OPERATION & MAINTENANCE MANUAL

DFI No. : D00122
Facility Type: Water Quality Extended Detention Dry Pond

MARCH 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00122**
Facility Type:	Water Quality Extended Detention Dry Pond
Construction Drawings:	(V-File Number) 32V-022
Location:	District: 2B (Old 2A)
	Highway No.: 001
	Mile Post: 292.32 TO 292.37 (beg./end)
	Description: This facility is located on the eastern side of the I-5 (Hwy 001) northbound lane adjacent to the I-5 off ramp onto Kruse way.

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, Jeffery Scheick, P.E./Mngr., (503) 731-8200
Facility construction:	1999
Contractor:	Kiewit Pacific

4. Storm Drain System and Facility Overview

A water quality extended detention dry pond is a basin that is designed to detain stormwater for a sufficient time to allow particles and attached pollutants to settle. The outlet control structure limits the rate of runoff leaving the pond by using an orifice. These facilities are designed to

completely drain over a 48 hour period. The size of these facilities depends on the location and the amount of contributing impervious area.

Stormwater runoff enters the water quality facility through a 36 inch storm pipe from the north. This pipe collects runoff from I-5 (Hwy 001) and a water quality facility, DFI D00118. The 36-inch pipe outfalls into the facility at the north end (Point A of the Operational Plan in Appendix A). After treatment through the extended detention dry pond, the water is then discharged through the facility's outlet control structure (Refer to Photo 1 and Photo 3; Point B) and then directed into a 36-inch storm pipe. This pipe tee's into an 84-inch storm pipe that directs the runoff into Ball Creek south of Kruse Way.

An emergency overflow grate is located at an elevation above the outlet control structure (Refer to Photo 1 and Photo 2; Point C).

An inlet is located within the basin of the facility that is considered plugged and abandoned (Refer to Photo 4). This inlet served the area as an area drain prior to the construction of the extended dry detention facility.

A. Maintenance equipment access:
Maintenance crew can access the facility directly from the interstate 5 HWY since there is no barrier between the grassy area and the roadway

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: Overflow control structure looking south.

Photo 2: Emergency overflow grate with maintenance access rip rap pad behind.

Photo 3: WQ Extended Dry Detention Pond looking south towards the outlet control structure.

Photo 4: Old inlet within WQ Extended Dry Detention Pond that has been plugged. Inlet is no longer functioning.

Photo 5: Special Manhole with emergency overflow grate looking down.

5. Facility Haz Mat Spill Feature(s)

The pond can be used to store a volume of liquid by blocking the outlet control structure (Point B of the Operational Plan) through either: 1) blocking the grates of both ditch inlets with either a steel plate or sand bags, or 2) blocking the outlet pipe of the outlet control structure.

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 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 facility includes two auxiliary outlets as follows:

1) The first auxiliary outlet includes the second outlet of the outlet control structure (Point B). The rim elevation of this outlet is set above the water quality pond level. In the event the storm event exceeds the water quality flow, the water quality facility pond level will rise and began discharging through the second outlet.

2) The second auxiliary outlet includes an emergency overflow grate located well above the outlet control structure. In the event, the outlet control structure becomes plugged or flows exceed the capacity of the outlet control structure, the water can safely exit the facility through the grate of the special manhole (Point C).

All flows are directed into the same downstream piping as the water quality flows.

☐ 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:N/A

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

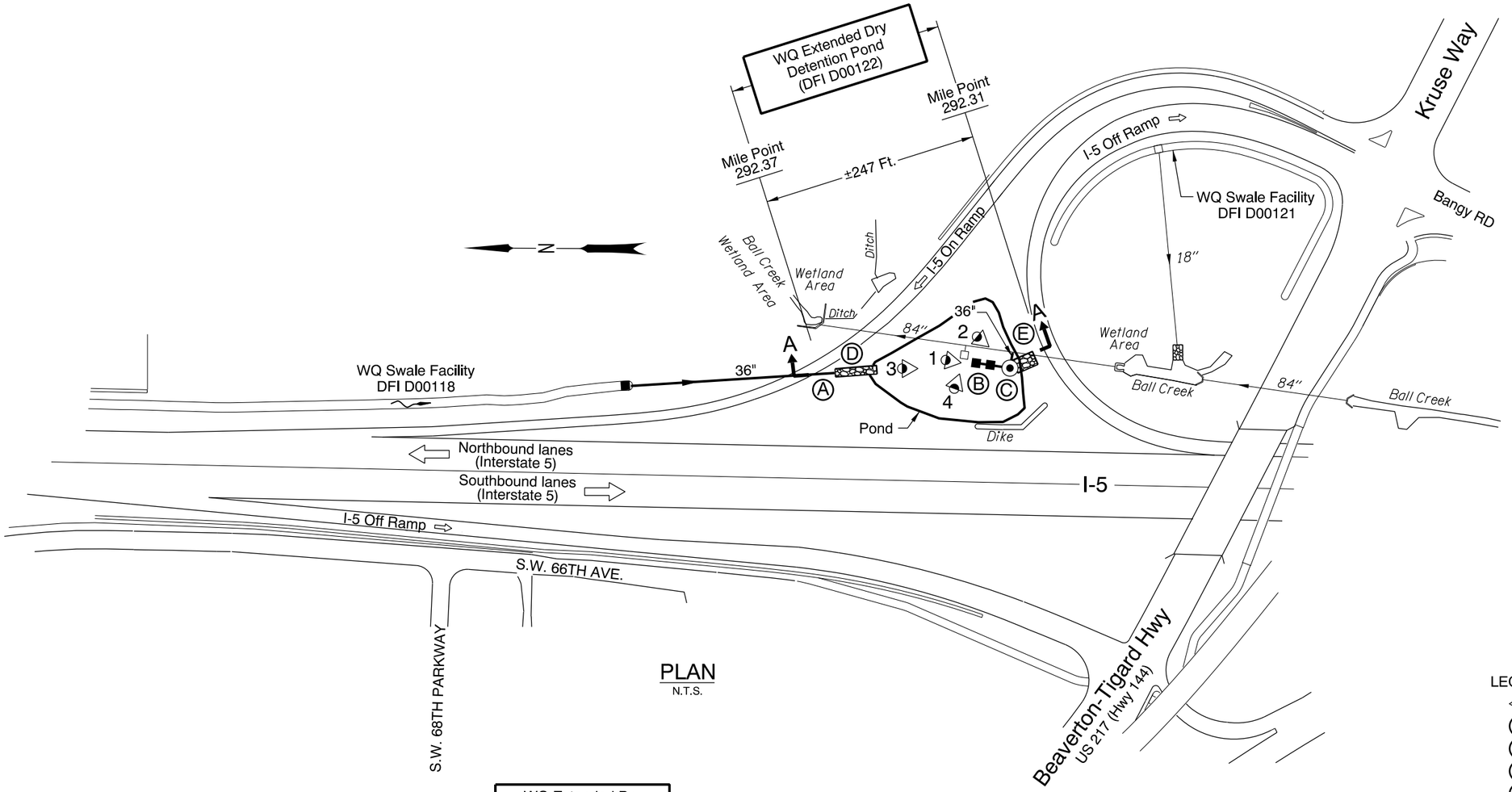
Contact any of the following for more detailed information about management of waste materials found on site:

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

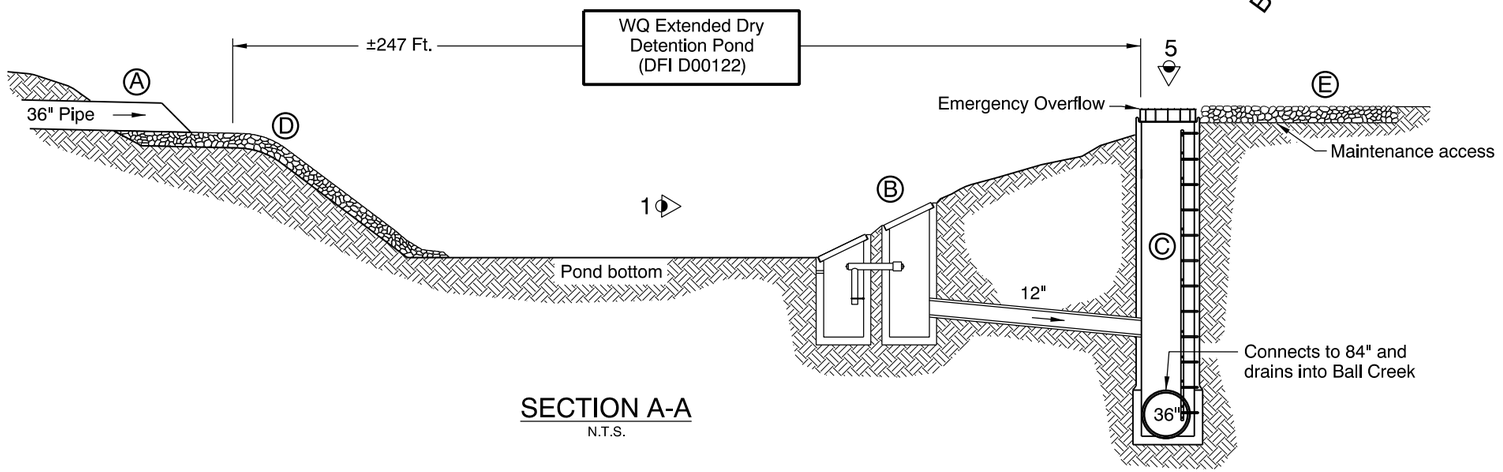
Appendix A

Content:

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



PLAN
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- Photo Location / Direction
- (A) Pond Inlet
- (B) Control Structure Outlet
- (C) Special Manhole with emergency overflow grate
- (D) Riprap Splash Pad
- (E) Maintenance access
- Manhole and/or Manhole
- Inlet and/or 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 D00122
MAINTENANCE DISTRICT 2B HWY 1
WQ EXTENDED DRY DETENTION POND
PACIFIC HIGHWAY MP 292.32-292.37
CLACKAMAS COUNTY

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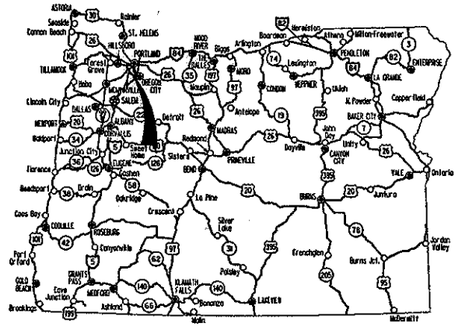
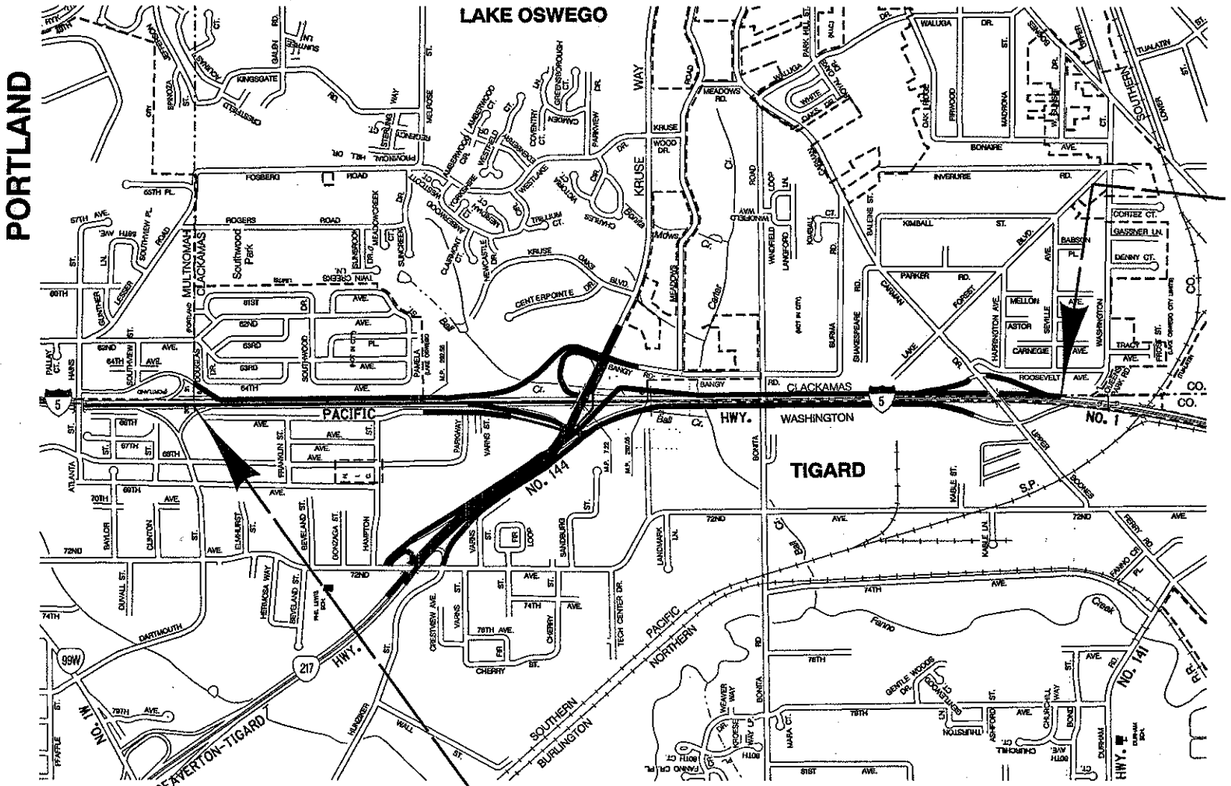
Appendix B

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.

LET'S ALL
WORK TOGETHER
TO MAKE THIS
JOB SAFE

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

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

Z
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

16,458
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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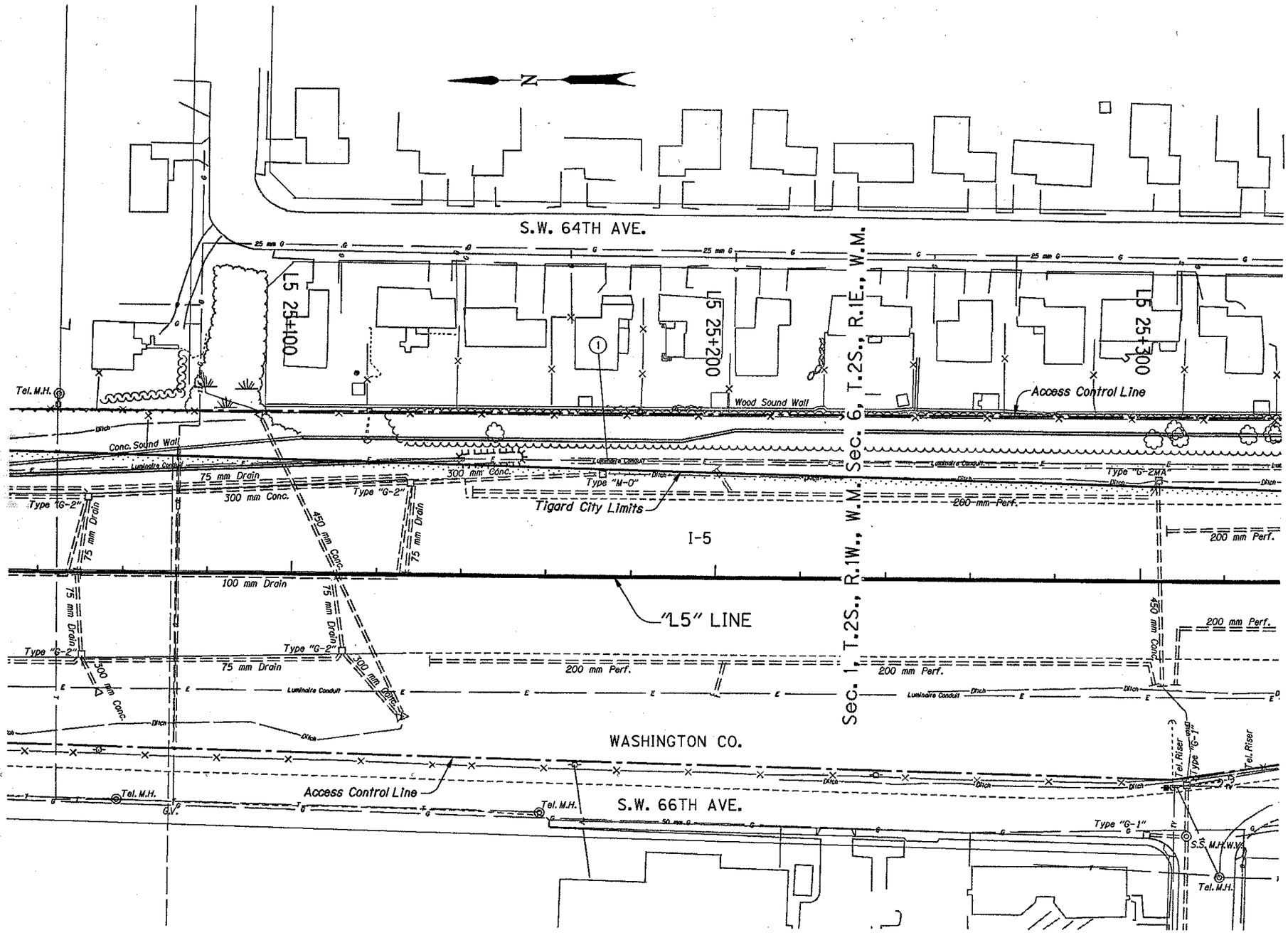
WATER QUALITY PLAN



① *Begin Water Quality Swale Sta. "L5" 25+165 To Sta. "KA" 12+163.45 (Earthwork Included In Main Rdwy. Distr.) (For Typical Section, See Sht. 2D-5)*

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-7

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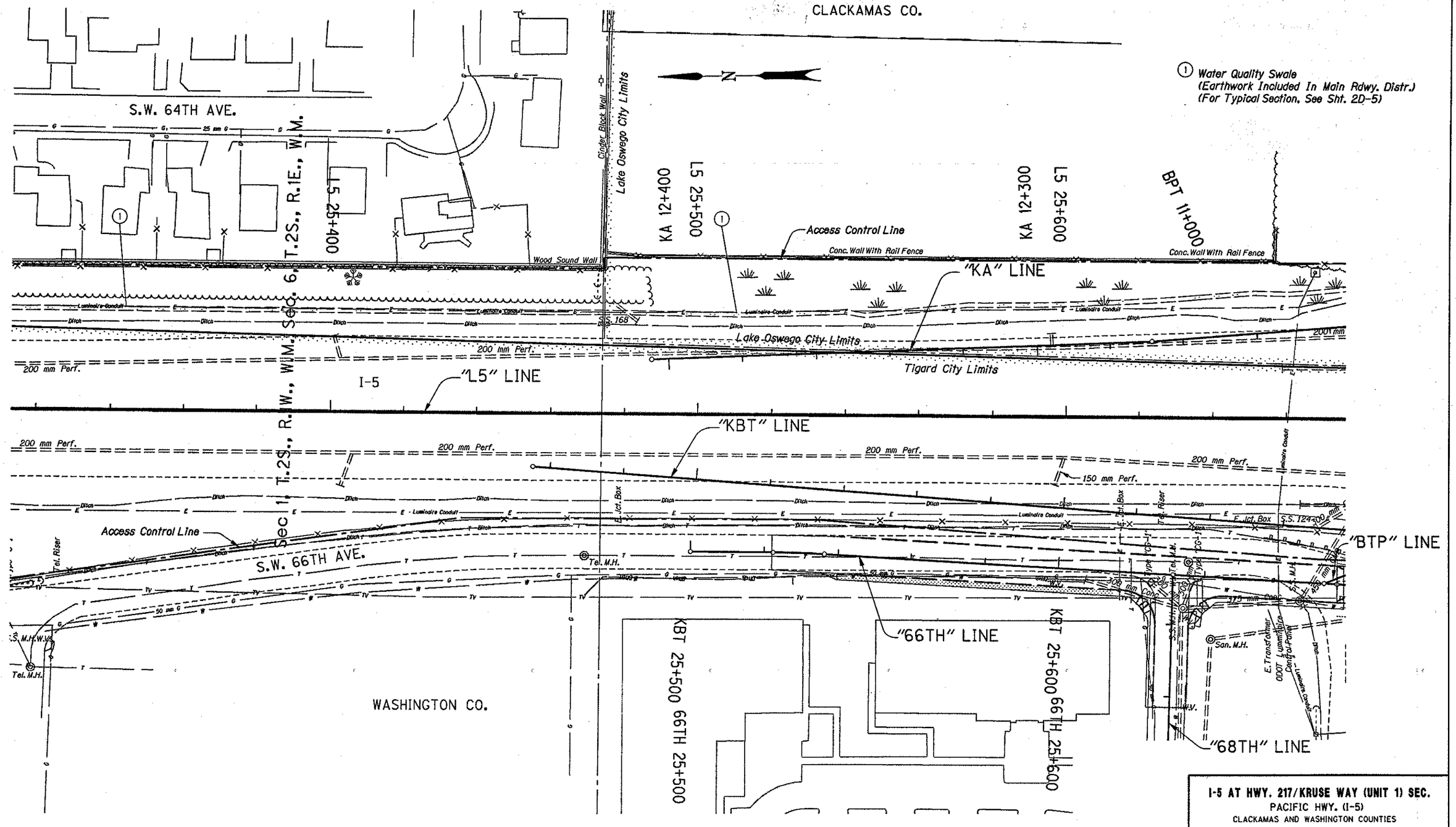
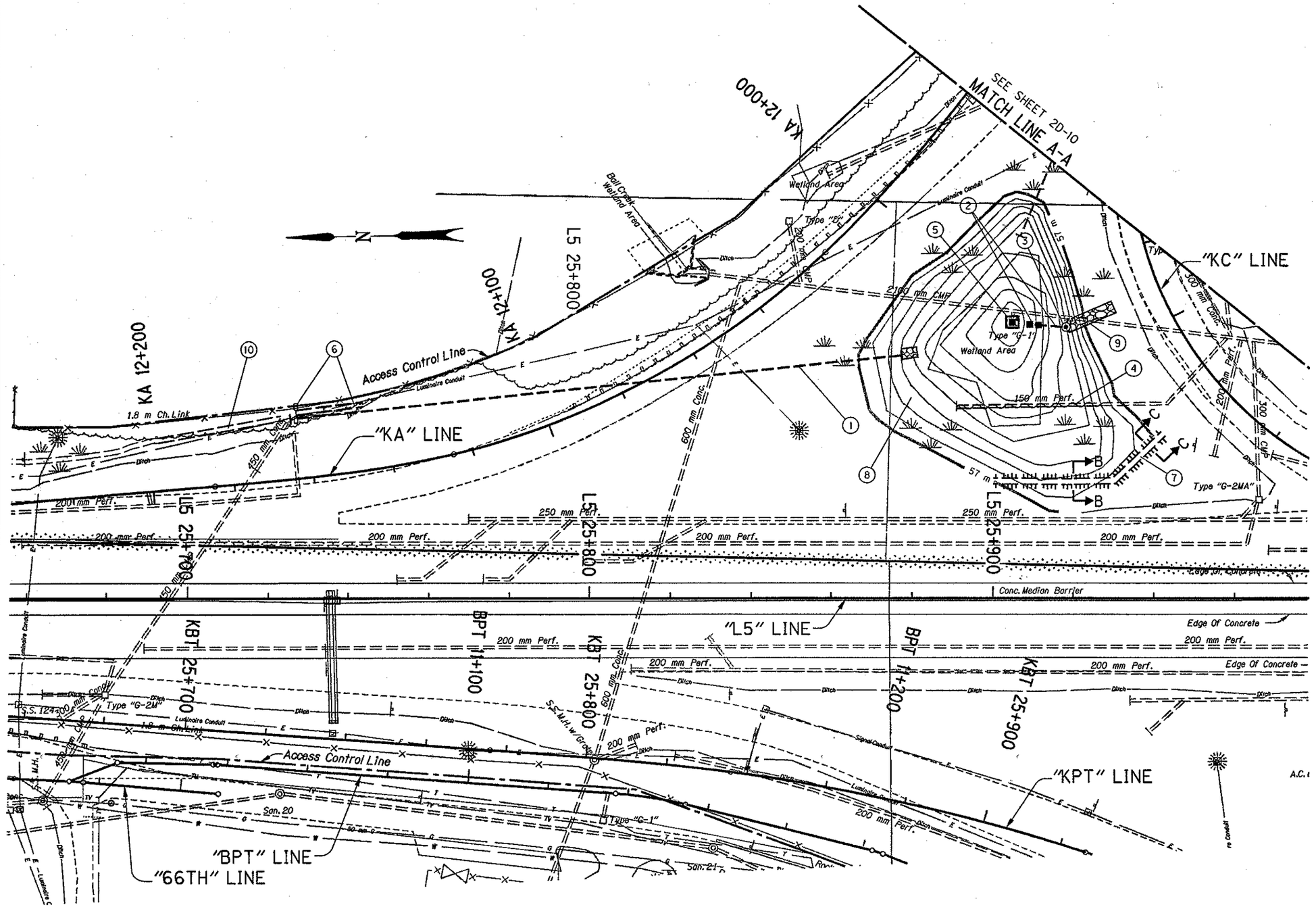
VIEW 6

WATER QUALITY PLAN



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-8

WATER QUALITY PLAN



(1) *Const. Riprap Basin*
Inst. 900 mm Sewer Pipe - 152 m
Tr. Exc. - 319 m³
(For Details, See Sht. 2B-3)

(2) *Water Quality Extended Dry Detention Outflow Device*
Inst. 300 mm Sewer Pipe - 6.0 m
(100 mm Corr. Poly. Sewer Pipe)
Tr. Exc. - 5.4 m³
(For Details, See Sht. 2D-3)

(3) *Const. "Special Manhole" With Overflow Riser And Cover*
Inst. 900 mm C.M.P. - 1.0 m
(Blind Connect To 2100 mm C.M.P.
Tr. Exc. - 2.1 m³
(For Details, See Sht. 2D)

(4) *Plug Existing 150 mm Perf.*

(5) *Const. Inlet Protection, Plug Inlet At Completion Of Project*
(For Details See Sht. 2E)

(6) *Const. Check Dam*
Const. Ditch - 20 m
Dt. Exc. - 24 m³
(For Details See Sht. 2E)

(7) *Const. Berm To Elev. 57.0*
Embankment - 68 m³
(Earthwork Included In Main Rdwy. Distr.)
(For Details, See Sht. 2D-6)

(8) *Existing Pond*

(9) *Const. Riprap Mattress*
(Class 50) Riprap - 16.2 m³
(For Details, See Sht. 2D-2)

(10) *See Sht. 2D-7, Note 1*

Check Dam In Ditch Section

Inlet Protection

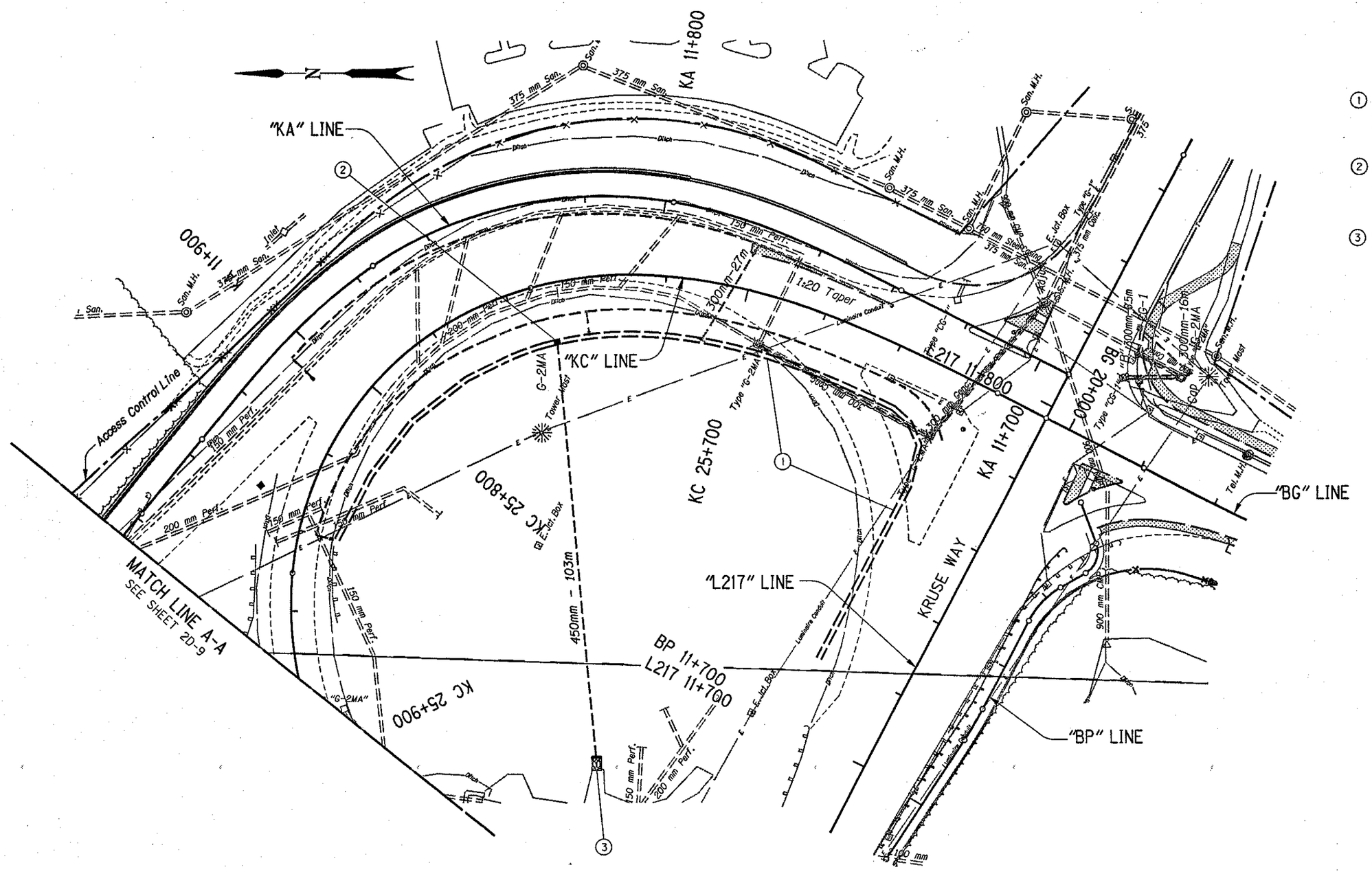
I-5 AT HWY. 217/KRUSE WAY (UNIT 1) SEC.
PACIFIC HWY. (I-5)
CLACKAMAS AND WASHINGTON COUNTIES

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D-9

VIEW 6

VIEW 6

WATER QUALITY PLAN



① Water Quality Swale
(Earthwork Included In Main Rdwy. Distr.)
(For Details, See Sht. 2D-5)

② Const. Type "G-2MA" Inlet
Inst. 450 mm Pipe - 103 m
Tr. Exc. - 108 m³

③ Const. Riprap Basin
(For Details, See Sht. 2B-3)

LEGEND

- Water Quality Swale
- Pipe
- Abandon Pipe
- Inlet
- Manhole

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-10

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VIEW 6
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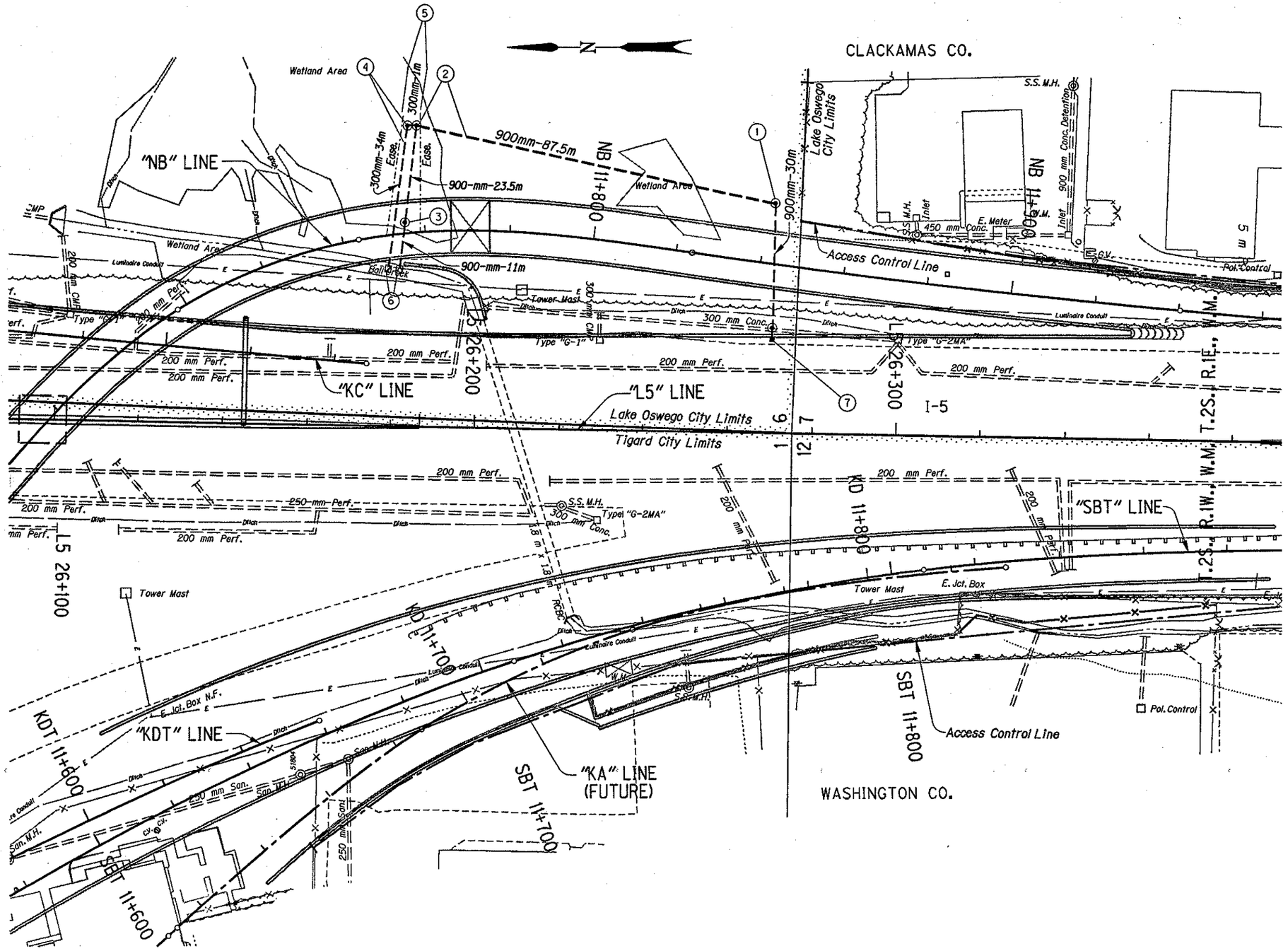
WATER QUALITY PLAN



1. Const. Manhole
   Inst. 900 mm Pipe - 33 m
   Tr. Exc. - 315 m³

2. Const. Manhole
   Inst. 900 mm Pipe - 85 m
   Tr. Exc. - 442 m³

3. Construct Manhole
   Inst. 900 mm Pipe - 25 m
   Tr. Exc. - 129 m³
   Inst. 900 mm Pipe - 10 m
   Tr. Exc. - 48 m³

4. Const. Water Quality Manhole
   Inst. 300 mm Pipe - 1.0 m
   Tr. Exc. - 3 m³
   Inst. 300 mm Pipe - 35 m
   Tr. Exc. - 93 m³
   (For Details, See Sht. 2D-4)

5. Const. Embankment
   Embankment - 75 m³
   (Earthwork Included In Main Rdwy. Distr.)
   (For Details, See Sht. 2D-6)

6. Const. Riprap Basin - 2
   (For Details See Sht. 2B-3)

7. See Sht. 9B-2, Note 1

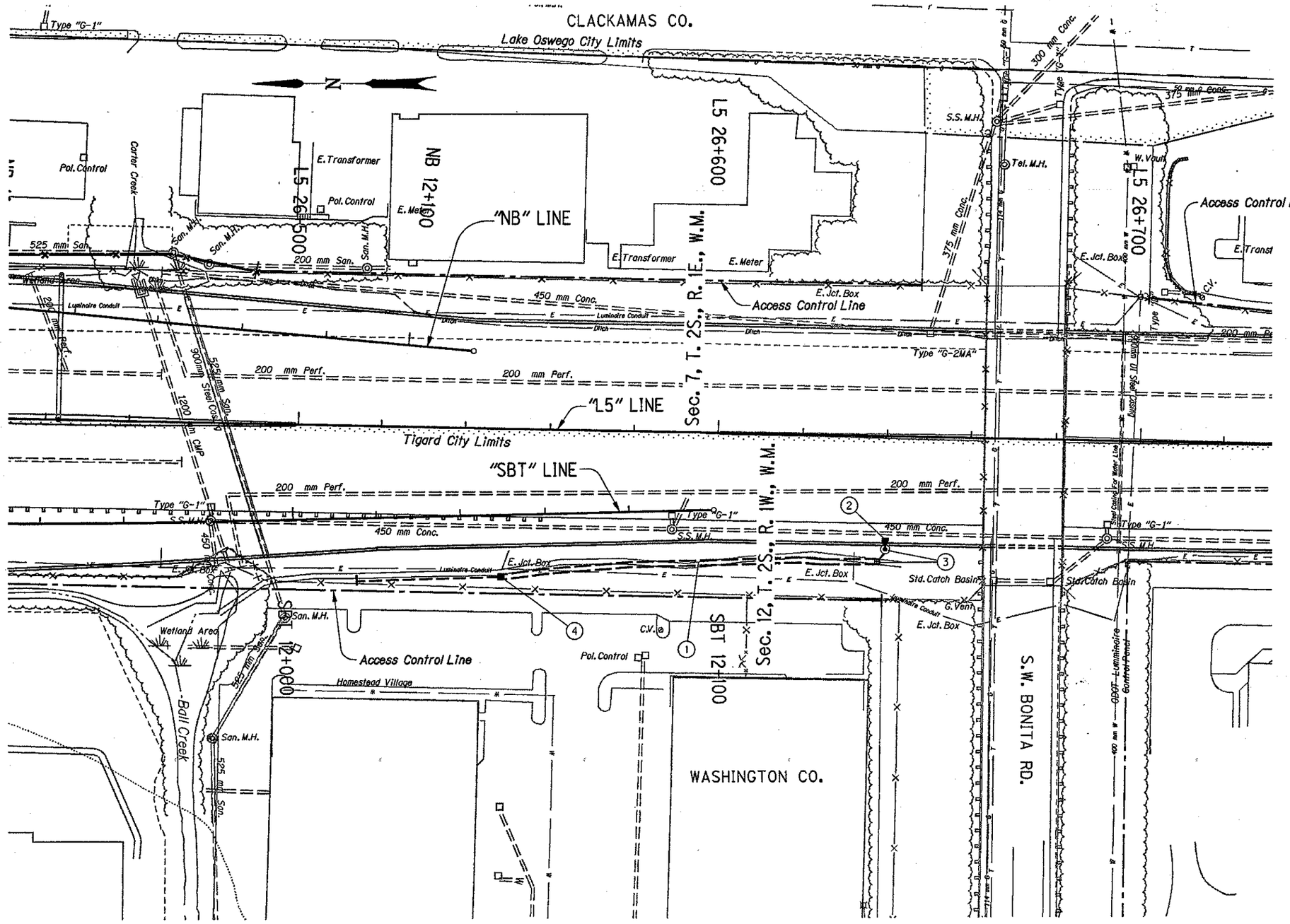
I-5 AT HWY. 217/KRUSE WAY (UNIT 1) SEC.
PACIFIC HWY. (I-5)
CLACKAMAS AND WASHINGTON COUNTIES

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		2D-11

VIEW 3

METRIC

WATER QUALITY PLAN



① Const. Water Quality Swale
Sta. "L5" 26+550 To Sta. "L5" 26+633
(Earthwork Included In Main Rdwy. Distr.)
(For Typical Sections, See Sht. 2D-6)
Dt. Exc. - 268 m³

② Const. Type "G2 Split Flow" Inlet
(For Details, See Sht. 2D-4)
Inst. 300 mm Pipe - 1.0 m
Tr. Exc. - 0.9m³

③ Const. Water Quality Manhole
Inst. 300 mm Pipe - 2.0 m
Tr. Exc. - 1.8 m³
(For Details, See Sht. 2D-4)
Const. Riprap Basin
(For Details, See Sht. 2B-3)

④ Const. Type "M-E" Inlet
Inst. 300 mm Pipe - 34 m
Tr. Exc. - 31 m³

LEGEND

===	Water Quality Swale
---	Place Pipe

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-12

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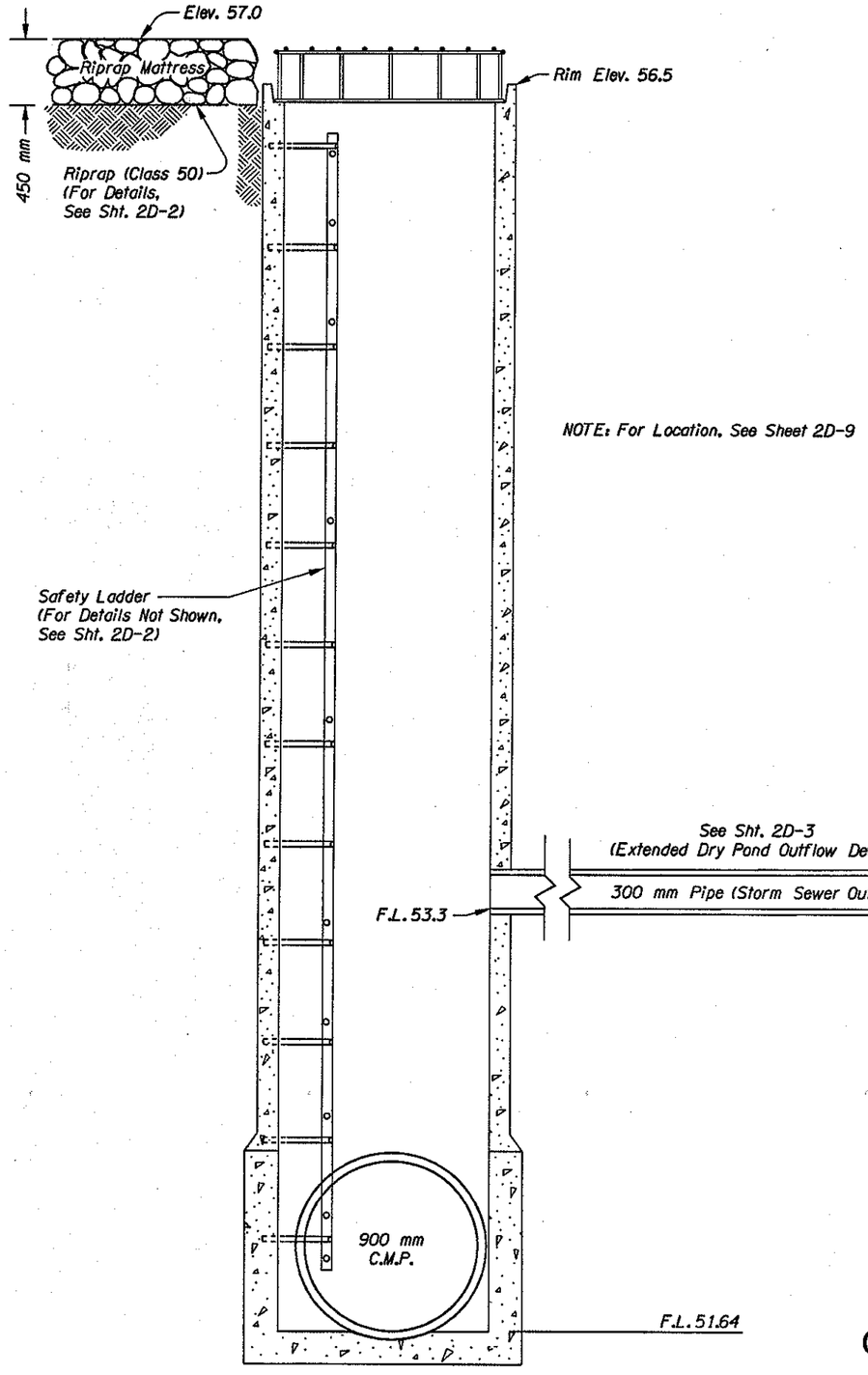
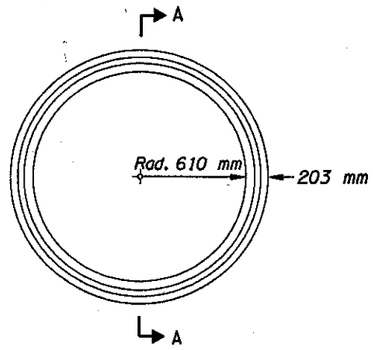
WATER QUALITY DETAIL

(For Details Not Shown, See Sht. 2D-2)

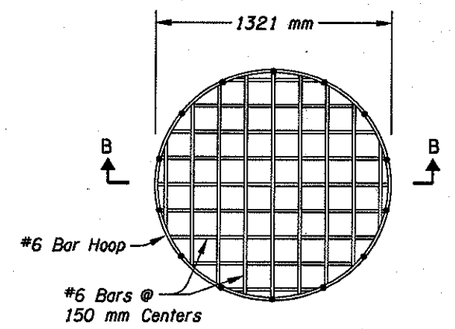


NOTE: For Location, See Sheet 2D-9

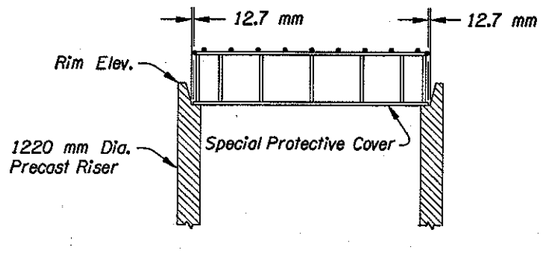
OVERFLOW RISER AND COVER



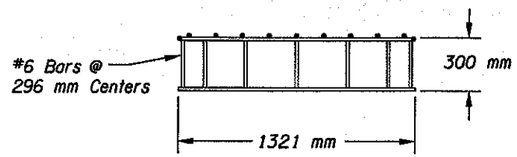
TOP VIEW



OVERFLOW RISER COVER



SECTION A-A



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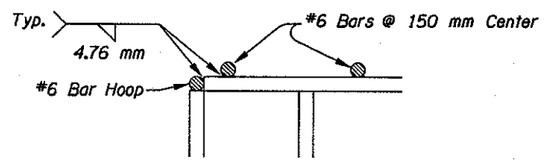


OVERFLOW RISER COVER WELDING

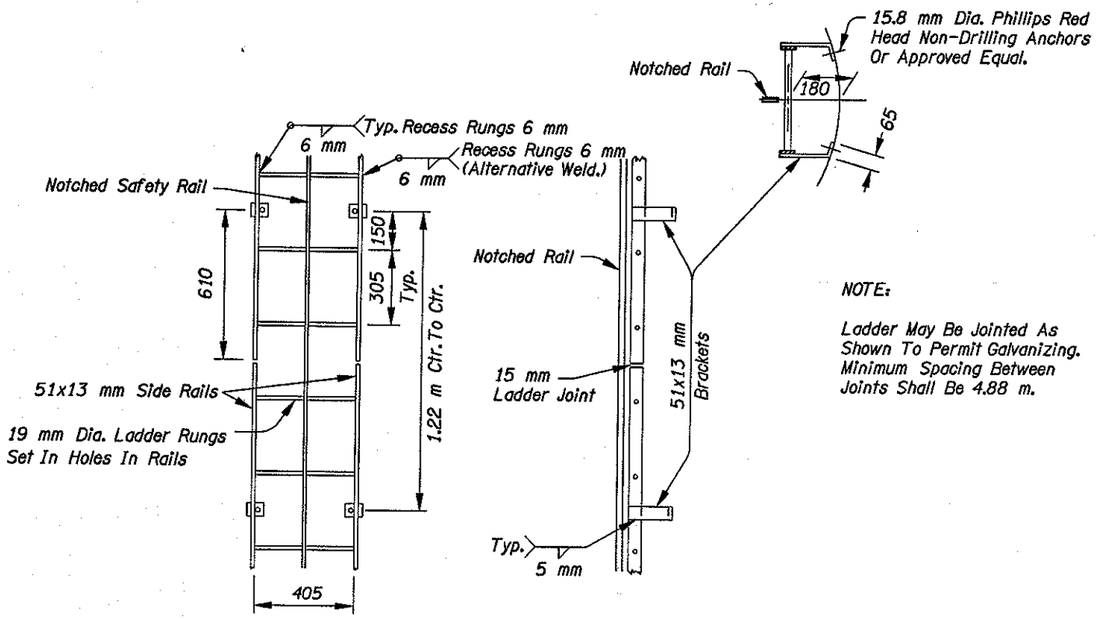
NOTE: The Riser Shall Meet The Requirements Of The Current AASHTO Standard Specification M199

The Special Protective Cover Shall Be Hot Galvanized After Fabrication In Conformance To Requirements Of AASHTO M111 (ASTM A 123)

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

WATER QUALITY PLANS & DETAILS	DESIGN ENGINEER	I-5 AT HWY. 217/KRUSE WAY (UNIT 1) SEC. PACIFIC HWY. (I-5) CLACKAMAS AND WASHINGTON COUNTIES			
Designed By Ted Armstrong Drafted By Jim Holeman	REGISTERED PROFESSIONAL ENGINEER 14,906 OREGON JULY 25, 1980 THEODORE ARMSTRONG Expires Dec. 31, 1999	FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
		REGION 10	OREGON DIVISION		2D

WATER QUALITY DETAIL



NOTE:

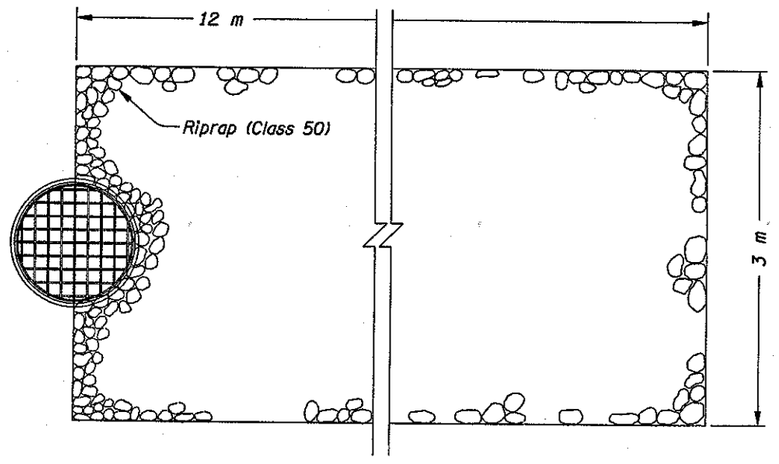
Ladder May Be Jointed As Shown To Permit Galvanizing. Minimum Spacing Between Joints Shall Be 4.88 m.

NOTE:

All Structural Steel Shall Be A36M.
All Bolts Shall Be A307.
All Material Shall Be Hot - Dipped Galvanized After Fabrication.

SAFETY LADDER

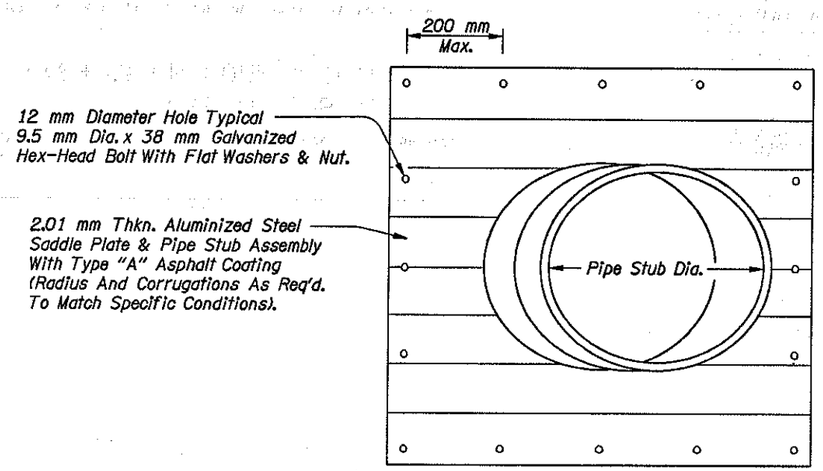
(For Details Not Shown, See Drg. Nos. RD324 & RD327)



RIPRAP MATTRESS

(See Sht. 2D-9)

CORRUGATED METAL PIPE SADDLE - T CONNECTION TO EXISTING CORRUGATED METAL PIPE



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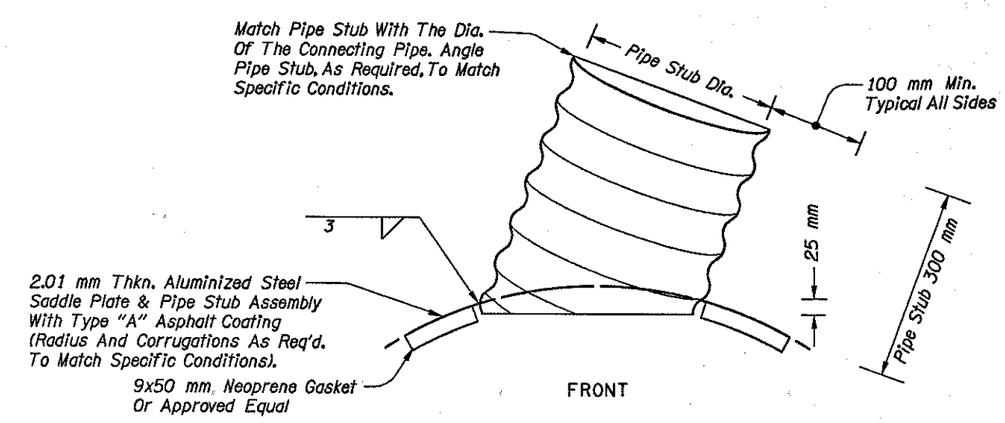

FRONT

(For Coupling Band Details, See Drg. No. RD354

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-2

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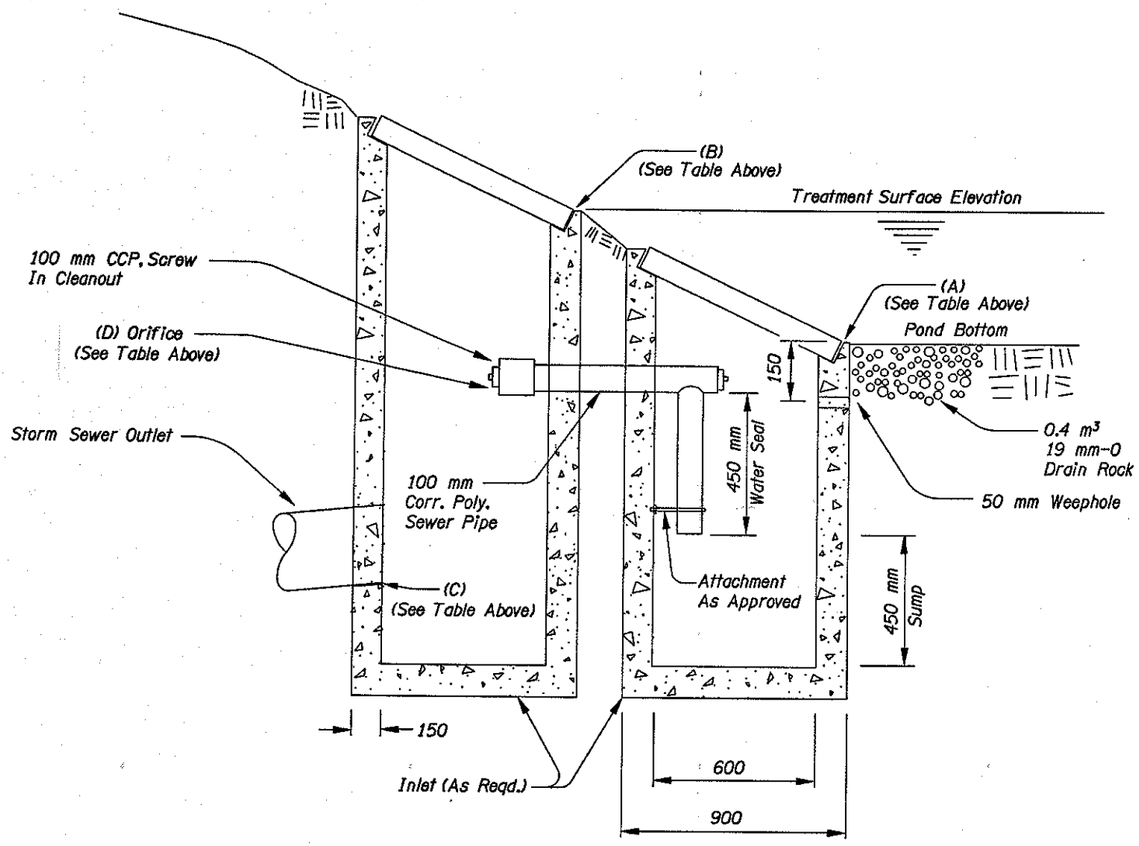
VIEW 2

VIEW 2

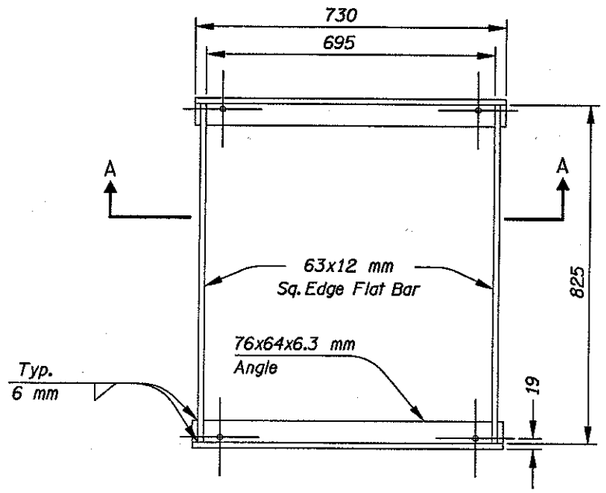
WATER QUALITY DETAIL

SHEET 2D-9 NOTE (2)	
A	Elev. 55.4 m
B	Elev. 56.1 m
C	Elev. 55.5 m
D	Dia. 23 mm

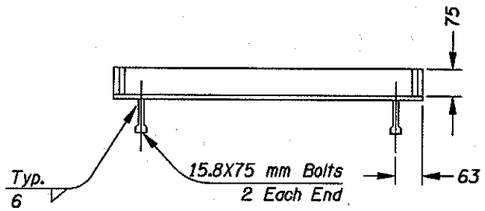


WASHINGTON COUNTY WATER QUALITY EXTENDED DRY POND OUTFLOW DEVICE

(See USA's - Design And Construction Standards - July 1996)
(Drg. No. 150)



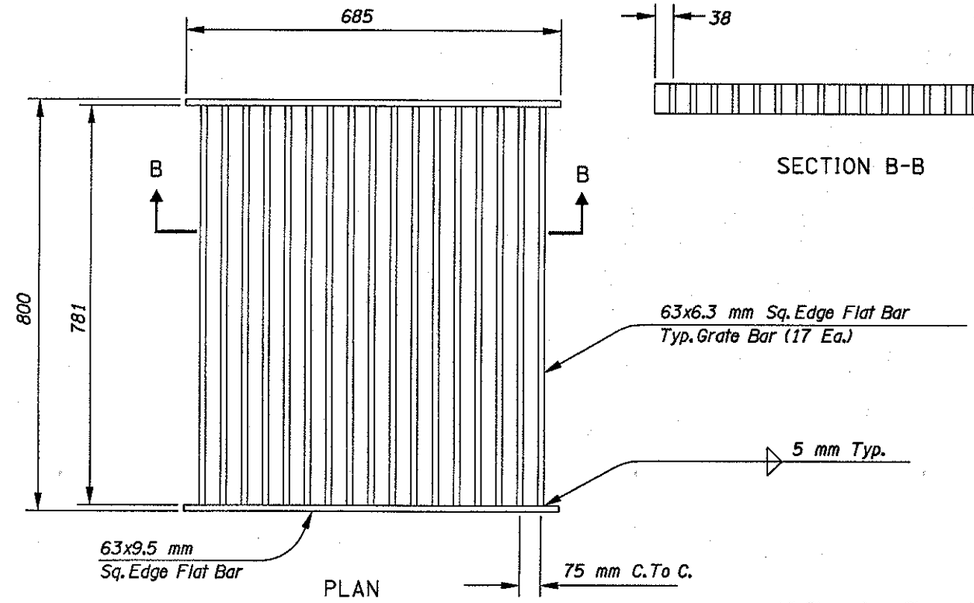
PLAN



SECTION A-A

Note:

Frame And Grate To Be Flat Bar Steel Or Approved Equal. To Be Used With Washington County Water Quality Extended Dry Pond Outflow Device



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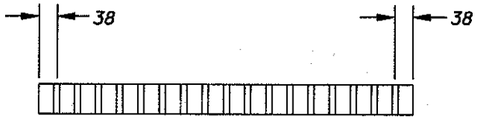

SECTION B-B

Note:
Frame And Grate To Be Flat Bar Steel Or Approved Equal.

WASHINGTON COUNTY DITCH INLET FRAME AND GRATE

(See USA's - Design And Construction Standards - July 1996)
(Drg. No. 150)

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-3

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VIEW 3
VIEW 3