OPERATION & MAINTENANCE MANUAL

DFI No. : D00229
Facility Type: Detention Pond

May, 2017

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00229**
Facility Type:	Detention Pond
Construction Drawings:	21V-011
Location:	District: 2B
	Highway No.: 002
	Mile Post: [11.38; 11.41]
	Description: This facility is located west of NE 148th Ave, south of I-84 and NE Pedestrian Trail, north of NE 146th Dr., and east of NE Knott Ct.

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: Unable to Obtain

Facility construction: 1994
Contractor: Unable to Obtain

4. 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 facility is located west of NE 148th Ave, south of I-84 and NE Pedestrian Trail, north of NE 146th Dr., and east of NE Knott Ct. Access can be obtained from a maintenance road located on NE 148th Ave.

There is a series of manholes and inlets, connected to 12 and 36 inch pipes, conveying flows toward this facility. A 36 inch pipe ultimately conveys stormwater runoff into a 200 ft. x 105 ft. detention pond at the facility inlet. The detention pond contains a canal gate, allowing stormwater to be contained in the event of a hazardous material spill; see points C in the Operational Plan, Appendix A.

The detention pond at the facility inlet is used to handle both regularly occurring lower flow and higher flow stormwater events. The set of canal gates are used as valves to direct the water volume contained within the facility. Stormwater events, occurring after a hazardous material spill has been contained in the pond and prior to proper cleanup, are restrained by closing the canal gate.

A. Maintenance equipment access:
   The facility is accessible via NE 148th Avenue. Access is limited by a gravel pathway and gated entrance.

B. Heavy equipment access into facility:

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

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☒ Liners; A polyethylene liner lines the bottom of the ponds/swales.
☐ Underdrain

Photo 1: Facility access.

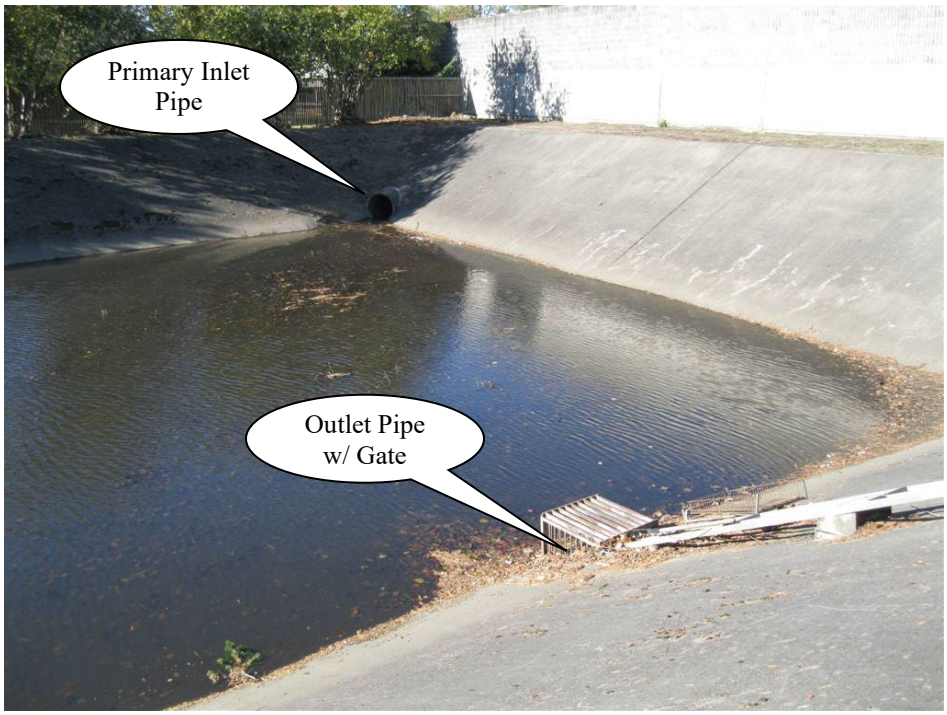


Photo 2: Detention pond primary inlet and outlet.

Photo 3: Secondary inlet.

Photo 4: Detention pond outlet with gate.

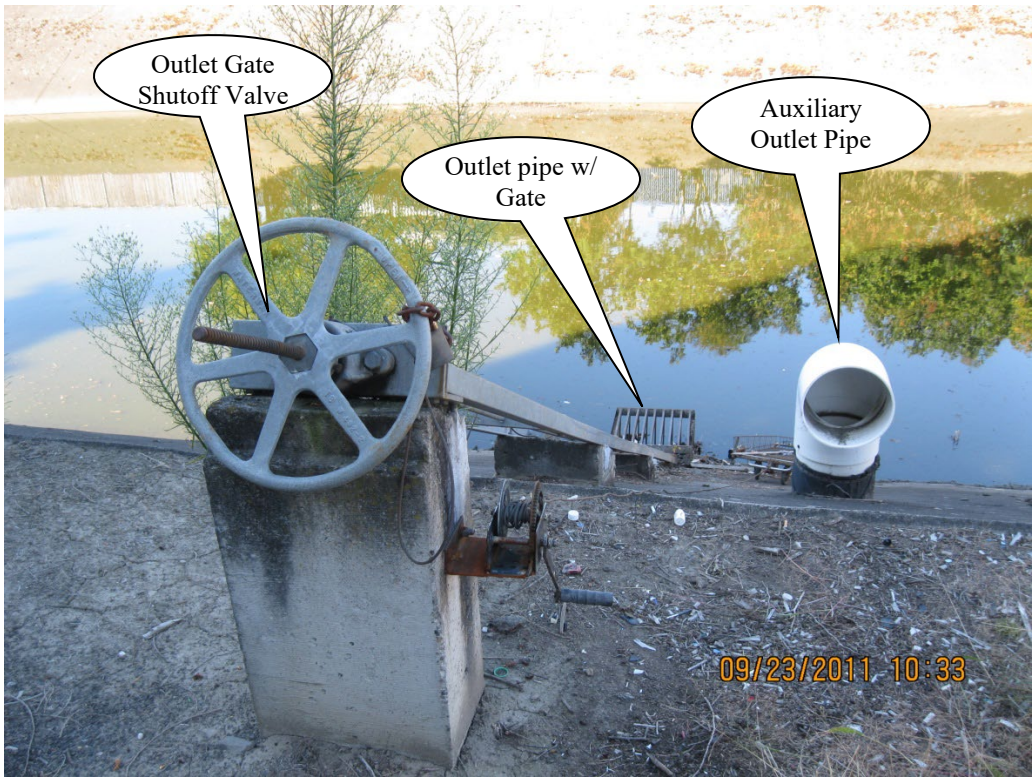


Photo 5: Outlet gate shutoff valve and auxiliary outlet pipe.

5. Facility Haz Mat Spill Feature(s)

The Detention Pond Facility can be used to store a volume of liquid by closing the 2 canal gates located at the high and low flow outlet of the Detention Pond Facility. This pipe is noted as point C in Appendix A.

Should a hazardous spill event ever occur, the canal gate may be operated as suggested above, closing the outlet flow and giving maintenance personnel the ability to temporarily hold the liquids while the spill is contained and eventual removal occurs. The pond is lined with an impermeable membrane found below the topsoil. Contaminated, hazardous liquids will likely be held within the pond such that staff should be able to pump them out and remove appropriate amounts of topsoil while satisfying properly approved of disposal practices

6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure cannot 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
An auxiliary bypass is included along the Canal Gate frame (see Photo 5).

☐ Other, as noted below

7. Maintenance Actions

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 actions for ponds, swales, filter strips, bioslopes, and detention tanks and vaults. Special maintenance actions in addition to the routine actions 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 actions 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 actions 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 actions:

Note: Special Maintenance Actions 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 road waste 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

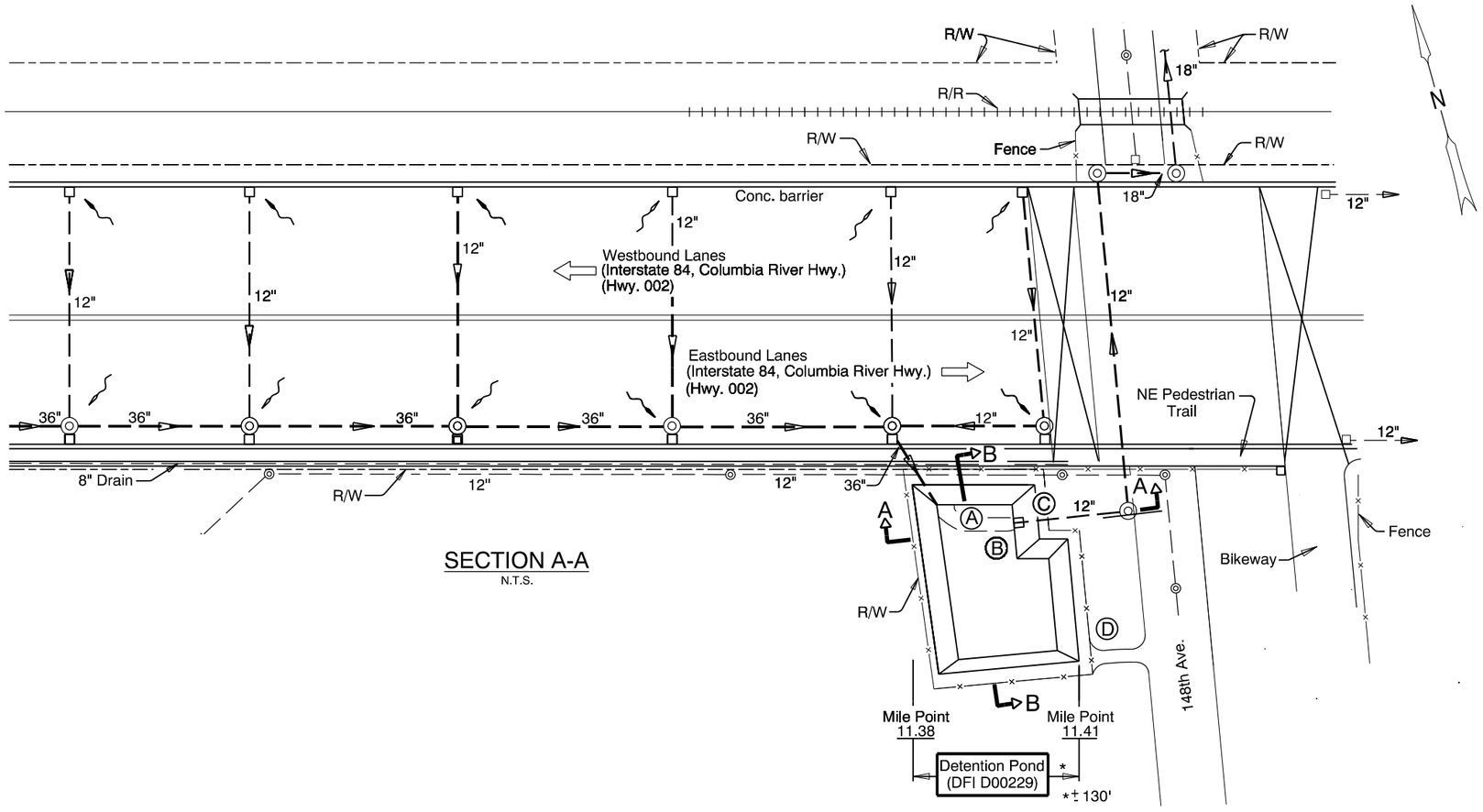
Contact any of the following for more detailed information about management of waste materials found on site:

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:

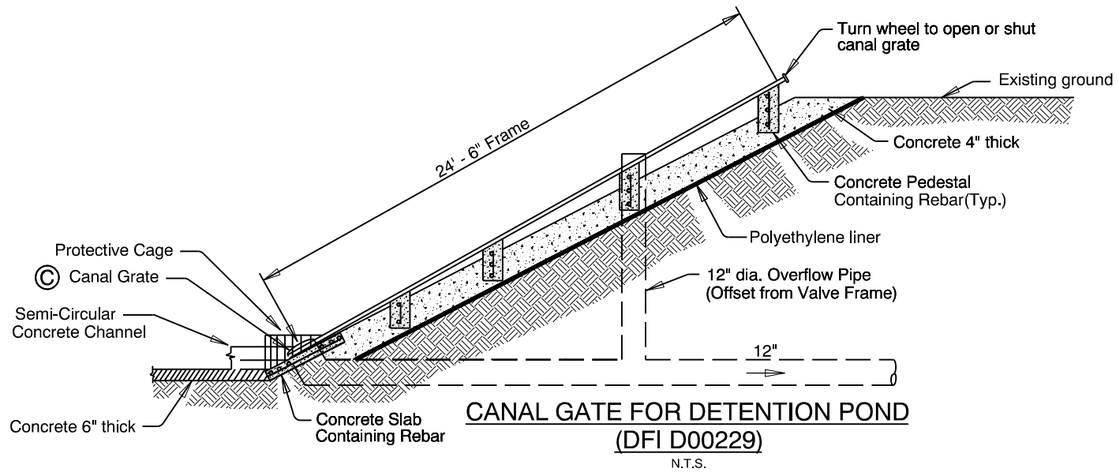
- **Operational Plan and Profile Drawing(s)**



SECTION A-A
N.T.S.

LEGEND:

- Photo Location / Direction
- (A) Pipe Oufall of Pond Inlet
- (B) Semi-Circular Concrete Channel
- (C) Canal Gate at Pond Outlet
- (D) Maintenance Access
- Manhole
- Inlet
- Traffic direction / Flow
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path



CANAL GATE FOR DETENTION POND
(DFI D00229)
N.T.S.

Sheet 1 of 2

Prepared By: Wynee Hu

Drafted By: Chris Wallen

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00229
MAINTENANCE DISTRICT 2B HWY 002
DETENTION POND
COLUMBIA RIVER HIGHWAY MP 11.38-11.41
MULTNOMAH COUNTY

THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

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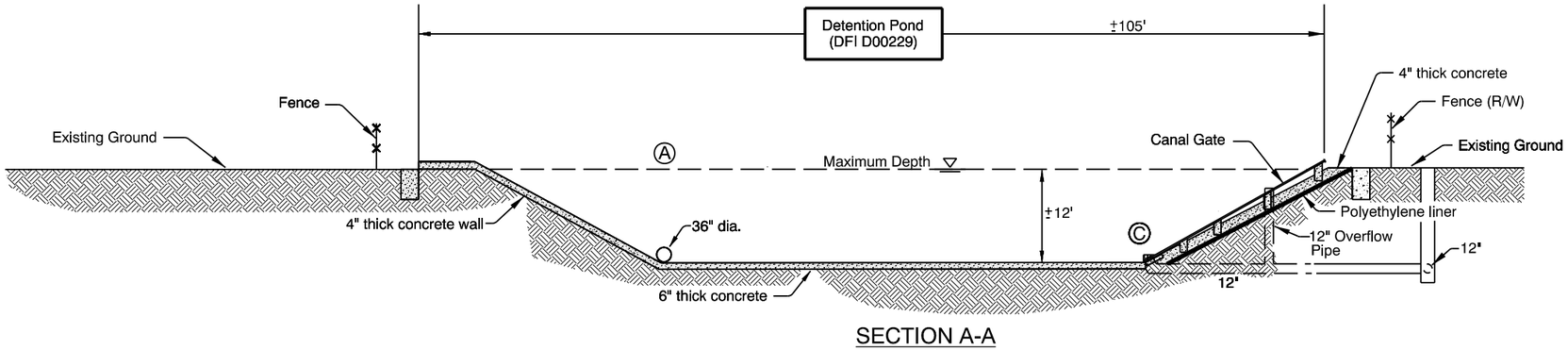
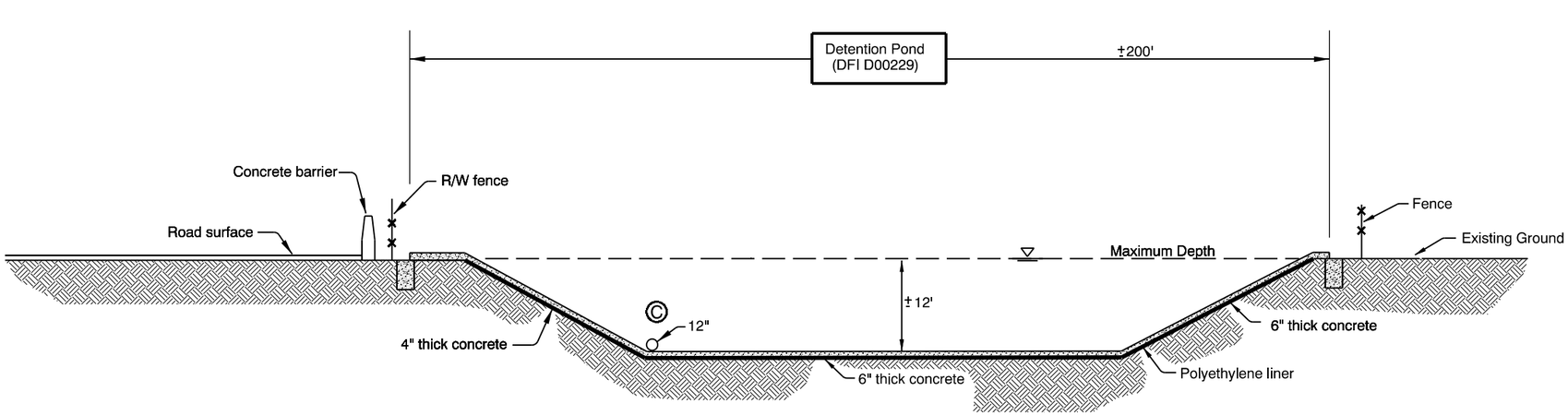


SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

CANAL GATE FOR DETENTION POND
(DFI D00229)
N.T.S.

Sheet 2 of 2

Prepared By: Wynee Hu

Drafted By: Chris Wallen

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00229
MAINTENANCE DISTRICT 2B HWY 002
DETENTION POND
COLUMBIA RIVER HIGHWAY MP 11.38-11.41
MULTNOMAH COUNTY

THIS IS THE FILENAME LOCATION ********** DD-MMM-YYYY HH:MM USERNAME

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Appendix B

Content:

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

21V-11

N.E. 111TH DR. - N.E. 181ST AVE. SEC. COLUMBIA RIVER HIGHWAY MULTNOMAH COUNTY				SHEET No. 1
FED. ROAD Div. No.	STATE	PROJECT NUMBER	FISCAL YEAR	TOTAL SHEETS
10	OREGON	I-IR-84-1(11)10		See Index

Overall Length Of Project - 3.40 Miles

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY DIVISION

PLANS FOR PROPOSED PROJECT

GRADING, PAVING, STRUCTURES, SIGNING, ILLUMINATION & SIGNALS

N.E. 111TH DR. - N.E. 181ST AVE. SEC.

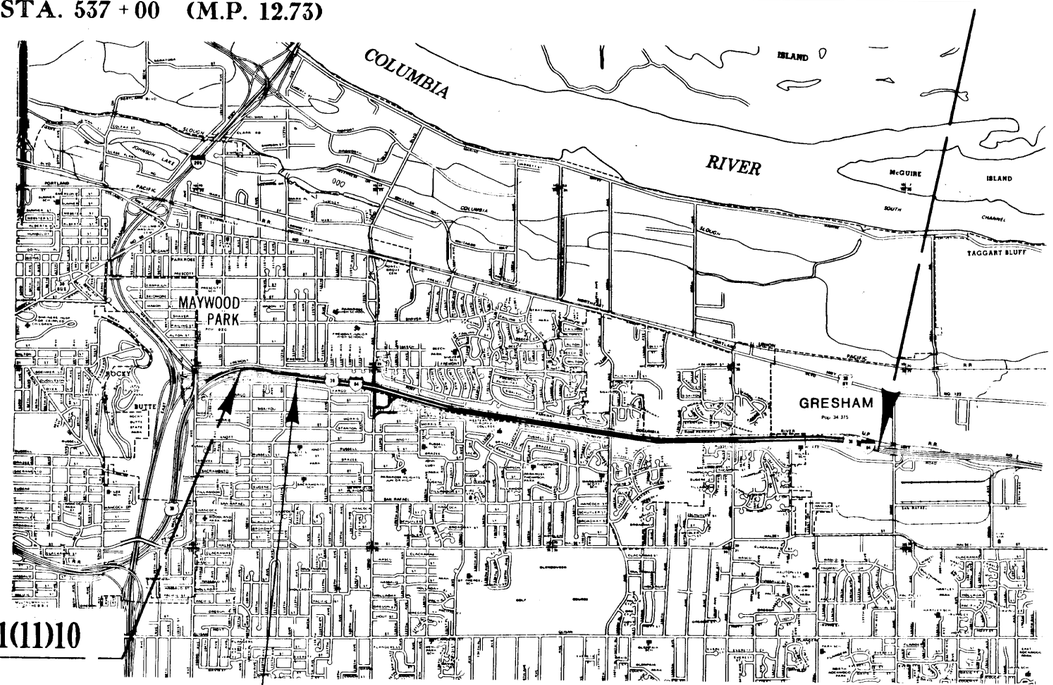
COLUMBIA RIVER HIGHWAY

MULTNOMAH COUNTY

DECEMBER, 1987

END OF PROJECT I-IR-84-1(11)10

STA. 537 + 00 (M.P. 12.73)



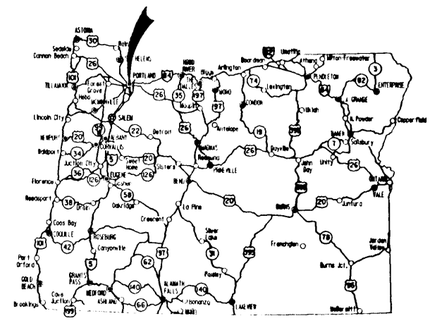
BEGINNING OF PROJECT I-IR-84-1(11)10

STA. 227 + 00 (M.P. 9.33)

EQUA. = STA. 387+82.01 Ah. = STA. 207+63.00 Bk.

Sketch Map

Scale 0 2000 4000 Feet



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INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Drawing Numbers
2, 2A, 2A-2, Thru 2A-9 Incl.	Typical Sections
2B, 2B-2 Thru 2B-12 Incl.	Details
2C, 2C-2 Thru 2C-7 Incl.	Pipe Data
2D	Vicinity Map
2E, 2E-2 Thru 2E-29 Incl.	Stage Construction, Temporary Protection & Direction Of Traffic
2F, 2F-2, 2F-3	Summary
3, 4, 5	Alignment & General Construction
5A	Drainage Plan
6	Alignment & General Construction
6A	Drainage Plan
7	Alignment & General Construction
7A	Construction Notes
7B	Utilities & Drainage
7B-2	Drainage Notes
7C, 7C-2, 7C-3	Profiles
8	Alignment & General Construction
8A	Drainage Plan
9	Alignment & General Construction
9A	Drainage Plan
10	Alignment & General Construction
10A	Drainage Plan
11	Alignment & General Construction
11A	Drainage Plan
12	Alignment & General Construction
12A	Drainage Plan
12B	Alignment & Drainage Plan
12C	Bikeway Profiles
13	Alignment & General Construction
13A	Drainage Plan
14	Alignment & General Construction
14A	Drainage Plan
15	Alignment & General Construction
15A	Drainage Plan
16	Alignment & General Construction
16A	Drainage Plan
17	Alignment & General Construction
17A	Drainage Plan
18	Alignment & Drainage Plan
19	Alignment & Drainage Plan

REGISTERED PROFESSIONAL ENGINEER 8075 OREGON JULY 22, 1986 WAYNE F. CUBINE

OREGON TRANSPORTATION COMMISSION

Michael P. Hollern	CHAIRMAN
John Whitty	VICE CHAIRMAN
David F. Bolender	COMMISSIONER
Cynthia J. Ford	COMMISSIONER
Robert F. Duvall	COMMISSIONER
Robert N. Bothman	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER 3668 OREGON MAY 7, 1984 L. W. RULFEN

REGISTERED PROFESSIONAL ENGINEER 4861 OREGON MAY 9, 1980 DONALD R. ADAMS

L. W. Rulfen — STATE HIGHWAY ENGINEER

Donald R. Adams — ASSISTANT STATE HIGHWAY ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

FIELD OPERATIONS ENGINEER — DATE

10-19-87

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VIEW=A5

N.E. 111TH DR. - N.E. 181 ST. AVE. SEC. COLUMBIA RIVER HIGHWAY MULTNOMAH COUNTY				SHEET No. 12A
FED. ROAD Div. No.	STATE	PROJECT NUMBER	FISCAL YEAR	TOTAL SHEETS
10	OREGON	I-IR-84-1(11)10		See Index

UTILITIES & DRAINAGE PLAN

(1) See Sht 11A, Note 6

(2) Sta. 470+75
Const. Manhole
Const. Type "G-2" Inlets - 2
Inst. 12" Sew. Pipe - 118'
Inst. 36" Sew. Pipe - 174'
Tr. Exc.- 657 C.Y.

(3) Sta. 472+50
Const. Manhole
Const. Type "G-2" Inlets - 3
Inst. 8" Sew. Pipe - 12'
Inst. 12" Sew. Pipe - 118'
Inst. 36" Sew. Pipe - 174'
Tr. Exc.- 701 C.Y.

(4) Sta. 474+25
Const. Manhole
Const. Type "G-2" Inlets - 2
Inst. 12" Sew. Pipe - 118'
Inst. 36" Sew. Pipe - 174'
Tr. Exc.- 734 C.Y.

(5) Sta. 477+00
Const. Manhole
Const. Type "G-2" Inlets - 2
Inst. 12" Sew. Pipe - 258'
Inst. 36" Sew. Pipe - 374'
Tr. Exc.- 1,868 C.Y.

(6) Sta. 478+50
Const. Manhole
Const. Type "G-2" Inlets - 3
Inst. 8" Sew. Pipe - 12'
Inst. 12" Sew. Pipe - 118'
Tr. Exc.- 36 C.Y.

(7) Sta. 82+44
Const. Manhole
Inst. 12" Sew. Pipe - 80'
Inst. 12" Overflow Pipe - 10'
With 12" Tee Connection
Inst. 12" Pipe Gate
With Shutoff Valve
Tr. Exc. - 116 C.Y.
(For Details, See Sht 28-7)

(8) Sta. 80+64 (Rt.)
Const. Manhole
Inst. 12" Sew. Pipe - 180'
Tr. Exc.- 122 C.Y.

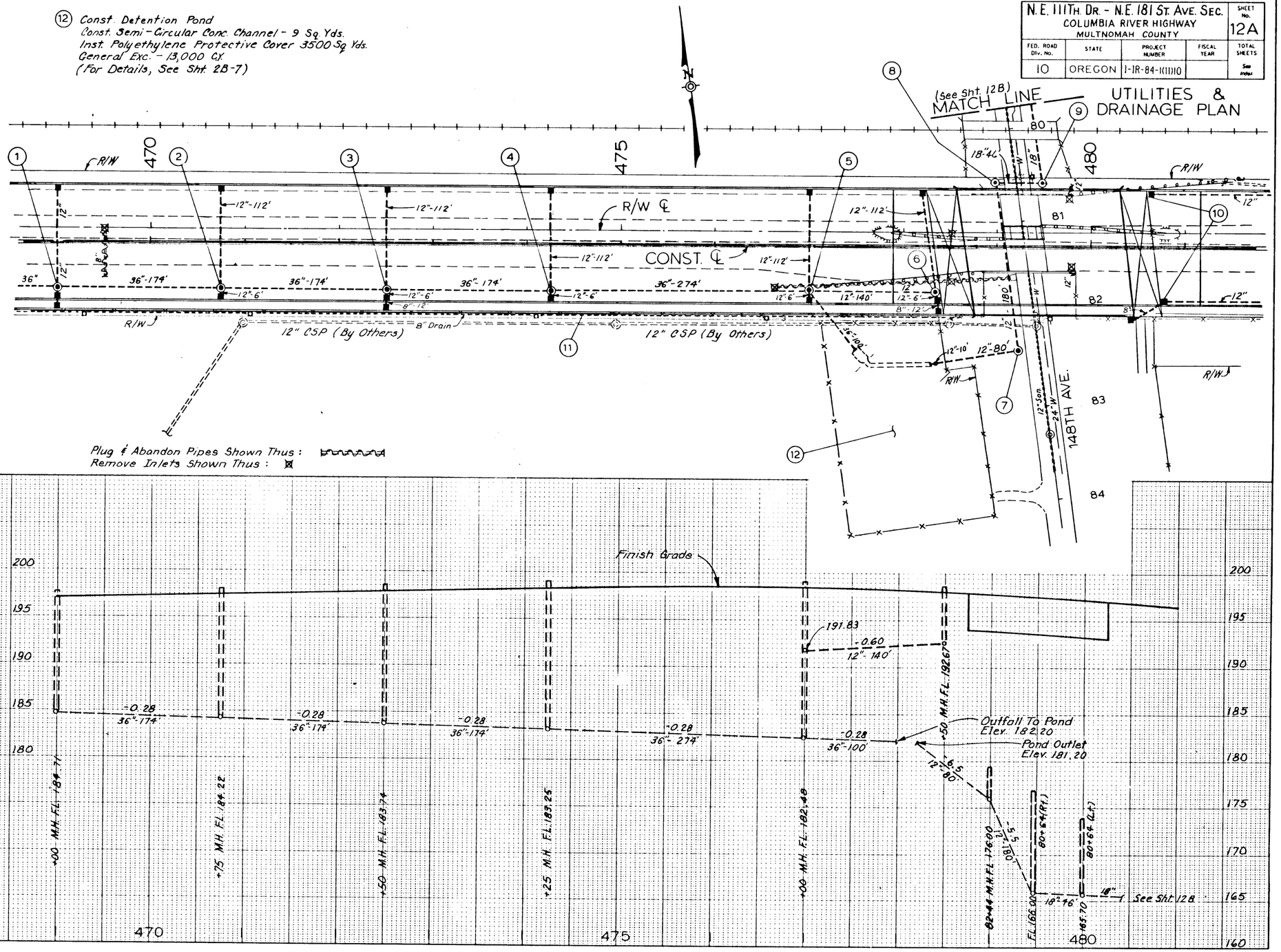
(9) Sta. 80+64 (Lt.)
Const. Manhole
Inst. 18" Sew. Pipe - 46'
Under Pvmt. - 26'
Tr. Exc. - 42 C.Y.

(10) See Sht. 13A, Note 1

(11) See Sht. 11A, Note 4

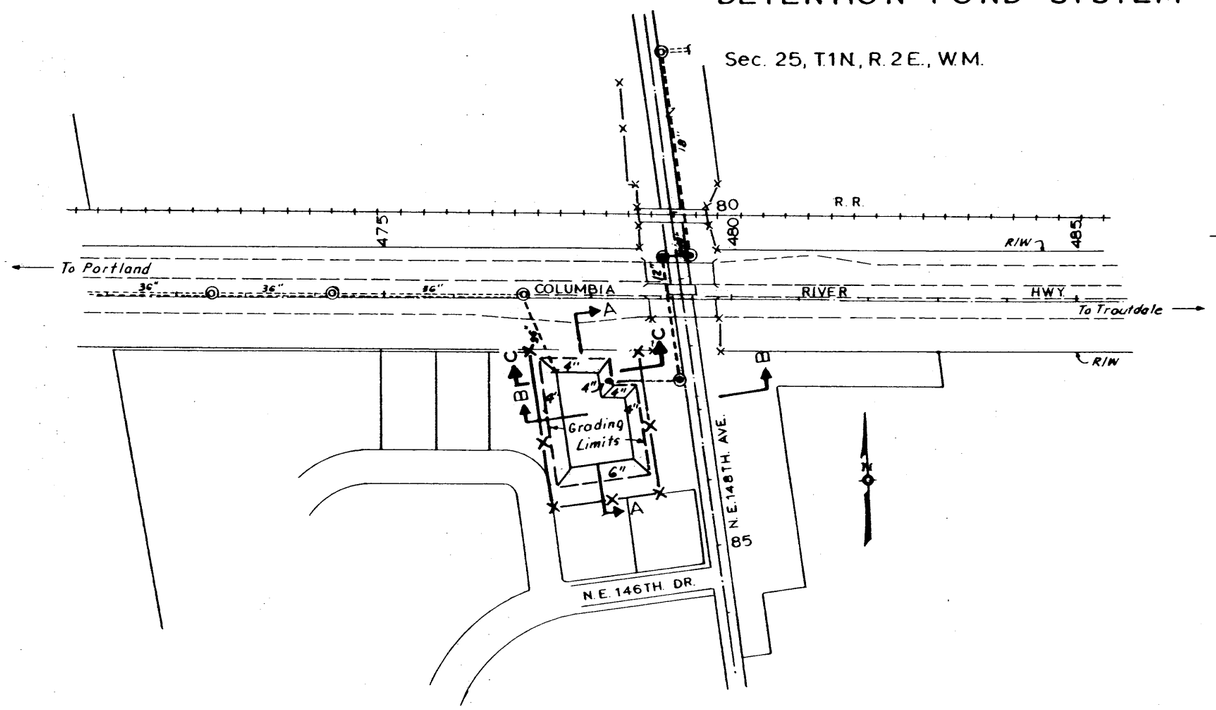
(12) Const. Detention Pond
Const. Semi-Circular Conc. Channel - 9 Sq. Yds.
Inst. Polyethylene Protective Cover 3500 Sq. Yds.
General Exc. - 13,000 C.Y.
(For Details, See Sht. 28-7)

Plug & Abandon Pipes Shown Thus:
Remove Inlets Shown Thus:



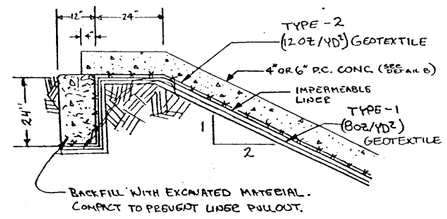
DETENTION POND SYSTEM

Sec. 25, T1N, R.2E., W.M.



Vicinity Map

Scale 0 100 200 Feet



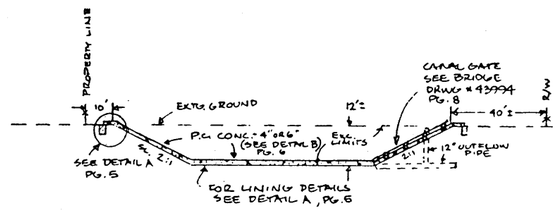
STANDARD ANCHOR TRENCH

NOTE: ANCHOR TRENCH IS TO BE CONSTRUCTED AROUND POND PERIMETER.

DETAIL (A)

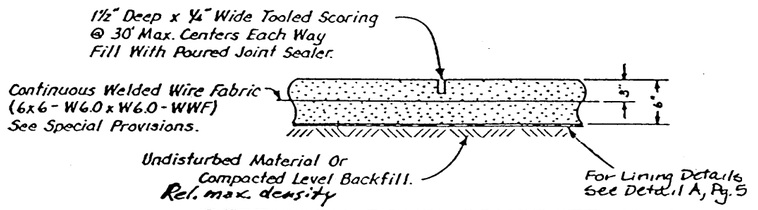
N.E. 111TH DR - N.E. 181ST. AVE. SEC. COLUMBIA RIVER HIGHWAY MULTNOMAH COUNTY				SHEET No. 2B-7
FED. ROAD DIV. NO.	STATE	PROJECT NUMBER	FISCAL YEAR	TOTAL SHEETS
10	OREGON	I-IR-84-(111)10		See Index

"AS CONSTRUCTED"
Jack Jones
PROJECT MANAGER
12-15-94
DATE

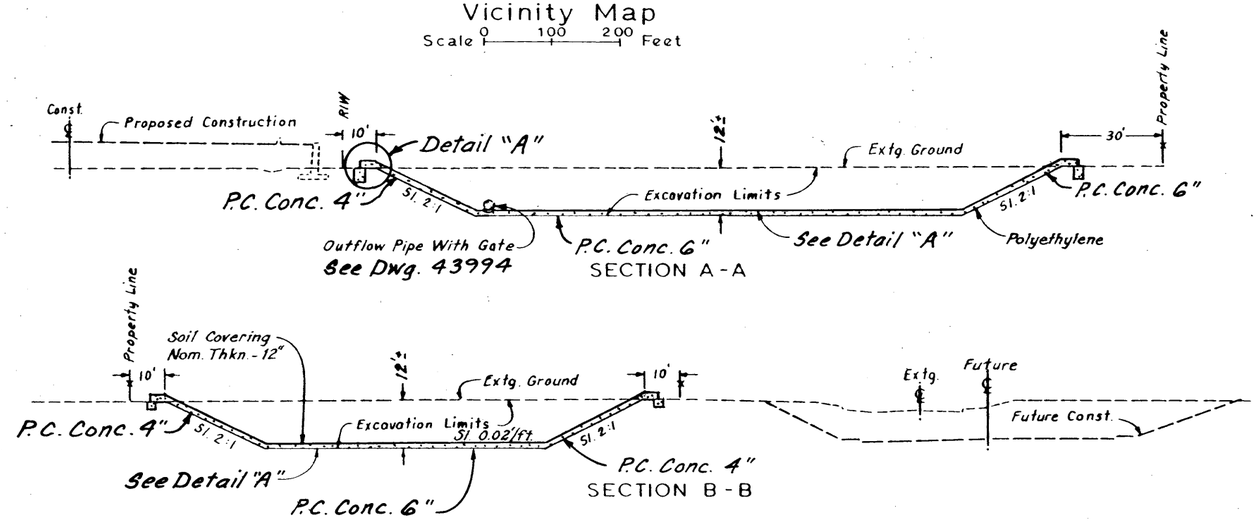


SECTION C-C

NOTE:
Min. Splice Length For This
6x6 - W6 x W6 - WWF Is 8"

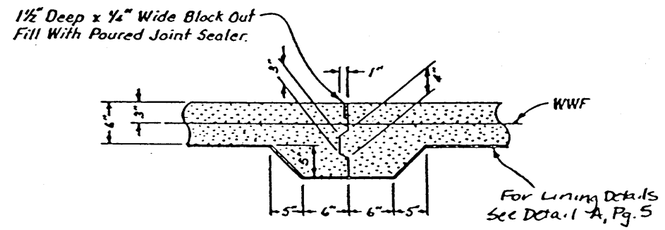


DETENTION POND CONCRETE SLAB



SECTION A-A

SECTION B-B



CONSTRUCTION JOINT