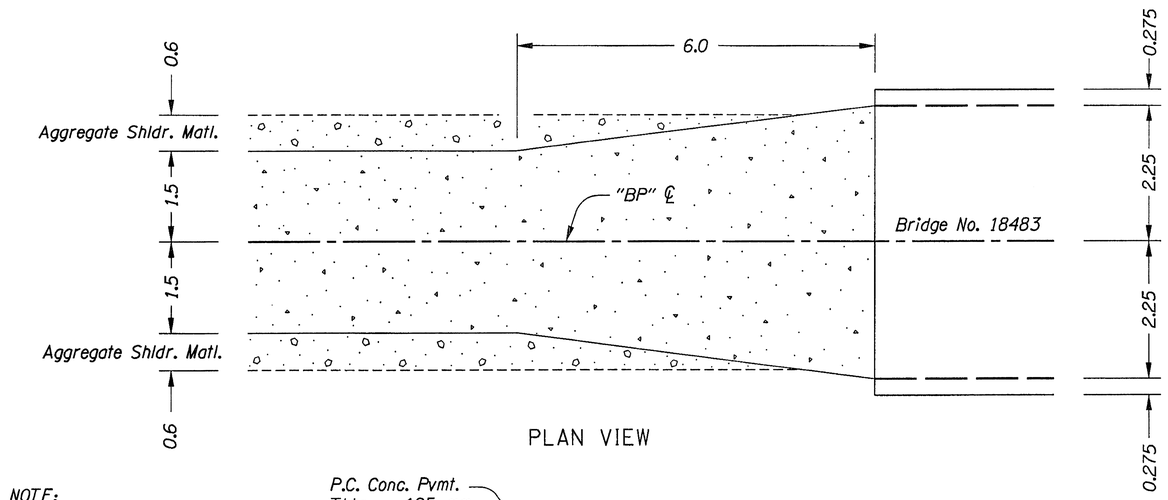
I-5 AT HWY. 217/ KRUSE WAY (UNIT 1) SEC.
PACIFIC HIGHWAY
CLACKAMAS & WASHINGTON COUNTIES

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

21-SEP-1999 11:07
C:\usr\Projects\S\07975f.dMet
VIEW A1 C603-1401

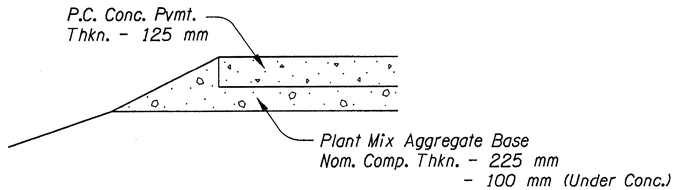
D E T A I L S

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



PLAN VIEW

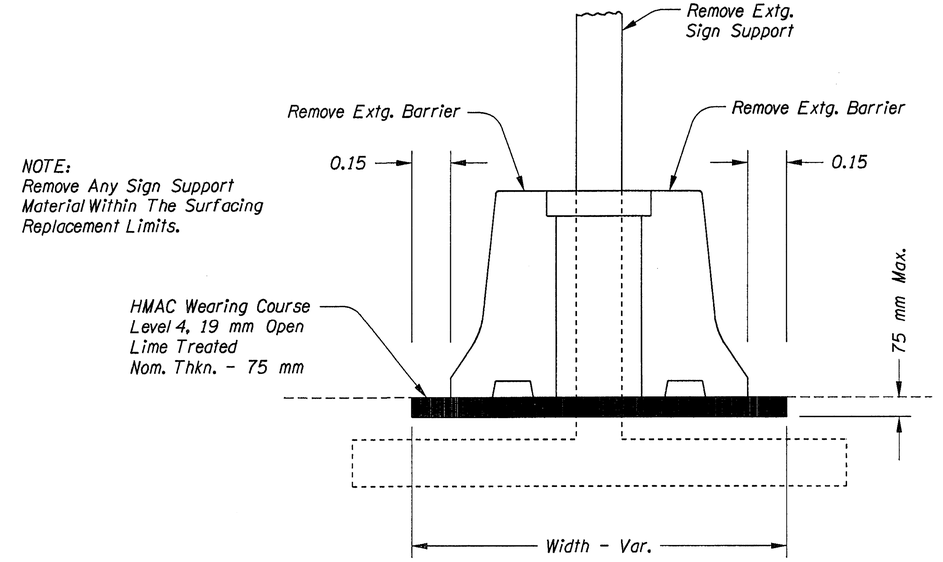
NOTE:
Taper Occurs At Both Ends Of Bridge No. 18483



ELEVATION

SURFACING TAPER TO PED. BRIDGE NO. 18483

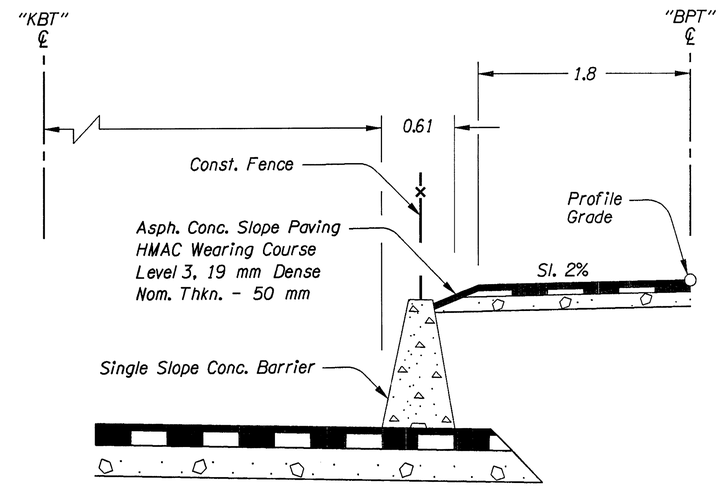
(For Locations, See Sht. 8A-2)



NOTE:
Remove Any Sign Support Material Within The Surfacing Replacement Limits.

SURFACING REPLACEMENT AT EXTG. SIGN BRIDGE

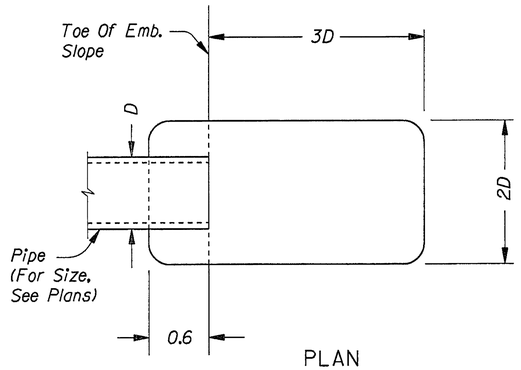
(For Locations, See Shts. 4A, 7A-2 & 12A-2)



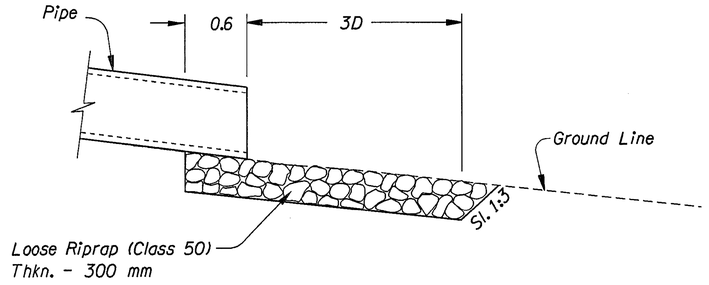
STA. "KBT" 25+690 To STA. "KBT" 25+740

SLOPE PAVING

(See Sht. 7A-2)



PLAN



ELEVATION

NOTE:
D=Pipe Diameter

RIPRAP BASIN

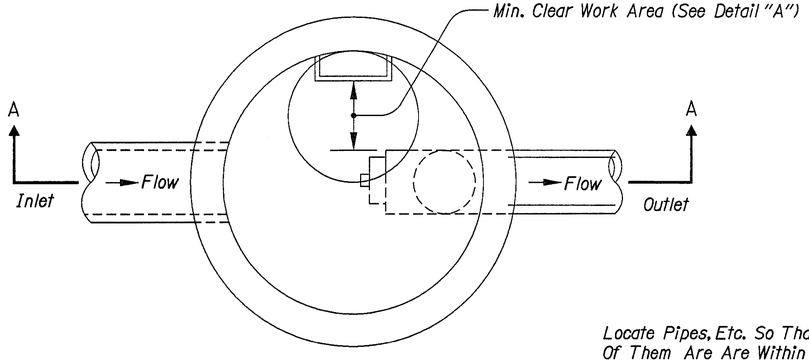
(For Locations, See Plans)

AS CONSTRUCTED
PROJECT MANAGER
10/14/02
DATE

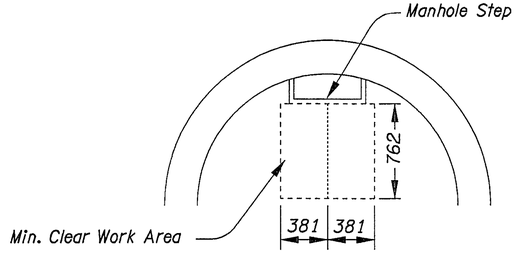
I-5 AT HWY. 217/KRUSE WAY (UNIT 1) SEC.
PACIFIC HWY. (I-5)
CLACKAMAS AND WASHINGTON COUNTIES

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

WATER QUALITY DETAIL

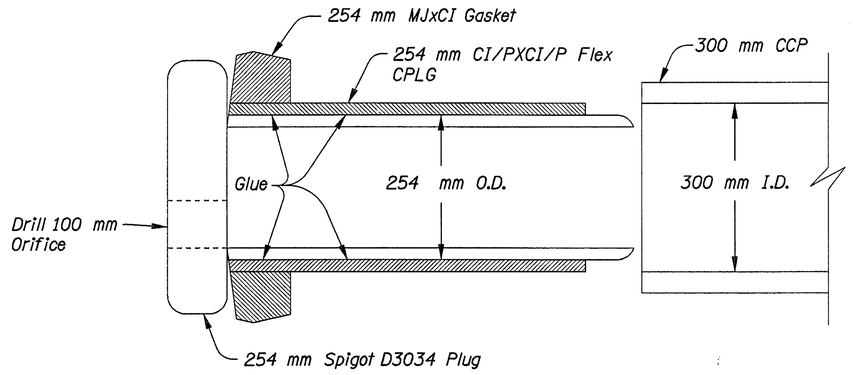


PLAN



DETAIL "A"

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

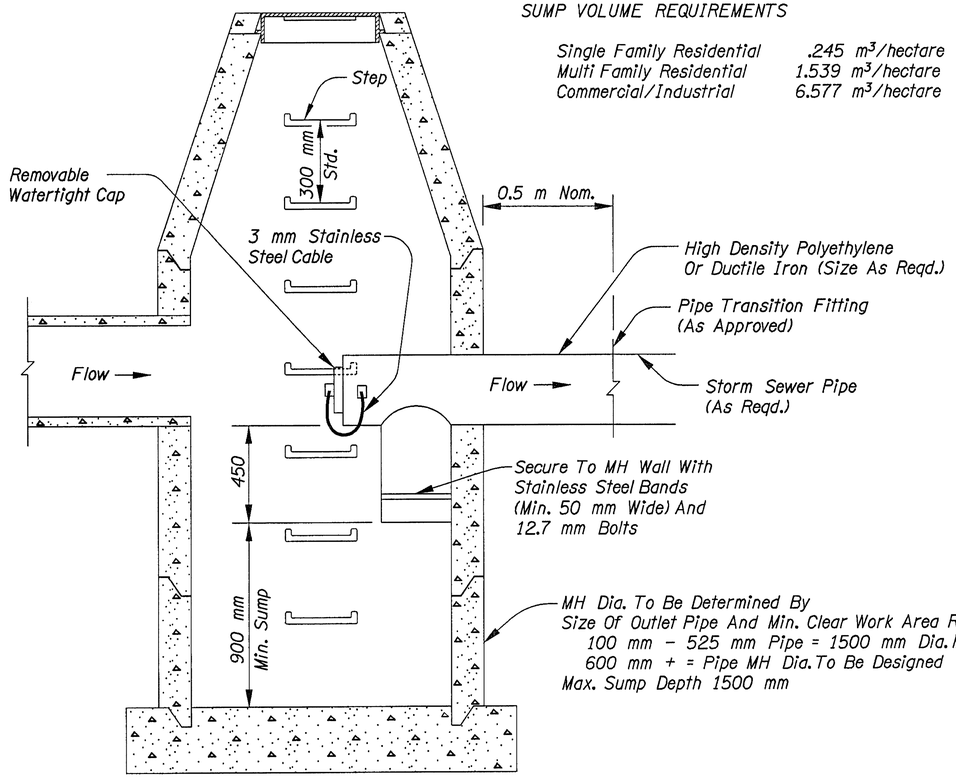


ORIFICE PLUG

(For Location, See Plans)

SUMP VOLUME REQUIREMENTS

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



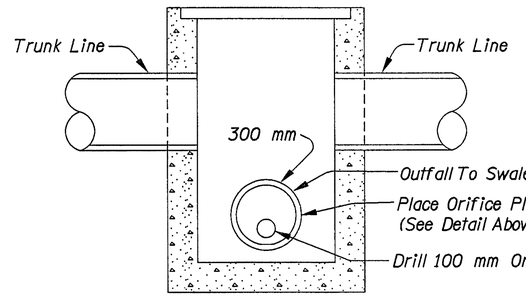
SECTION A-A

(For Details Not Shown, See Manhole Standard Drawing No. RD327)

NOTES:

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

WATER QUALITY MANHOLE



"G2 SPLIT FLOW" INLET

(For Details, See Drg. No. RD336)

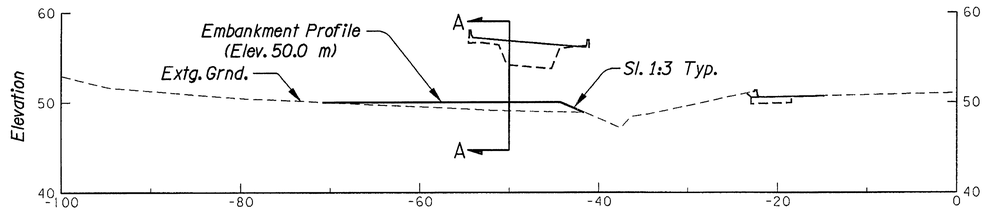
AS CONSTRUCTED
PROJECT MANAGER
1-21-99
DATE

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

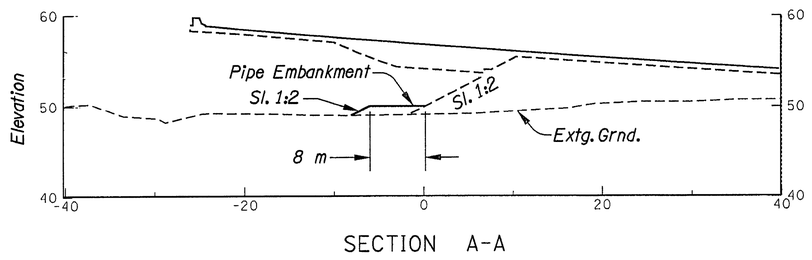
I-5 AT HWY. 217/KRUSE WAY (UNIT 1) SEC.
PACIFIC HWY. (I-5)
CLACKAMAS AND WASHINGTON COUNTIES

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

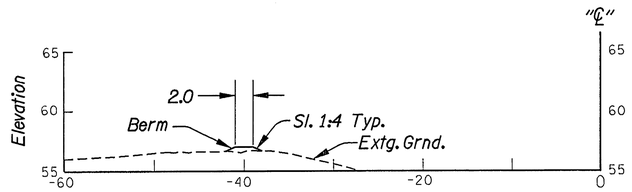
WATER QUALITY DETAIL



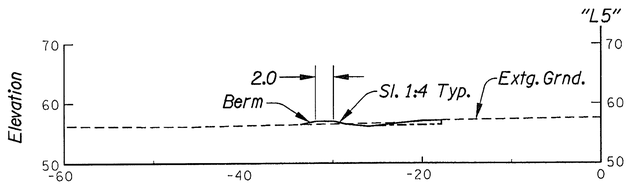
Embankment Profile (Sta. "L5 26+187" Lt.)
(For Location, See Sht. 2D-11, Note 5)
See Section A-A Below



SECTION A-A

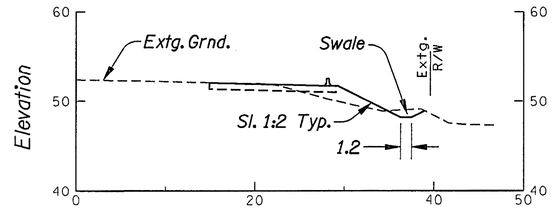


SECTION C-C
"L5" 25+940

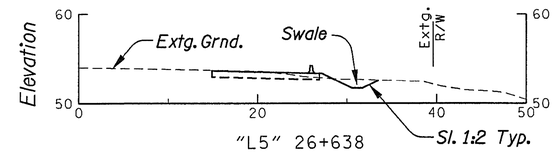


SECTION B-B

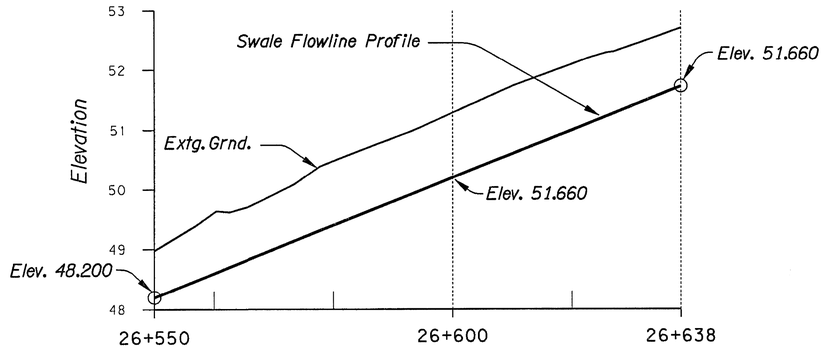
"L5" 25+920
(For Location, See Sht. 2D-9, Note 7)



"L5" 26+550



Water Quality Swale Profile
Sta. "L5" 26+550" To Sta. "L5" 26+638



STATION
(For Location, See Sht. 2D-12)

AS CONSTRUCTED
PROJECT MANAGER
12/14/01
DATE

NOTE:
1. *All Dimensions Are Shown In Meters (m) Unless Otherwise Noted.*
2. *Side-Slopes Are Shown As Vert. To Horiz.*

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-6

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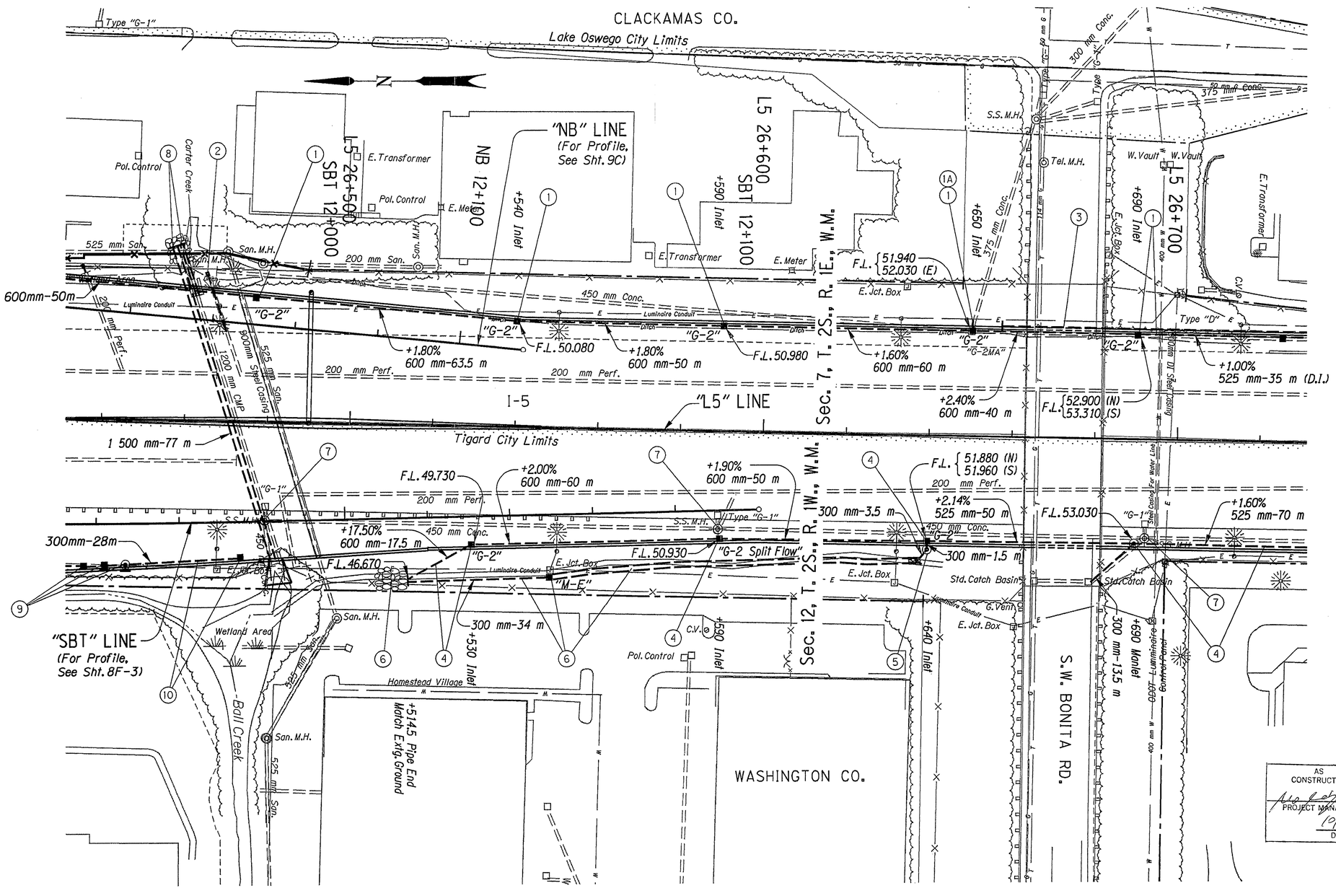
VIEW 6

VIEW 6

EXISTING DRAINAGE & UTILITIES PLAN



AS CONSTRUCTED
PROJECT MANAGER
10/14/22
DATE

(1) Sta. "NB" 12+050 To Sta. "L5" 26+690 Lt.
Const. Type "G-2" Inlet - 5
Inst. 600 mm Sew. Pipe - 213.5 m
Inst. 525 mm Ductile Iron Pipe - 35 m
(1A) Reconnect Extg. 375 mm Pipe
Tr. Exc. - 230 m³

(2) Sta. "NB" 12+039± Lt.
200 mm Drain Pipe (In Pl.)
Extend - 17 m
Const. (200 mm) Surfacing Drain Outlet
(For Details, See Sht. 2B-19)

(3) Sta. "L5" 26+650 To Sta. "L5" 26+888 Lt.
Inst. 150 mm Perf. Pipe - 238 m
(Inst. Behind Barrier Per Typical, Sht. 2A-4)
(Pipe Outlet At Sta. "L5" 26+650, Behind Barrier)

(4) Sta. "L5" 26+530 To Sta. "L5" 26+690 Rt.
Const. Manhole With Inlet Top
Const. Type "G-2" Inlet - 2
Const. Type "G-2 Split Flow" Inlet
Inst. 300 mm Sew. Pipe - 13.5 m
Inst. 525 mm Sew. Pipe - 120 m
Inst. 600 mm Sew. Pipe - 127.5 m
Tr. Exc. - 260 m³
(For Details, See Sht. 2D-4)

(5) Const. Water Quality Drainage System
Sta. "L5" 26+640 Rt.
Const. Water Quality Manhole
Inst. 300 mm Sew. Pipe - 5 m
Tr. Exc. - 1.8 m³
(For Details, See Sht. 2D-4)

(6) Const. Water Quality Drainage System
Sta. "L5" 26+550 To Sta. "L5" 26+637 Rt.
Const. Roadside Water Quality Swale
0.6 m Flat Bottom
Sta. "L5" 26+550 Rt.
Const. Type "M-E" Inlet
Inst. 300 mm Sew. Pipe - 34 m
Const. Riprap Basin
Tr. Exc. - 31 m³
(For Details, See Shts. 2B-3 & 2D-6)

(7) Remove Manhole - 3

(8) 1 200 mm Culv. Pipe - 69.5 m (In Pl.)
Remove - 3 m Rt.
Extend - 10.5 m Lt.
Remove Extg. Headwall (East Side)
Inst. 1 500 mm Culv. Pipe - 77 m
1 500 mm Trenchless Pipe Inst. Under I-5
Const. Riprap Blanket (Class 50) - 7 m³
Tr. Exc. - 120 m³
(For Details, See Sht. 2B-21)
(For Outlet Wingwalls, See Br. Drg. No. 57329)

(9) See Sht. 9B, Note 12

(10) Sta. "SBT" 11+975 Rt.
Const. Type "G-2" Inlet
Inst. 300 mm Sew. Pipe - 28 m
Tr. Exc. - 10 m³

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		10B

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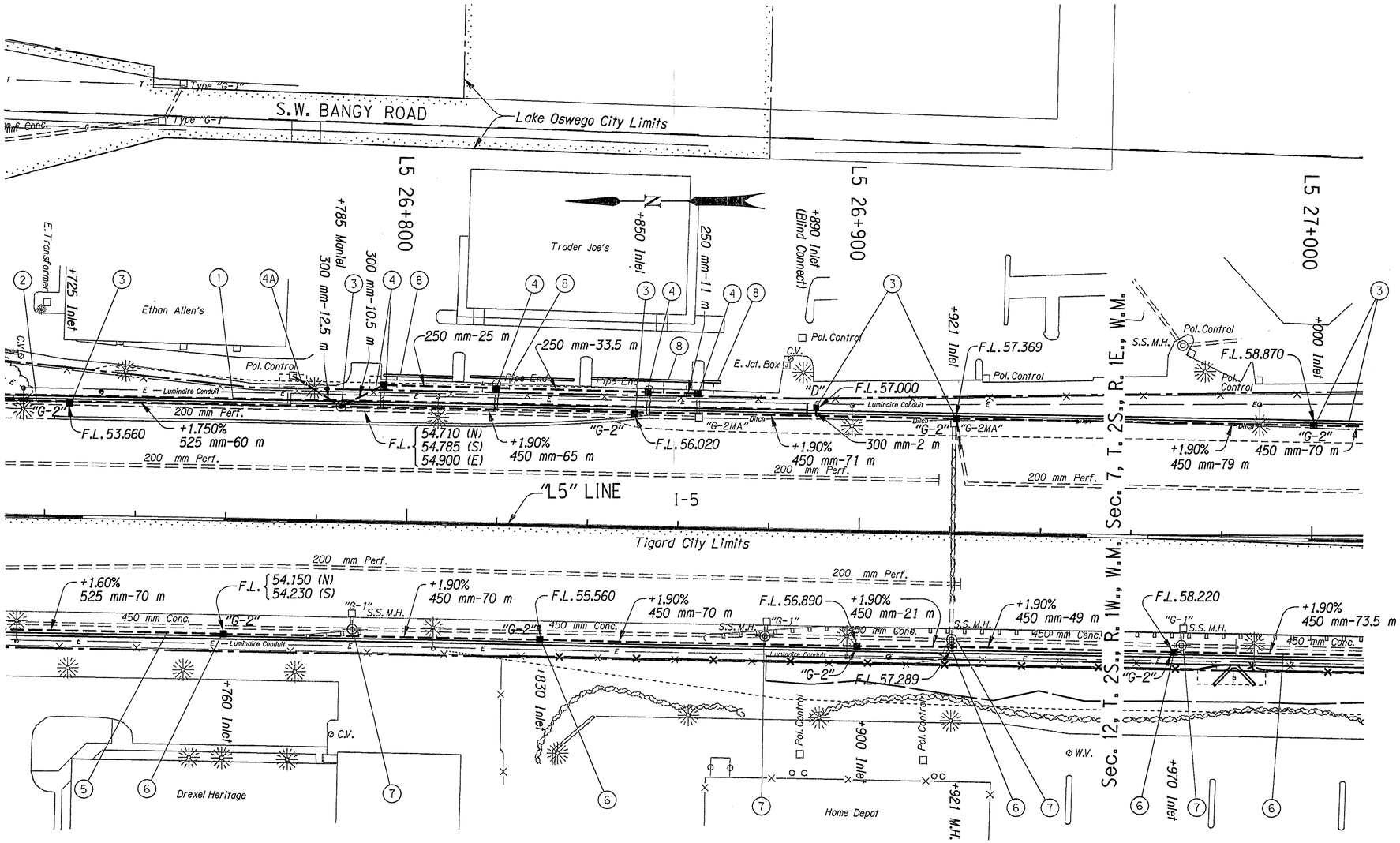
VIEW 6

EXISTING DRAINAGE & UTILITIES PLAN

CLACKAMAS CO.



WASHINGTON CO.

(1) *See Sht. 10B, Note 3*

(2) *See Sht. 10B, Note 1*

(3) *Sta. "L5" 26+725 To Sta. "L5" 27+000 Lt.*
Const. Manhole W/Inlet Top
Const. Type "G-2" Inlet - 4
Const. Type "D" Inlet
200 mm Perf. Pipe - 12.5 m (In Pl.)
Extend - 6.5 m Lt.
Inst. 300 mm Sew. Pipe - 2 m
Blind Connect
Inst. 450 mm Sew. Pipe - 285 m
Inst. 525 mm Sew. Pipe - 60 m
Tr. Exc. - 260 m³

(4) *Sta. "L5" 26+794.3 To Sta. "L5" 26+863.8*
Const. "USA Area Drain" Type 2 Inlet With 450 mm Sump - 4
Slotted Grate
Inst. 250 mm Sew. Pipe - 69.5 m
Inst. 300 mm Sew. Pipe - 23 m
(4A) *Connect To Extg. Pol. Control Inlet*
Tr. Exc. - 40 m³
(See USA Std. Drg. Nos., 220-ST & 230-ST)

(5) *See Sht. 10B, Note 4*

(6) *Sta. "L5" 26+760 To Sta. "L5" 27+970 Rt.*
Const. Manhole
Const. Type "G-2" Inlet - 4
Inst. 450 mm Sew. Pipe - 283.5 m
Tr. Exc. - 240 m³

(7) *Remove Manhole - 4*

(8) *Inst. Temp. Conc. Narrow Base Barrier - 64.8 m*
Protection Between Parking Lot & St. Sew. Construction
(Remove Temp. Conc. Barrier When St. Sew. Construction Is Complete)

AS CONSTRUCTED
PROJECT MANAGER
10/14/02
DATE

Plug And Abandon Extg. Pipe Shown Thus:

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		11B

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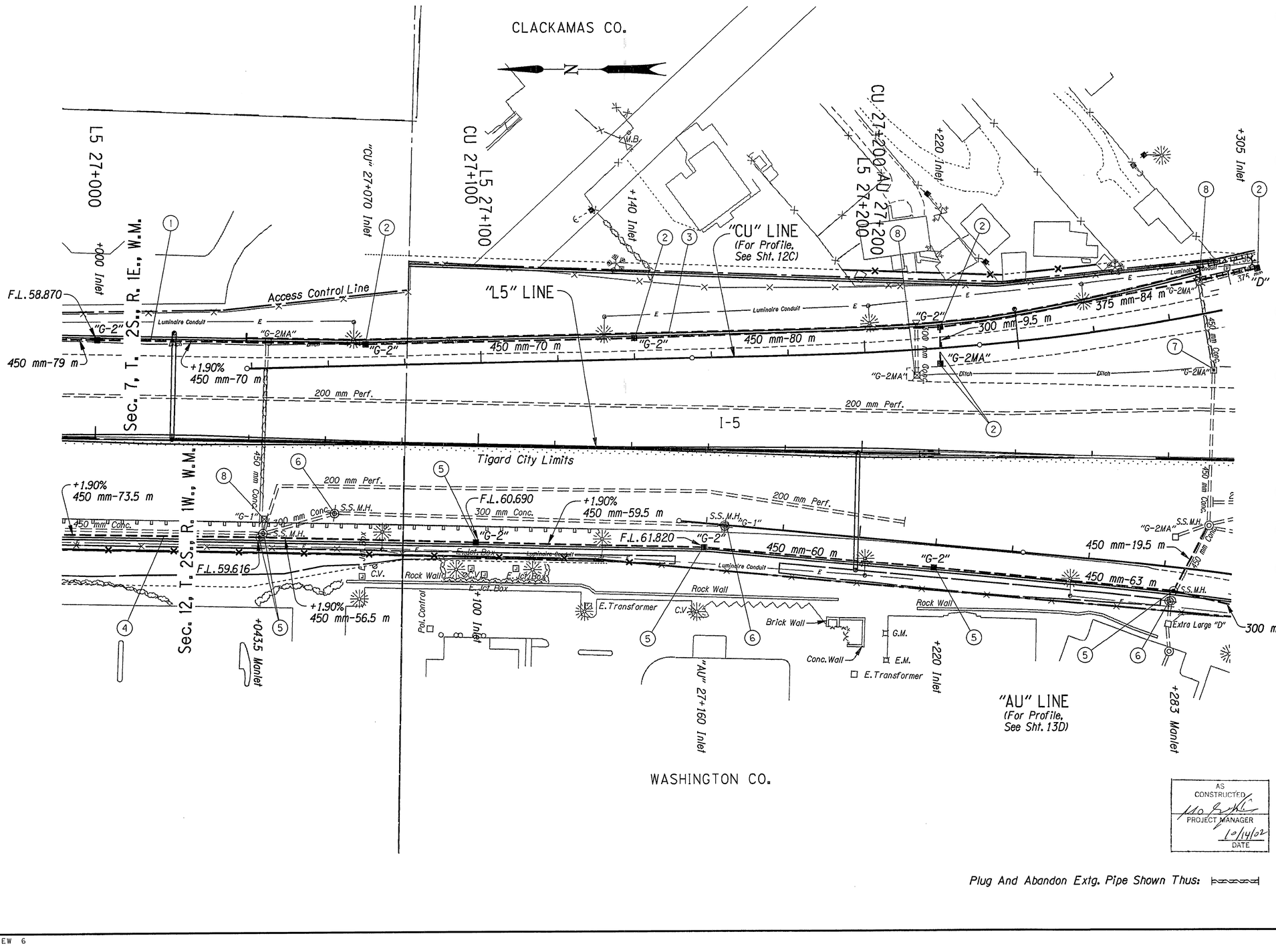
VIEW 3

EXISTING DRAINAGE & UTILITIES PLAN



(1) See Sht. 11B, Note 3

(2) Sta. "L5" 27+070 To Sta. "CU" 27+305 Lt.
Const. Type "G-2" Inlet - 3
Const. Type "G-2MA" Inlet
Const. Type "D" Inlet
Inst. 300 mm Sew. Pipe - 9.5 m
Inst. 375 mm Sew. Pipe - 84 m
Inst. 450 mm Sew. Pipe - 150 m
Tr. Exc. - 170 m³

(3) Sta. "CU" 27+039 To Sta. "CU" 27+290 Lt.
Inst. 150 mm Perf. Pipe - 251 m
(Inst. Behind Barrier Per Typical Sht. 2A-22)

(4) See Sht. 11B, Note 6

(5) Sta. "L5" 27+043.5 To Sta. "AU" 27+289.5
~~Remove Manhole~~ STA. "L5" 27+290 RT. PROTECT OR RECONSTRUCT MANHOLE
Const. Manhole With Inlet Top - 2
Const. Type "G-2" Inlet - 3
Inst. 450 mm Sew. Pipe - 258.5 m
Tr. Exc. - 190 m³

(6) Remove Manhole - 3

(7) Adjust Inlet

(8) Remove Inlet - 3

AS CONSTRUCTED
PROJECT MANAGER
10/4/02
DATE

Plug And Abandon Extg. Pipe Shown Thus:

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		12B

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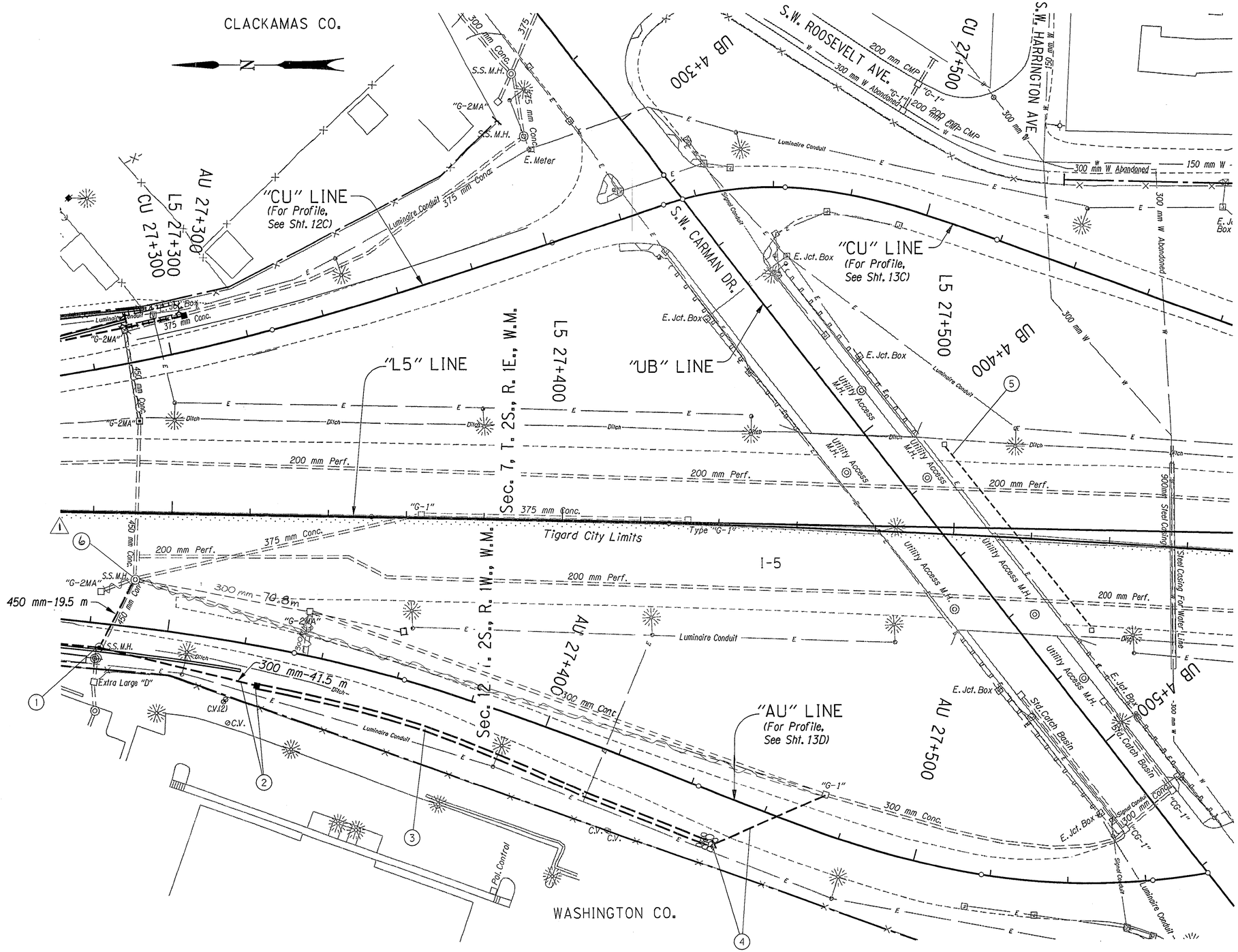
VIEW 6

EXISTING DRAINAGE & UTILITIES PLAN



(1) See Sht. 12B, Note 5

(2) Sta. "AU" 27+325 Rt.
Const. Type "G-2MA" Inlet
Inst. 300 mm Sew. Pipe - 41.5 m
Tr. Exc. - 20 m³

(3) Sta. "AU" 27+325 To Sta. "AU" 27+450 Rt.
Const. Roadside Water Quality Swale
0.6 m Flat Bottom
(For Details, See Sht. 2D-5)

(4) Inst. 300 mm Sew. Pipe - 31 m
Connect To Extg. "G-1" Inlet
Const. Riprap Basin
Tr. Exc. - 17 m³
(For Details, See Sht. 2B-3)

(5) Sta. "L5" 27+517
Inst. 50 mm Pipe - 59 m (Conduit)
Bore Under I-5
For Camera Interconnect Cable
(See Communications Network Plan Drg. No. 11784)

⚠(6) STA. "L5" 27+360 RT.
CONST. TYPE "G-2MA" INLET
INST. 300 mm SEW. PIPE - 70.8m

AS CONSTRUCTED
PROJECT MANAGER
10/14/21
DATE

⚠1 REVISED 9/20/2000

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		13B

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VIEW 3