# OPERATION & MAINTENANCE MANUAL

## DFI No. : D00131
## Facility Type: Detention Pond/Water Quality Biofiltration Swale Combo

**JUNE, 2011**

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**APPENDIX A:** Operational Plan and Profile Drawing(s)

**APPENDIX B:** ODOT Project Plan Sheets

## 1. Identification

| | |
|---|---|
| Drainage Facility ID (DFI): | **D00131** |
| Facility Type: | Detention pond/water quality biofiltration swale combo |
| Construction Drawings: | (V-File Number) 39V-058 |
| Location: | District: 2B (Old 2A) |
| | Highway No.: 064 |
| | Mile Post: 6.21/6.29(beg./end) |
| | Description: This facility is located in the median of I-205 (Hwy 64) just west of the 10th Street Interchange near West Linn, Oregon. Access is obtained from the shoulder areas of I-205 (Hwy 64). |

## 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: | Consultant Designer – OBEC Consultant Engineers, Jerome D. Lane, 503-589-4100 |
| Facility construction: | 2006 |
| Contractor: | Oregon Mainline Paving, LLC |

## 4. Storm Drain System and Facility Overview

A detention pond/water quality biofiltration swale combo (referred to from this point forward as a pond/swale combo) combines the forms and functions of a water quality swale and a detention pond. In a pond/swale combo, the biofiltration swale is situated within the bottom confines of the detention facility. The facility provides water quality treatment of the smaller storm events and detention of the larger storm events.

The biofiltration swale is designed as if it was a separate facility and consists of a grassy-lined facility with a flat trapezoidal cross section and gradual slope. Treatment is provided through sedimentation and filtration processes. If amended soils are present, additional treatment is obtained through infiltration through the amended soil media.

When the flows exceed the water quality flows, the pond/swale combo facility begins to provide detention. Detention is required to reduce or mitigate the increases in discharge, resulting from development. The facility is designed to store and gradually release (or attenuate) stormwater runoff via a control structure or release mechanism, then releasing it slowly over a more extended period of time. The flow control mechanism for this facility involves a 4-inch orifice surrounded by a wirecloth strainer assembly. When flows exceed the water quality design flow, the orifice restricts the flow causing the water to backup within the facility.

This particular facility is located in the median area of I-205 (Hwy 64), just west of the I-205 (Hwy 64) and 10$^{th}$ Street Interchange near West Linn, Oregon. An access driveway is located along the left shoulder of northbound I-205 (Hwy 64), approximately 1/10$^{th}$ mile prior to the 10$^{th}$ Street Interchange.

Highway runoff in the form of sheet flow is conveyed to the facility. Stormwater is both treated and detained in the facility as necessary while it flows eastward toward an outlet control structure before being redirected to the south via a 15-inch pipe. The water is finally conveyed to an outfall and a nearby waterway adjacent to the northbound off ramp; see Point C, on the Operational Plan, Appendix A. The outlet control structure itself (Point B on the Operational Plans) contains a 3-inch orifice which controls the flow of water, being released from the facility – and detains higher flows unable to pass through the orifice until the peak rainfall/flow event passes.

A. Maintenance equipment access:

An access driveway and parking area is located along the left shoulder of northbound I-205 (Hwy 64), approximately 1/10$^{th}$ mile prior to the 10$^{th}$ Street overpass.

B. Heavy equipment access into facility:

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

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

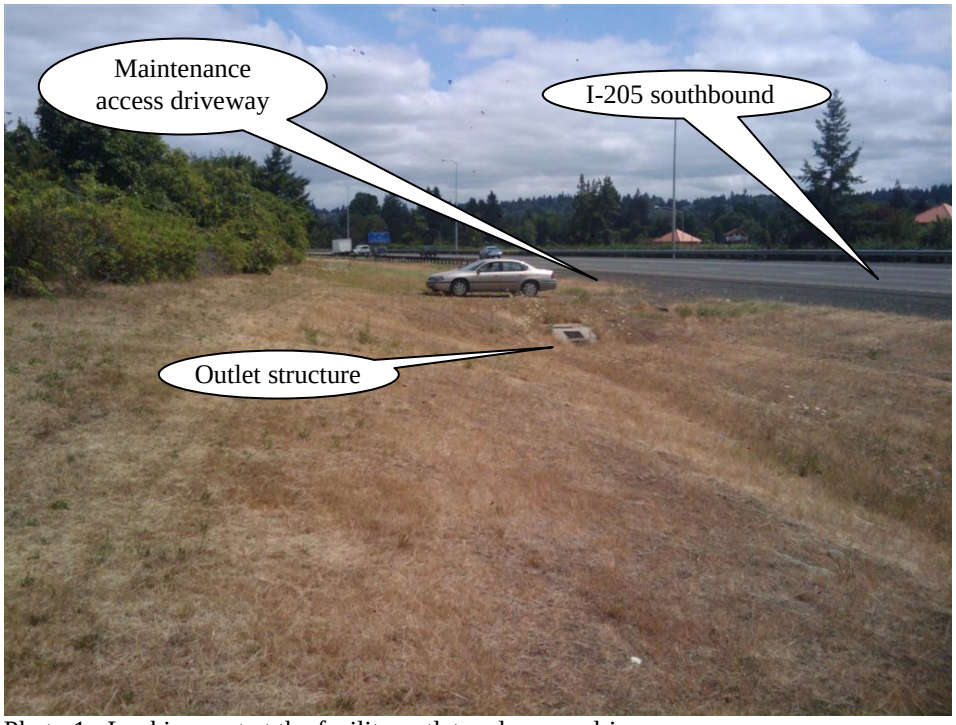


Photo 1: Looking east at the facility outlet and access driveway.

Photo 2: Looking west toward the facility entrance and northbound I-205.

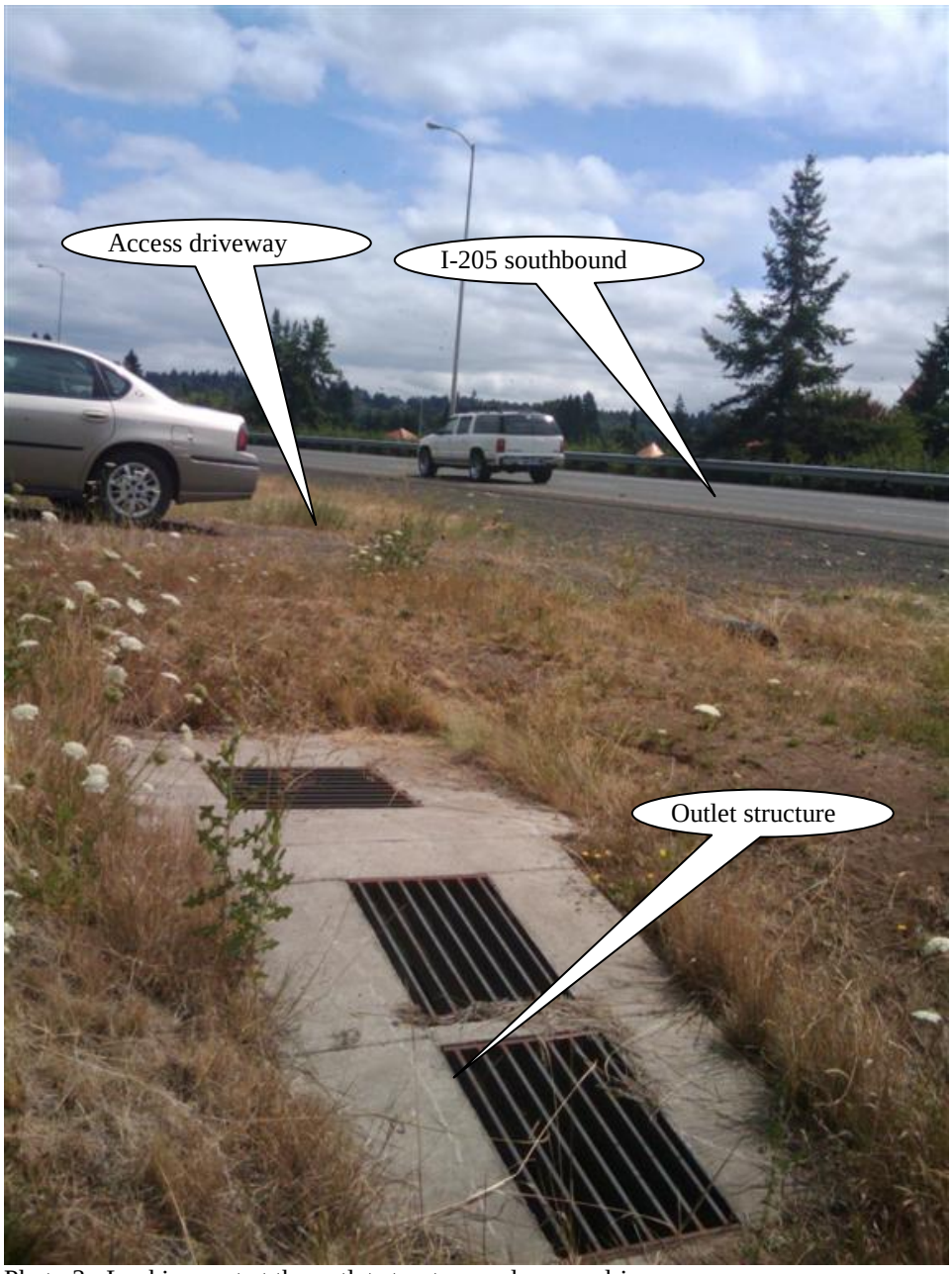


Photo 3: Looking east at the outlet structure and access driveway.

## 5. Facility Haz Mat Spill Feature(s)

The detention pond/water quality biofiltration swale combo can be used to store a volume of liquid by blocking the 15-inch diameter outlet pipe located at the outlet of the detention pond/water quality swale combo. This pipe is noted as Point C on Operational Plan in 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
The outlet control structure has a pair of grated inlets positioned above the main inlet, so that in the case of high flows, during a peak rainfall event, water will flow into either of the upper grated inlet/outlets and exit out of a 15-inch outlet pipe found within the main structure (Point B on the Operational Plan).

☐ 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

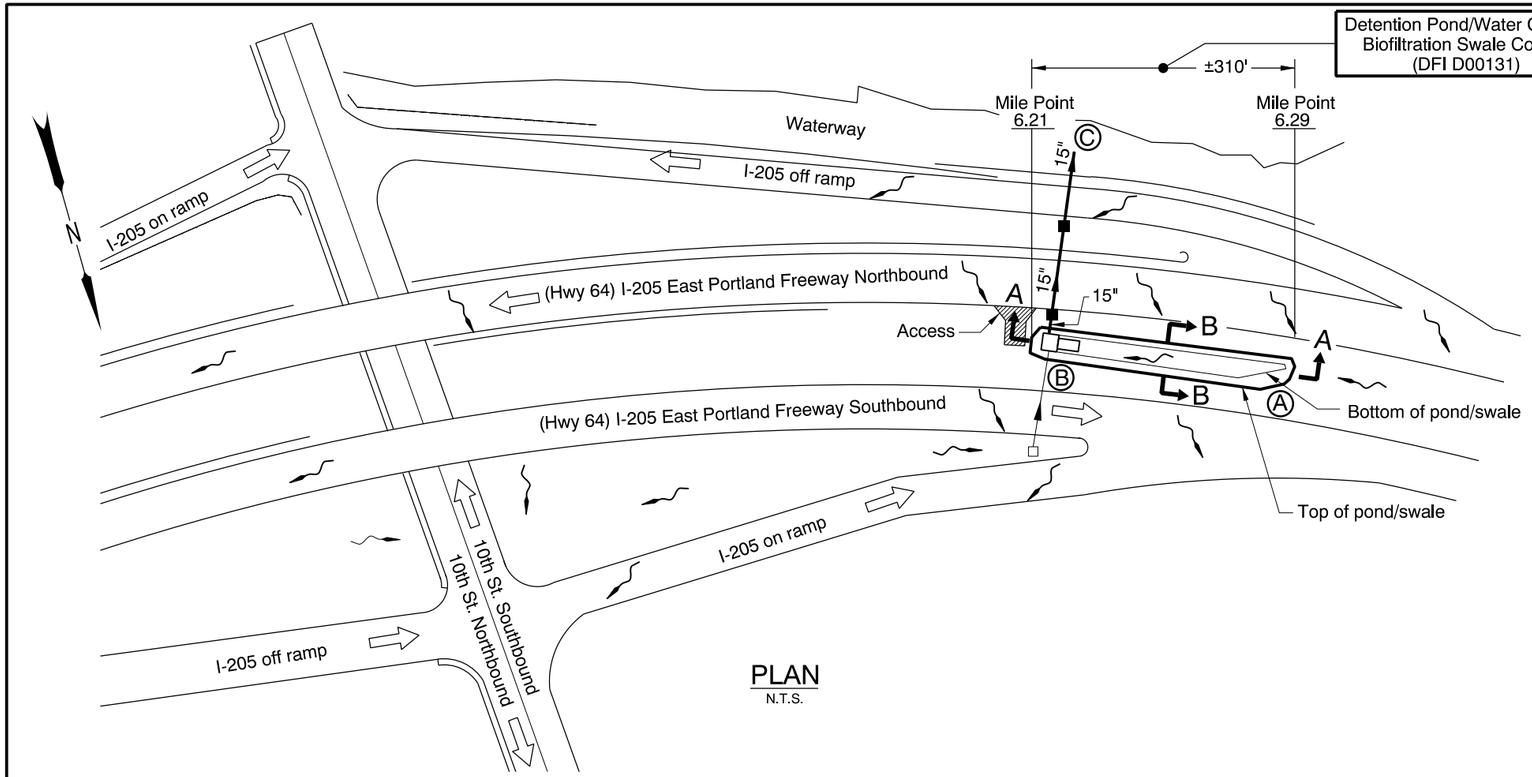
Contact any of the following for more detailed information about management of waste materials found on site:

| | |
|---|---|
| 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 |

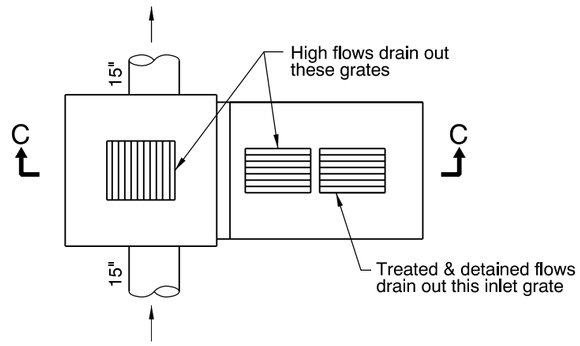
# Appendix A

**Content:**

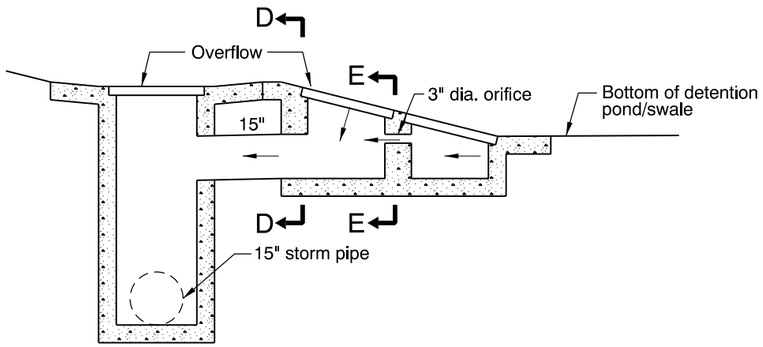
- **Operational Plan and Profile Drawing(s)**

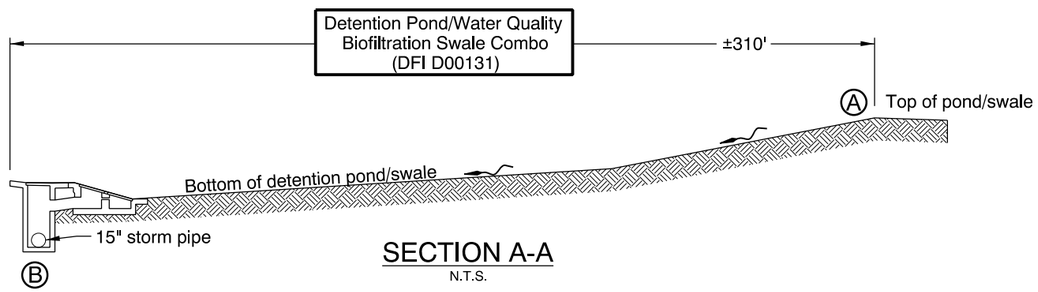



PLAN
N.T.S.




OUTLET STRUCTURE PLAN
N.T.S.




SECTION A-A
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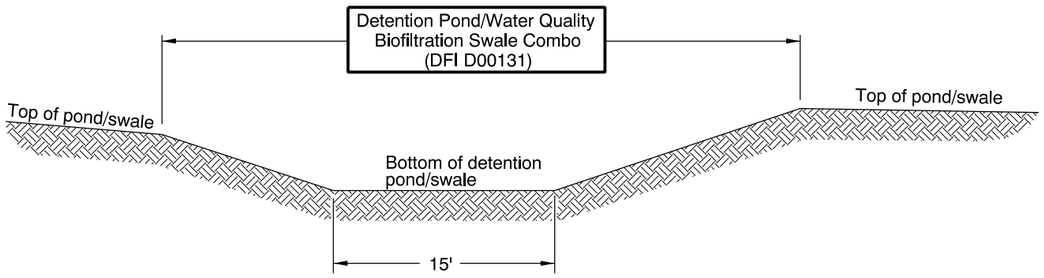
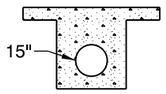
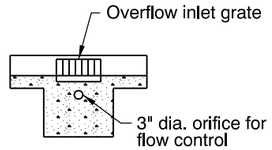



SECTION B-B
N.T.S.




SECTION D-D
N.T.S.




SECTION E-E
N.T.S.

LEGEND:

- Photo Location / Direction
- Detention pond/swale inlet
- Outlet structure
- Outfall
- Traffic direction/flow
- Manhole
- Inlet
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Maintenance access

Sht. 1 of 1

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Craig Fox

Drafted By: D. Claycomb

**DFI D00131**
**MAINTENANCE DISTRICT 2B HWY 64**
**DETENTION POND/WQ SWALE**
EAST PORTLAND FREEWAY MP 6.21-6.29
CLACKAMAS COUNTY

# Appendix B

**Content:**

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

39V-58

| INDEX OF SHEETS | |
|---|---|
| SHEET NO. | DESCRIPTION |
| 1 | Title Sheet |
| 1A, 1B | Index Of Sheets Cont'd. |
| 1C | Std. Drg. Nos. |

STATE OF OREGON

# DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

## GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING & ILLUMINATION

# I-205: WILLAMETTE RIVER BR. - PACIFIC HWY. (UNIT 3) SEC.

## EAST PORTLAND FREEWAY

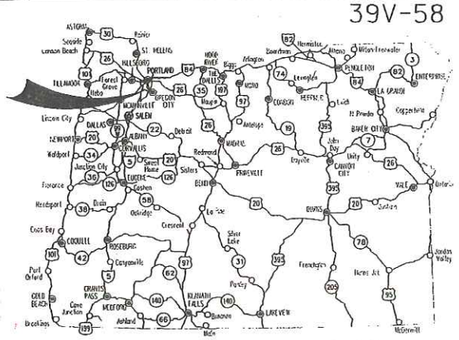
## CLACKAMAS & WASHINGTON COUNTIES

## APRIL 2006

"AS CONSTRUCTED"

Mark Beeson

Date 6/26/09 Project Mngr



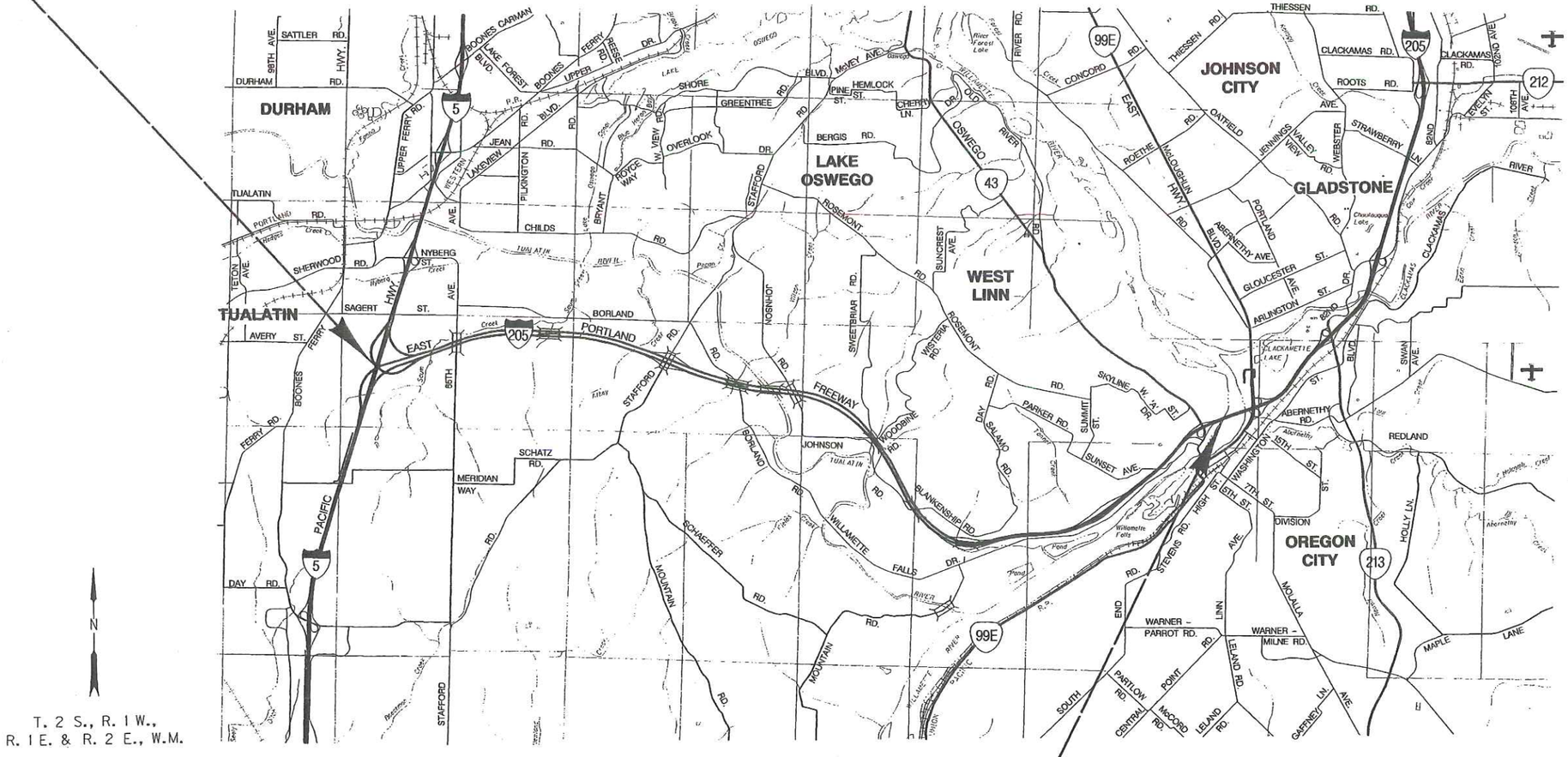
Overall Length Of Project - 8.90 Miles

**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 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

**END OF PROJECT IM-OTIA-S064(032)**

**STA. "LS2" 1231+71.15 (M.P. -0.10)**




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

**BEGINNING OF PROJECT IM-OTIA-S064(032)**

**STA. "L" 735+41.85 (M.P. 8.80)**

### OREGON TRANSPORTATION COMMISSION

| | |
|---|---|
| Stuart Foster | CHAIRMAN |
| Gail L. Achterman | COMMISSIONER |
| Mike Nelson | COMMISSIONER |
| Randall Papé | COMMISSIONER |
| Janice J. Wilson | COMMISSIONER |
| Matthew Garrett | DIRECTOR OF TRANSPORTATION |

REGISTERED PROFESSIONAL ENGINEER
14,953
OREGON
JULY 25, 1990
LAWRENCE H. FOX

EXPIRES: 12/31/07

LAWRENCE H. FOX
OBEC CONSULTING ENGINEERS - PROJECT MANAGER

OREGON DEPARTMENT OF TRANSPORTATION
CONCURRENCE

Harold E. Lasley 2/23/06
TECHNICAL SERVICES MANAGING ENGINEER DATE

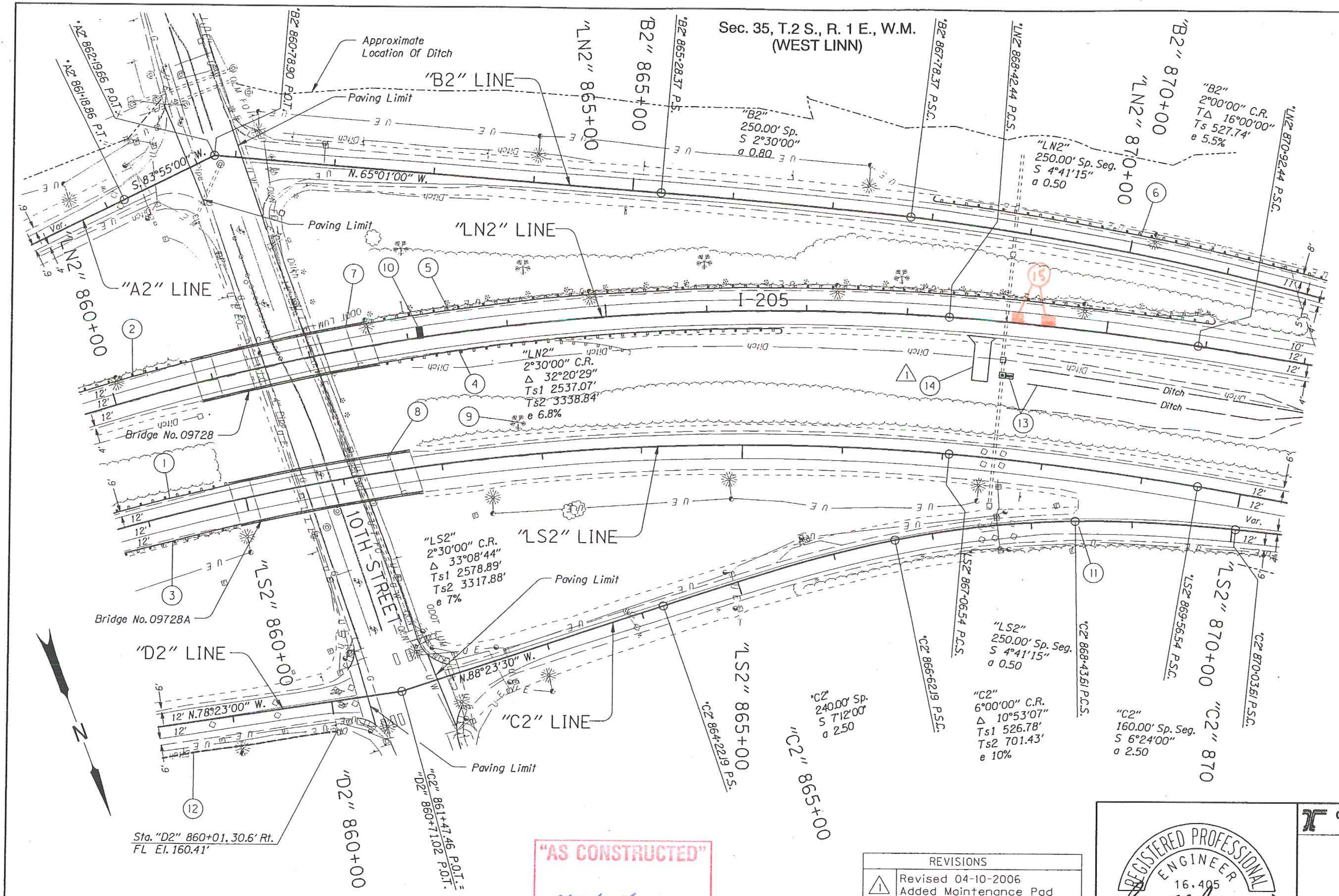
**I-205: WILLAMETTE RIVER BR. - PACIFIC HWY. (UNIT 3) SEC.**
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

| FEDERAL HIGHWAY ADMINISTRATION | PROJECT NUMBER | SHEET NO. |
|---|---|---|
| OREGON DIVISION | IM-OTIA-S064(032) | 1 |

File No. 15980

i:\Projects\019\019082\Roadway\12874fs.fs1 2/14/06

Sec. 35, T.2 S., R. 1 E., W.M.
(WEST LINN)



LEGEND

Terminal Expansion Joint Repair Shown Thus: ■

| REVISIONS | |
|---|---|
| 1 | Revised 04-10-2006<br>Added Maintenance Pad |

"AS CONSTRUCTED"

Mark Bor

Date 6/24/09 Project Mngr

Parametrix

16,405
BRIAN NEIL BIERWAGEN
4-6-06
EXPIRES: 12/31/07

**OREGON DEPARTMENT OF TRANSPORTATION**
**ROADWAY ENGINEERING SECTION**

I-205: WILLAMETTE RIVER BR. -
PACIFIC HWY. (UNIT 3) SEC.
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

Design Team Leader - Brian Bierwagen
Designed By - Jim Phillips
Drafted By - Ron Ricks

ALIGNMENT AND
GENERAL CONSTRUCTION

NO.
14

File No. 16197

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(1) See Sht. 5A, Note 3
Remove Extg. Guardrail
Const. Guardrail (Type 2A)
Const. Guardrail - 12.5' (Type 3)
Const. Guardrail To Bridge Rail Transition
(See Drg. No. BR203)

(2) See Sht. 13, Note 3
Remove Extg. Guardrail
Const. Guardrail (Type 2A)
Const. Bridge Rail To Guardrail Connection
(See Drg. No. BR236)

(3) See Sht. 13, Note 4
Remove Extg. Guardrail
Const. Guardrail (Type 2A)
Const. Guardrail - 12.5' (Type 3)
Const. Guardrail To Bridge Rail Transition

(4) Sta. "LN2" 862+68 To Sta. "LN2" 866+73, Rt.
Remove Extg. Guardrail - 254'
Const. Guardrail - 325' (Type 2A)
Const. Guardrail - 12.5' (Type 3)
Const. Guardrail To Bridge Rail Transition
Const. Guardrail Terminal, Non-Flared (50')
Flare Rate=0, W=1', E=0

(5) Sta. "LN2" 862+61 To Sta. "LN2" 871+04, Lt.
Remove Extg. Guardrail - 843'
Const. Guardrail - 762.5' (Type 2A)
Const. Guardrail - 12.5' (Type 3)
Const. Guardrail To Bridge Rail Transition
Const. Guardrail Terminal, Non-Flared (50')
Flare Rate=0, W=1', E=0

(6) Sta. "B2" 868+00 To Sta. "B2" 877+50, Lt.
Remove Extg. Guardrail - 950'
Const. Guardrail - 900' (Type 2A)
Const. Anchor (Type 1 Mod)
Inst. End Piece (Type B)

1 (7) Bridge No. 09728
Sta. "LN2" 860+83 To Sta. "LN2" 862+61
Remove Extg. Bridge Rail - 368'
Const. Type "F" Bridge Rail - 368'
(For Drg. Nos., See Sht. 1A)
(See Drg. Nos. BR200, BR203, and BR236)

(8) Bridge No. 09728A
Sta. "LS2" 859+88 To Sta. "LS2" 861+72
Remove Extg. Bridge Rail - 376'
Const. Type "F" Bridge Rail - 376'
(For Drg. Nos., See Sht. 1A)

(9) Sta. "LS2" 862+75, 42', Lt.
Remove Extg. 12" Dia. Tree

2 (10) Sta. "LN2" 863+10 To Sta. "LN2" 863+16, Lt.
Terminal Expansion Joint Repair - 12'
(For Details, See Shts. 2B-23 and 2B-24)

(11) Sta. "C2" 868+44, Rt.
Const. Open Grade HMAC
Wearing Surface Drain (Option B) - 24'

(12) See Sht. 13, Note 9
Inst. 8" Perf. Drain Pipe

2 (13) Const. Bio-Swale/Detention Pond B
Ditch Exc. - 800 Cu. Yd.
Inst. Outlet Structure
(For Details, See Sht. GJ-11)

3 (14) Sta. "LN2" 868+78, Rt.
Const. Aggr. Maintenance Pad (45')
Embankment - 22 Cu. Yd.
Aggregate - 54 Tons
(For Details, See Sht. 2B-26)

(15) Continuously Reinf. Conc. Pvmt. Repair

"AS CONSTRUCTED"
Mark Bauer
Date 6/26/09 Project Mngr

| REVISIONS | |
|---|---|
| 1 | Revised 03-23-2006<br>Changed Std. Drg. Callout In Note |
| 2 | Revised 04-10-2006<br>Revised Note |
| 3 | Revised 04-10-2006<br>Added Maintenance Pad |

Parametrix

REGISTERED PROFESSIONAL ENGINEER
16,405
OREGON
DECEMBER 31, 1995
BRIAN NEIL BIERWAGEN
4/6/06
EXPIRES: 12/31/07

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: WILLAMETTE RIVER BR. -
PACIFIC HWY. (UNIT 3) SEC.
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

Design Team Leader - Brian Bierwagen
Designed By - Jim Phillips
Drafted By - Ron Ricks

CONSTRUCTION NOTES

SHEET NO. 14A

File No. 16196

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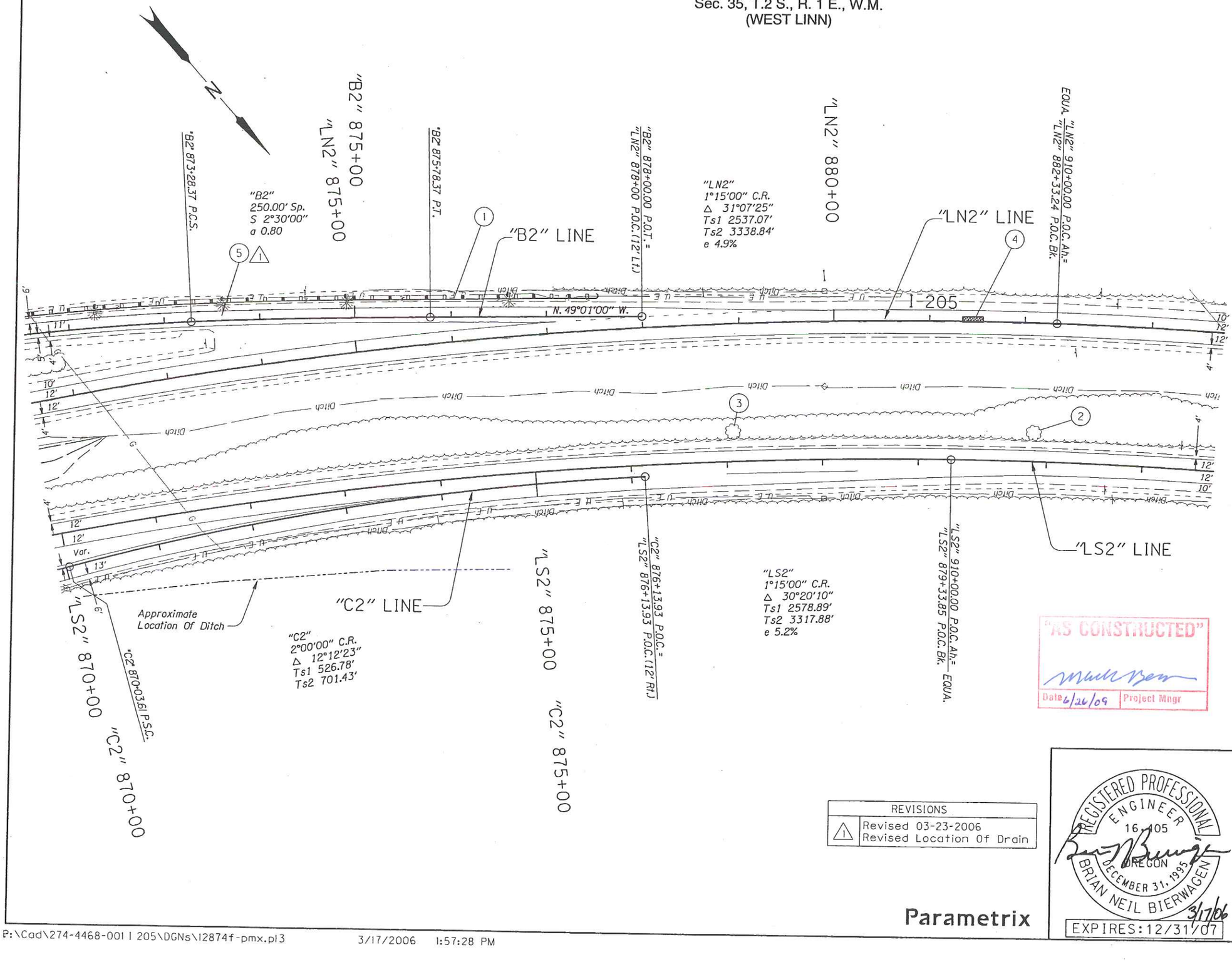
(WEST LINN)




1. See Sht. 14A, Note 6
   Remove Extg. Guardrail
   Const. Guardrail (Type 2A)
   Const. Guardrail Terminal, Non-Flared (50')
   Flare Rate=0, W=1', E=0
2. Sta. "LS2" 910+75, 41', Lt.
   Remove Extg. 12" Dia. Tree
3. Sta. "LS2" 877+00, 38', Lt.
   Remove Extg. 12" Dia. Tree
4. Continuously Reinf. Conc.
   Pvmt. Repair - 15 Sq. Yd.
   (For Details, See Shts. 2B-18, 2B-19, and 2B-20)
1 5. Sta. "B2" 873+60 Lt.
   Const. Open Grade HMAC
   Wearing Surface Drain (Option B) - 24'

"AS CONSTRUCTED"
Date 6/26/09 Project Mngr

LEGEND
Continuously Reinf.
Conc. Pvmt. Repair Shown Thus: ▩

| REVISIONS | |
|---|---|
| 1 | Revised 03-23-2006<br>Revised Location Of Drain |

REGISTERED PROFESSIONAL ENGINEER
16405
OREGON
DECEMBER 31, 1995
BRIAN NEIL BIERWAGEN
3/17/06
EXPIRES: 12/31/07

Parametrix

**OREGON DEPARTMENT OF TRANSPORTATION**
**ROADWAY ENGINEERING SECTION**

**I-205: WILLAMETTE RIVER BR. - PACIFIC HWY. (UNIT 3) SEC.**
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

Design Team Leader - Brian Bierwagen
Designed By - Jim Phillips
Drafted By - Ron Ricks

**ALIGNMENT AND GENERAL CONSTRUCTION**

SHEET NO. 15

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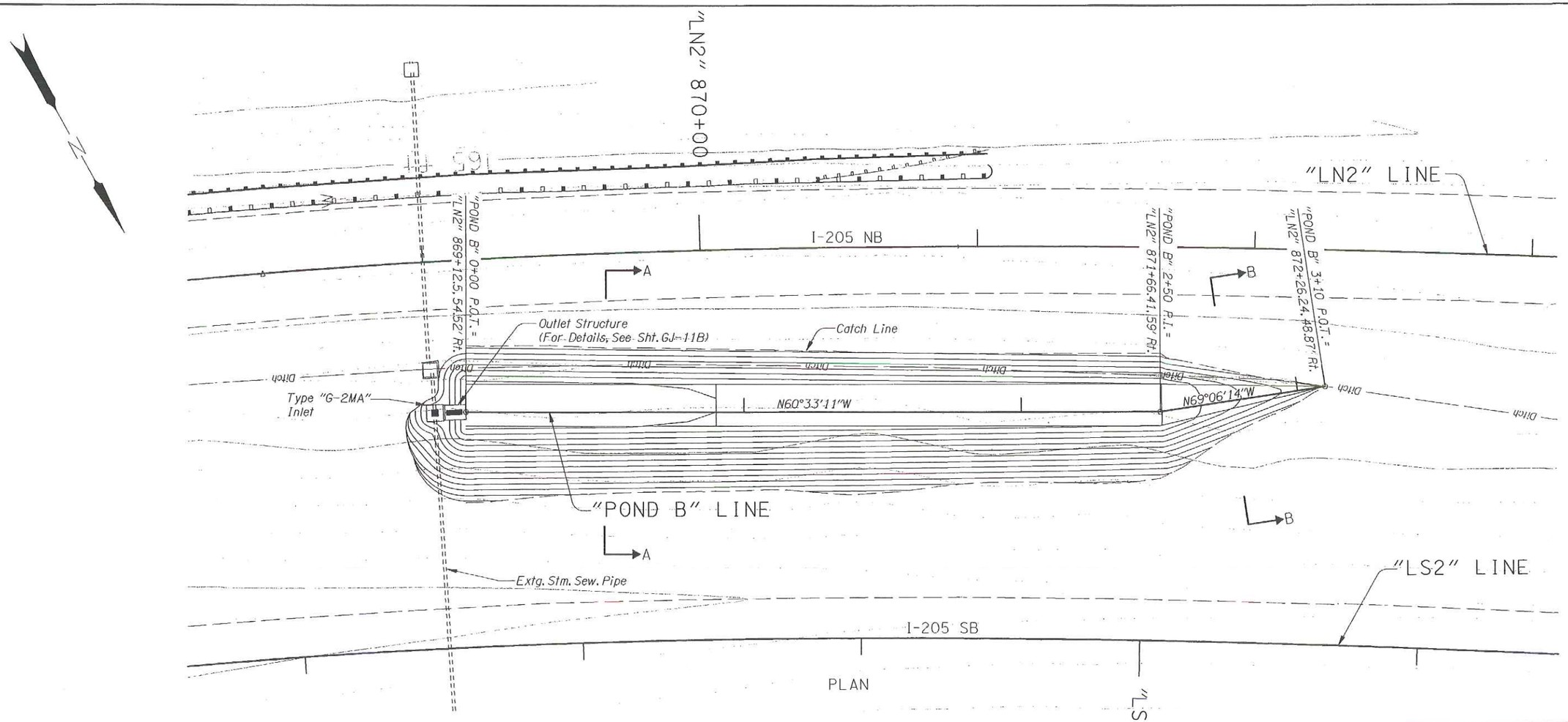
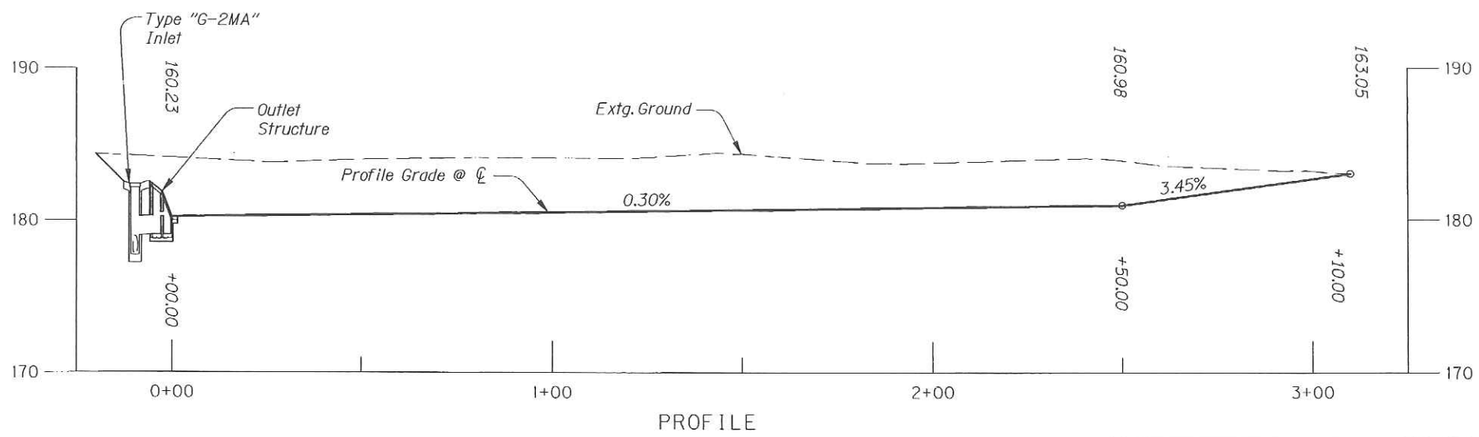



"AS CONSTRUCTED"
Mark Bow
Date 6/26/09 Project Mngr

NOTE:
For Sections Not Shown,
See Sht. GJ-11A.
For Outlet Structure Details,
See Sht. GJ-11B.

REGISTERED PROFESSIONAL ENGINEER
12295
Jerome D. Lane
OREGON
JULY 5, 1983
JEROME D. LANE
EXPIRES: 12/31/06

CONSULTING ENGINEERS
www.obec.com
Corporate Office: 920 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6069
2235 MISSION STREET SE, SUITE 100 SALEM, OREGON 97302-1295
1335 POPLAR DRIVE MEDFORD, OREGON 97504-5207

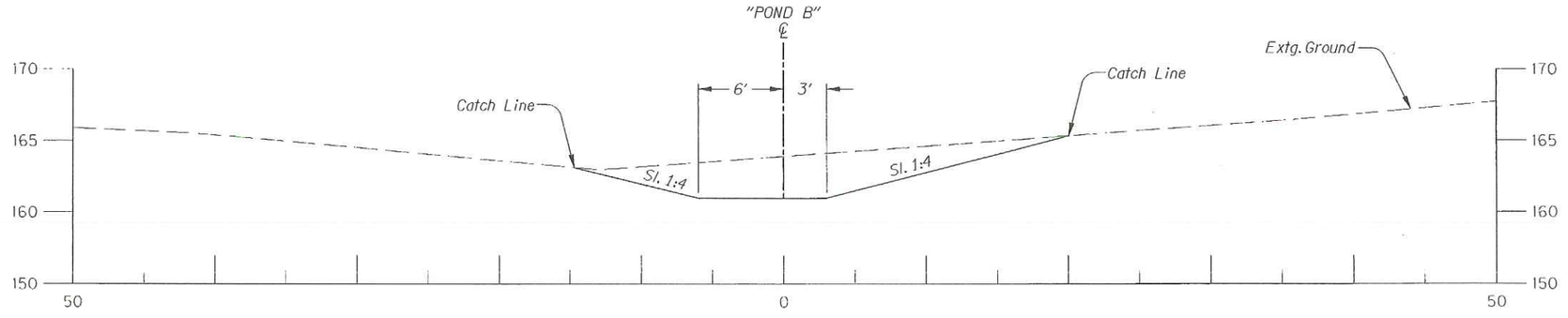
OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: WILLAMETTE RIVER BR. -
PACIFIC HWY. (UNIT 3) SEC.
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

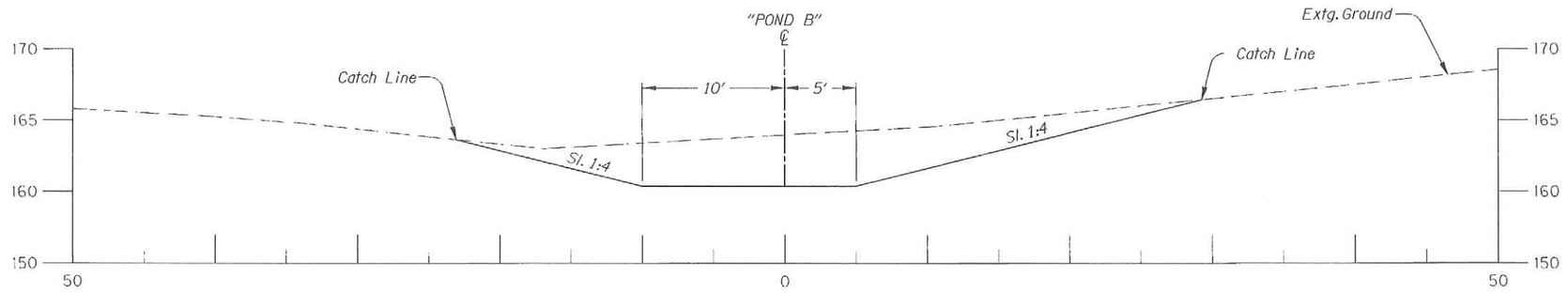
Design Team Leader - Jerry Lane
Designed By - James Kent
Drafted By - Mathew Bunde

POND B
PLAN AND PROFILE

SHEET NO. GJ-11




SECTION B-B




SECTION A-A

"AS CONSTRUCTED"
Date 6/26/09 | Project Mngr

REGISTERED PROFESSIONAL ENGINEER
12295
Jerome D. Lane
OREGON
JULY 5, 1983
JEROME D. LANE
EXPIRES: 12/31/06

OBEC CONSULTING ENGINEERS
www.obec.com
Corporate Office: 920 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6069
2235 MISSION STREET SE, SUITE 100 SALEM, OREGON 97302-1235
1335 POPLAR DRIVE MEDFORD, OREGON 97504-5207

**OREGON DEPARTMENT OF TRANSPORTATION**
**ROADWAY ENGINEERING SECTION**

**I-205: WILLAMETTE RIVER BR. - PACIFIC HWY. (UNIT 3) SEC.**
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

Design Team Leader - Jerry Lane
Designed By - James Kent
Drafted By - Mathew Bunde

**POND B**
**CROSS SECTIONS**

SHEET NO. GJ-11A

File No. 16324 1:100

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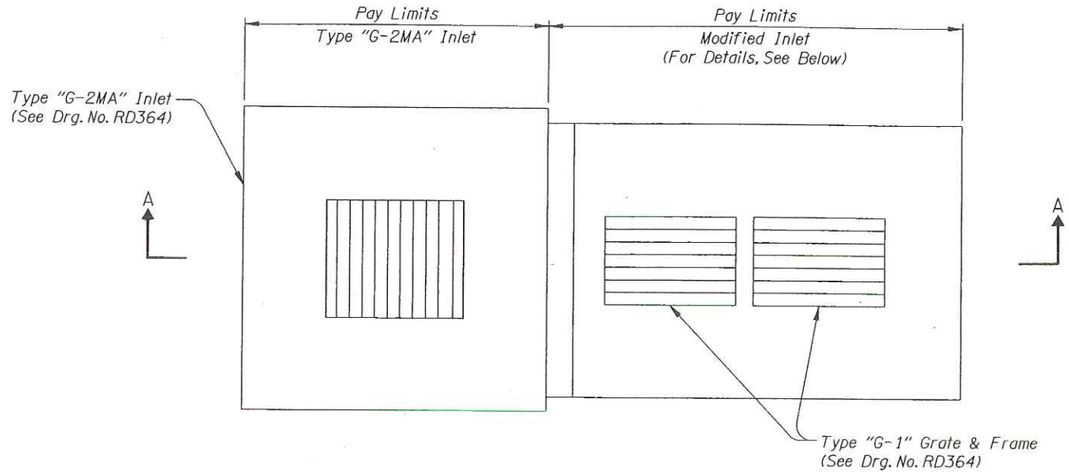
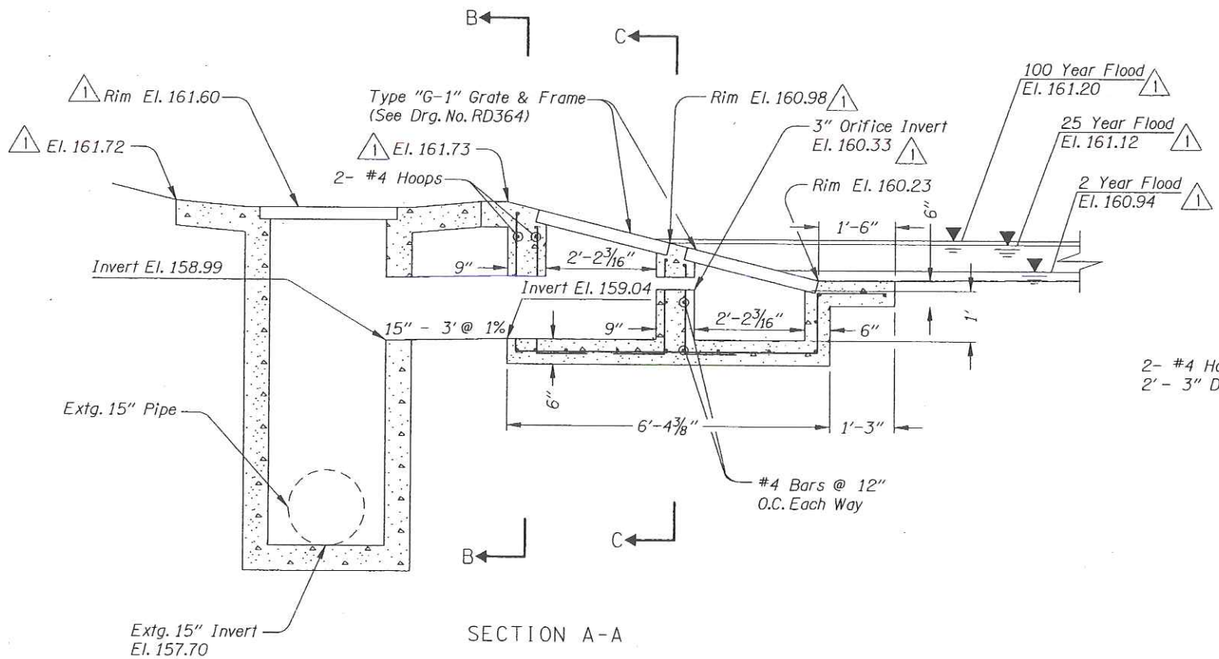
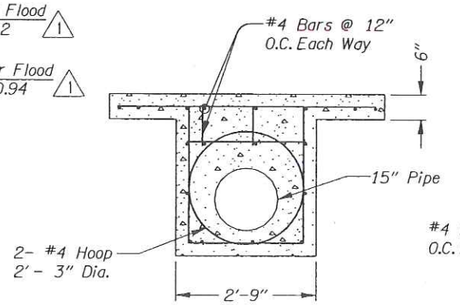


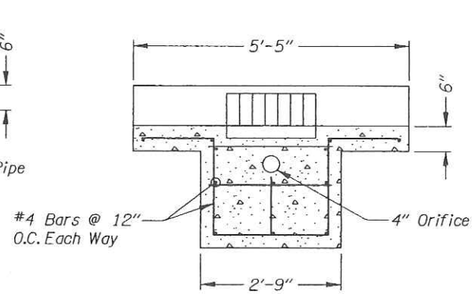

PLAN




SECTION A-A




SECTION B-B




SECTION C-C

OUTLET STRUCTURE

GENERAL NOTES:

All Material And Workmanship Shall Conform To The 2002 Oregon Standard Specifications For Construction.

All Reinforcement Steel Shall Conform To Astm Specification A615, Grade 60 Or A706.

The Following Splice Lengths Shall Be Used,

| Bar Size | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| Splice Length | Uncoated | 1'-0" | 1'-4" | 1'-8" | 2'-0" | 2'-8" | 3'-6" | 4'-4" | 5'-7" | 6'-9" |
| | Epoxy Coated | 1'-5" | 1'-10" | 2'-4" | 2'-10" | 3'-9" | 4'-11" | 6'-1" | 7'-10" | 9'-6" |

All Bars Shall Be Placed 2" Clear Of The Nearest Face Of Concrete Unless Shown Otherwise.

Concrete Shall Be Commercial Grade Concrete ODOT Section 00440.

"AS CONSTRUCTED"
Mark Bunn
Date 6/26/09 | Project Mngr

| REVISIONS | |
|---|---|
| 1 | Revised 03-23-2006<br>Revised Elevations |

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OREGON
JULY 5, 1983
JEROME D. LANE
EXPIRES: 12/31/06

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

I-205: WILLAMETTE RIVER BR. - PACIFIC HWY. (UNIT 3) SEC.
EAST PORTLAND FREEWAY
CLACKAMAS & WASHINGTON COUNTIES

Design Team Leader - Jerry Lane
Designed By - James Kent
Drafted By - Mathew Bunde

POND B DETAILS

SHEET NO. GJ-11B