OPERATION & MAINTENANCE MANUAL

Water Quality Bioretention Pond

Manual prepared: 7/2021

DFI No. D01342

1. Identification

Drainage Facility ID (DFI):	D01342
Facility Type:	Water Quality Bioretention Pond
Construction Drawings:	(54V-063)
Location:	District: 10
	Highway No.: 007
	Mile Post: 3.49 to 3.505, Lt.

2. Manual Purpose

The purpose of this manual is to outline inspection needs and summarize maintenance actions for stormwater ponds.

3. Facility Location

The location map below details the facility location. The highway, mile posts, side streets, access location, and stormwater flow directions are noted on the map.

Facility location type: Roadway shoulder

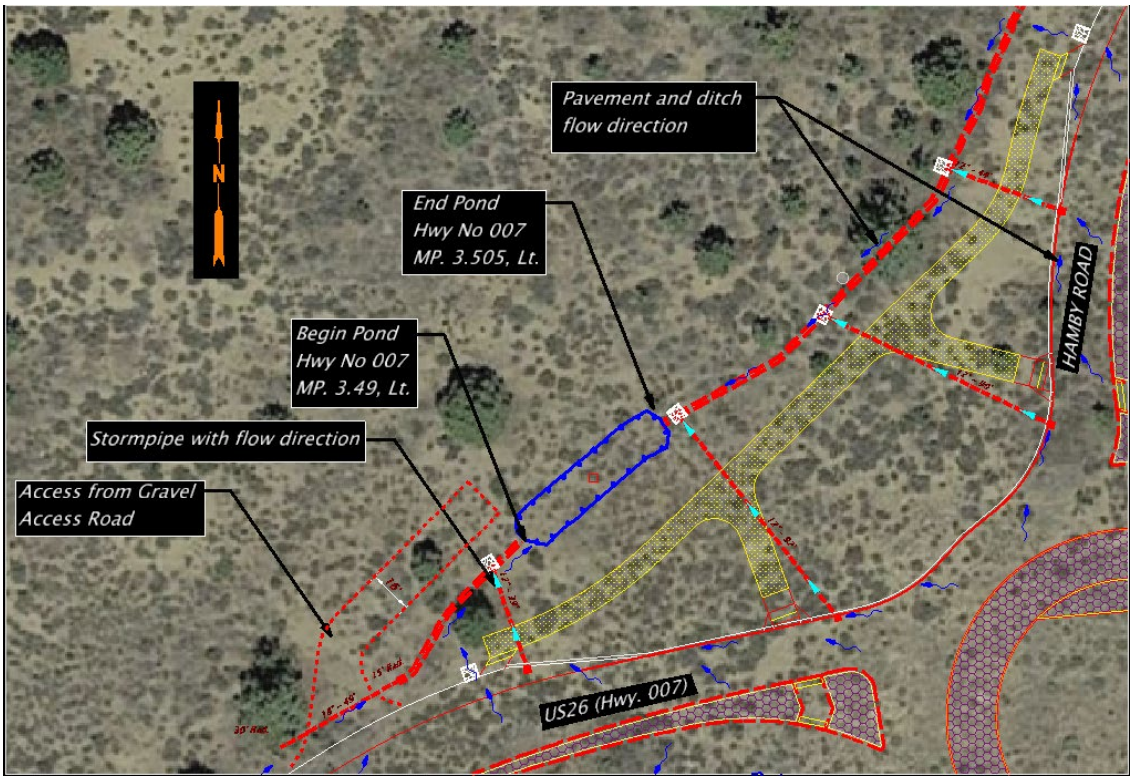


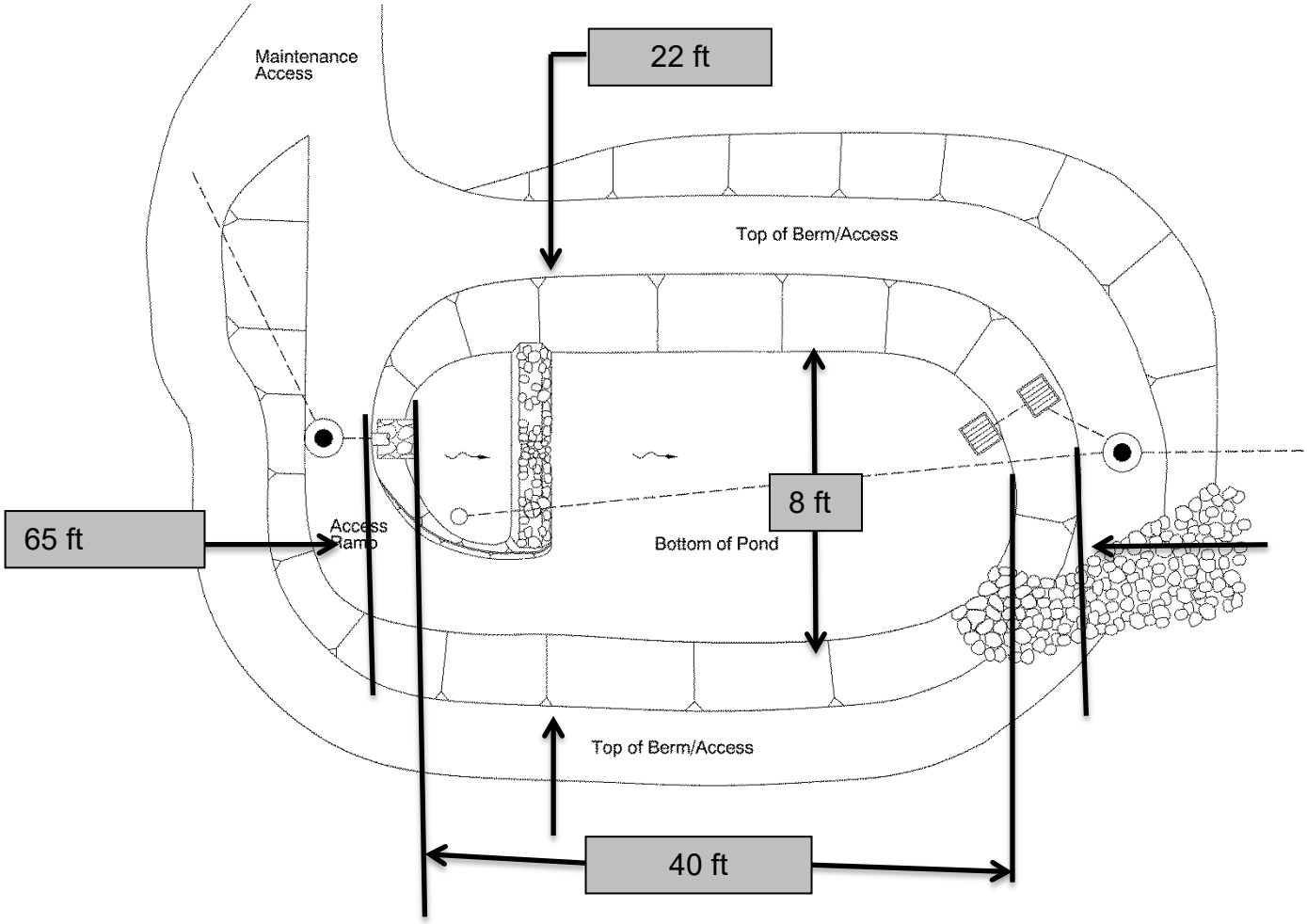
Figure 1: Facility location map.

4. Facility Summary

The pond size is based on storage volume, the bottom and top surface areas and the depth are used for this measurement.

The bottom area and top area of the pond is:

Bottom Area (sq. ft.)	Top Area (sq. ft.)
320	1430

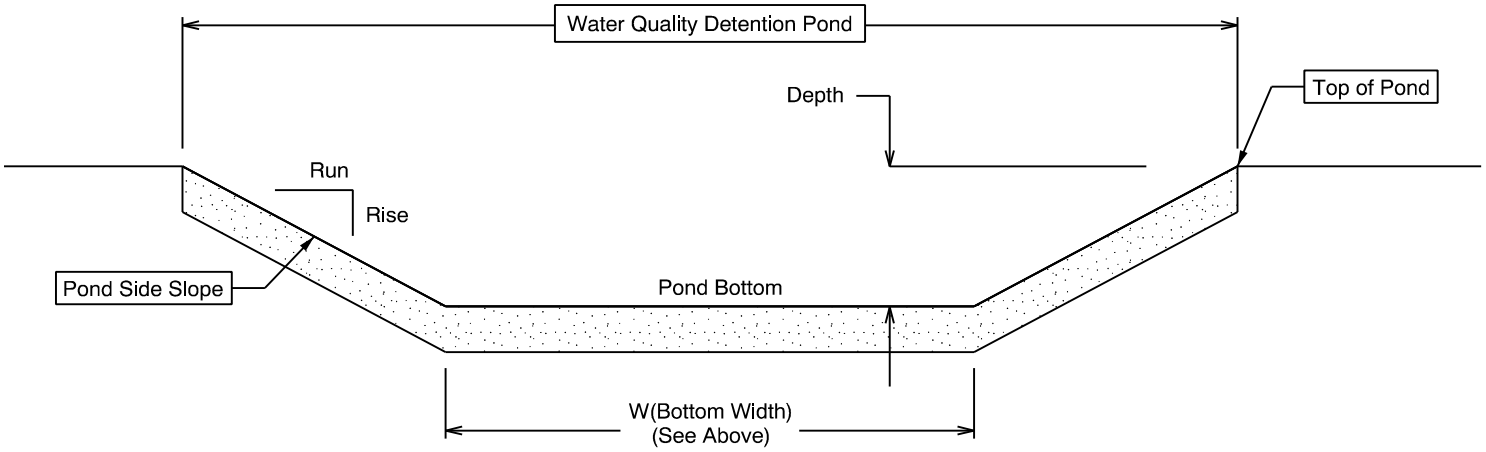


The depth of the pond is the vertical distance measured from the bottom of the pond to the top. The slope of the pond sides is presented by a vertical distance (rise) followed by the horizontal distance (run).

Depth and side slopes:

Depth (feet)
2

Side Slope	
Rise (feet)	**1**
Run (feet)	**3**



Site Specific Information: Pond is connected to Pond DFI D01344 via an overflow ditch. Water quality material will only be placed up to 1 foot above pond bottom. Pond is placed in a larger deeper basin that is depicted, but what is noted are the general functionality limits of the pond.

Facility Access

Maintenance access to the facility:

☐Roadside pad	☐Roadside shoulder
☐Access road with Gate	☒Access road without Gate

5. Operational Components / Maintenance Items

Classification and Standard Operational (Op) Plan:

This facility is classified as a:

☐ Detention Pond (Op Plan A)	☒ WQ Bioretention Pond (Op Plan B)	☐ WQ Extended Detention Dry Pond (Op Plan C)	☐ WQ Detention Pond/Biofiltration Swale Combo (Op Plan D)
A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A,B,C,D) are provided in the Standard Operation Manual.			

See Appendix A for the site specific operational plan.

Key Features/Items:

This facility is classified as a:

☒ Dry Pond	☐ Wet Pond
The pond is wet during storm events and dries during periods of no precipitation.	**The pond has constant presence of water year round. A portion of the pond dries during periods of no precipitation.**

This facility includes a **high flow bypass component**:

☒ No	☐ Yes
There is no bypass component. High flows drains into and through the facility	**There is a bypass component. Only low/small flows drain into the pond. High flows are diverted around the pond using a bypass component**

This facility includes a **proprietary structure(s)**:

☒ No	☐ Yes (DXXXXX)
There are no proprietary structures associated with this facility.	**A proprietary structure is used in the operation of this facility. The proprietary structure is a/an:** describe

Operational Components

The facility components table (**Table 1**) has been provided to highlight the applicable components for this facility. The component is in use when the box contains an "x" (e.g. ☒).

The Standard Operation Manual for Ponds outlines facility operation, typical footprint configuration, and component definitions and details. A link to the manual is attached to the feature marker in TransGIS.
https://gis.odot.state.or.us/TransGIS/

Maintenance Items

Operational components marked in **Table 1** should be inspected and maintained according to Section 7. Each facility component is defined and detailed in the Standard Operation Manual using the associated ID number indicated in the table below.

Table 1: Stormwater Pond Components		ID #
Upstream Manholes/Structures		
Pre-treatment Manhole Type: describe	☐	**P1**
Water Quality Manhole Type: describe	☐	**P2**
Flow Splitter Manhole (Weir/Orifice)	☐	**P3**
Standard Manhole	☐	**P4**
Sediment Basin/Forebay	☐	**P5**

Forebay Dewatering Riser Pipe (outlet)	☐	**P6**
Facility Inlet		
Pavement Sheet Flow	☒	**P7**
Inlet Pipe(s)	☒	**P8**
Open Channel Inlet	☒	**P9**
Riprap Pad (Energy Dissipater)	☒	**P10**
Ground Cover		
Grass Bottom	☒	**P11**
Grass Side Slopes	☒	**P12**
Granular Drain Rock	☒	**P13**
Plantings	☐	**P14**
Underground Components		
Geotextile Fabric: Type 1	☒	**P15**
Impermeable Liner	☐	**P16**
Water Quality Mix	☒	**P17**
Perforated Pipe	☐	**P18**
Bottom Marker (ex. Porous Pavers)	☒	**P19**

Flow Spreader		
Anchored Board (midpoint of pond or every 50 feet along pond bottom)	☐	**P20**
Other: describe	☐	**P21**
Facility Outlet		
Catch Basin with Grate	☐	**P22**
Outlet Pipe(s)	☐	**P23**
Outlet/Flow Control Structure	☐	**P24**
Auxiliary Outlet	☐	**P25**
Hazmat Control Valve: Specify make/model	☐	**P26**
Outfall Type		
Waterbody (**C**reek/**L**ake/**O**cean)	☐ **C** ☐ **L** ☐ **O**	**P27**
Ditch	☐	**P28**
Storm Drain System	☐	**P29**
Outfall Components		
Riprap Pad	☐	**P30**
Riprap Bank Protection	☐	**P31**

6. Maintenance

Maintenance Frequency/Maintain Records

a. Inspect annually. Preferably prior to the rainy season.

b. Clean and maintain as necessary. Refer to Activity 125 in the Maintenance Guide for conditions when maintenance is needed.
c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The Maintenance Guide outlines the standard maintenance actions for water quality facilities under Activity 125.

There are standard maintenance tables for standard ODOT designs. The maintenance tables describe the maintenance component, the defect or problem, the condition when maintenance is needed, and the recommended maintenance to correct the problem. Use the following tables to maintain ODOT Ponds:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 2 (Maintenance of Stormwater Ponds): Contains maintenance information for ponds

The ODOT Maintenance Guide can be viewed at the following website:
http://www.oregon.gov/ODOT/HWY/OOM/pages/mguide.aspx

The Blue Book can be viewed at the following website:
http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

7. Limitations

There are access limitations for this facility:

☒ No	☐ Yes
There are no porous pavers installed in this pond.	

Ponds are designed to allow equipment access along the bottom if an access grid is installed. If an access grid is NOT installed, vehicles entering the pond can create depressions (tire ruts), damage vegetation, or damage structural components (e.g. flow spreaders). These conditions may result in poor treatment and drainage performance.

If no access grid then: Equipment wheels should be kept on the tops and side slopes. Mower arms may be run along the pond bottom.

8. Waste Material Handling

Material removed from the facility is defined as waste by the Department of Environmental Quality (DEQ). Refer to the road waste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

http://www.oregon.gov/ODOT/HWY/OOM/pages/ems.aspx

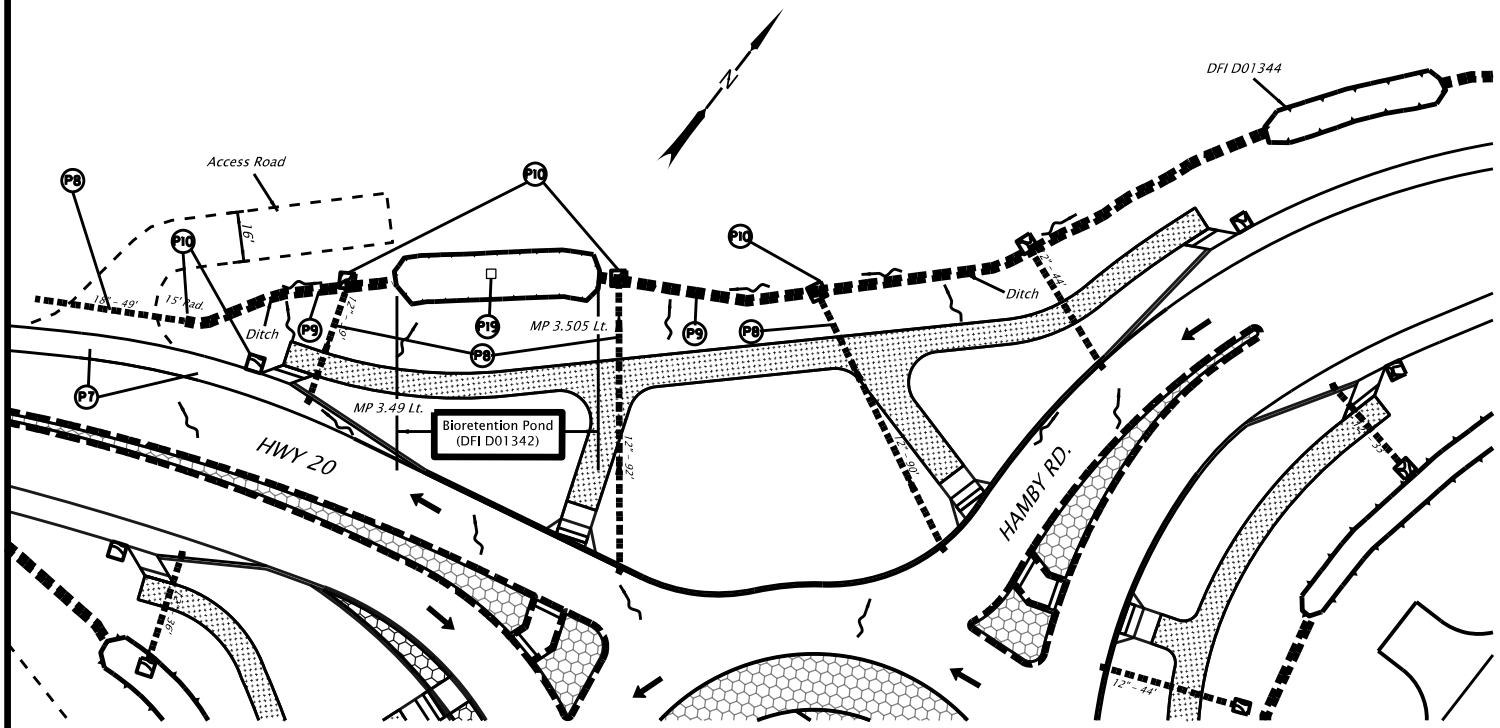
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator	(541) 963-1590
ODEQ Northwest Region Office	(503) 229-5263

A Appendix A – Site Specific Operational Plan

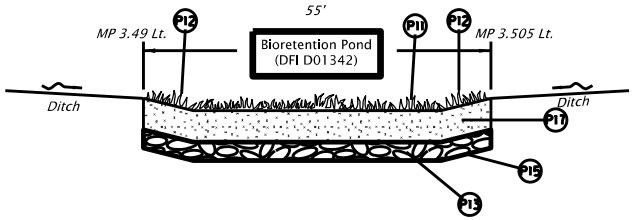
Contents:

Operational Plan: DFI D01342

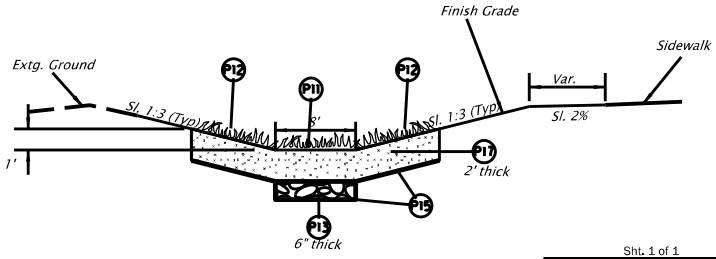


LEGEND

- Facility Component (see Table 1 in O&M Manual)
- Inlet
- Storm Pipe
- Conveyance Direction
- Water Flow Direction
- Traffic Flow Direction



Profile
N.T.S.



OREGON DEPARTMENT OF TRANSPORTATION

Sht. 1 of 1

Prepared By: Wade J. Coatney

Drafted By: Connor Auchterlonie

DFI D01342
MAINTENANCE DISTRICT 10 HWY 007
BIORETENTION POND
HIGHWAY MP 3.49 to 3.505
DESCHUTES COUNTY

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

Rotation: 0° Scale: 1"=40'

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A01	*Title Sheet*
A02	*Index Of Sheets*
A03	*Std. Dwg. Nos.*
A04 thru A07 Incl.	*Survey Control Data*
A08	*Plan Sheet Layout*

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, PAVING, CURB RAMPS, SIGNING, ILLUMINATION & ROADSIDE DEVELOPMENT

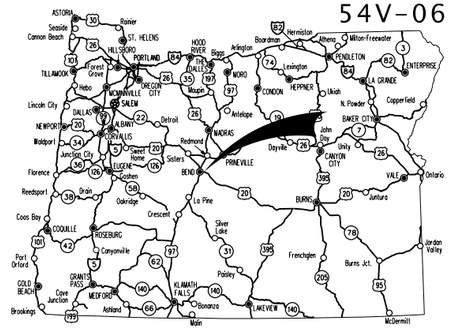
US20: WARD / HAMBY RD. INTERSECTION PROJECT

CENTRAL OREGON HIGHWAY

DESCHUTES COUNTY

SEPTEMBER 2021

54V-063

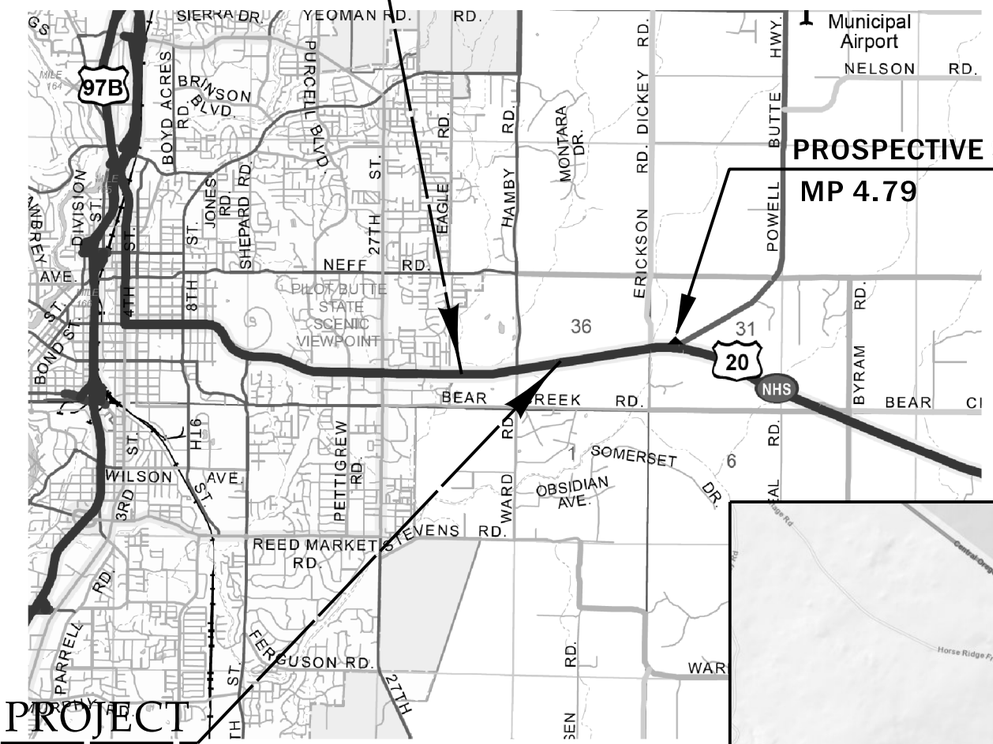


Overall Length Of Project – 0.60 Miles

ATTENTION:
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0001 Through OAR 952-001-0100. You May Obtain Copies Of The Rules By Calling The Center (Note: The Telephone Number For The Oregon Utility Notification Center Is (503) 232-1987).

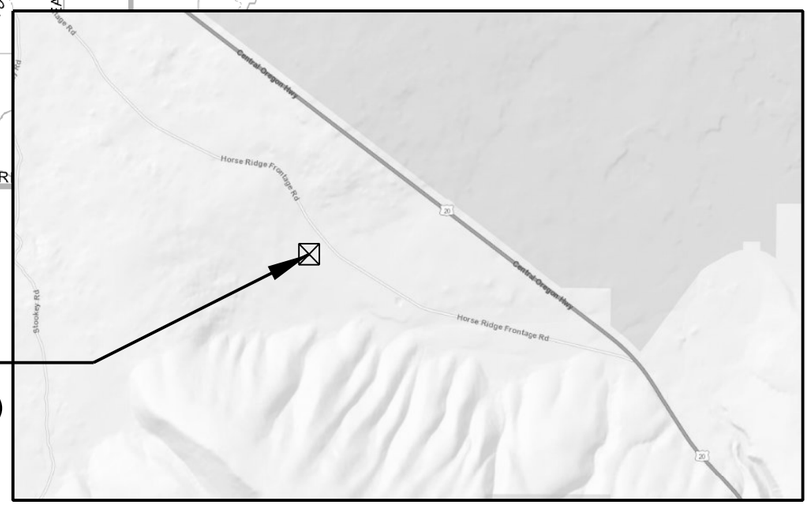
SAFETY FIRST
LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

BEGINNING OF PROJECT
STA. "L_W" 104+00
MP 3.26



END OF PROJECT
STA. "L_E" 317+15
MP 3.86

PROSPECTIVE MATERIAL SOURCE
ARNOLD ICE CAVES
HWY 007 (CENTRAL OREGON HWY)
MP 12.60



N

T. 17., R. 12., W.M.

OREGON TRANSPORTATION COMMISSION

Robert Van Brocklin	CHAIR
Alando Simpson	COMMISSIONER
Julie Brown	COMMISSIONER
Sharon Smith	COMMISSIONER
Vacant	COMMISSIONER
Kristopher W. Strickler	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.

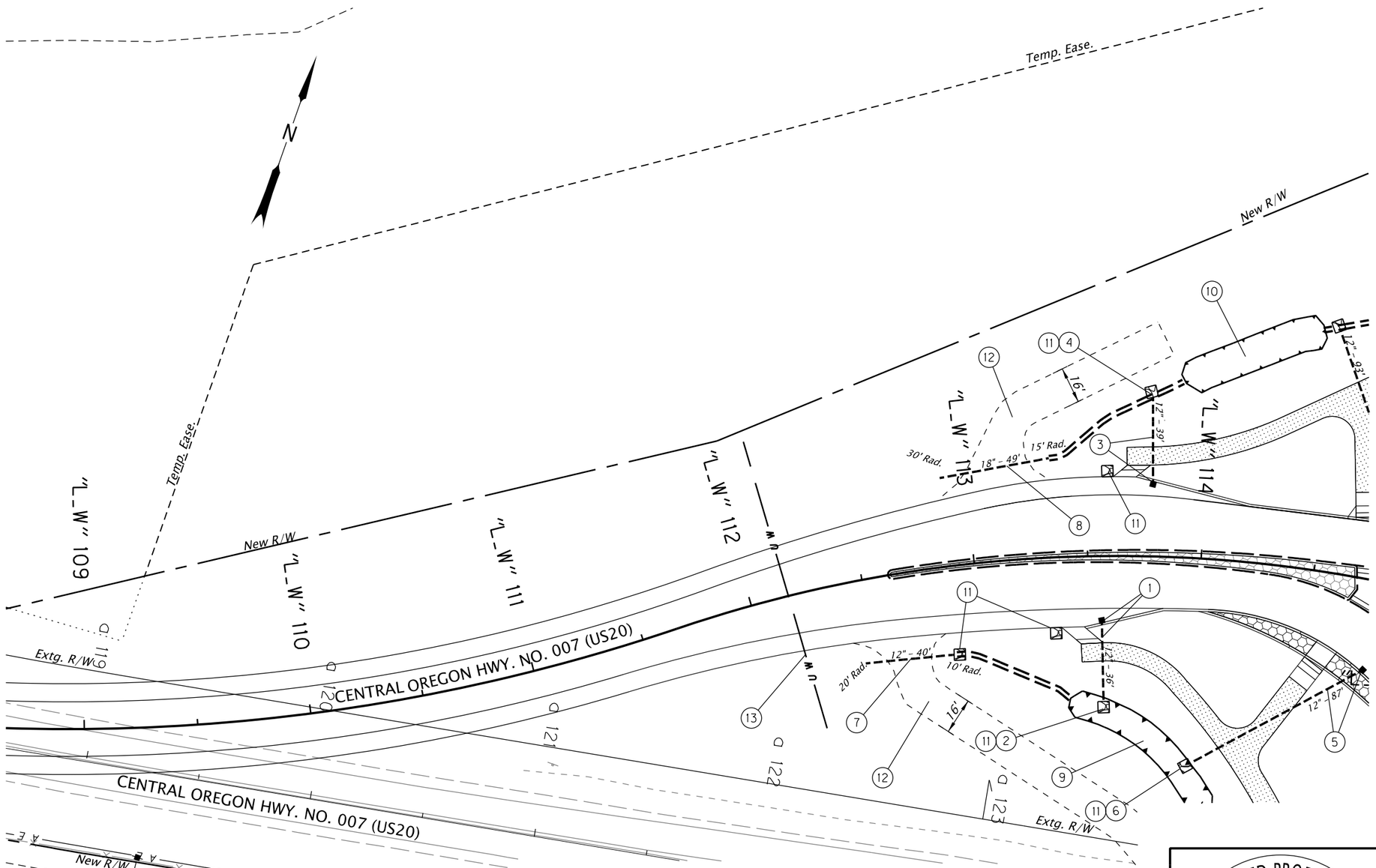
Approving Authority: _____
Signature & date

Omar Ahmed, Region 4 TCM
Print name and title

_____
Concurrence by ODOT Chief Engineer

US20: WARD / HAMBY RD. INTERSECTION PROJECT
CENTRAL OREGON HIGHWAY
DESCHUTES COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	S007(084)	A01



1. Sta."L_W" 113+55.94, 28.86' Rt.
   Const. Type "G-2" inlet - 2' sump
   I.E. (12" out) = 3613.02 (SW)
   Inst. 12" storm sew. pipe - 36'
   5' depth
   slope = 0.010 ft./ft.
   (See dwg. nos. RD300, RD325, RD326, RD336, RD339, RD363, RD365, RD366, RD380, RD386 & RD388)

2. Sta."L_W" 113+56.32, 64.03' Rt.
   I.E. (12" outfall) = 3612.67 (SW)
   Const. sloped end
   (See dwg. nos. RD316, RD318 & RD319)

3. Sta."L_W" 113+78.07, 32.50' Lt.
   Const. Type "G-2" inlet - 2' sump
   I.E. (12" out) = 3613.02 (NW)
   Inst. 12" storm sew. pipe - 39'
   5' depth
   slope = 0.005 ft./ft.

4. Sta."L_W" 113+77.08, 70.02' Lt.
   I.E. (12" outfall) = 3612.84 (NW)
   Const. sloped end

5. Sta."L_W" 114+79.01, 40.08' Rt.
   Const. Type "G-2" inlet - 2' sump
   I.E. (12" out) = 3614.13 (SW)
   Inst. 12" storm sew. pipe - 87'
   5' depth
   slope = 0.017 ft./ft.

6. Sta."L_W" 114+00.90 , 90.25' Rt.
   I.E. (12" outfall) = 3612.69 (SW)
   Const. sloped end

7. Sta."L_W" 112+44.47 to Sta. 112+86.11
   Inst. 12" ductile iron pipe - 40'
   5' depth
   slope = 0.011 ft./ft.
   I.E. Inlet = 3613.97 (W)
   I.E. Outfall = 3613.54 (E)
   Const. sloped ends - 2
   (See Dwg. nos. RD319 & RD327)

8. Sta."L_W" 112+89.45 to Sta. 113+34.91
   Inst. 18" ductile iron pipe - 49'
   5' depth
   slope = 0.005 ft./ft.
   I.E. In = 3613.51 (W)
   I.E. Out = 3613.27 (E)
   Const. sloped ends - 2

9. Const. Bioretention Pond DFI no. D01341
   (For details, see sht. HA04)

10. Const. Bioretention Pond DFI no. D01342
    (For details, see sht. HA01)

11. Const. riprap pad
    Class 50 riprap - 0.9 cu. yd., ea.
    W = 5', L = 5', T = 2.3'
    (See dwg. no. RD317)

12. Const. appoach - gravel
    (See dwg. no. RD715)

13. Approx. prop. Avion waterline
    (To be installed during construction)
    Preserve and protect after installation
    (See Special Provision 00150.50)

REGISTERED PROFESSIONAL ENGINEER
87978
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2021

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

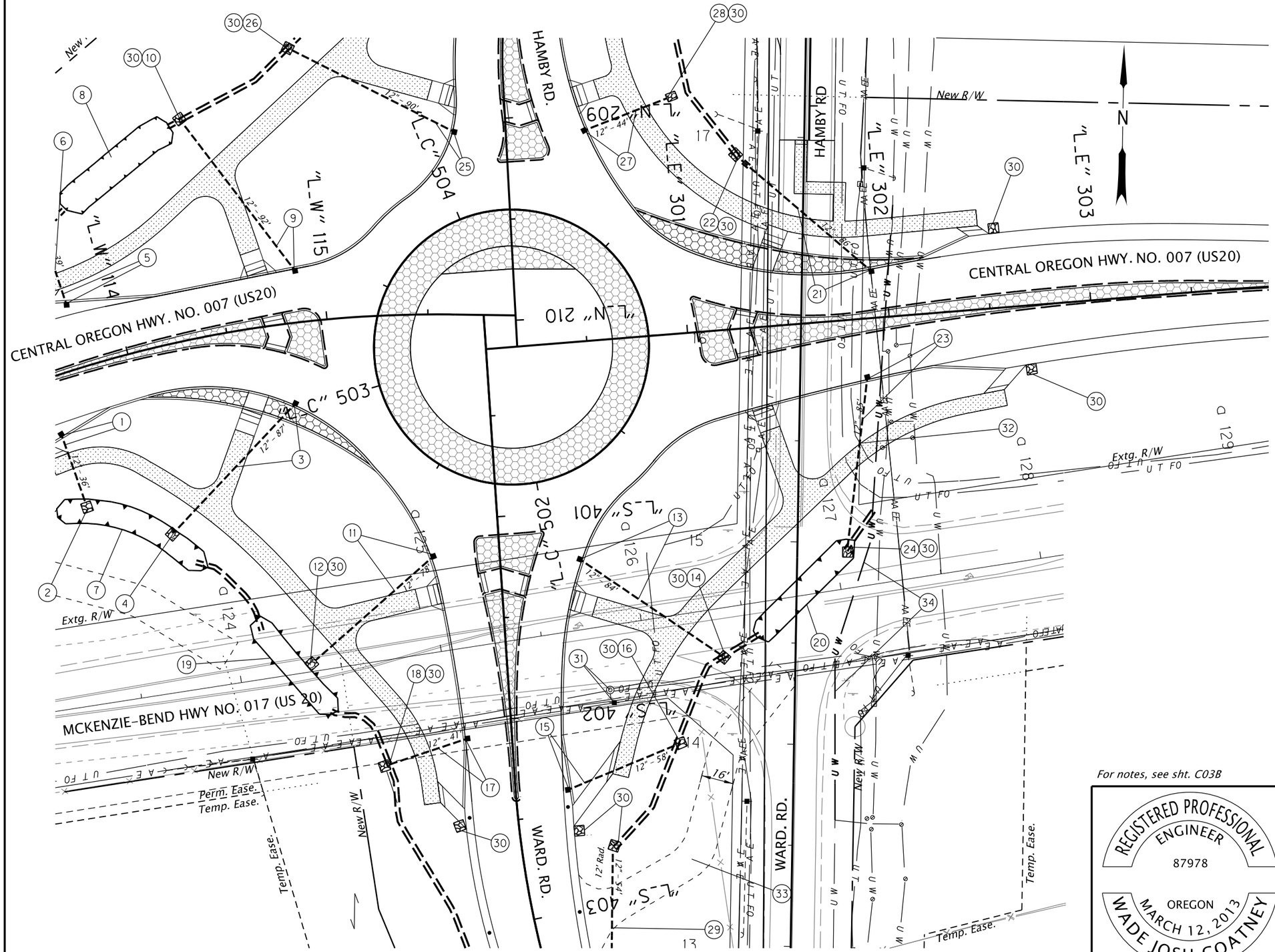
OREGON DEPARTMENT OF TRANSPORTATION

US20: WARD / HAMBY RD. INTERSECTION PROJECT
CENTRAL OREGON HIGHWAY
DESCHUTES COUNTY

Designer: Connor J. Auchterlonie
Reviewer: Wade J. Coatney
Drafter: Rhonda L. Freeman
Checker: Chad M. Howard

DRAINAGE & UTILITIES

SHEET NO. C02A



For notes, see sht. C03B

REGISTERED PROFESSIONAL ENGINEER
87978
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

US20: WARD / HAMBY RD. INTERSECTION PROJECT
CENTRAL OREGON HIGHWAY
DESCHUTES COUNTY

Designer: Connor J. Auchterlonie
Drafter: Rhonda L. Freeman
Reviewer: Wade J. Coatney
Checker: Chad M. Howard

DRAINAGE & UTILITIES

SHEET NO. C03A

Rotation: 0° Scale: 1"=50'

(1) *See sht. C02A, note 1*

(2) *See sht. C02A, note 2 & 11*

(3) *See sht. C02A, note 5*

(4) *See sht. C02A, note 6 & 11*

(5) *See sht. C02A, note 3*

(6) *See sht. C02A, note 4 & 11*

(7) *See sht. C02A, note 9*

(8) *See sht. C02A, note 10*

(9) *Sta."L_W" 114+87.05, Lt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3614.57 (NW)
Inst. 12" storm sew. pipe - 92'
5' depth
slope = 0.021 ft./ft.

(10) *Sta."L_W" 114+46.95, 105.83' Lt.*
I.E. (12" outfall) = 3612.65 (NW)
Const. sloped end

(11) *Sta."L_S" 401+17.60 Rt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3614.46 (SW)
Inst. 12" storm sew. pipe - 78'
5' depth
slope = 0.015 ft./ft.

(12) *Sta."L_S" 401+64.81, 94.38' Rt.*
I.E. (12" outfall) = 3613.28 (SW)
Const. sloped end

(13) *Sta."L_S" 401+23.68, Lt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3614.23 (SE)
Inst. 12" storm sew. pipe - 84'
5' depth
slope = 0.014 ft./ft.

(14) *Sta."L_S" 401+75.12, 105.33' Lt.*
I.E. (12" outfall) = 3613.10 (SE)
Const. sloped end

(15) *Sta."L_S" 402+37.37, Lt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3613.20 (NE)
Inst. 12" storm sew. pipe - 58'
5' depth
slope = 0.005 ft./ft.

(16) *Sta."L_S" 402+18.58, 80.7' Lt.*
I.E. (12" outfall) = 3612.91 (NE)
Const. sloped end

(17) *Sta."L_S" 402+08.48 , Rt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3613.61 (SW)
Inst. 12" storm sew. pipe - 41'
5' depth
slope = 0.006 ft./ft.

(18) *Sta."L_S" 402+18.64, 61.41' Rt.*
I.E. (12" outfall) = 3613.38 (SW)
Const. sloped end

(19) *Const. Bioretention Pond DFI no. D01343*
(For details, see sht. HA04)

(20) *Const. Bioretention Pond DFI no. D01345*
(For details, see sht. HA03)

(21) *Sta."L_E" 301+92.97, Lt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3613.15 (NE)
Inst. 12" storm sew. pipe - 86'
5' depth
slope = 0.008 ft./ft.

(22) *Sta."L_E" 301+32.37, 84.02' Lt.*
I.E. (12" outfall) = 3612.48 (NE)
Const. sloped end

(23) *Sta."L_E" 301+87.00, Rt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3613.14 (SW)
Inst. 12" storm sew. pipe - 85'
5' depth
slope = 0.005 ft./ft.

(24) *Sta."L_E" 301+70.40, 111.95' Rt.*
I.E. (12" outfall) = 3612.72 (SW)
Const. sloped end

(25) *Sta."L_N" 209+05.30, Rt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3614.53 (NW)
Inst. 12" storm sew. pipe - 90'
5' depth
slope = 0.011 ft./ft.

(26) *Sta."L_N" 208+67.51, 103.87' Rt.*
I.E. (12" outfall) = 3613.56 (NW)
Const. sloped end

(27) *Sta."L_N" 209+08.10, Lt.*
Const. Type "G-2" inlet - 2' sump
I.E. (12" out) = 3614.32 (NE)
Inst. 12" storm sew. pipe - 44'
5' depth
slope = 0.020 ft./ft.

(28) *Sta."L_N" 208+94.50, 80.43' Lt.*
I.E. (12" outfall) = 3613.45 (NE)
Const. sloped end

(29) *Sta."L_S" 403+28.71 to Sta. 402+72.16*
Inst. 12" ductile iron pipe - 54'
5' depth
slope = 0.009 ft./ft.
I.E. Inlet = 3614.27 (S)
I.E. Outfall = 3613.80 (E)
Const. sloped ends - 2

(30) *Const. riprap pad*
Class 50 riprap - 0.9 c.u. yd., ea.
W = 5', L = 5', T = 2.3'

(31) *Protect in place*

(32) *Adjust LS Networks flexible conduit to suit*
Anticipated exc. 12 cu.yd.

(33) *Const. appoach - gravel*

(34) *Approx. prop. Avion waterline*
(To be installed during construction)
Preserve and protect after installation
(See Special Provision 00150.50)

REGISTERED PROFESSIONAL ENGINEER
87978
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2021

OREGON DEPARTMENT OF TRANSPORTATION

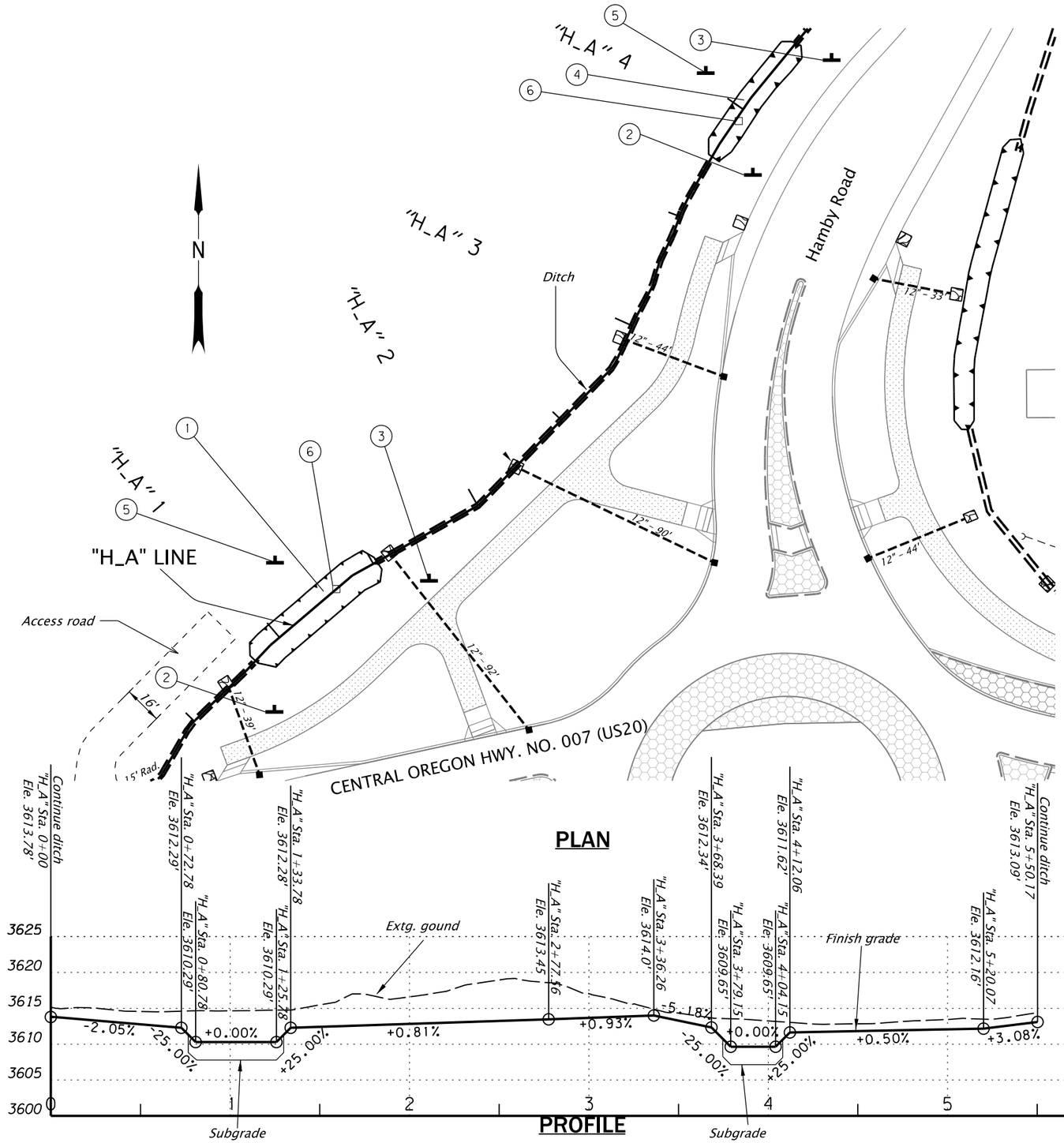
US20: WARD / HAMBY RD. INTERSECTION PROJECT
CENTRAL OREGON HIGHWAY
DESCHUTES COUNTY

Designer: Connor J. Auchterlonie | Reviewer: Wade J. Coatney
Drafter: Rhonda L. Freeman | Checker: Chad M. Howard

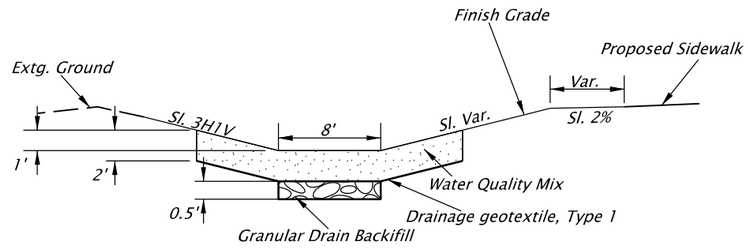
DRAINAGE & UTILITIES NOTES

SHEET NO. C03B

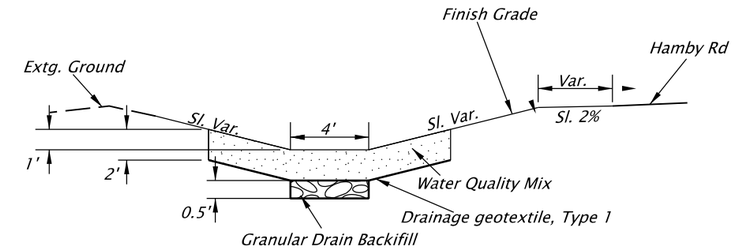
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST



1. Sta. "H_A" 0+88.9 to 1+49.9
   Const. Bioretention Pond DFI no. D01342
2. Inst. field facility marker - 2
   Type S1, green
   (See dwg. no. RD399)
3. Inst. field facility marker - 2
   Type S1, red
   (See dwg. no. RD399)
4. Sta. "H_A" 3+84.28 to 4+27.95
   Const. Bioretention Pond DFI no. D01344
5. Inst. field facility marker - 4
   Type S2
   (See dwg. no. RD399)
6. Const. conc. bottom marker - 2
   3'x3'x4"
   Elev. - match pond bottom



"H_A" Sta. 0+76.7 to 1+29.9



"H_A" Sta. 3+74.7 to 4+08.1

TYPICAL SECTION

General Notes:

1. Excavation to finish grade, including ditch excavation excavation will be paid with earthwork pay items. For quantities, see Roadway Sheets.

2. For ditch details, see Typical Sections

REGISTERED PROFESSIONAL ENGINEER
87978
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2021

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

US20: WARD / HAMBY RD. INTERSECTION PROJECT
CENTRAL OREGON HIGHWAY
DESCHUTES COUNTY

Designer: Connor J. Auchterlonie
Reviewer: Wade J. Coatney
Drafter: Rhonda L. Freeman
Checker: Chad M. Howard

STORMWATER PLAN

SHEET NO. HA01