



Location: District: 2C  
Highway No.: 100  
Mile Post: 49.39 to 49.41, Left

## 1. Manual Purpose

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

## 2. 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

Flow direction: West



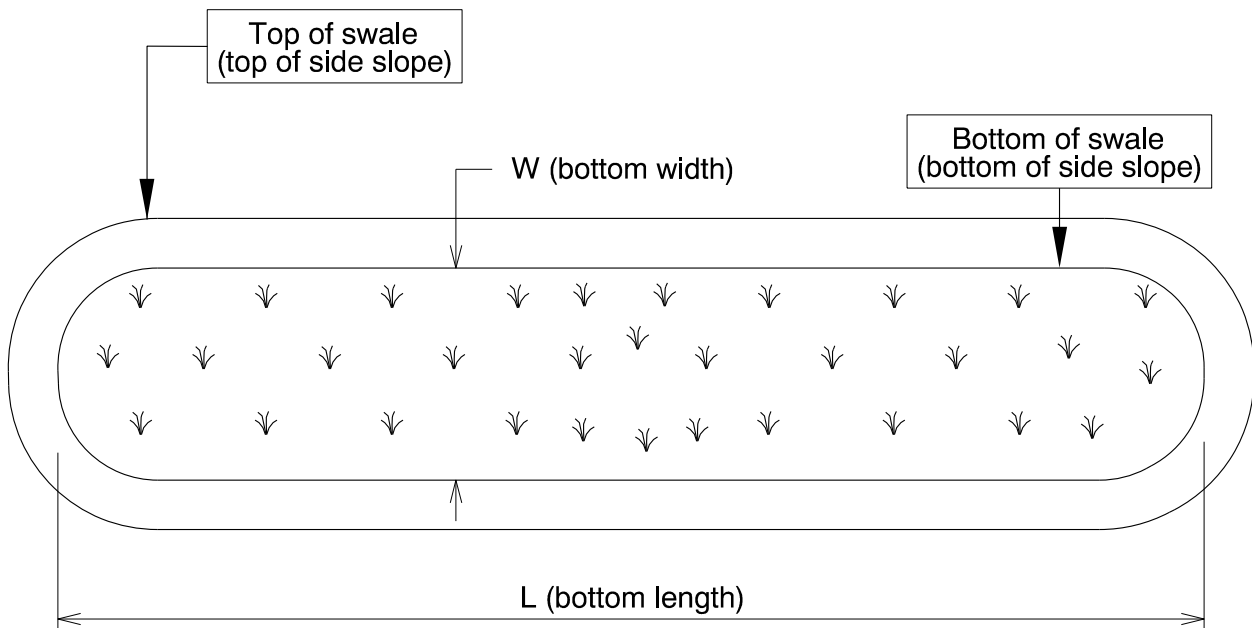
Figure 2: Facility location map

### 3. Facility Summary

The length and width of a swale is based on the bottom dimensions.

The bottom length and bottom width of the swale is:

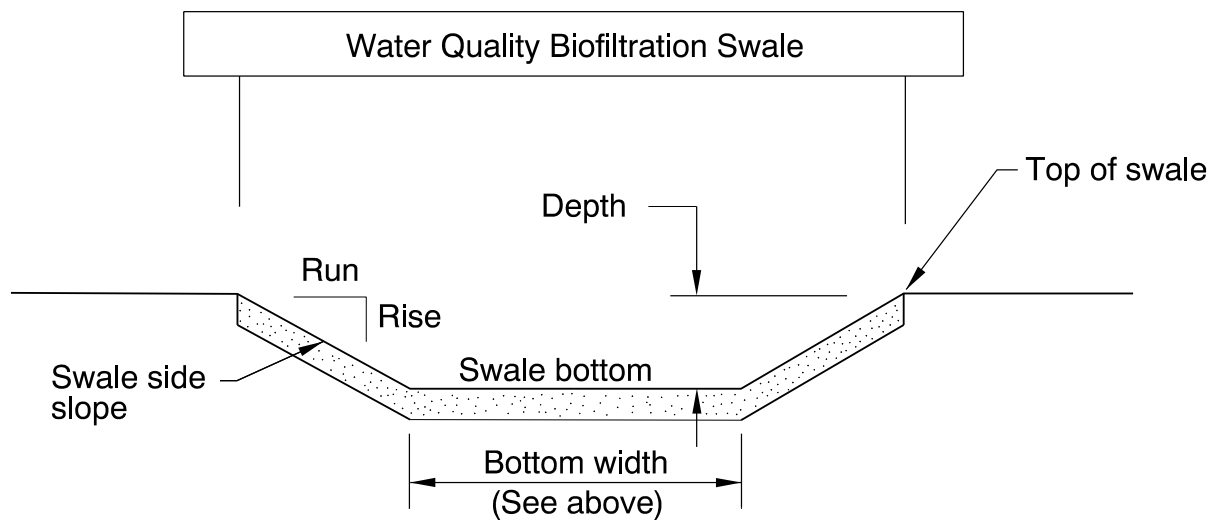
Bottom Length (feet)	Bottom Width (feet)
100	12



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

Depth and side slopes:

Depth (feet)	Rise (feet)	Run (feet)
8' max	1	3



**Site Specific Information:**

Swale depth varies, 8' max depth, with 1:3 grass side slopes. The outlet structure and storm system are not owned or maintained by ODOT.

#### 4. 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 checked="" type="checkbox"/> Access road without Gate

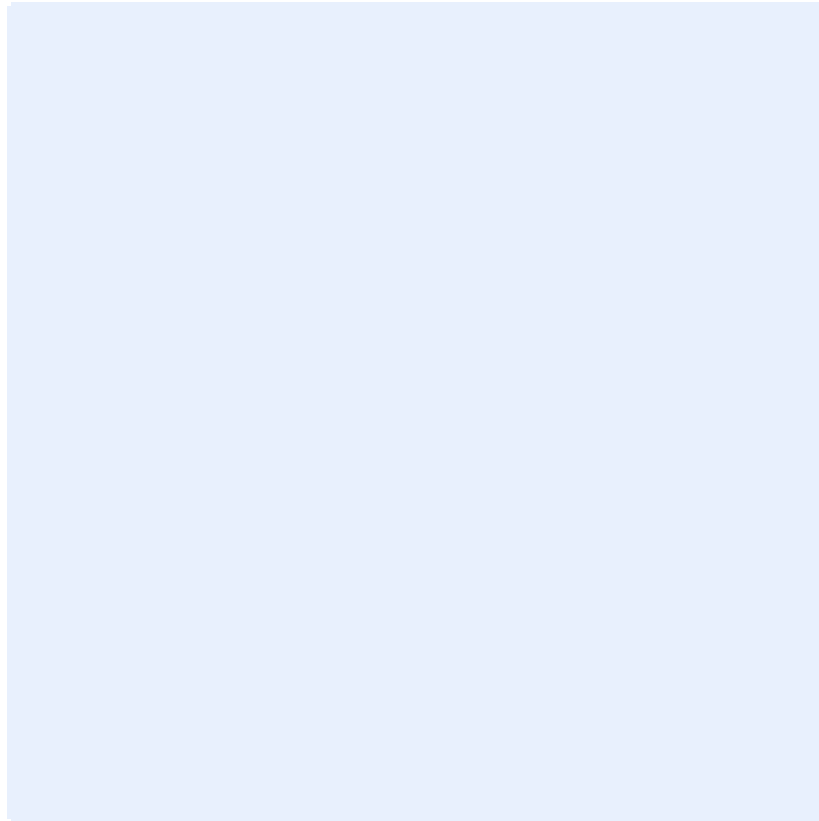


Figure 3: [insert post construction facility access photo and caption text]

#### 5. Operational Components / Maintenance Items

##### Classification

This facility is classified as an:

<input checked="" type="checkbox"/> <b>On-line Swale</b>	<input type="checkbox"/> <b>Off-line Swale</b>
A swale that does not include a high flow bypass component; flow drains into and through the facility	A swale that treats low/small flows and diverts high flows using a bypass component

## Bypass Component

This facility includes a high flow bypass component:

<input checked="" type="checkbox"/> No	<input type="checkbox"/> 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 swale. High flows are diverted around the swale using a bypass component

## Operational Components

A swale has many components that assist with treatment, conveyance, and reducing flow velocity to minimize erosion. The components in use can vary depending if the facility was designed to operate on-line or off-line. 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 Biofiltration Swales (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/>

## Operational Plan

The applicable standard operational plan for this facility is:

<input type="checkbox"/> Operational Plan A	<input checked="" type="checkbox"/> Operational Plan B	<input type="checkbox"/> Operational Plan C
An on-line swale with roadside ditches	An on-line swale with piped inlets and outlets	An off-line swale with a piped high flow bypass
A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A, B, C) are provided in the Standard Operation Manual.		

See Appendix A for the site specific operational plan.

## 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.



<b>Table 1: Swale Components</b>		<b>ID #</b>
<b>Manholes/Structures</b>		
Pre-treatment manhole	<input type="checkbox"/>	<b>S1</b>
Weir type flow splitter/flow splitter manhole	<input type="checkbox"/>	<b>S2</b>
Orifice type flow splitter/flow splitter manhole	<input type="checkbox"/>	<b>S3</b>
Standard manhole	<input checked="" type="checkbox"/>	<b>S4</b>
<b>Swale Inlet</b>		
Pavement sheet flow	<input checked="" type="checkbox"/>	<b>S5</b>
Inlet Pipe (s)	<input checked="" type="checkbox"/>	<b>S6</b>
Open channel inlet	<input type="checkbox"/>	<b>S7</b>
Riprap pad	<input checked="" type="checkbox"/>	<b>S8</b>
<b>Ground Cover</b>		
Grass bottom	<input checked="" type="checkbox"/>	<b>S9</b>
Grass side slopes	<input checked="" type="checkbox"/>	<b>S10</b>
Granular drain rock	<input type="checkbox"/>	<b>S11</b>
Channel matting	<input checked="" type="checkbox"/>	<b>S12</b>
<b>Underground Components</b>		
Geotextile fabric	<input checked="" type="checkbox"/>	<b>S13</b>
Water quality mix	<input checked="" type="checkbox"/>	<b>S14</b>
Perforated pipe	<input type="checkbox"/>	<b>S15</b>
Porous pavers (access grid)	<input type="checkbox"/>	<b>S16</b>
<b>Flow Spreader</b>		
Rock basin (used at inlet)	<input type="checkbox"/>	<b>S17</b>
Anchored board (midpoint of swale or every 50 feet along swale bottom)	<input checked="" type="checkbox"/>	<b>S18</b>
Other: describe type	<input type="checkbox"/>	<b>S19</b>
<b>Swale Outlet</b>		
Catch basin with grate	<input checked="" type="checkbox"/>	<b>S20</b>
Outlet Pipe (s)	<input checked="" type="checkbox"/>	<b>S21</b>
Open channel outlet	<input type="checkbox"/>	<b>S22</b>
Auxiliary Outlet: describe type	<input type="checkbox"/>	<b>S23</b>
<b>Outfall Type</b>		
Waterbody (Creek/Lake/Ocean)	<input type="checkbox"/> <b>C</b>	<b>S24</b>
	<input type="checkbox"/> <b>L</b>	
	<input type="checkbox"/> <b>O</b>	
Ditch	<input type="checkbox"/>	<b>S25</b>
Storm drain system	<input checked="" type="checkbox"/>	<b>S26</b>
<b>Outfall Components</b>		
Riprap pad	<input checked="" type="checkbox"/>	<b>S27</b>
Riprap bank protection	<input type="checkbox"/>	<b>S28</b>

## 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 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 swales:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 3 (Maintenance of Water Quality or Biofiltration Swales): Contains maintenance information for swales

The *Blue Book* can be viewed at the following website:

[http://www.oregon.gov/ODOT/Maintenance/Documents/blue\\_book.pdf](http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf)

## 7. Limitations

Access grid installed:

<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
There are <b>no</b> porous pavers installed in this swale	

Swales are designed to allow equipment access along the bottom. If an access grid is **NOT** installed, vehicles entering the swale 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.

Equipment wheels should be kept on the tops and side slopes. Mower arms may be run along the swale bottom.



## 8. Waste Material Handling

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

[http://www.oregon.gov/ODOT/Maintenance/Documents/ems\\_manual.pdf](http://www.oregon.gov/ODOT/Maintenance/Documents/ems_manual.pdf)

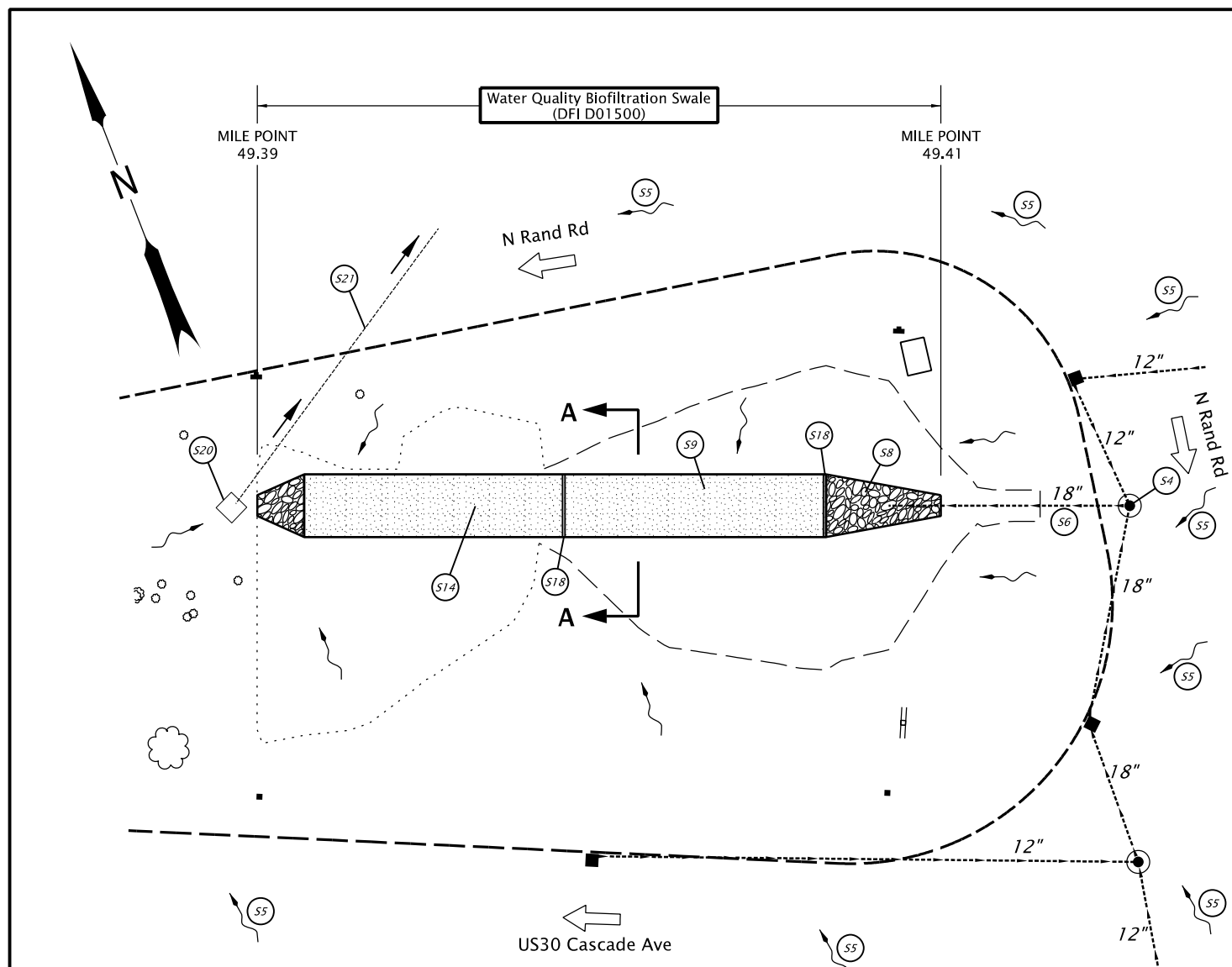
Contact any of the following for more detailed information about management of waste materials found on site:

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

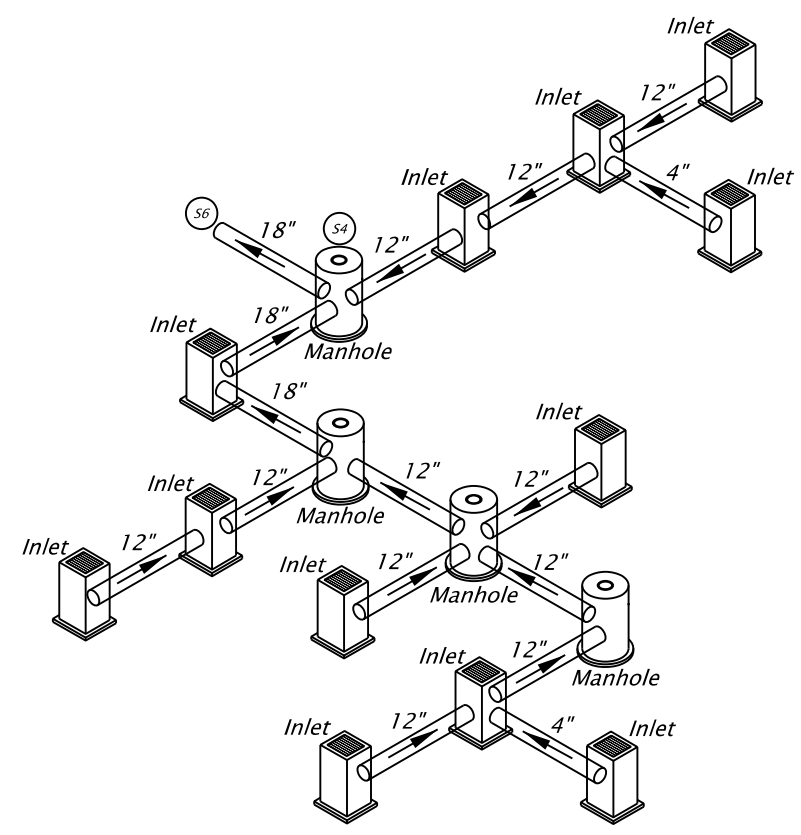
## **A Appendix A – Site Specific Operational Plan**

### **Contents:**

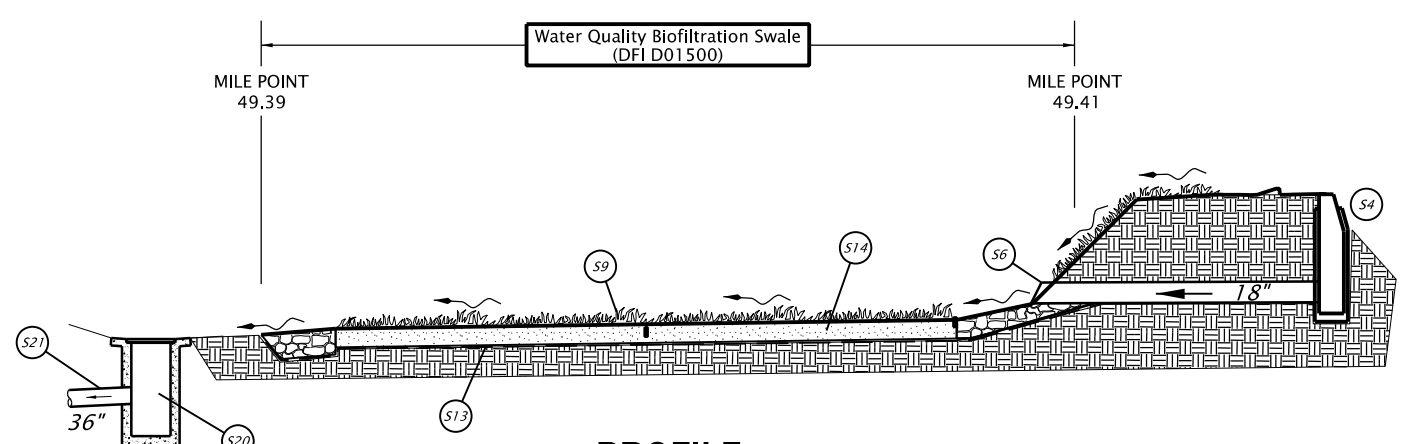
**Operational Plan: DFI D01500**



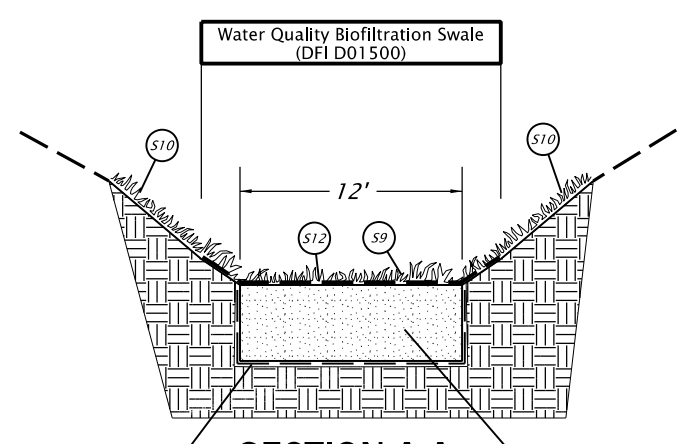
**PLAN**  
Not to Scale



**PIPE DRAINAGE SYSTEM SCHEMATIC**  
(See Sheet 2 of 2)  
Not to Scale



**PROFILE**  
Not to Scale



**SECTION A-A**  
Not to Scale

- LEGEND**
- Facility component (see table 1 in O&M Manual)
  - Manhole
  - Inlet
  - Type S1 & S2 marker
  - Storm pipe (facility)
  - Storm pipe
  - Curb
  - Conveyance direction
  - Pavement / facility flow path
  - Traffic flow direction



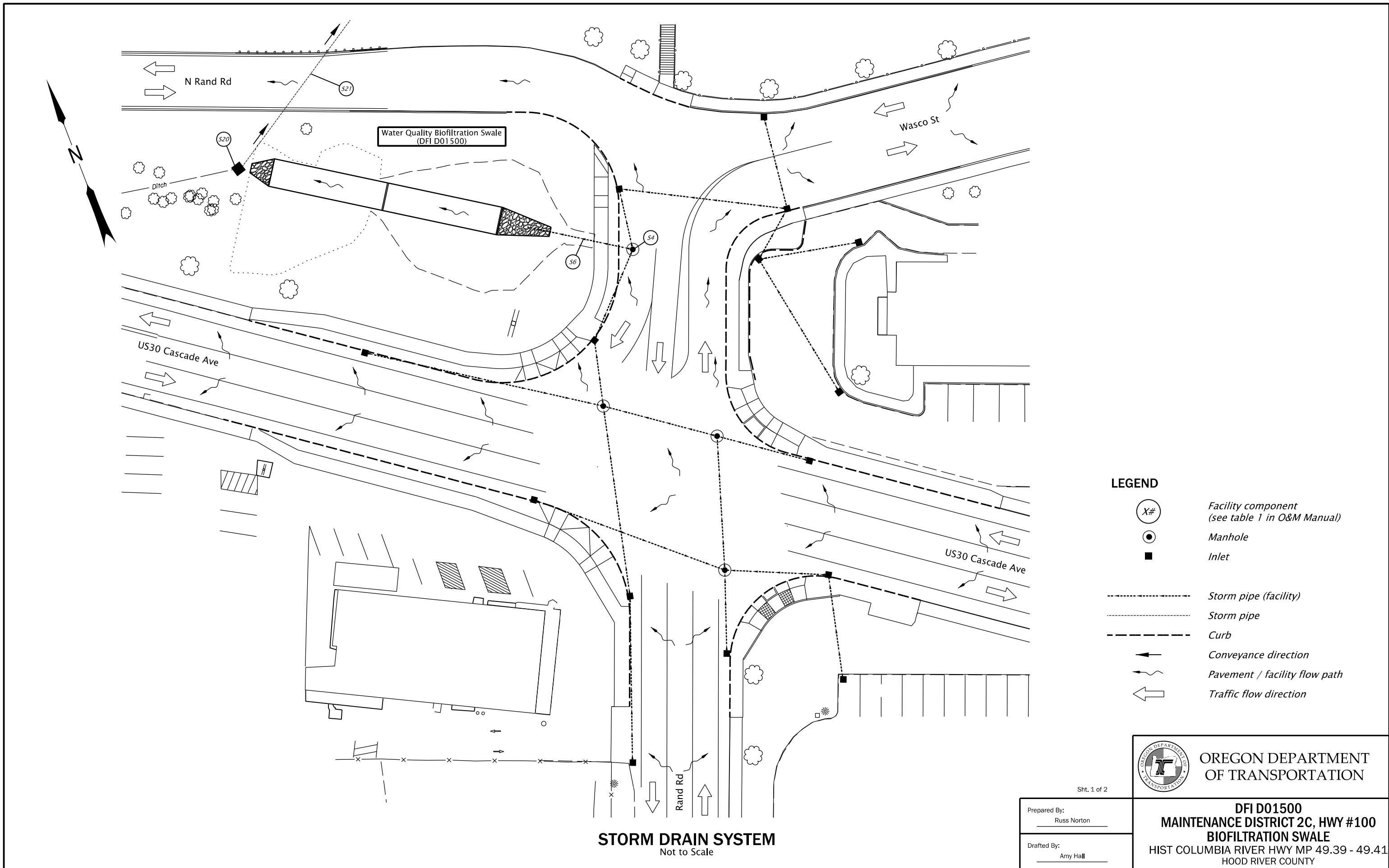
**OREGON DEPARTMENT OF TRANSPORTATION**

Sht. 1 of 2

Prepared By:  
Russ Norton

Drafted By:  
Amy Hall

**DFI D01500**  
**MAINTENANCE DISTRICT 2C, HWY #100**  
**BIOFILTRATION SWALE**  
HIST COLUMBIA RIVER HWY MP 49.39 - 49.41  
HOOD RIVER COUNTY



## **B Appendix B – Project Contract Plans**

### **Contents:**

**Site Specific Subset of Project Contract Plan 56V-011**

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A01	Title Sheet
A02	Index Of Sheets Cont.
A03	Std. Dwg. Nos.
A04	Survey Control Data

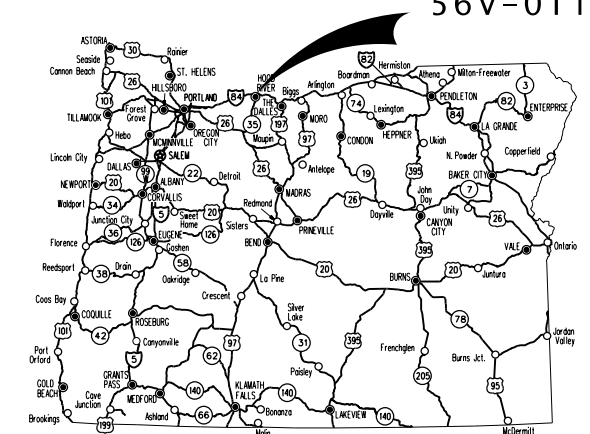
STATE OF OREGON  
 DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT  
 GRADING, DRAINAGE, STRUCTURES, PAVING,  
 CURB RAMPS, SIGNING, ILLUMINATION, & SIGNALS

**US30 (CASCADE AVE) AT RAND RD  
 (HOOD RIVER) PROJECT**

**HISTORIC COLUMBIA RIVER HIGHWAY**

**HOOD RIVER COUNTY  
 NOVEMBER 2022**

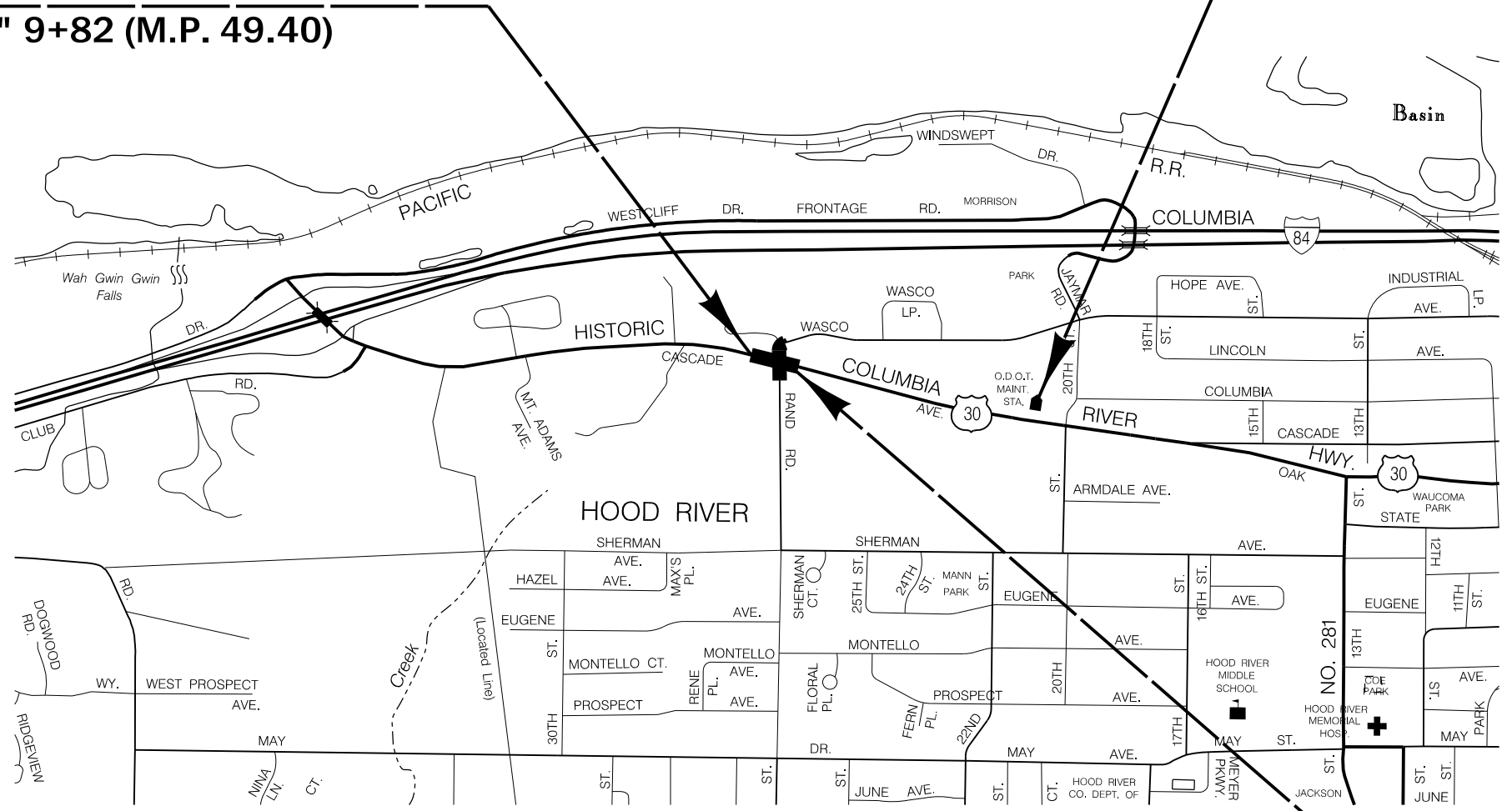


Overall Length Of Project - 0.07 Miles

**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 PROJECT**  
**STA. "C" 9+82 (M.P. 49.40)**

**PROSPECTIVE STAGING AREA**



**END OF PROJECT**  
**STA. "C" 14+99 (M.P. 49.47)**

N  
 T. 3N, R. 10E, W.M.



PLANS PREPARED FOR  
 OREGON DEPARTMENT OF TRANSPORTATION



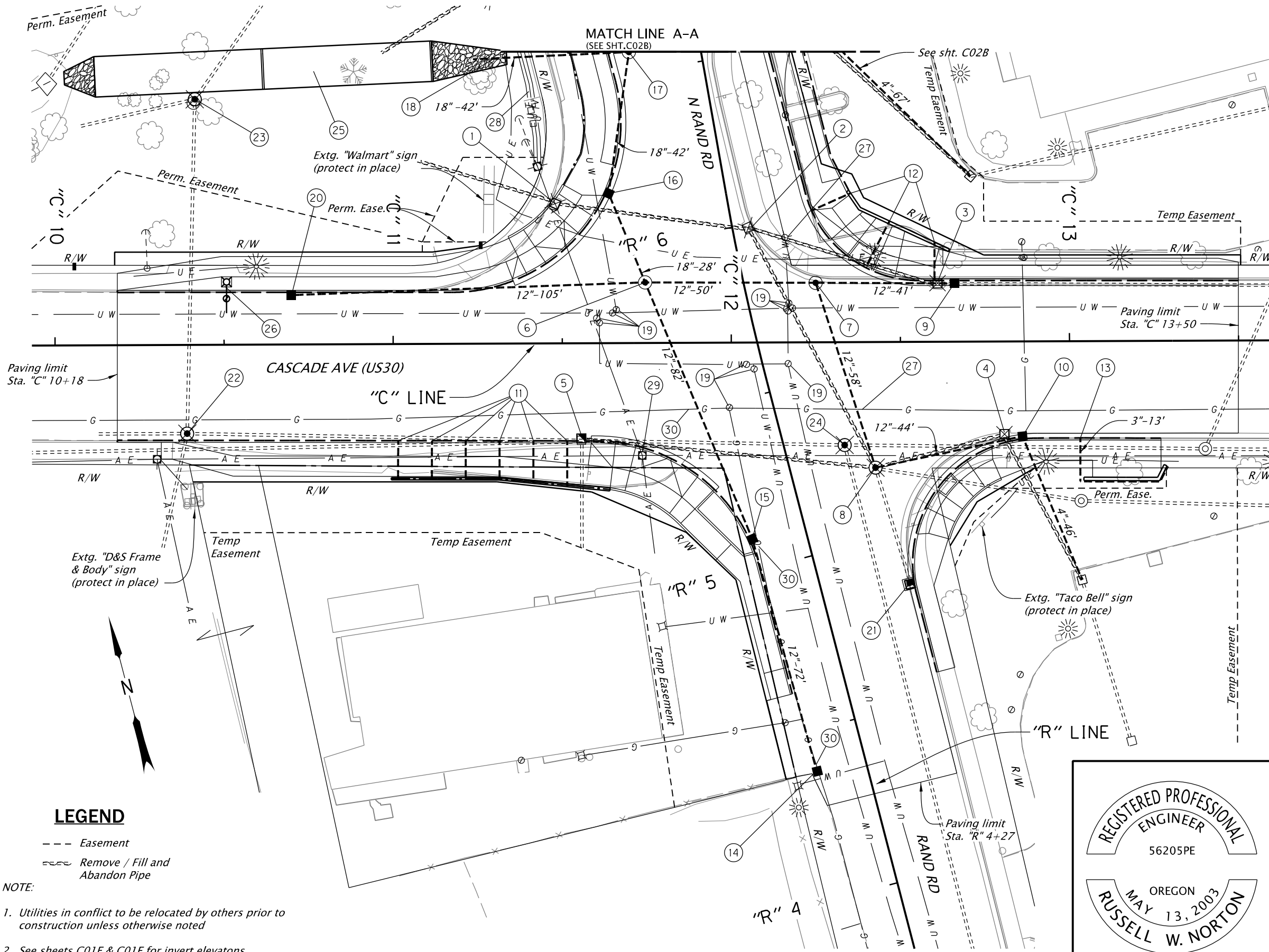
**OREGON TRANSPORTATION COMMISSION**  
 Bob Van Brocklin CHAIR  
 Alando Simpson VICE CHAIR  
 Julie Brown COMMISSIONER  
 Sharon Smith COMMISSIONER  
 Marcilynn Burke COMMISSIONER  
 Kris Strickler DIRECTOR OF TRANSPORTATION

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  
 Russell W. Norton, Project Manager  
 Print name and title  
 \_\_\_\_\_  
 Concurrence by ODOT Chief Engineer

**US30 (CASCADE AVE) AT RAND RD  
 (HOOD RIVER) PROJECT**  
 HISTORIC COLUMBIA RIVER HIGHWAY  
 HOOD RIVER COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	3490 (012)	A01



**CONSTRUCTION NOTES**

- 1 Sta. "R" 6+16, 50' Lt.  
Remove inlet  
Plug and abandon 8" pipe (W)  
Plug and abandon 8" pipe (E)
- 2 Sta. "R" 5+99, 5' Rt.  
Remove inlet  
Plug and abandon 12" pipe (SE)  
Plug and abandon 12" pipe (E)
- 3 Sta. "C" 12+61, 17' Lt.  
Remove inlet
- 4 Sta. "C" 12+80, 27' Rt.  
Remove inlet and 10" pipe (W)  
Plug and abandon 4" pipe (S)
- 5 Sta. "C" 10+70, 14.6' Lt.  
Const. Type CG-2 inlet  
(See dwg. nos. RD363, RD365 & RD366)
- 6 Sta. "C" 11+75, 17.9' Lt.  
Const. conc. storm sewer manhole w/ sump  
Inst. 12" storm sewer pipe - 82' (S)  
10' depth  
Inst. 12" storm sewer pipe - 50' (E)  
5' depth  
Inst. 12" storm sewer pipe - 105' (W)  
10' depth  
(See dwg. nos. RD300, RD335, RD336, RD339, RD344, RD345, RD356, RD380, RD386, RD388, RD390, & RD393)
- 7 Sta. "C" 12+25, 17.6' Lt.  
Const. conc. storm sewer manhole w/ sump  
Inst. 12" storm sewer pipe - 58' (S)  
5' depth  
Inst. 12" storm sewer pipe - 41' (E)  
5' depth
- 8 Sta. "C" 12+33, 37.2' Rt.  
Remove 12" pipe (E)  
Inst. 12" storm sewer pipe - 44' (E)  
5' depth  
Connect to extg. manhole  
Adjust manhole to grade  
(See dwg. no. RD360)
- 9 Sta. "C" 12+66, 17.2' Lt.  
Const. Type CG-2 inlet  
Connect to extg. 12" pipe

**LEGEND**

- - - Easement
- Remove / Fill and Abandon Pipe

- NOTE:
1. Utilities in conflict to be relocated by others prior to construction unless otherwise noted
  2. See sheets C01E & C01F for invert elevations

REGISTERED PROFESSIONAL  
ENGINEER  
56205PE  
OREGON  
MAY 13, 2003  
RUSSELL W. NORTON  
RENEWS: 12-31-2022

**QUINCY ENGINEERING**



**US30 (CASCADE AVE) AT RAND RD  
(HOOD RIVER) PROJECT**  
HISTORIC COLUMBIA RIVER HIGHWAY  
HOOD RIVER COUNTY

Designer: Scott Sinclair      Reviewer: Russ Norton  
Drafter: Amy Hall              Checker: Karen Tatman

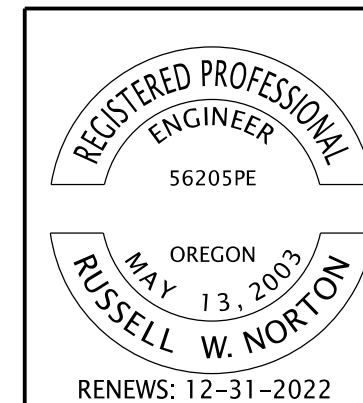
**DRAINAGE & UTILITIES**

SHEET NO.  
C01C



**CONSTRUCTION NOTES**

- ⑩ Sta. "C" 12+86, 28.1' Rt.  
Const. Type CG-2 inlet  
Inst. 4" PVC pipe - 46'  
5' depth  
Connect to extg. Inlet
- ⑪ Sta. "C" 11+01 to Sta. 11+51 Rt.  
Inst. 3" PVC pipe at 10' spacing - 75'  
Connect to wall drain perf. pipe  
(For details, see shts BB04 & GB02)
- ⑫ Sta. "C" 12+24 to Sta. 12+60 Lt.  
Inst. 3" PVC pipe - 54'  
Connect to wall drain perf. pipe  
(For details, see shts BB04 & GB03)
- ⑬ Sta. "C" 13+03, 28.7' Rt.  
Inst. 3" PVC pipe - 13'  
Connect to wall drain perf. pipe  
(For details, see shts BB04 & GB01)
- ⑭ Sta. "R" 4+38, 15.2' Lt.  
Const. Type G-2 inlet  
(See dwg. no. RD364)
- ⑮ Sta. "R" 5+09, 15.4' Lt.  
Const. Type CG-2 inlet  
Inst. 12" storm sewer pipe - 72'  
10' depth
- ⑯ Sta. "R" 6+16, 34.2' Lt.  
Const. Type CG-2 inlet  
Inst. 18" storm sewer pipe - 28'  
10' depth
- ⑰ Sta. "R" 6+56, 21.0' Lt.  
Const. conc. storm sewer manhole w/ sump  
Inst. 18" storm sewer pipe - 42' (S)  
10' depth  
Inst. 12" storm sewer pipe - 27' (N)  
10' depth
- ⑱ Sta. "R" 6+56, 21.0' Lt.  
Inst. 18" storm sewer pipe - 42'  
10' depth  
(Outfall to water quality swale)
- ⑲ Adjust box - 11
- ⑳ Sta. "C" 11+56, 28' Rt.  
Adjust inlet to grade  
(See dwg. no. RD376)
- ㉑ Sta. "R" 4+85, 25.6' Rt.  
Adjust inlet to grade
- ㉒ Sta. "C" 10+39, 26.3' Rt.  
Minor adjust san. sewer manhole  
(See dwg. nos. RD338 & RD360)
- ㉓ Sta. "C" 10+42, 73' Lt.  
Minor adjust san. sewer manhole
- ㉔ Sta. "C" 12+33, 30.6' Rt.  
Minor adjust san. sewer manhole
- ㉕ Sta. "S" 0+04 to Sta. "S" 1+28  
Const. water quality swale  
DFI #D01500  
(For details, see sheets HA01 & HA02)  
(See dwg. no. RD399)
- ㉖ Sta. "C" 10+51, 18.5' Lt.  
Inst. hydrant assembly  
Inst. 8" tapping sleeve and 6" valve assembly  
(For details, see sheet BB02)
- ㉗ Sta. "C" 10+51, 18.5' Lt.  
Remove hydrant and valve  
Remove service lateral, cap at main
- ㉘ UG power and communications  
lines to be relocated by others  
(See 00150.50(g) for details)
- ㉙ Utility pole to be removed by others  
(See 00150.50(g) for details)
- ㉚ Gas line to be relocated by others  
prior to construction

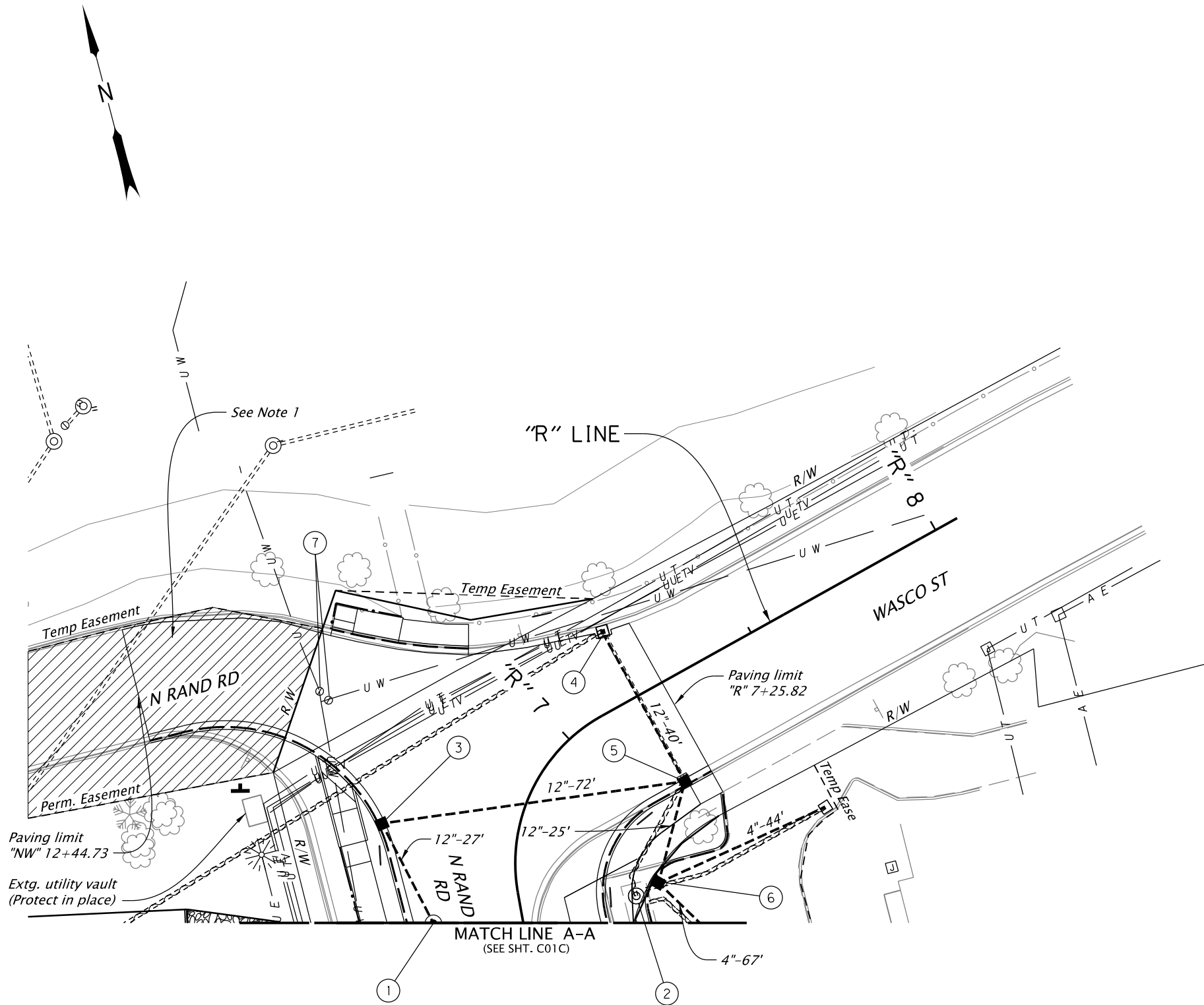


**US30 (CASCADE AVE) AT RAND RD  
(HOOD RIVER) PROJECT**  
HISTORIC COLUMBIA RIVER HIGHWAY  
HOOD RIVER COUNTY

Designer: Scott Sinclair      Reviewer: Russ Norton  
Drafter: Amy Hall      Checker: Karen Tatman

**DRAINAGE & UTILITIES NOTES**

SHEET NO.  
C01D



**CONSTRUCTION NOTES**

- ① See sht. C01C, note 15  
Inst. 12" storm sewer pipe - 27' (N)  
5' depth
- ② Sta. "R" 6+54, 27.8' Rt.  
Remove stormwater storage vault and pipes
- ③ Sta. "R" 6+72, 32.2' Lt.  
Const. Type CG-2 inlet w/ sump  
Inst. 12" storm sewer pipe - 72'  
10' depth
- ④ Sta. "R" 7+19, 17.3' Lt.  
Plug and abandon extg. 12" pipe (W)  
Remove extg. 12" pipe, 5  
Inst. 12" storm sewer pipe - 40'  
5' depth  
Connect to extg. inlet  
Adjust inlet to grade
- ⑤ Sta. "R" 7+25, 23.2' Rt.  
Remove inlet  
Const. Type CG-2 inlet  
Inst. 12" storm sewer pipe - 25'  
5' depth
- ⑥ Sta. "R" 6+87, 39.2' Rt.  
Const Type G-2 inlet  
Inst 4" PVC pipe - 44' (E)  
5' depth  
Connect to extg. Inlet  
Inst. 4" PVC pipe - 67' (S)  
5' depth  
Connect to extg. Inlet  
Trench resurfacing - 10 sq. yd.
- ⑦ Adjust box - 2

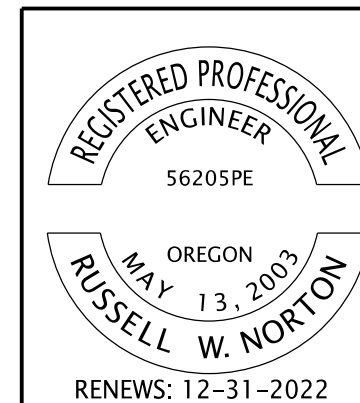
**NOTE:**

- 1. Contractor may not occupy Temporary Easement shown thus between November 15 and January 15
- 2. See sheet C01F for invert elevations



**LEGEND**

- Easement
- Remove / Fill and Abandon Pipe

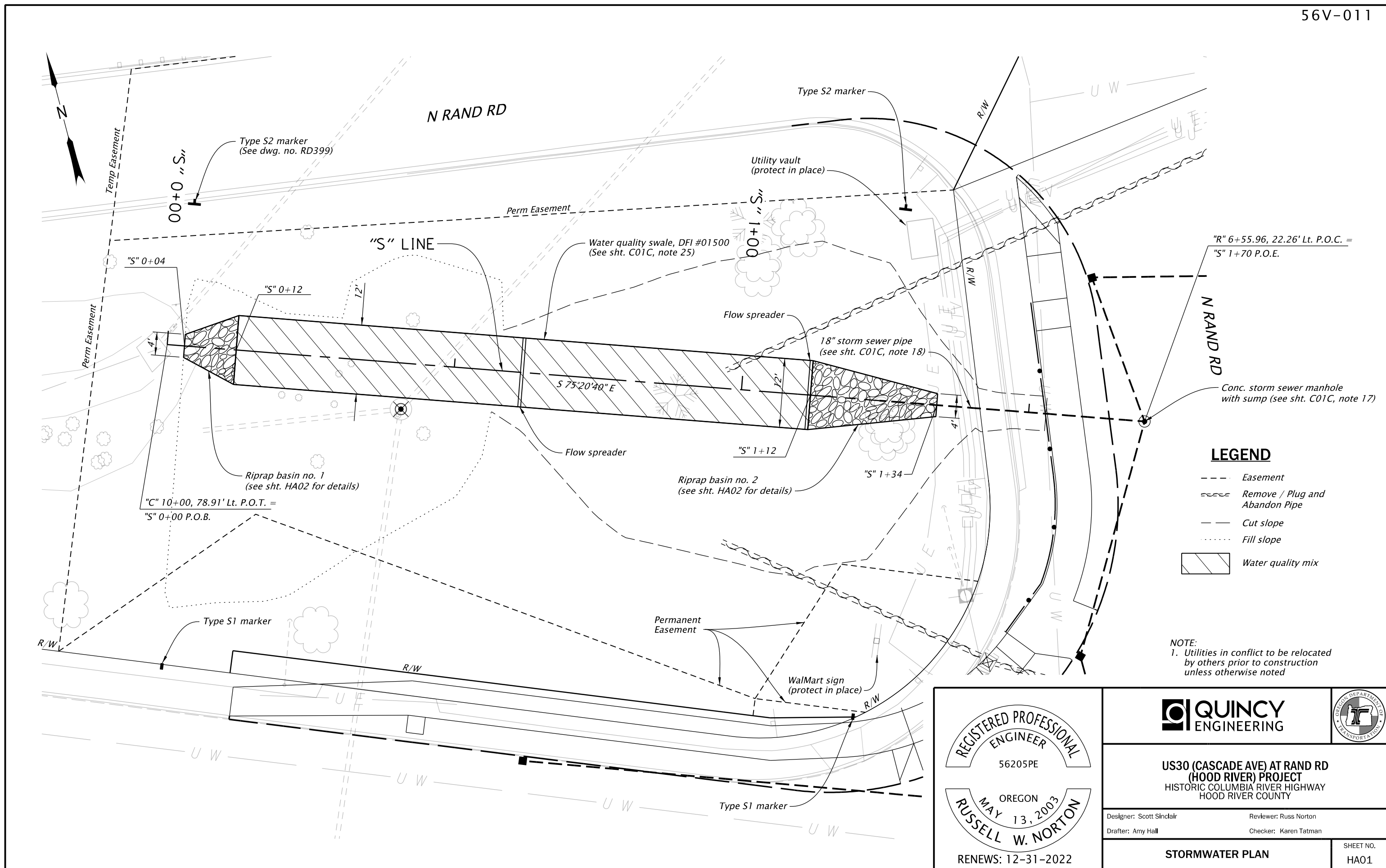


**US30 (CASCADE AVE) AT RAND RD (HOOD RIVER) PROJECT**  
HISTORIC COLUMBIA RIVER HIGHWAY  
HOOD RIVER COUNTY

Designer: Scott Sinclair      Reviewer: Russ Norton  
 Drafter: Amy Hall      Checker: Karen Tatman

**DRAINAGE & UTILITIES**

SHEET NO.  
C02B



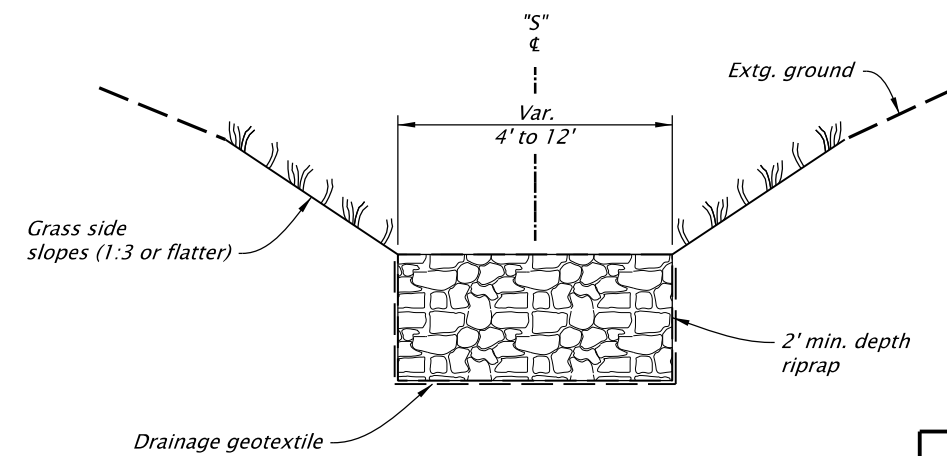
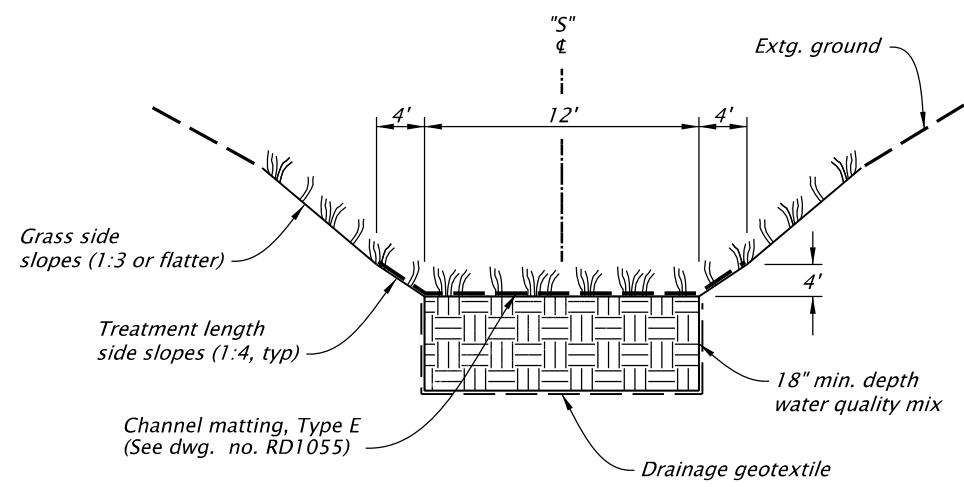
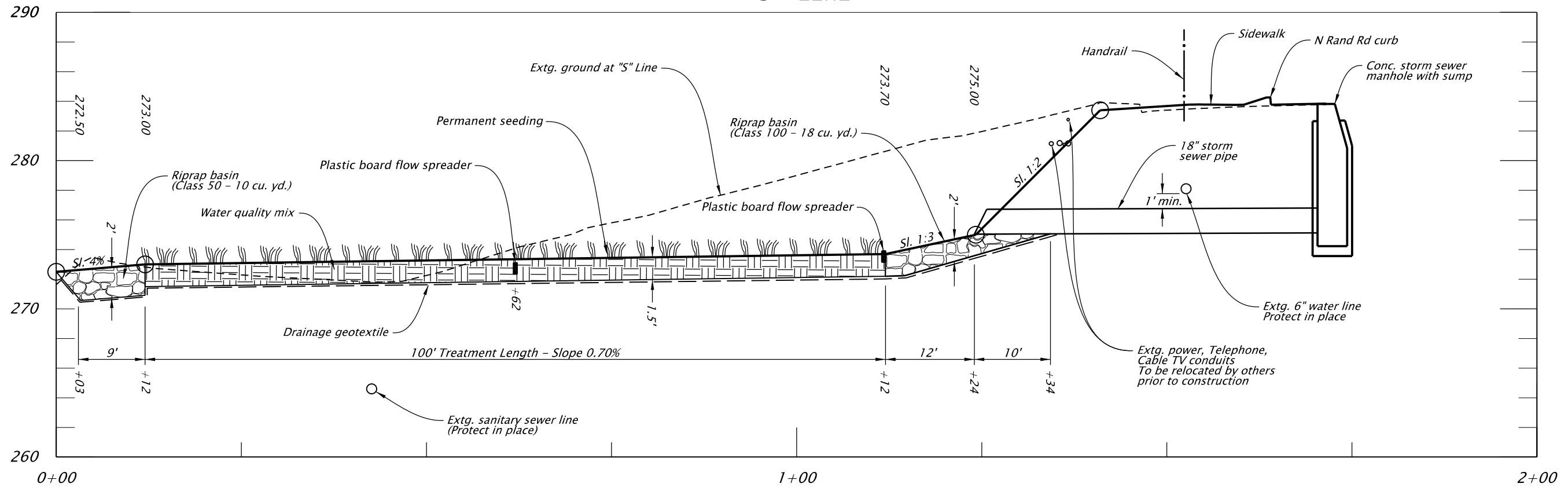
**LEGEND**

- Easement
- Remove / Plug and Abandon Pipe
- Cut slope
- Fill slope
- Water quality mix

NOTE:  
1. Utilities in conflict to be relocated by others prior to construction unless otherwise noted

<p><b>US30 (CASCADE AVE) AT RAND RD (HOOD RIVER) PROJECT</b> HISTORIC COLUMBIA RIVER HIGHWAY HOOD RIVER COUNTY</p>	
Designer: Scott Sinclair Drafter: Amy Hall	Reviewer: Russ Norton Checker: Karen Tatman
<p><b>STORMWATER PLAN</b></p>	SHEET NO. <b>HA01</b>

"S" LINE



REGISTERED PROFESSIONAL ENGINEER  
56205PE  
MAY 13, 2003  
RUSSELL W. NORTON  
OREGON  
RENEWS: 12-31-2022

**QUINCY ENGINEERING**

US30 (CASCADE AVE) AT RAND RD (HOOD RIVER) PROJECT  
HISTORIC COLUMBIA RIVER HIGHWAY  
HOOD RIVER COUNTY

Designer: Scott Sinclair      Reviewer: Russ Norton  
Drafter: Amy Hall              Checker: Karen Tatman

**STORMWATER PLAN**      SHEET NO. HA02