OPERATION & MAINTENANCE MANUAL

DFI No. : D00684

Facility Type: Water Quality Bioretention Pond

December, 2014

INDEX

1. IDENTIFICATION 1
2. FACILITY CONTACT INFORMATION 1
3. CONSTRUCTION 1
4. STORM DRAIN SYSTEM AND FACILITY OVERVIEW 2
5. FACILITY HAZ MAT SPILL FEATURE(S) 2
6. AUXILIARY OUTLET (HIGH FLOW BYPASS) 3
7. MAINTENANCE REQUIREMENTS 3
8. WASTE MATERIAL HANDLING 4

APPENDIX A: Operational Plan and Profile Drawing(s)

APPENDIX B: ODOT Project Plan Sheets

1. Identification

Drainage Facility ID (DFI):	**D00684**
Facility Type:	Bio-Retention Pond
Construction Drawings:	46V-015
Location:	District: 9
	Highway No.: 002
	Mile Post: 104.60; 104.72 Rt
	Description: This facility is located on the west side of the eastbound on-ramp of US97 connecting to I-84.

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 4 Tech. Center, Mike Ogden, (541) 388-6288
Facility construction:	2014
Contractor:	Kerr Contractors Inc.

4. Storm Drain System and Facility Overview

This retention pond is designed to store and infiltrate runoff during wet weather and is dry the remainder of the time. The pond is placed in an existing basin with natural vegetation. Because of this, no improvements to the site were required to make this function as a retention pond.

There are two storm drain pipes that convey stormwater runoff from paved areas. One pipe is the main storm drain line from the intersection of US97 and US30 and the other is an overflow pipe for roadside drainage from I-84. The location of these pipes is noted in Appendix A.

There is no overflow for this facility. The pond has the capability to store over 4 times the volume of water produced by the 100-year storm event, omitting infiltration.

A. Maintenance equipment access:
Access to the pond is only possible on foot. The side slopes from the eastbound on-ramp are too steep and rocky for vehicle access. Due to the overly large size of the pond, vehicle access is not anticipated to be necessary. Parking for vehicle inspection is possible in the gore area of the eastbound on-ramp to I-84.

B. Heavy equipment access into facility:

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

C. Special Features:

☐ Amended Soils
☐ Porous Pavers
☐ Liners
☐ Underdrains

5. Facility Haz Mat Spill Feature(s)

The retention pond can be used to store and/or prevent hazardous material from leaving the facility with no amendments to the system. With this being a closed system, no conveyance systems need to be blocked.

6. Auxiliary Outlet (High Flow Bypass)

There is no auxiliary outlet for this facility. The pond has the capability to store over 4 times the volume of water produced by the 100-year storm event, omitting infiltration.

The auxiliary outlet feature for this facility is:

☐ Designed into facility

☒ Other, as noted below
No auxiliary outlet is required do to the overly large size of the facility. Based on the currently designed drainage basin, the pond cannot overflow. No structures or roadways are in danger if the facility overflows.

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

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	(541) 388-6088
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

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

Conc. barrier

Median barrier

Westbound I-84 Off-Ramp

I-84 Westbound lanes

I-84 Eastbound lanes

Parking for inspections

Eastbound I-84 On-Ramp

Gurardrail

BIORETENTION POND (DFI D00864)

Ⓑ

Ⓓ

SPANISH HOLLOW CREEK

N

Ⓐ

Ⓐ

Ⓒ

UNION PACIFIC RAILROAD

LEGEND:

- Ⓐ Storm drain system outfalls to pond
- Ⓑ Low point in pond for infiltration
- Ⓒ Riprap embankment protection
- Ⓓ Berm between pond and Spanish Hollow Creek
- ■ Inlet
- ◉ Manhole
- Storm Pipe with flow direction
- Pavement / Facility Flow Path
- Conveyance Direction

Sht. 1 of 2

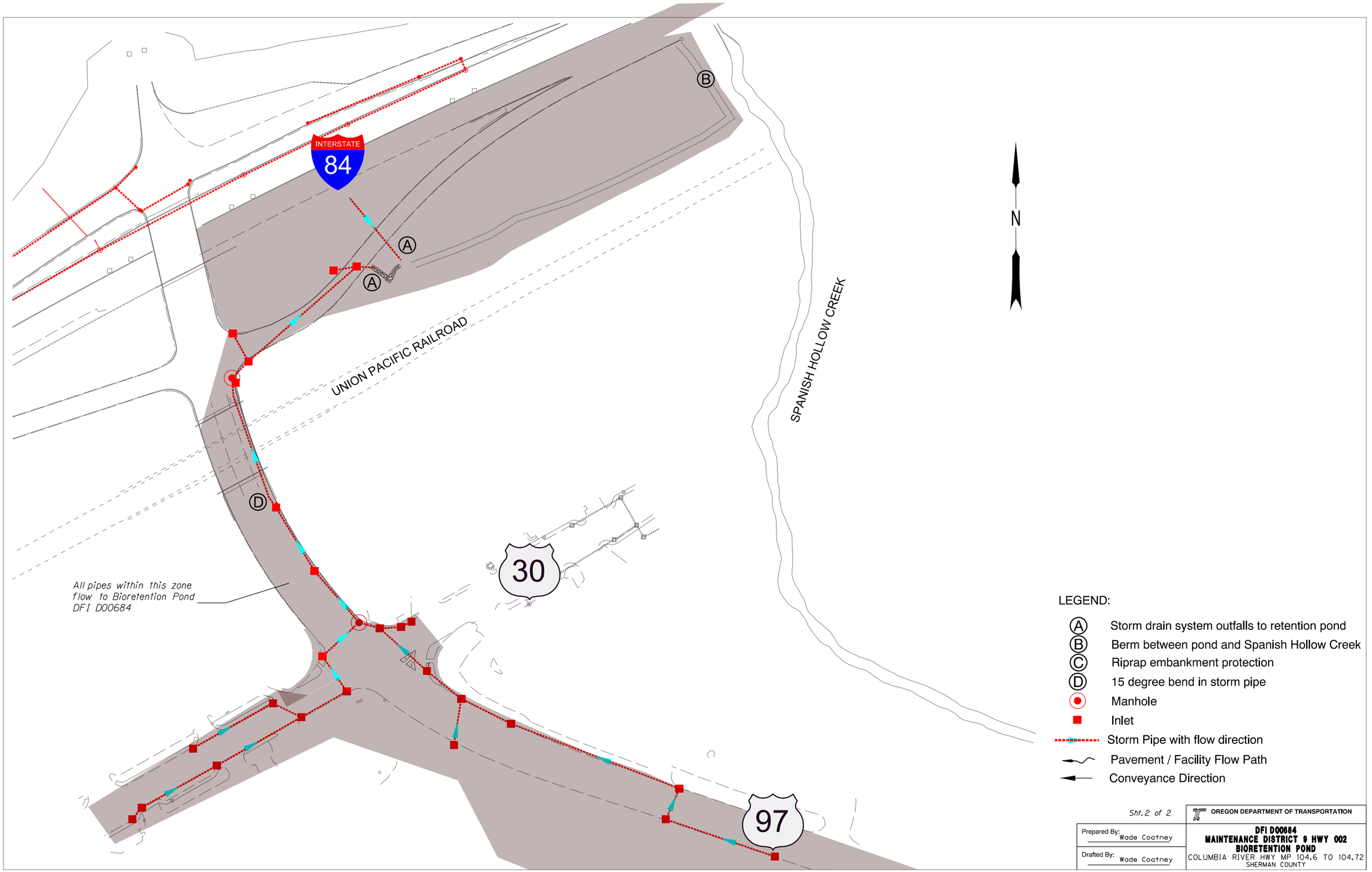
OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wade Coatney

Drafted By: Wade Coatney

DFI D00684
MAINTENANCE DISTRICT 9 HWY 002
BIORETENTION POND
COLUMBIA RIVER HWY MP 104.6 TO 104.72
SHERMAN COUNTY

DFI_D00000.dgn



LEGEND:

- (A) Storm drain system outfalls to retention pond
- (B) Berm between pond and Spanish Hollow Creek
- (C) Riprap embankment protection
- (D) 15 degree bend in storm pipe
- Manhole
- Inlet
- Storm Pipe with flow direction
- Pavement / Facility Flow Path
- Conveyance Direction

Sht. 2 of 2

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wade Coatney

Drafted By: Wade Coatney

DFI D00684
MAINTENANCE DISTRICT 9 HWY 002
BIORETENTION POND
COLUMBIA RIVER HWY MP 104.6 TO 104.72
SHERMAN COUNTY

DFI_D00000.dgn

Appendix B

Content:

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

46V-015

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd.
1A-2	Std. Drg. Nos.
1B	Layout Sheet
1C	Survey Control Data

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

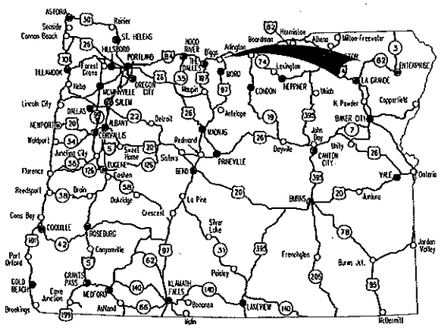
PLANS FOR PROPOSED PROJECT

STRUCTURE, PAVING, SIGNING, ILLUMINATION
SIGNALS & ROADSIDE DEVELOPMENT

FFO - I-84 @ US97 INTERCHANGE (BIGGS JUNCTION) PROJECT

COLUMBIA RIVER HIGHWAY

SHERMAN COUNTY
MARCH 2013



Overall Length Of Project - 6.50 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 BARRIER REPLACEMENT
M.P. 109.17

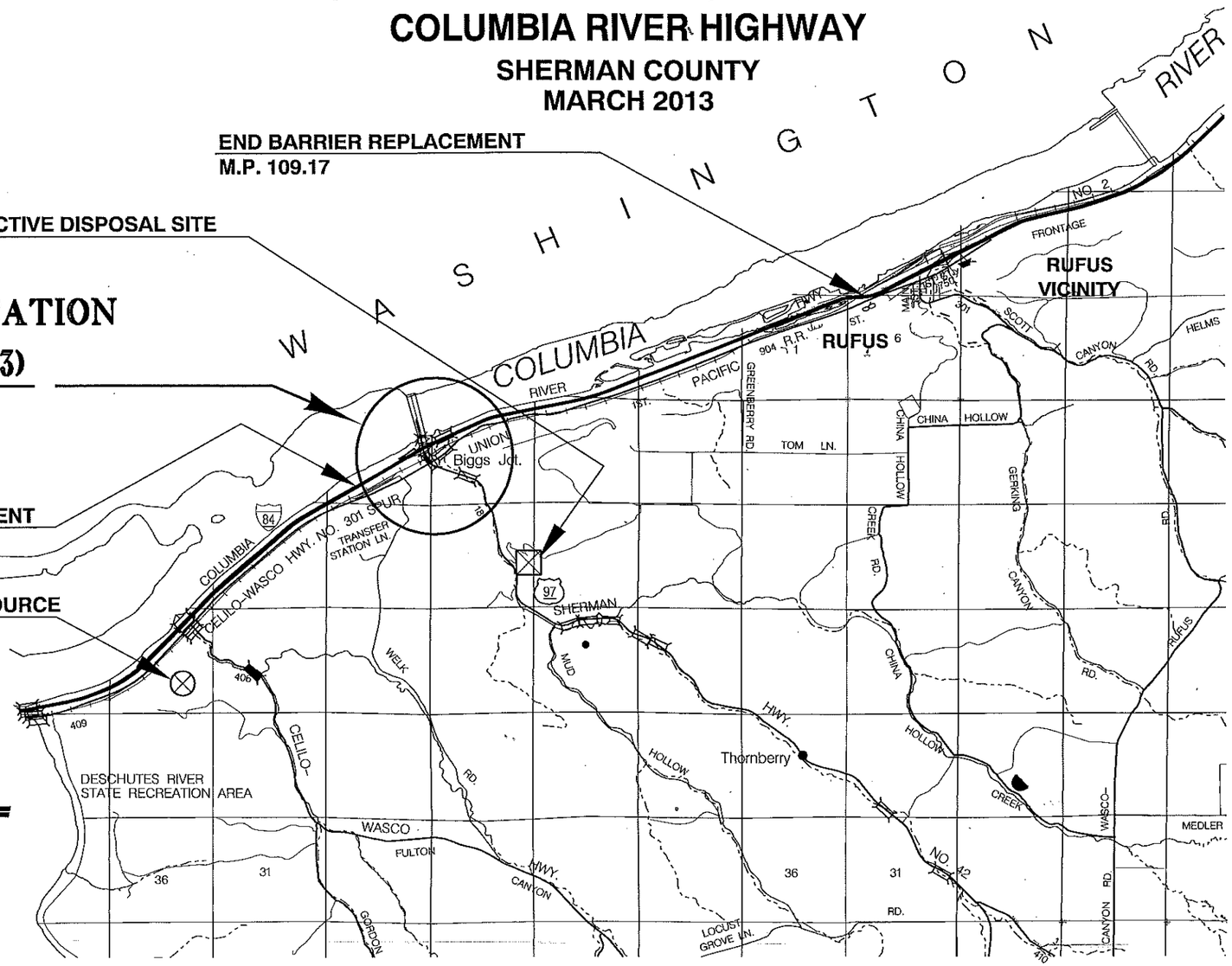
PROSPECTIVE DISPOSAL SITE
M.P. 1.5

PROJECT LOCATION

HSIP-SO-S002(133)
M.P. 104.50

BEGIN BARRIER REPLACEMENT
M.P. 103.77

PROSPECTIVE MATERIAL SOURCE
M.P. 101.68



T. 2 N., R. 16 E., W.M.

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
David Lohman	COMMISSIONER
Mary F. Olson	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tammy Baney	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: Jon W. Heacock 12/21/12
Signature & date

Jon Heacock, Region 4 TCM
Print name and title

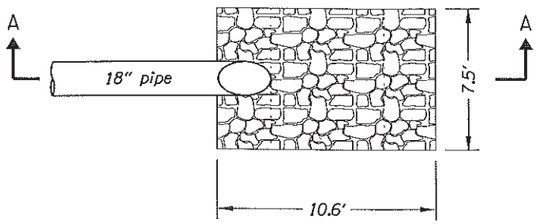
Concurrence by ODOT Chief Engineer

FFO - I-84 @ US97 INTERCHANGE (BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

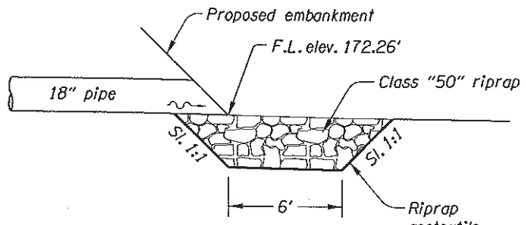
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HSIP-SO-S002(133)	1

F:\ODOT_DATA\Projects\16940_Biggs_Junction\16940ts.dgn :: Default 12/20/2012 1:52:49 PM hwye431

1:1200 - 001

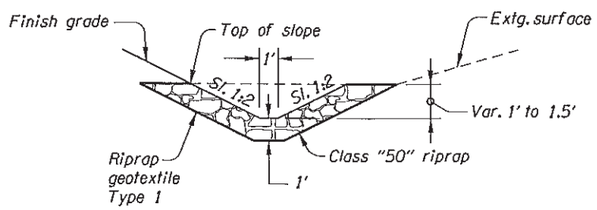


PLAN

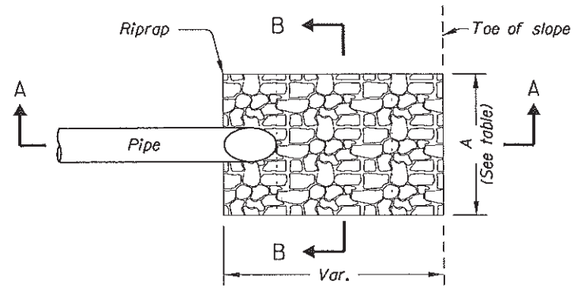


SECTION A-A

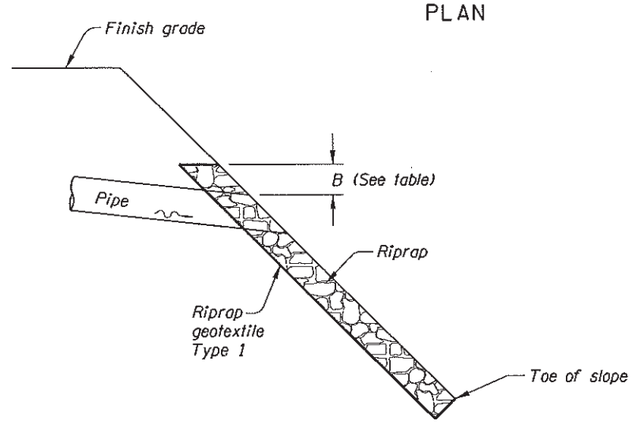
RIPRAP ENERGY DISSAPATOR

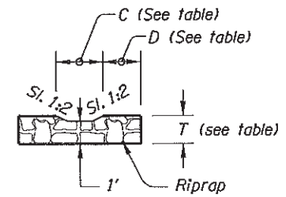


RIPRAP DITCH



PLAN





SECTION B-B

SECTION A-A

EMBANKMENT PROTECTION

TABLE A						
PIPE DIA.	Riprap Class	A	B	C	D	t
12"	50	5'	0.5'	1.5'	1.25'	1.25'
18"	200	7.5'	1'	2.5'	1'	2.25'

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN

RENEWS: 12-31-2014

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

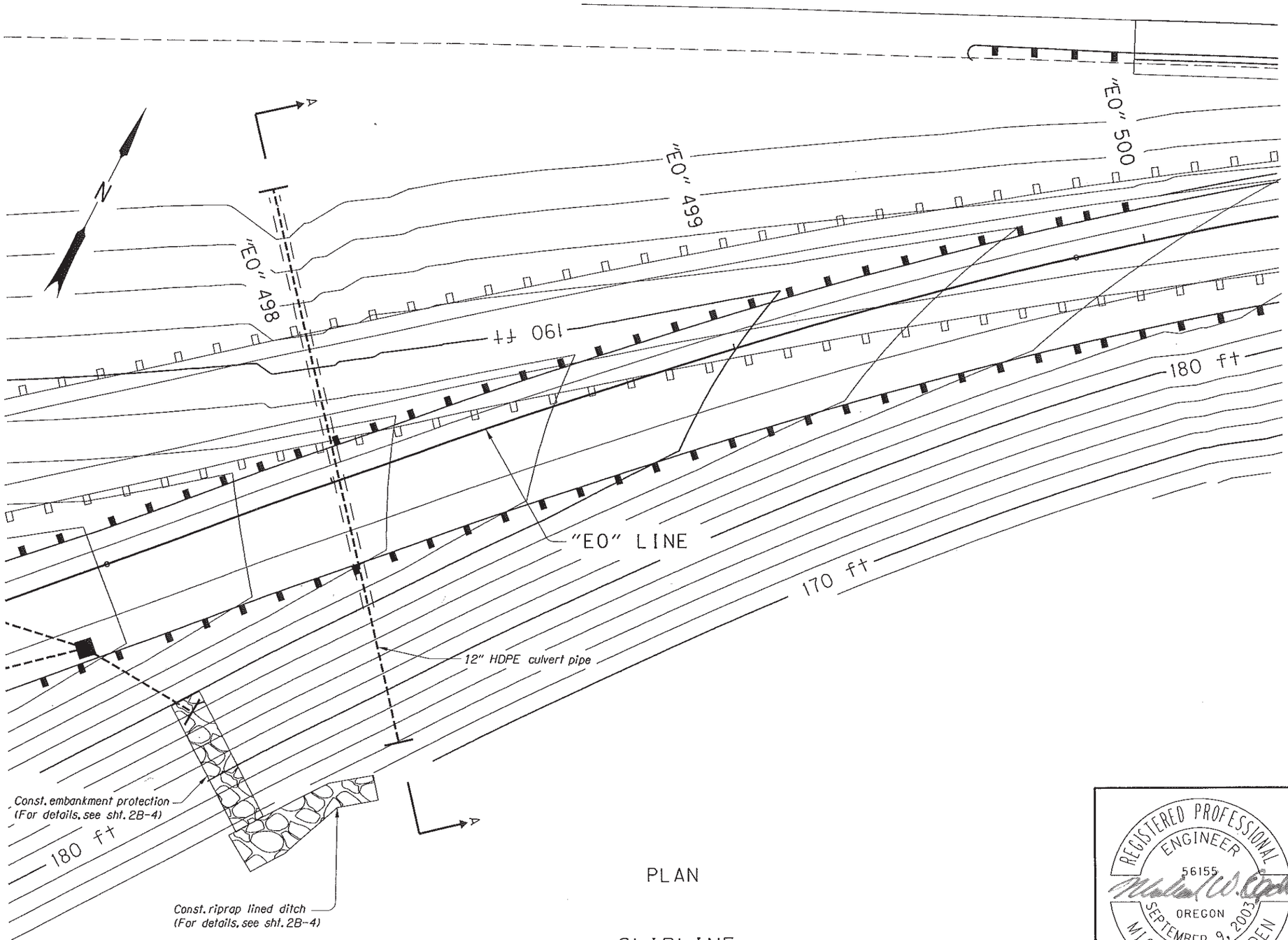
FFO - I-84 @ US97 INTERCHANGE (BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

DETAILS

SHEET NO. 2B-4

VIEW 4



PLAN

SLIPLINE

For section A-A, see sht. 2B-6

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2014

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

DETAILS

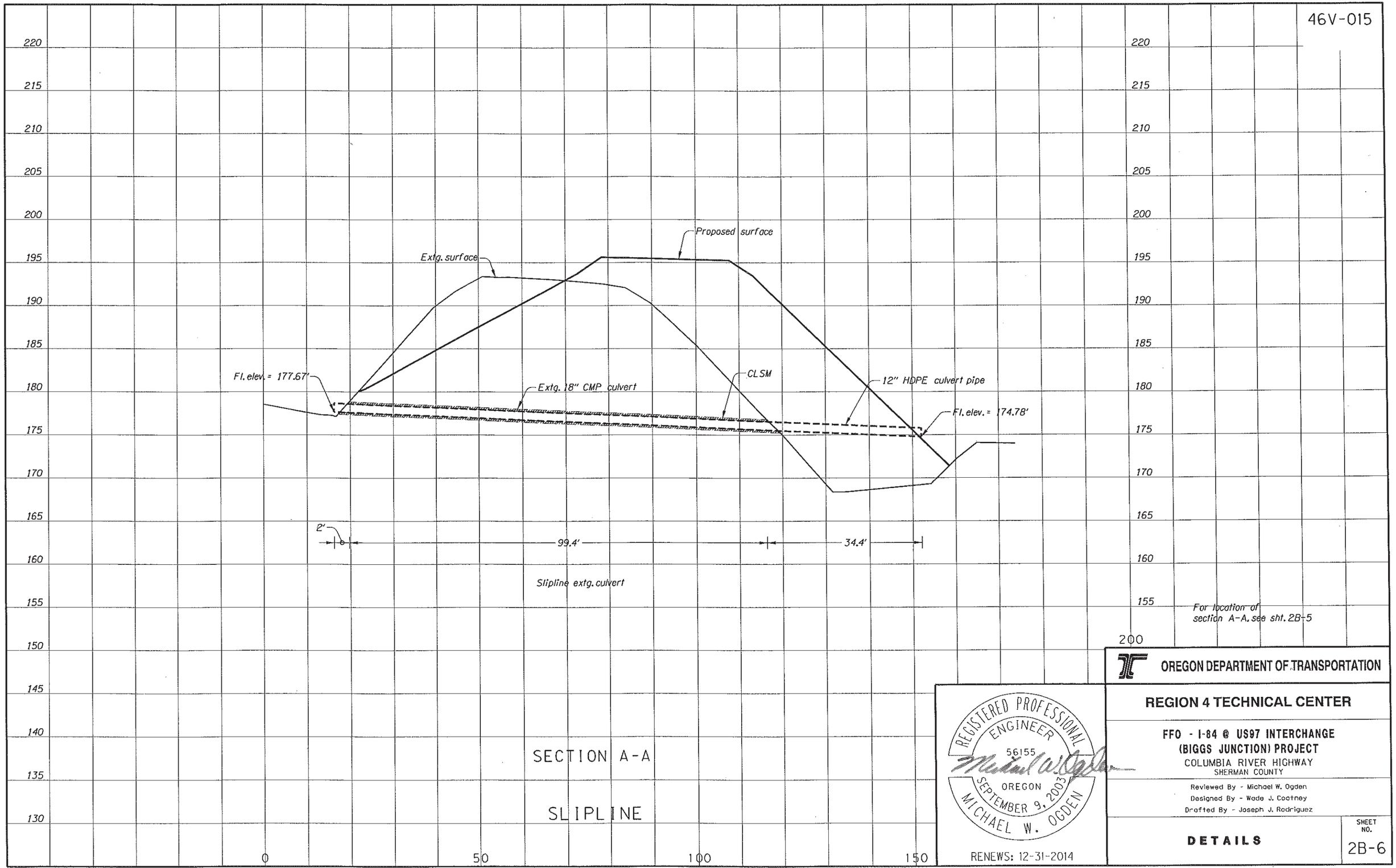
SHEET NO. 2B-5

F:\ODOT_DATA\Projects\16940_Biggs_Junction\16940dt03.dgn :: Default 12/19/2012 4:28:32 PM hwye431

VIEW 6

1:1200_BL - 006

46V-015



SECTION A-A

SLIPLINE

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN

RENEWS: 12-31-2014

VIEW 7

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

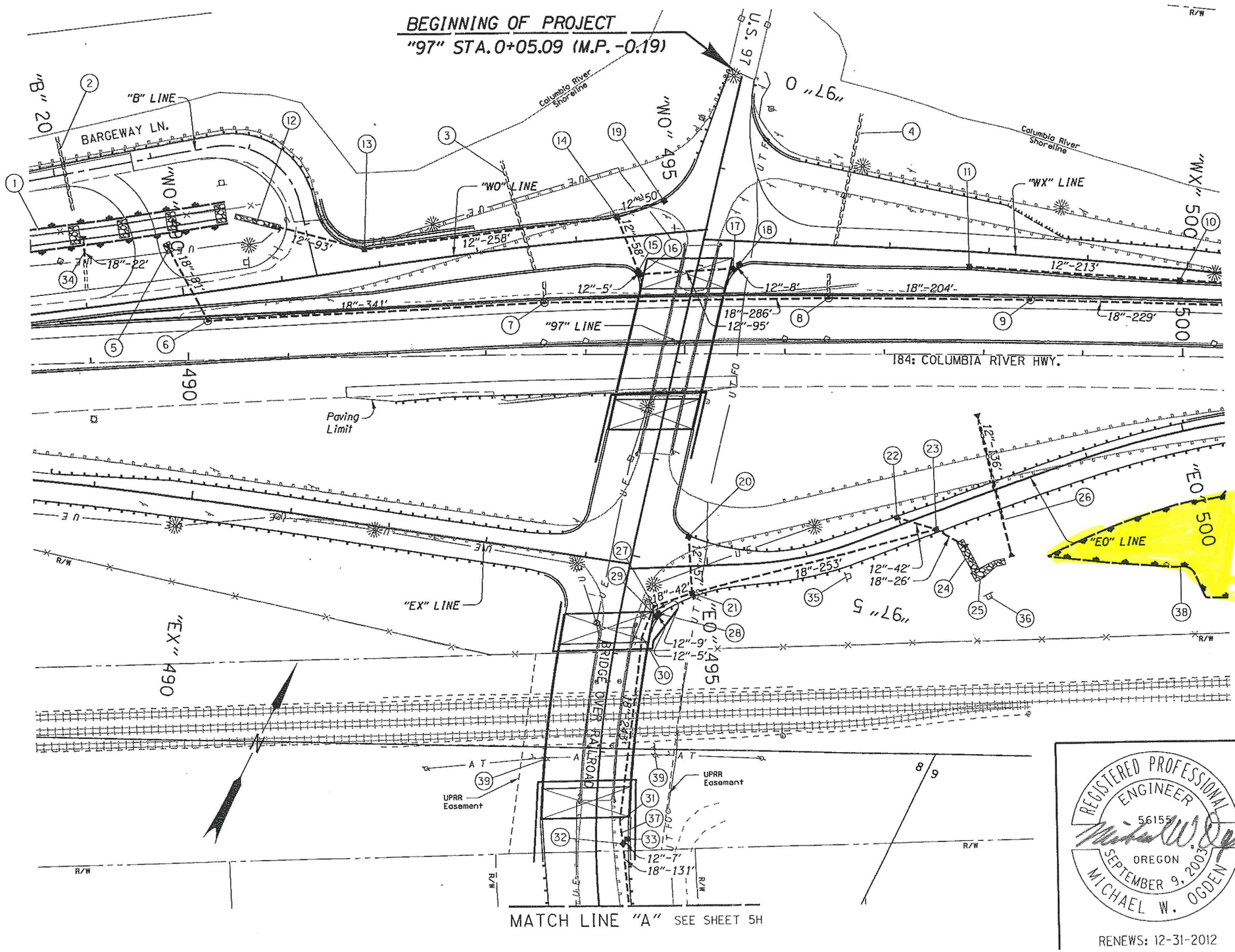
Reviewed By - Michael W. Ogden
Designed By - Wade J. Cootney
Drafted By - Joseph J. Rodriguez

DETAILS

SHEET NO. 2B-6

Sec. 8 & 9, T. 2 N., R. 16 E., W.M.

46V-015



Retention Pond
DFI no: D00684

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2012

DRAINAGE & UTILITIES

SHEET NO. 5B

(1) See Sht. 4A, Note 2

(2) Plug and abandon culvert
Remove culvert ends - 38'
Saw cut to match extg. slopes

(3) Plug and abandon culvert
Remove culvert ends - 30'
Saw cut to match extg. slopes

(4) Plug and abandon culvert
Remove culvert ends - 20'
Saw cut to match extg. slopes

(5) Const. riprap energy dissipator
(For details, see sht. 2B-4)

(6) Sta. "84" 490+20.35, Lt.
Const. manhole w/ 1.5' sump
See drg. nos. RD344 & RD384
I.E. (18" In) - 175.18'
I.E. (18" Out) - 175.08
Inst. 18" storm sew. pipe - 81'
10' depth
S = .0050'/ft
I.E. (12" outfall) = 174.68'
See drg. nos. RD300, RD302, RD336, RD386, & RD388

(7) Sta. "84" 493+59.60, Lt.
Remove extg. culv. pipe - 21'
Connect to extg. storm sew. pipe
Const. manhole w/ 1.5' sump
I.E. (12" Extg.) - 180.56'
I.E. (18" In) - 176.99'
I.E. (18" Out) - 176.89'
Inst. 18" ductile iron pipe - 341'
10' depth
S = 0.0050'/ft

(8) Sta. "84" 496+44.14, Lt.
Remove extg. culv. pipe - 24'
Connect to extg. storm sew. pipe
Const. manhole w/ 1.5' sump
I.E. (12" Extg.) - 180.46'
I.E. (18" In) - 178.18'
I.E. (18" Out) - 178.08'
Inst. 18" ductile iron pipe - 286'
10' depth
S = 0.0038'/ft

(9) Sta. "84", 498+47.22, Lt.
Const. manhole w/ 1.5' sump
I.E. (18" In) - 179.05'
I.E. (18" Out) - 178.95'
Inst. 18" ductile iron pipe - 204'
10' depth
S = 0.0038'/ft

(10) Sta. "WX" 499+93.86 Rt.
Const. type "G-2" inlet w/ 1.5' sump
See drg. no. RD364
I.E. (12" In) - 181.39'
I.E. (12" Out) - 181.29'
Inst. 12" storm sew. pipe - 80'
5' depth
S = 0.0100'/ft

(11) Sta. "WX" 497+80.92 Rt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 191.20'
Inst. 12" storm sew. pipe - 213'
5' depth
S = 0.0462'/ft

(12) Const. riprap embankment protection
(For details, see sht. 2B-4)

(13) Sta. "WO" 491+86.90, Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 185.36'
I.E. (12" Out) - 185.26'
Inst. 12" storm sew. pipe - 93'
5' depth
S = 0.0400'/ft
I.E. (12" outfall) = 181.57'

(14) Sta. "WO" 494+43.39 Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 197.59'
I.E. (12" In) - 197.59'
I.E. (12" Out) - 197.49'
Inst. 12" storm sew. pipe - 258'
5' depth
S = 0.0471'/ft

(15) Sta. "97" 2+19.85 Rt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 199.35'
I.E. (12" Out) - 199.25'
Inst. 12" storm sew. pipe - 58'
5' depth
S = 0.0288'/ft

(16) Sta. "97" 2+22.53 Rt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 199.47'
I.E. (12" Out) - 199.37'
Inst. 12" storm sew. pipe - 5'
5' depth
S = 0.005'/ft

(17) Sta. "97" 1+95.34 Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 200.04'
I.E. (12" Out) - 199.94'
Inst. 12" storm sew. pipe - 95'
5' depth
S = 0.005'/ft

(18) Sta. "97" 1+89.57 Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 200.08'
Inst. 12" storm sew. pipe - 8'
5' depth
S = 0.005'/ft

(19) Sta. "97" 1+45.19, Rt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 199.92'
Inst. 12" storm sew. pipe - 51'
5' depth
S = 0.0463'/ft

(20) Sta "EO" 494+82.81, Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 205.39'
Inst. 12" storm sew. pipe - 57'
5' depth
S = 0.0100'/ft

(21) Sta "EO" 494+83.49, Rt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 204.82'
I.E. (18" In) - 206.64'
I.E. (18" Out) - 204.72'
Inst. 18" storm sew. pipe - 253'
10' depth
S = 0.0449'/ft

(22) Sta "EO" 496+98.89 Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 194.57'
Inst. 12" storm sew. pipe - 42'
5' depth
S = 0.0288'/ft

(23) Sta "EO" 497+31.70, Rt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 193.38'
I.E. (18" In) - 193.34'
I.E. (18" Out) - 193.28'
Inst. 18" storm sew. pipe - 26'
5' depth
S = 0.1000'/ft

(24) Const. riprap embankment protection
(For details, see sht. 2B-4)

(25) Sta. "WO" 497+48.50 Rt to Sta "WO" 497+87.30 Rt
Const. riprap lined ditch
(For details see sht. 2B-4)

(26) Inst. 12" HDPE culvert pipe - 136'
Slipline extg. pipe - 100'
I.E. (In) - 177.67'
I.E. (Out) - 174.78'
10' depth
S = 0.0213'/ft
(For details, see shts. 2B-5 & 2B-6)

(27) Sta. "97" 5+45.96, Lt.
Const. manhole w/ 1.5' sump
I.E. (12" In) - 208.42'
I.E. (18" In) - 209.99'
I.E. (18" Out) - 208.31'
Inst. 18" storm sew. pipe - 42'
5' depth
S = 0.0401'/ft

(28) Sta. "97" 5+52.00 Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 208.61'
I.E. (12" Out) - 208.51'
Inst. 12" storm sew. pipe - 9'
5' depth
S = 0.0100'/ft

(29) Sta. "97" 5+55.40 Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 208.65'
Inst. 12" storm sew. pipe - 5'
5' depth
S = 0.0100'/ft

(30) Sta. "97" 5+78.30, Lt.
Inst. 15 degree pipe bend

(31) Sta. "97" 7+70.11, Lt.
Inst. 15 degree pipe bend

(32) Sta. "97" 7+92.78, Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 216.80'
I.E. (18" In) - 216.80'
I.E. (18" Out) - 216.70'
Inst. 18" storm sew. pipe - 243'
5' depth
S = 0.0253'/ft

(33) Sta. "97" 7+87.89, Lt.
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 216.86'
Inst. 12" ductile iron pipe - 7'
5' depth
S = 0.0100'/ft

(34) Sta. "WO" 489+03.87
Inst. 18" culv. pipe - 22'
Connect to extg. culv. pipe
Match extg. material
S = 0.005'/ft
I.E. (Out) = 170.44'

(35) Inst. Type "S1" marker - green
(See drg. no RD399)

(36) Inst. Type "S2" marker
DFI no. D00684
(See drg. no RD399)

(37) Sta. "97" 7+66.85 to Sta. "97" 7+92.78, Lt.
Const. conc. cap
(See drg. no. RD306)

(38) Extg. bio-retention pond
Preserve and protect

(39) Relocate utility
(By others)

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2012

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

DRAINAGE NOTES

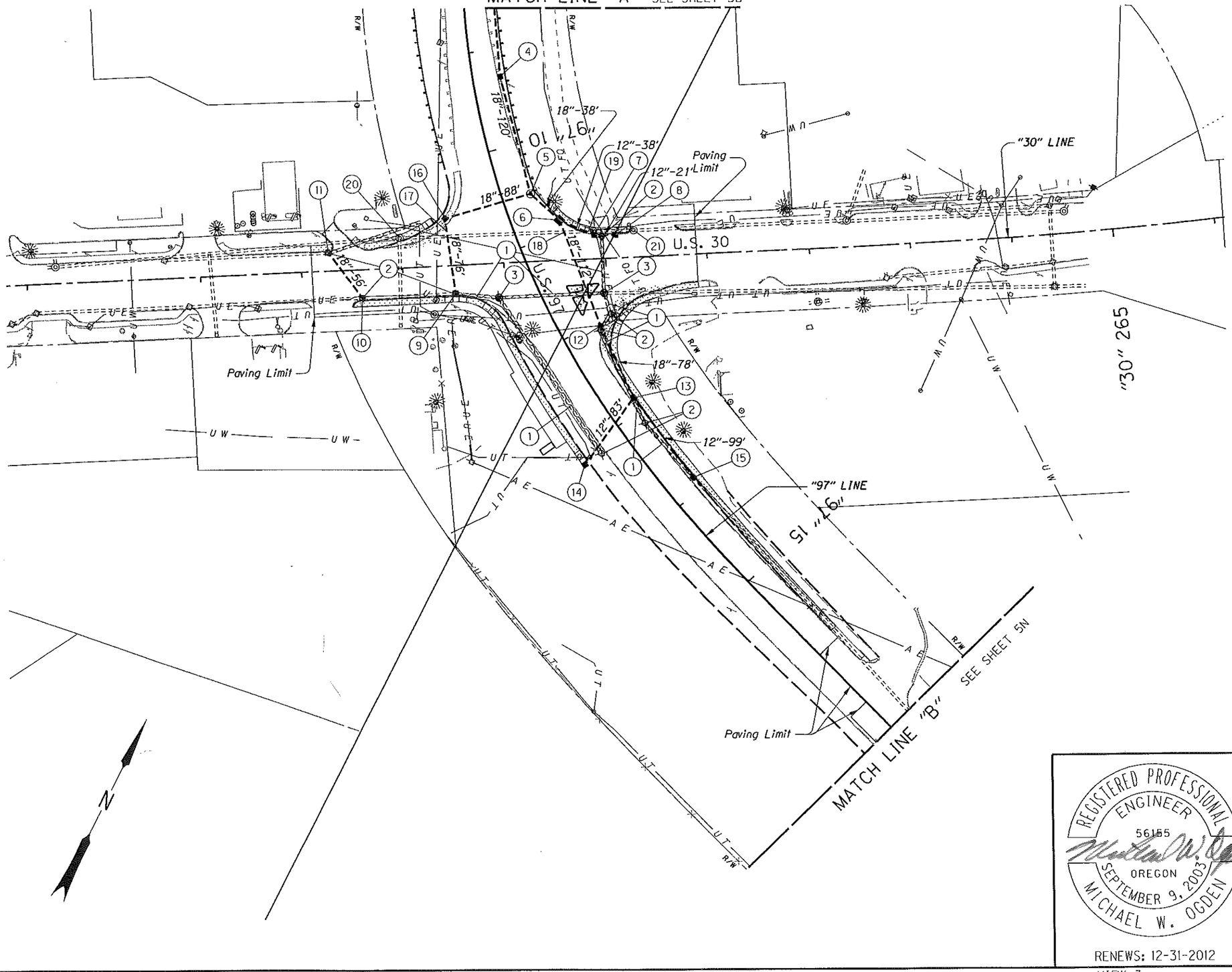
SHEET NO. 5C

VIEW 2

Sec. 8 & 9, T. 2 N., R. 16 E., W.M.

46V-015

MATCH LINE "A" SEE SHEET 5B



OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Cootney
Drafted By - Joseph J. Rodriguez

DRAINAGE & UTILITIES

SHEET NO. 5H

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2012

VIEW 3

(1) *Abandon pipe*

(2) *Remove inlets - 8*

(3) *Remove manholes - 2*

(4) *Sta. "97" 9+28.27, Lt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (18" In) - 219.14'
I.E. (18" Out) - 219.00'
Inst. 18" ductile iron pipe - 131'
5' depth
S = 0.0171'/ft

(5) *Sta. "97" 10+52.35, Lt.*
Const. manhole w/ 1.5' sump
I.E. (18" In) - 221.69'
I.E. (18" In) - 221.54'
I.E. (18" Out) - 221.44'
Inst. 18" storm sew. pipe - 120'
5' depth
S = 0.0192'/ft

(6) *Sta. "97" 10+87.47, Lt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 222.46'
I.E. (18" In) - 222.37'
I.E. (18" Out) - 222.27'
Inst. 18" storm sew. pipe - 38'
5' depth
S = 0.0192'/ft

(7) *Sta. "30" 270+10.24, Rt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 222.94'
I.E. (12" Out) - 222.84'
Inst. 12" storm sew. pipe - 38'
5' depth
S = 0.0100'/ft

(8) *Sta. "30" 269+89.36, Rt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" Out) - 223.14'
Inst. 12" storm sew. pipe - 21'
5' depth
S = 0.0100'/ft

(9) *Sta. "30" 271+49.07, Lt.*
Connect to extg. storm sew. pipe
Const. type "G-2" inlet w/ 1.5' sump
I.E. (18" In) - 225.69'
I.E. (18" Out) - 225.59'
Inst. 18" storm sew. pipe - 76'
5' depth
S = 0.005'/ft

(10) *Sta. "30" 272+41.02, Lt.*
Connect to extg. storm sew. pipe
Const. type "G-2" inlet w/ 1.5' sump
I.E. (18" In) - 226.74'
I.E. (18" In extg.) - 226.64'
I.E. (18" Out) - 226.64'

(11) *Sta. "30" 272+72.55, Rt.*
Connect to extg. storm sew. pipe
Const. type "G-2" inlet w/ 1.5' sump
I.E. (18" In, extg.) - 230.98'
I.E. (18" Out) - 228.42'
Inst. 18" storm sew. pipe - 56'
10' depth
S = 0.0300'/ft

(12) *Sta. "97" 12+05.21.05, Lt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (18" In) - 224.15'
I.E. (18" Out) - 224.05'
Inst. 18" storm sew. pipe - 112'
5' depth
S = 0.0150'/ft

(13) *Sta. "97" 12+85.60, Lt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 225.42'
I.E. (12" In) - 227.28'
I.E. (18" Out) - 225.32
Inst. 18" storm sew. pipe - 78'
10' depth
S = 0.0150'/ft

(14) *Sta. "97" 13+12.41, Rt.*
Const. type "D" inlet w/ 1.5' sump
I.E. (12" Out) - 229.85'
Inst. 12" storm sew. pipe - 83'
5' depth
S = 0.0312'/ft

(15) *Sta. "97" 13+86.65, Lt.*
Connect to extg. storm sew. pipe
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In extg.) - 227.73'
I.E. (12" Out) - 227.63'
Inst. 12" storm sew. pipe - 99'
5' depth
S = 0.0225'/ft

(16) *Sta. "97" 10+49.41, Rt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (18" In) - 225.21'
I.E. (18" Out) - 225.11'
Inst. 18" storm sew. pipe - 88'
5' depth
S = 0.0385'/ft

(17) *Sta. "97" 10+65.63, Rt.*
Const. conc. saddle
(See drg. no. RD306)

(18) *Sta. "97" 11+01.14, Lt.*
Const. conc. saddle

(19) *Sta. "97" 11+09.15, Lt.*
Const. conc. saddle

(20) *Adjust manhole - major*
(See drg. no. RD360)

(21) *Adjust manhole - minor*

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2005
MICHAEL W. OGDEN
RENEWS: 12-31-2012

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

DRAINAGE NOTES

SHEET NO. 5J

Sec. 9, T. 2 N., R. 16 E., W.M.

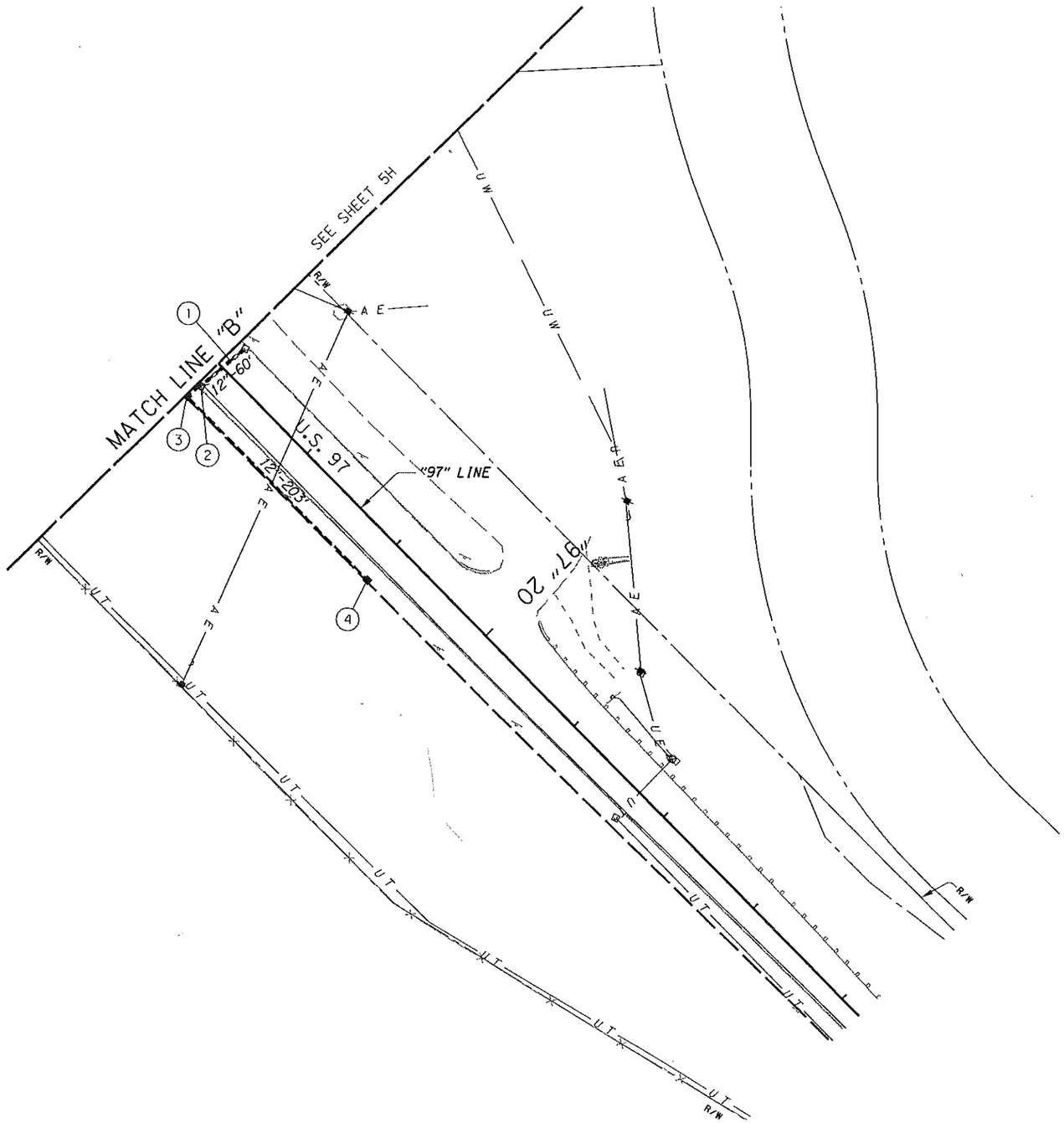
46V-015

(1) *Remove pipe - 43.1'*

(2) *Remove inlet*

(3) *Sta. "97" 17+01.44 Rt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E.(12" In) - 236.30'
I.E.(12" Out) - 236.20'
Inst. 12" storm sew. pipe - 60'
10' depth
S = 0.0219'/ft
Connect to extg. inlet

(4) *Sta. "97" 19+04.25 Rt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E.(12" Out) - 241.39'
Inst. 12" storm sew. pipe - 203'
5' depth
s = 0.0251'/ft



N

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

REGISTERED PROFESSIONAL ENGINEER
56158
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
RENEWS: 12-31-2012

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

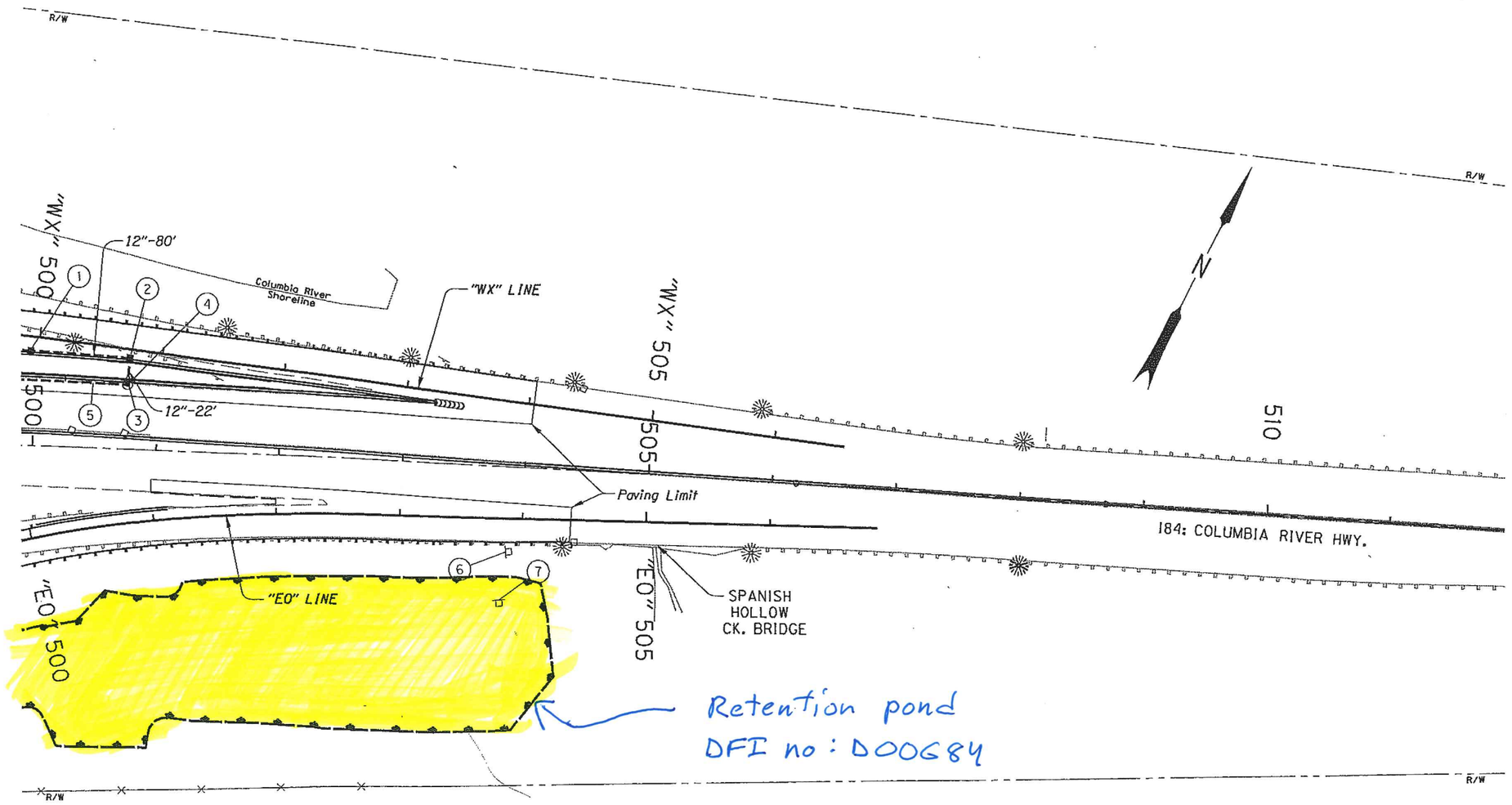
Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

DRAINAGE & UTILITIES

SHEET NO. 5N

Sec. 9, T. 2 N., R. 16 E., W.M.

46V-015



(1) *See shts. 5B & 5C Note 10*

(2) *Sta. "WX" 500+73.81 Rt.*
Const. type "G-2" inlet w/ 1.5' sump
I.E. (12" In) - 180.49'
I.E. (12" Out) - 180.39'
Inst. 12" storm sew. pipe - 22'
5' depth
S = 0.0232'/ft

(3) *Sta. "84" 500+75.41, Lt.*
Connect to extg. storm sew. pipe
Const. manhole
I.E. (12" Extg.) - 180.45'
I.E. (12" In) - 179.88'
I.E. (18" Out) - 179.78'
Inst. 18" ductile iron pipe - 229'
5' depth
S = 0.0032'/ft

(4) *Remove culv. pipe - 7'*

(5) *Sta. "84" 500+25.41 to Sta. "84" 500+75.41, Lt.*
Const. conc. cap
(For details, see sht. 2B-5)

(6) *Inst. type "S1" marker - red*

(7) *Inst. type "S2" marker*
DFI no. D00684

REGISTERED PROFESSIONAL ENGINEER
56155
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN

RENEWS: 12-31-2012

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

FFO - I-84 @ US97 INTERCHANGE
(BIGGS JUNCTION) PROJECT
COLUMBIA RIVER HIGHWAY
SHERMAN COUNTY

Reviewed By - Michael W. Ogden
Designed By - Wade J. Coatney
Drafted By - Joseph J. Rodriguez

DRAINAGE & UTILITIES

SHEET NO. 6A