

OPERATION & MAINTENANCE MANUAL

Water Quality Bioslope

Manual prepared: December 2021

DFI No. D01422

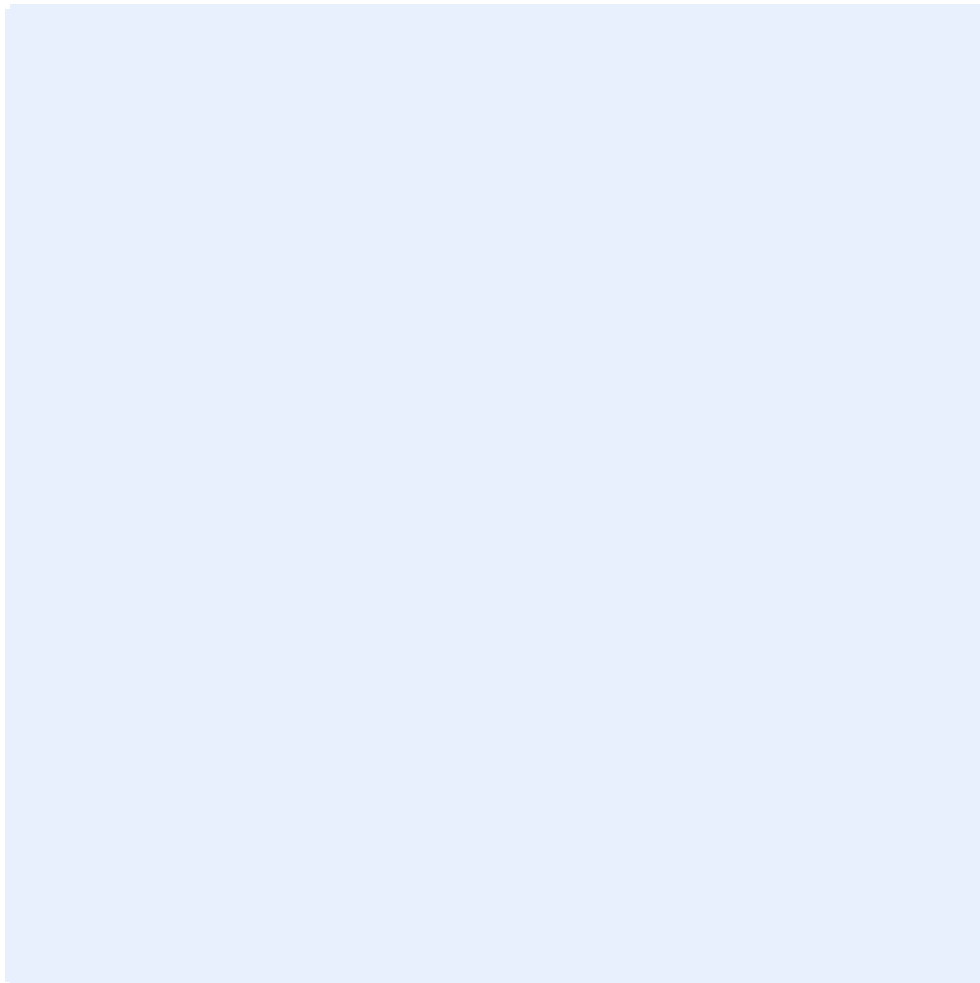


Figure 1: DFI No. D01422, looking [cardinal direction]

1. Identification

Drainage Facility ID (DFI): D01422
Facility Type: Water Quality Bioslope
Construction Drawings: (V-File Numbers) 54V-102
Location: District: 4
Highway No.: 031
Mile Post: 5.61 to 5.42, Right

2. Manual Purpose

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

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. **NOTE: Mile posts are based off of the V-File, and may vary from TransGIS mile posts.**

Facility location type: **Roadway shoulder**

Flow direction: North

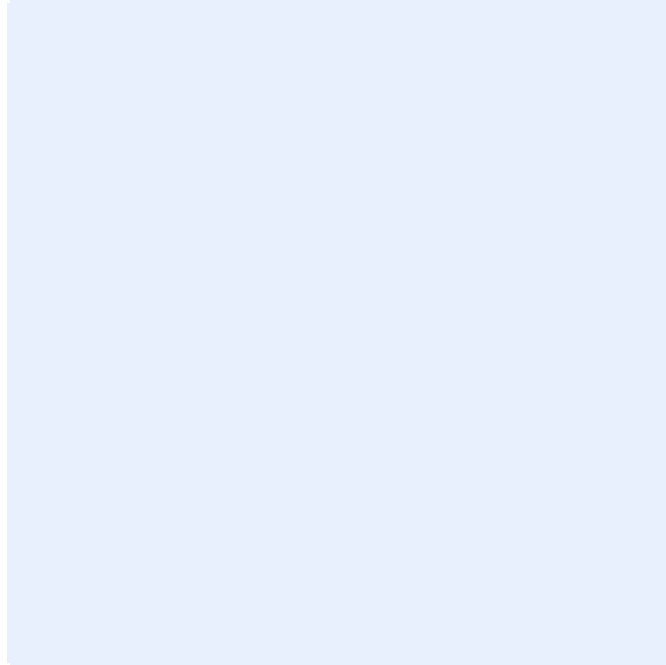


Figure 2: [Placeholder facility location map]

4. Facility Summary

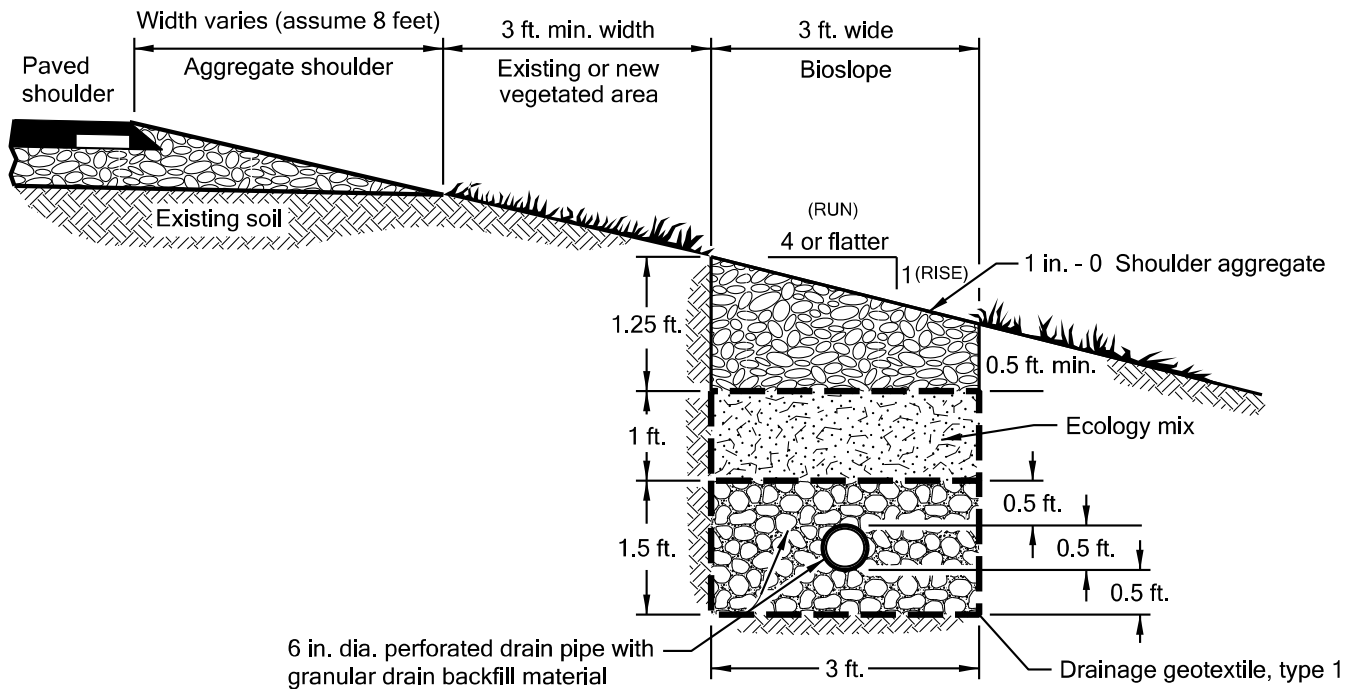
The width is measured perpendicular to the edge of pavement and is equivalent to the flow length. The length is measured parallel to the edge of pavement and is equivalent to the length of the contributing impervious area.

The length and width of the applicable facility components are:

Component	Length (feet)	Width (feet)
Bioslope	997	2

The slope of the facility is presented by a vertical distance (rise) followed by the horizontal distance (run).

Side Slope	Rise (feet)	Run (feet)
Bioslope	1	6



SECTION A-A

NTS

Figure 3: BioSlope Section

Site Specific Information: This facility is located on the north side of southbound US-20 between the edge of pavement and conveyance ditch adjacent to the railroad. The facility is west of the US-20 and NE Granger Ave. intersection.

5. Facility Access

Maintenance access to the facility:

<input type="checkbox"/> Roadside pad	<input checked="" type="checkbox"/> Roadside shoulder
<input type="checkbox"/> Access road with Gate	<input type="checkbox"/> Access road without Gate

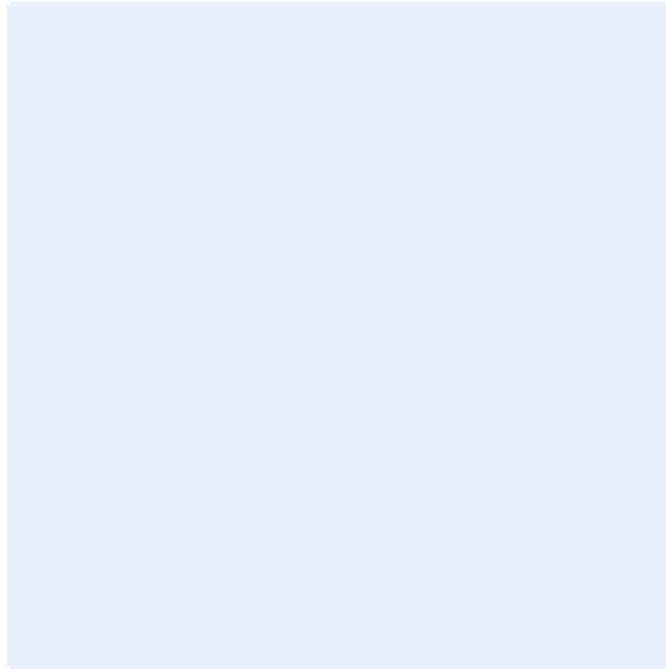


Figure 3: [insert post construction facility access photo and caption text]

6. Operational Components / Maintenance Items

Classification and Standard Operational (Op) Plan:

This facility is classified as a:

<input type="checkbox"/> Filter Strip (Op Plan A)	<input checked="" type="checkbox"/> Bioslope (Op Plan B)
<p>A filter strip consists of a vegetated or media slope located parallel to the edge of pavement. It maintains sheet flow of stormwater runoff over the width of the strip.</p>	<p>A bioslope consists of a filter strip and treatment zone. It is a flow-through stormwater treatment facility located along roadside embankments.</p>
<p>A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A, B) are provided in the Standard Operation Manual.</p>	

See Appendix A for the site specific operational plan.

Operational Components

Filter strips and bioslopes have many components that assist with treatment, conveyance, and infiltration of stormwater runoff. The components in use can vary depending on the facility design. 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 Water Quality Filter Strips and Bioslopes (implemented March 2017) 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 below.

Table 1: Bioslope/Filter Strip Components		ID #
Facility Inlet		
Pavement Sheet Flow	<input checked="" type="checkbox"/>	B1
Shoulder Aggregate	<input checked="" type="checkbox"/>	B2
Ground Cover		
Vegetated Slope	<input checked="" type="checkbox"/>	B3
Aggregate Media Slope	<input type="checkbox"/>	B4
Underground Components		
Water Quality Mix	<input type="checkbox"/>	B5
Ecology Mix	<input checked="" type="checkbox"/>	B6
Granular Drain Backfill Material	<input checked="" type="checkbox"/>	B7
Geotextile Fabric	<input checked="" type="checkbox"/>	B8
Geocell Grid	<input type="checkbox"/>	B9
Structures		
Curb/Berm	<input type="checkbox"/>	B10
Check Dam	<input type="checkbox"/>	B11
Cleanout	<input type="checkbox"/>	B12
Facility Outlet		
Perforated Drain Pipe	<input type="checkbox"/>	B13
Open Slope Outlet	<input checked="" type="checkbox"/>	B14
Open Channel Outlet	<input type="checkbox"/>	B15
Storm Drain Outlet Pipe	<input type="checkbox"/>	B16
Outfall Type		
Waterbody (Creek/Lake/Ocean)	<input type="checkbox"/> C	B17
	<input type="checkbox"/> L	
	<input type="checkbox"/> O	
Outfall Channel	<input checked="" type="checkbox"/>	B18
Storm Drain System	<input type="checkbox"/>	B19
Outfall Components		
Pervious Berm	<input type="checkbox"/>	B20
Riprap Pad	<input type="checkbox"/>	B21

7. Maintenance

Maintenance Frequency/Maintain Records

- a. Inspect annually. Preferably prior to the rainy season.
- b. Clean and maintain as necessary. Refer to Activity 125 for conditions when maintenance is needed.
- c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The ODOT Routine Road Maintenance Water Quality and Habitat Guide (the *Blue Book*) 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 filter strips and bioslopes:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 4 (Water Quality Filter Strips)
- Table 5 (Water Quality Bioslopes)

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

8. Limitations

Filter strips and bioslopes are NOT designed to allow the use of heavy equipment. Vehicles entering the facility can create depressions (tire ruts), damage vegetation, and damage structural components (e.g. flow spreaders). These conditions may result in poor treatment and drainage performance.

9. 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>

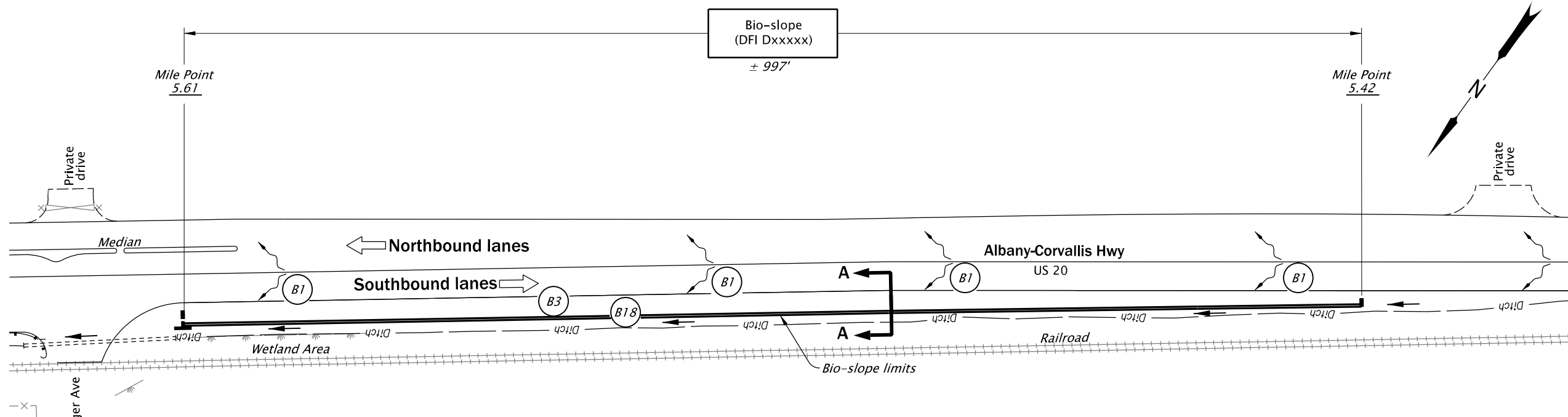
Contact any of the following for more detailed information about management of waste materials found on site:

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

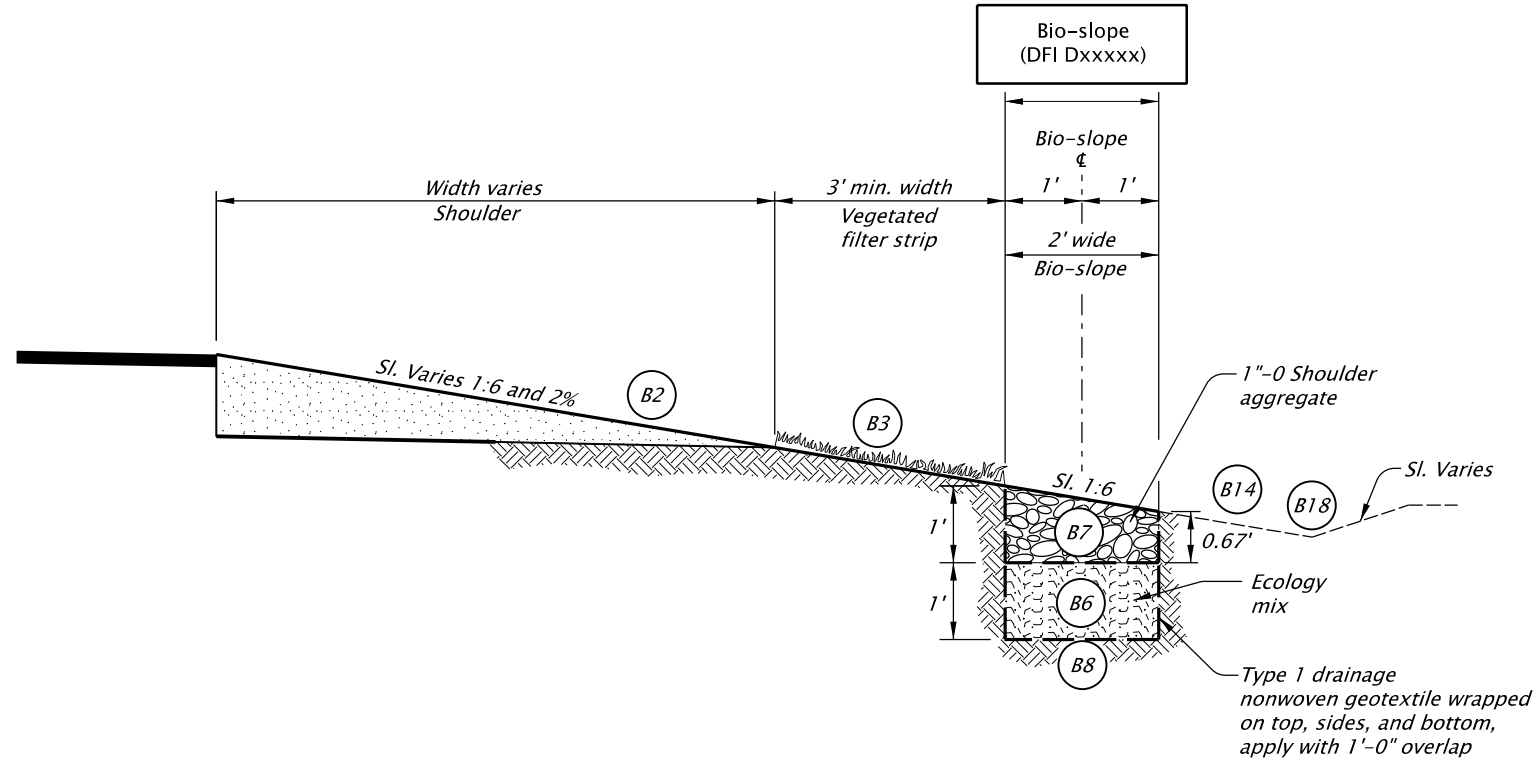
A Appendix A – Site Specific Operational Plan

Contents:

Operational Plan: DFI D01422



PLAN
Not to Scale



SECTION A-A
Not to Scale

- LEGEND**
- Photo location / direction
 - Facility component (see Table 1 in O&M Manual)
 - Manhole
 - Inlet
 - Storm pipe (Facility)
 - Storm pipe
 - Bio-slope boundary
 - Conveyance direction
 - Pavement / facility flow path
 - Traffic flow direction

Sht. 1 of 1

Prepared By:
Mike Rice

Drafted By:
Edita Boguslawski

DAVID EVANS AND ASSOCIATES INC.
2100 S River Parkway
Portland Oregon 97201
Phone: 503.223.6663

DFI D#####
MAINTENANCE DISTRICT # HWY 20
BIO-SLOPE
ALBANY-CORVALLIS HIGHWAY MP 5.42 - 5.61
BENTON COUNTY

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 54V-102

STATE OF OREGON
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

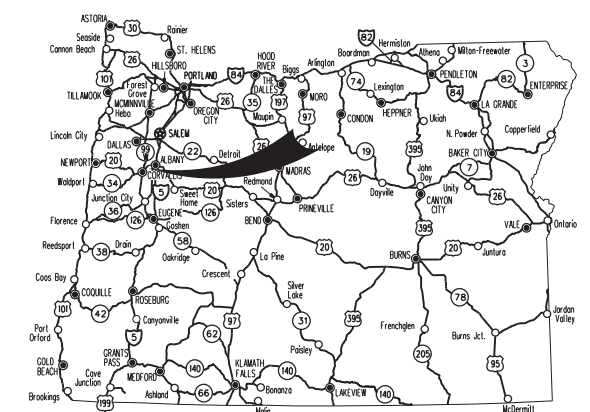
GRADING, DRAINAGE, STRUCTURES, PAVING,
SIGNING, ILLUMINATION & SIGNALS

**US20: SAFETY UPGRADES
(ALBANY TO CORVALLIS) SEC.**

ALBANY-CORVALLIS HIGHWAY

**BENTON COUNTY
SEPTEMBER 2021**

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A01	Title Sheet
A02	Index Of Sheets Cont.



Overall Length Of Project - 2.2 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 952-001-0090. 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).

BEGINNING OF CONTRACT

STA. "E2" 1187+04.6 (MP 7.04)

BEGINNING OF PROJECT

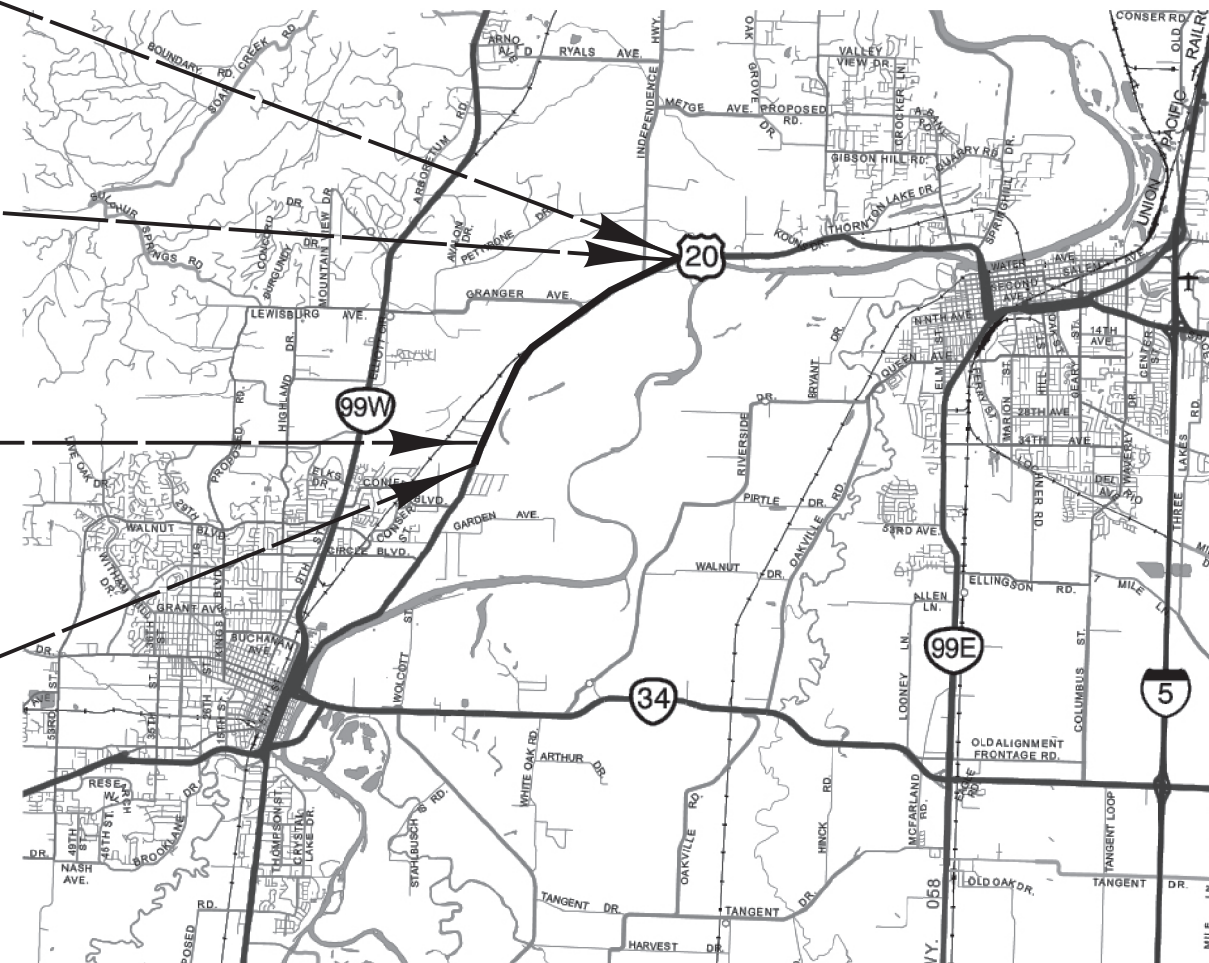
STA. "E2" 1188+49.5 (MP 7.01)

END OF PROJECT

STA. "E2" 1303+30.3 (MP 4.81)

END OF CONTRACT

STA. "E2" 1314+20.1 (MP 4.62)



T. 4 S., R. 11 W., W.M.



PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION
By:
DAVID EVANS AND ASSOCIATES INC.
2100 S River Parkway
Portland Oregon 97201
Phone: 503.223.6663

OREGON TRANSPORTATION COMMISSION
Robert Van Brocklin CHAIR
Alando Simpson COMMISSIONER
Julie Brown COMMISSIONER
Sharon Smith COMMISSIONER
Maurice Henderson COMMISSIONER
Kristopher W. Strickler DIRECTOR OF TRANSPORTATION

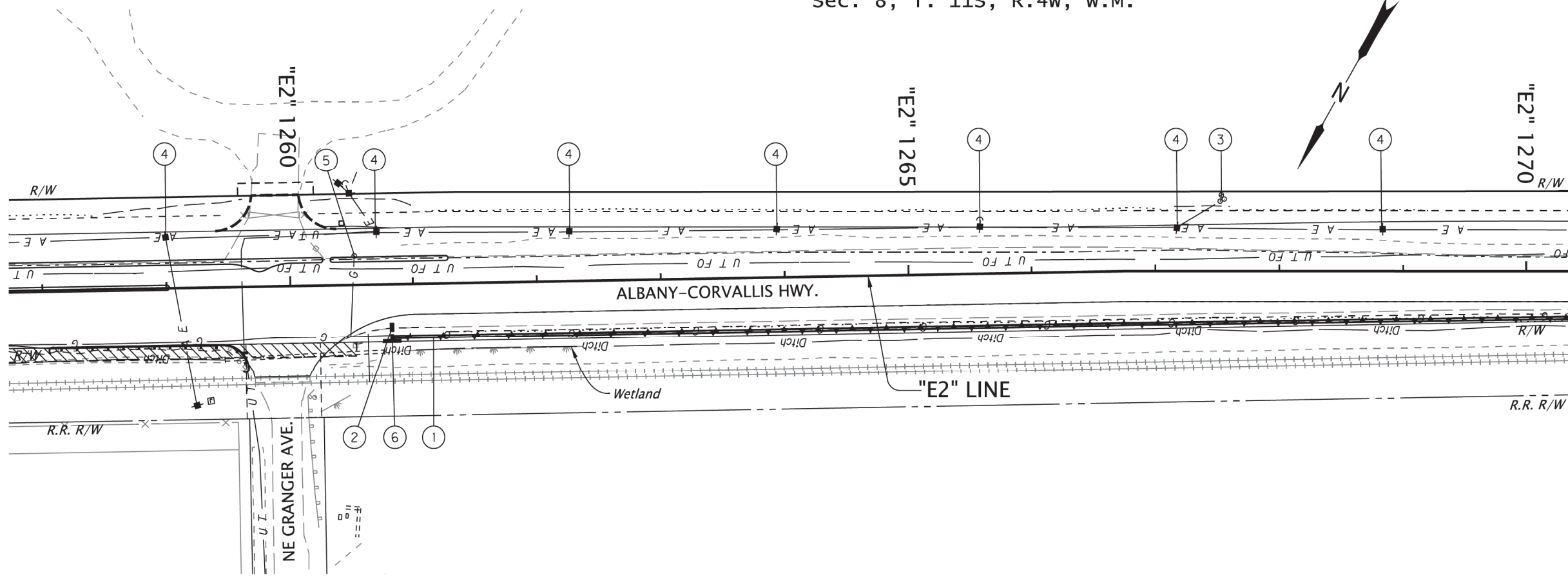
These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: Edward J. Chamberland II 2021.07.16 15:22:43-07'00'
Signature & date
Edward J Chamberland II, Proj. Mgr.
Print name and title
Steven B Cooley COOLEY Steven B
Aug 10 2021 11:20 AM
Concurrence by ODOT Chief Engineer

US20: SAFETY UPGRADES (ALBANY TO CORVALLIS) SEC.
ALBANY-CORVALLIS HIGHWAY
BENTON COUNTY

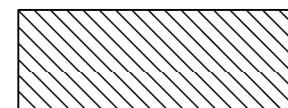
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	S031(014)	A01

Sec. 8, T. 11S, R.4W, W.M.



- ① Sta. "E2" 1260+82, Rt. to Sta. "E2" 1270+79, Rt. Const. bio-slope - D01422 (For details, see shts. HA06 & HA07)
- ② Sta. "E2" 1260+81.42, 34.58' Rt. Inst. drainage facility ID marker, Type S1
- ③ Sta. "E2" 1267+53.16, 61.35' Lt. Abandon irrigation water well
- ④ Relocate utility pole - 7 (By others)
- ⑤ Relocate gas valve (By others)
- ⑥ Sta. "E2" 1260+81.42, 46.04' Rt. Inst. drainage facility ID marker, Type S2 DFI no. D01422 MP 5.61

Right-of-Way and Access Delays shown thus:
See Special Provision 00180.65.



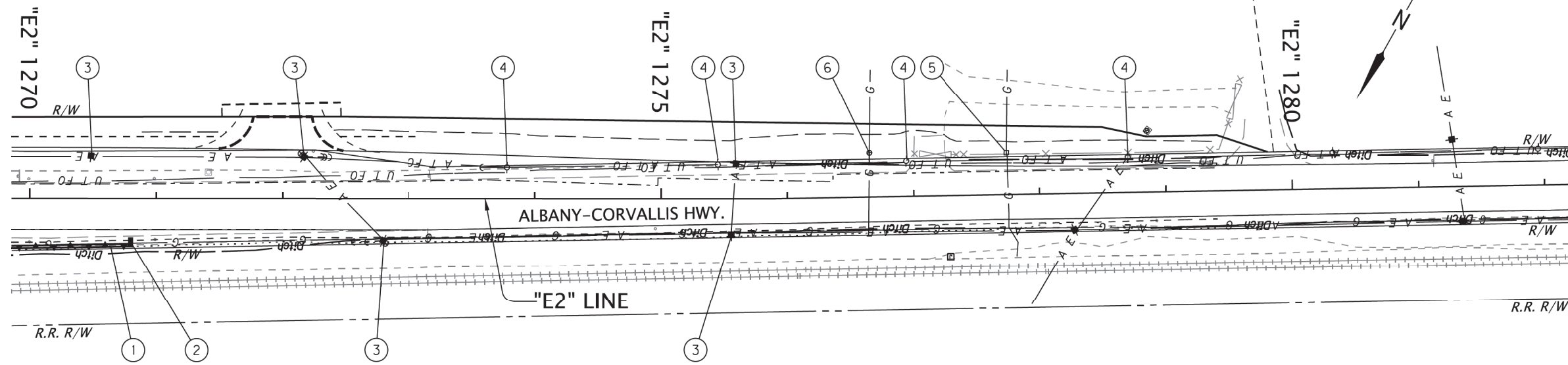
RENEWS: 12-31-2022

	DAVID EVANS AND ASSOCIATES INC. 2100 S River Parkway Portland Oregon 97201 Phone: 503.223.6663	
	US20: SAFETY UPGRADES (ALBANY TO CORVALLIS) SEC. ALBANY - CORVALLIS HIGHWAY BENTON COUNTY	

Designer: Mike Rice Reviewer: Mike Rice
 Drafter: Edita Boguslawski Checker: Julie McCaskill

DRAINAGE & UTILITIES SHEET NO. C07B

Sec. 8, T. 11S, R.4W, W.M.



- ① See sht. C07B, note 1
Const. bio-slope - D01422
- ② Sta. "E2" 1270+79.09, 34.51' Rt.
Inst. drainage facility ID marker, Type S1
- ③ Relocate utility pole - 5
(By others)
- ④ Relocate telephone pole - 4
(By others)
- ⑤ Relocate gas vault
(By others)
- ⑥ Adjust gas valve box
(By others)

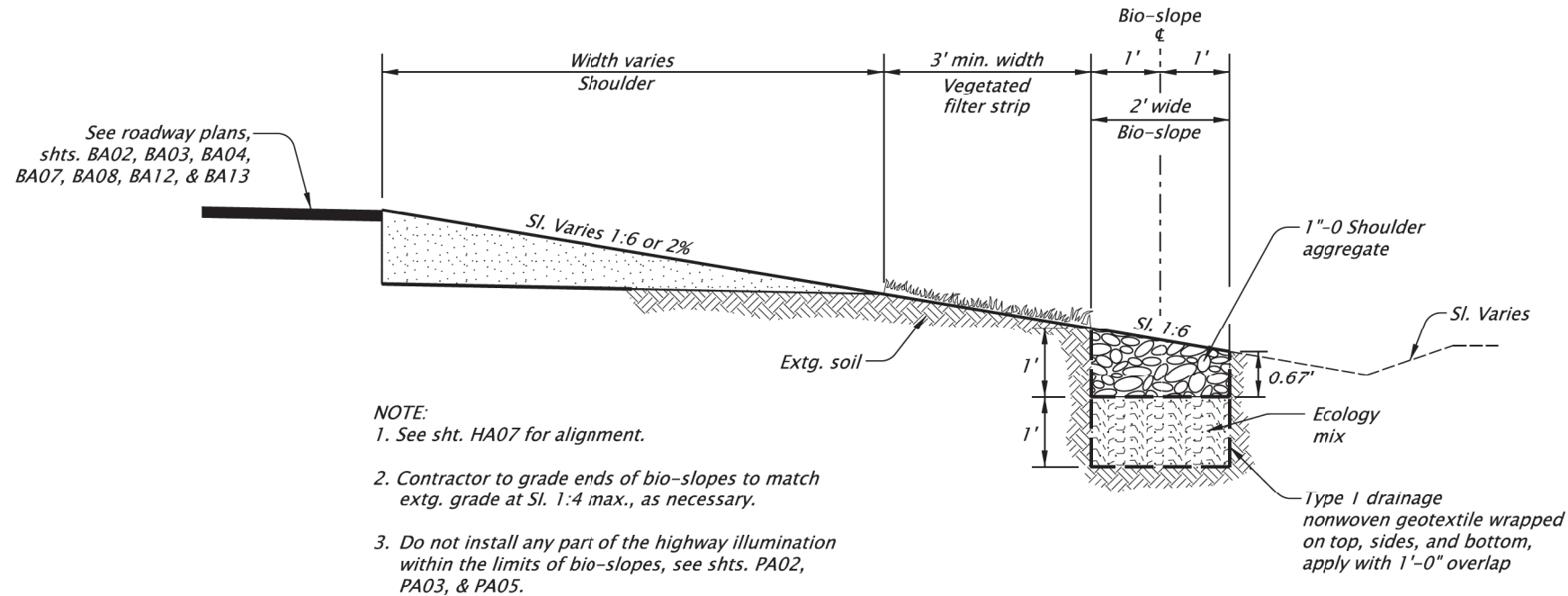
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 OREGON
 S.E.P. 12, 2017
MIKE RICE
 RENEWS: 12-31-2022

	DAVID EVANS AND ASSOCIATES INC. 2100 S River Parkway Portland Oregon 97201 Phone: 503.223.6663	
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US20: SAFETY UPGRADES (ALBANY TO CORVALLIS) SEC.
ALBANY - CORVALLIS HIGHWAY
BENTON COUNTY

Designer: Mike Rice	Reviewer: Mike Rice
Drafter: Edita Boguslawski	Checker: Julie McCaskill

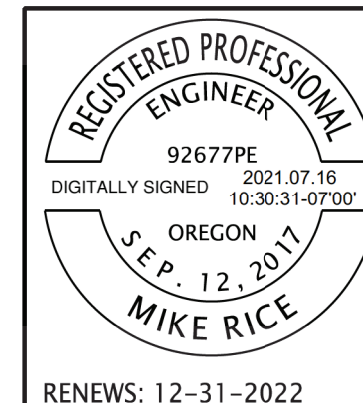
DRAINAGE & UTILITIES	SHEET NO. C08B
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BIO-SLOPE "D01420" SECTION A-A
 STA. "E2" 1206+88, RT. TO STA. "E2" 1213+65, RT.

BIO-SLOPES "D01421a", "D01421b, & "D01421c" SECTION A-A
 STA. "E2" 1219+79, RT. TO STA. "E2" 1226+61, RT.

BIO-SLOPE "D01422" SECTION A-A
 STA. "E2" 1260+82, RT. TO STA. "E2" 1270+79, RT.
 N.T.S.

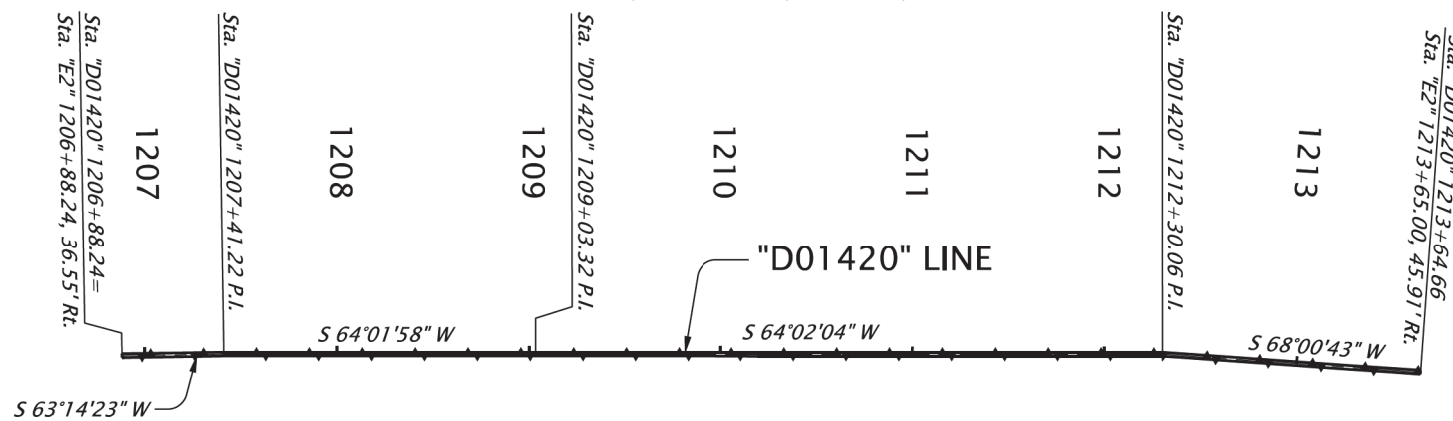


	DAVID EVANS AND ASSOCIATES INC. 2100 S River Parkway Portland Oregon 97201 Phone: 503.223.6663	
	US20: SAFETY UPGRADES (ALBANY TO CORVALLIS) SEC. ALBANY - CORVALLIS HIGHWAY BENTON COUNTY	

Designer: Mike Rice Reviewer: Mike Rice
 Drafter: Edita Boguslawski Checker: Julie McCaskill

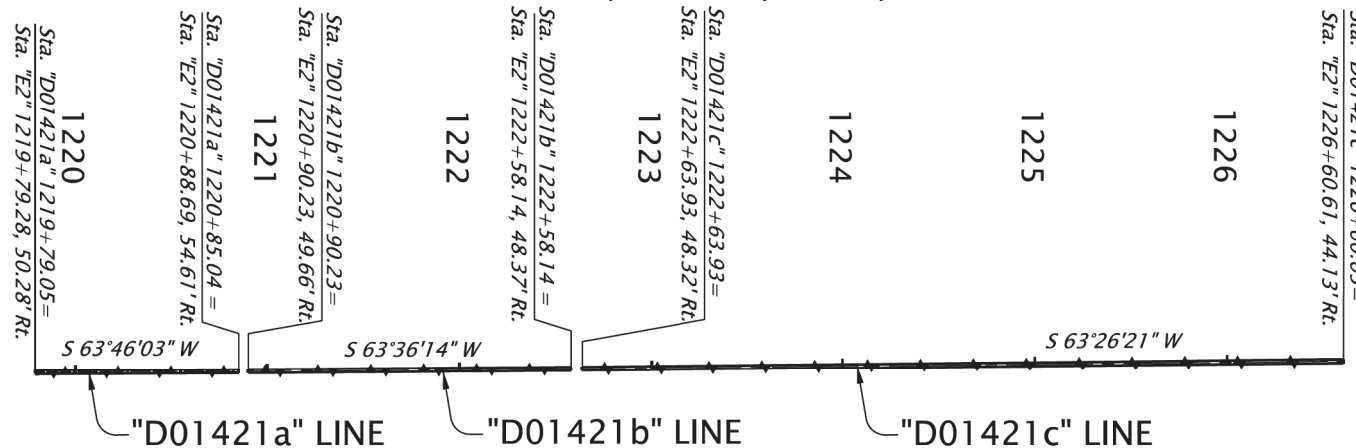
DETAILS	SHEET NO. HA06
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Sec. 4, T. 11S, R.4W, W.M.



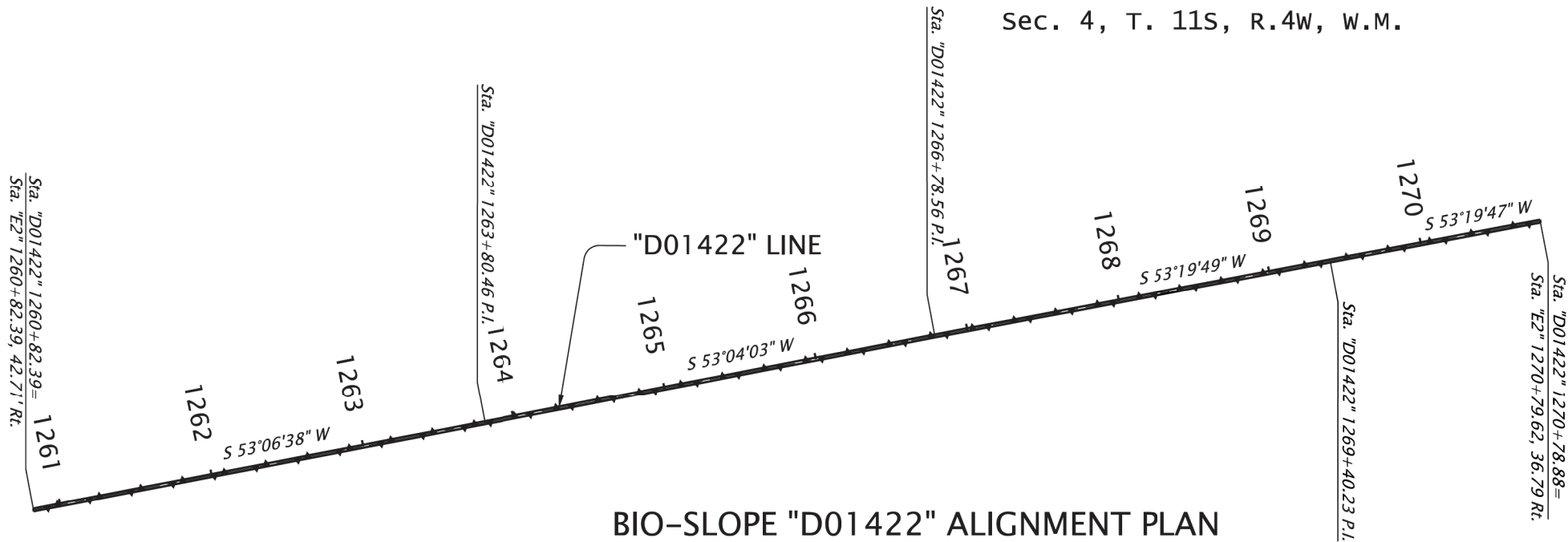
BIO-SLOPE "D01420" ALIGNMENT PLAN

Sec. 4, T. 11S, R.4W, W.M.



BIO-SLOPES "D01421a", "D01421b" & "D01421c" ALIGNMENTS PLAN

Sec. 4, T. 11S, R.4W, W.M.



BIO-SLOPE "D01422" ALIGNMENT PLAN



RENEWS: 12-31-2022

	DAVID EVANS AND ASSOCIATES INC. 2100 S River Parkway Portland Oregon 97201 Phone: 503.223.6663	
	US20: SAFETY UPGRADES (ALBANY TO CORVALLIS) SEC. ALBANY - CORVALLIS HIGHWAY BENTON COUNTY	

Designer: Mike Rice	Reviewer: Mike Rice
Drafter: Edita Boguslawski	Checker: Julie McCaskill

DETAILS	SHEET NO. HA07
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