OPERATION & MAINTENANCE MANUAL

Other (Water Quality Facility)

Manual prepared: May 2019

DFI No. D01232

Figure 1: DFI No. D01232, looking west

Identification

Drainage Facility ID (DFI):	D01232
Facility Type:	Other (Water Quality Facility)
Construction Drawings:	(V-File Numbers) 44V-009
Location:	District: Region 2
	Highway No.: 047
	Mile Post: 24.01 to 24.02, right

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

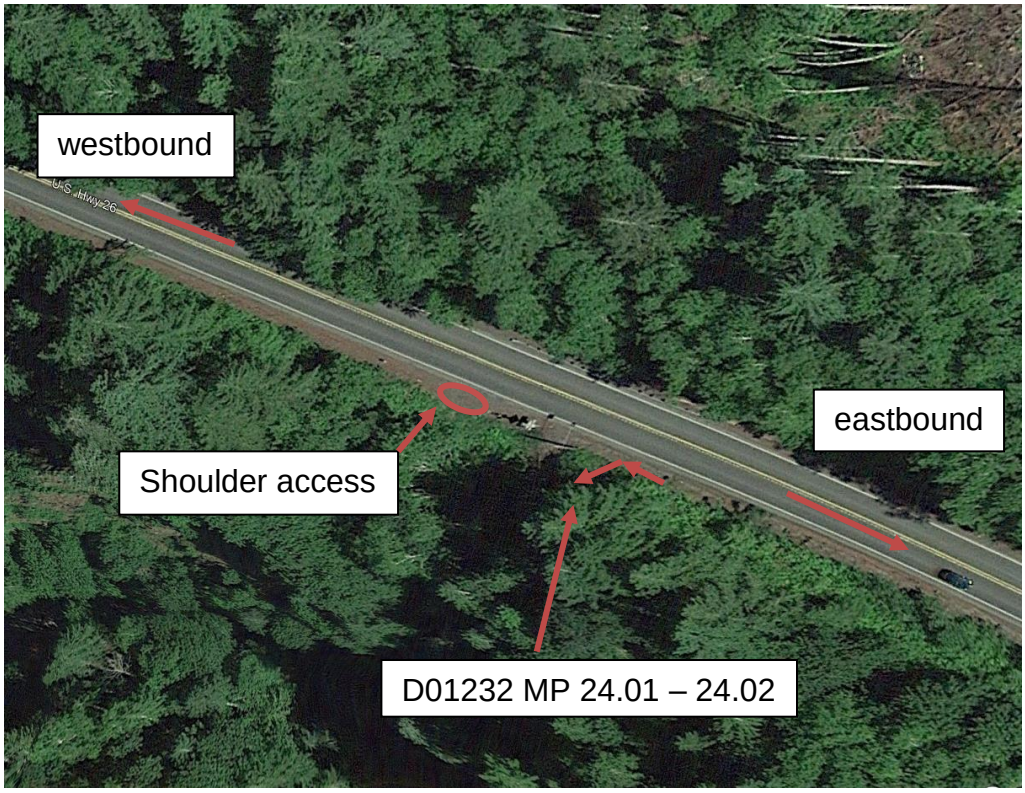


Figure 2: Facility location map

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)
53	2

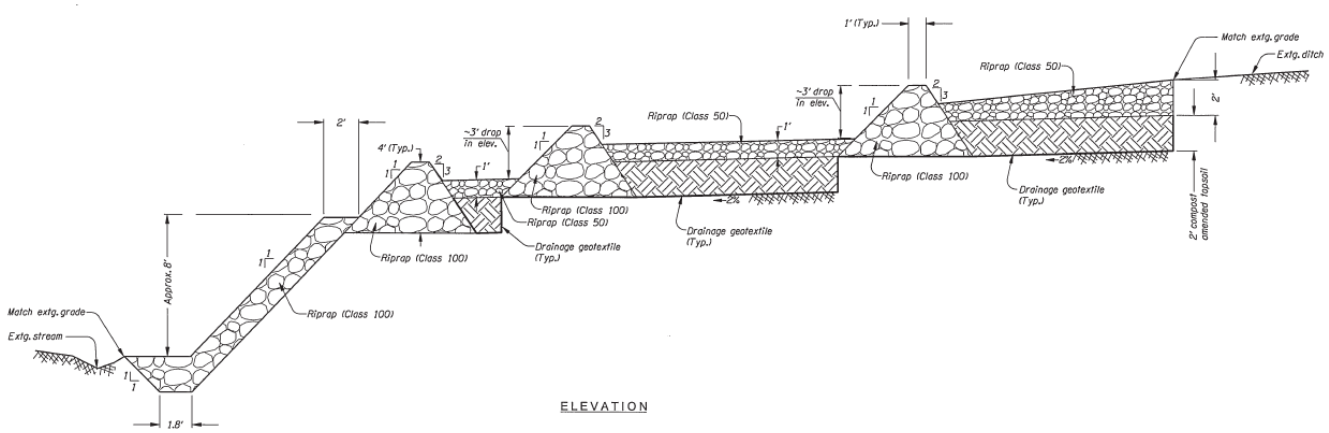


Figure 3: Facility Elevation View

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)
3	3	2

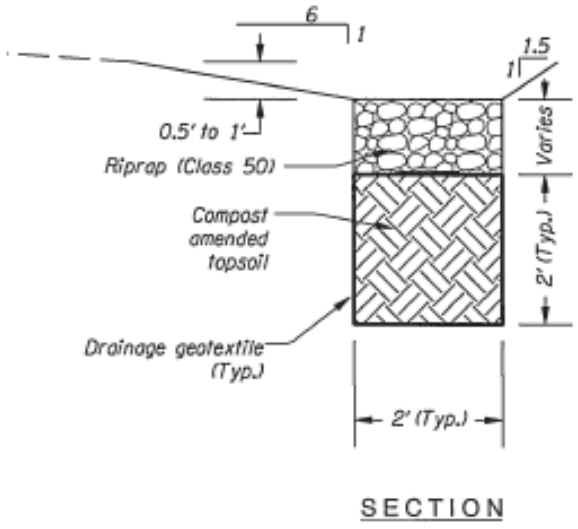


Figure 4: Facility Section View

Site Specific Information: This facility, classified as Other, functions like a swale without the grass and other vegetation. The geometry is also different with shorter, stepped pools. The existing terrain did not allow for a more traditional design. Access the facility from the eastbound travel lane. A small shoulder area is available for a single vehicle. The shoulder is located approximately 20 feet east of the mile-point 24 post. There is a Type 1 check dam at the west end of the v- bottom ditch. Two Type 6 check dams, within the swale, pool water to allow infiltration through class 50 riprap and compost, as indicated in figure 3. The check dams are referenced on sheet GA in Appendix B. Higher flows go over the dams to the outfall stream.

4. Facility Access

Maintenance access to the facility:

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

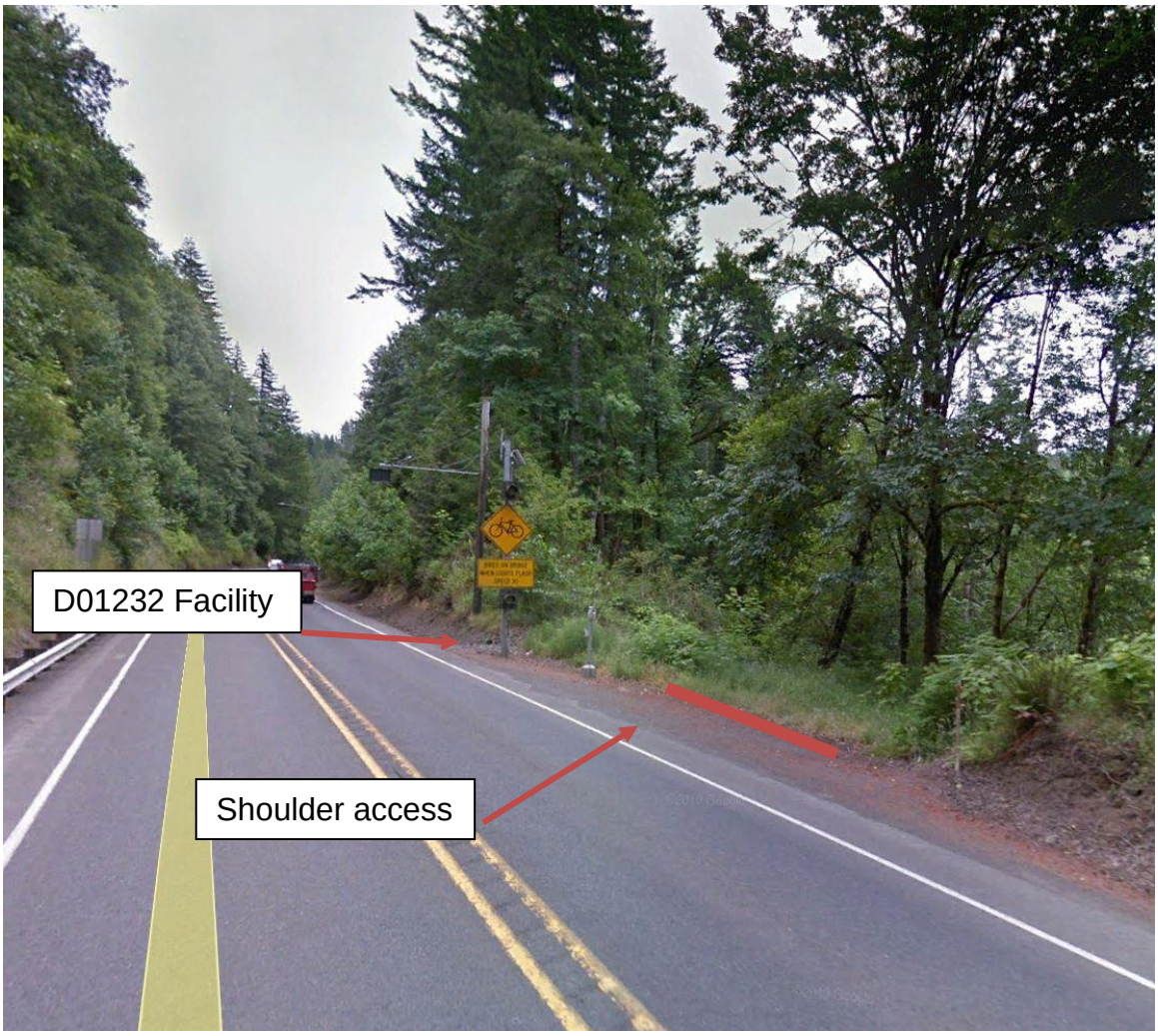


Figure 5: Shoulder access, looking east

5. Operational Components / Maintenance Items

Classification

This facility is classified as an:

☒ On-line Swale	☐ Off-line Swale
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:

☒ 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 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:

☒ **Operational Plan A**	☐ **Operational Plan B**	☐ **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.

Table 1: Swale Components		ID #
Manholes/Structures		
Pre-treatment manhole	☐	**S1**
Weir type flow splitter/flow splitter manhole	☐	**S2**
Orifice type flow splitter/flow splitter manhole	☐	**S3**
Standard manhole	☐	**S4**
Swale Inlet		
Pavement sheet flow	☒	**S5**
Inlet Pipe (s)	☐	**S6**
Open channel inlet	☒	**S7**
Riprap pad	☐	**S8**
Ground Cover		
Grass bottom	☐	**S9**
Grass side slopes	☐	**S10**
Class 50 Riprap	☒	**S11**
Plantings	☐	**S12**
Underground Components		
Geotextile fabric	☒	**S13**
Compost	☒	**S14**
Perforated pipe	☐	**S15**
Porous pavers (access grid)	☐	**S16**
Flow Spreader		
Rock basin	☒	**S17**
Anchored board (midpoint of swale or every 50 feet along swale bottom)	☐	**S18**
Other: Check dams	☒	**S19**
Swale Outlet		
Catch basin with grate	☐	**S20**
Outlet Pipe (s)	☐	**S21**
Open channel outlet	☐	**S22**
Auxiliary Outlet:	☐	**S23**
Outfall Type		
Waterbody (**C**reek/**L**ake/**O**cean)	☒ **C** ☐ **L** ☐**O**	**S24**
Ditch	☐	**S25**
Storm drain system	☐	**S26**
Outfall Components		
Riprap pad	☒	**S27**
Riprap bank protection	☐	**S28**

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

7. Limitations

Access grid installed:

☒ **No**	☐ **Yes**
There are (no) duty 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

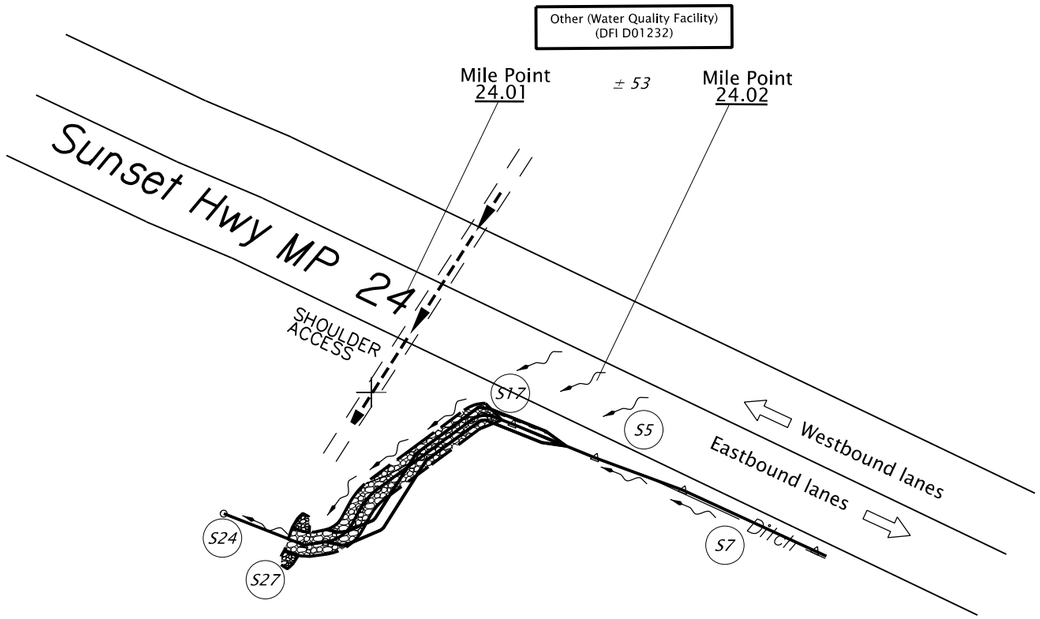
Contact any of the following for more detailed information about management of waste materials found on site:

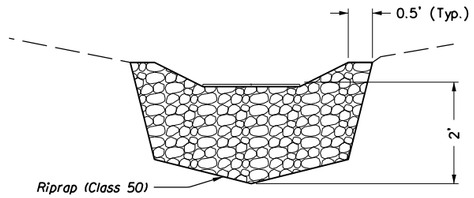
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator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

A Appendix A – Site Specific Operational Plan

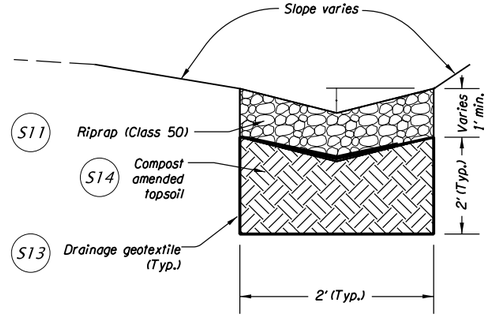
Contents:

Operational Plan: DFI D01232





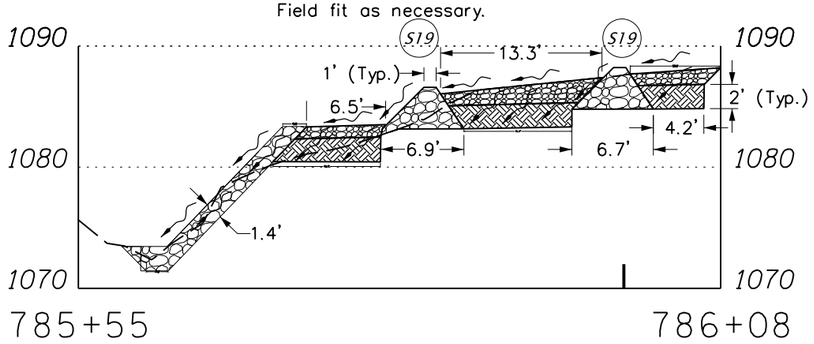
ELEVATION



SECTION

Class 100 riprap
Class 50 riprap
Compost ammended topsoil

Lengths are approximate.
Field fit as necessary.



ELEVATION

N

LEGEND:

- X# — *Facility Component (see table 1 in O&M Manual)*
- and/or — *Manhole*
- and/or — *Inlet*
- *Storm Pipe (Facility)*
- *Storm Pipe*
- *Conveyance Direction*
- *Pavement / Facility Flow Path*
- *Traffic Flow Direction*

OREGON DEPARTMENT OF TRANSPORTATION

Sht. 01 of 01

Prepared By: Laila Bush

Drafted By: Bruce Council

DFI D01232
MAINTENANCE DISTRICT 2B HWY 047
Other (Water Quality Facility)
HIGHWAY MP 24.01 - 24.02
CLATSOP COUNTY

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 44V-009

44V-009

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Std. Drg. Nos.

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

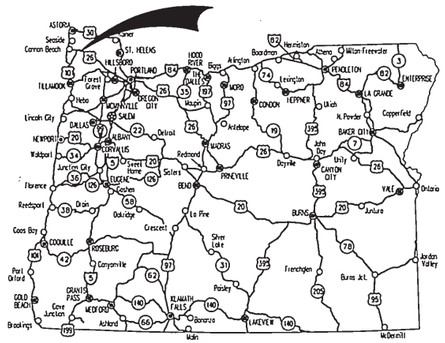
PLANS FOR PROPOSED PROJECT

GRADING, STRUCTURES, PAVING, PAVEMENT MARKINGS, SIGNING, & SIGNAL

US26: NORTH FORK QUARTZ CREEK BRIDGE #02164 PROJECT

SUNSET HIGHWAY

CLATSOP COUNTY
DECEMBER 2010

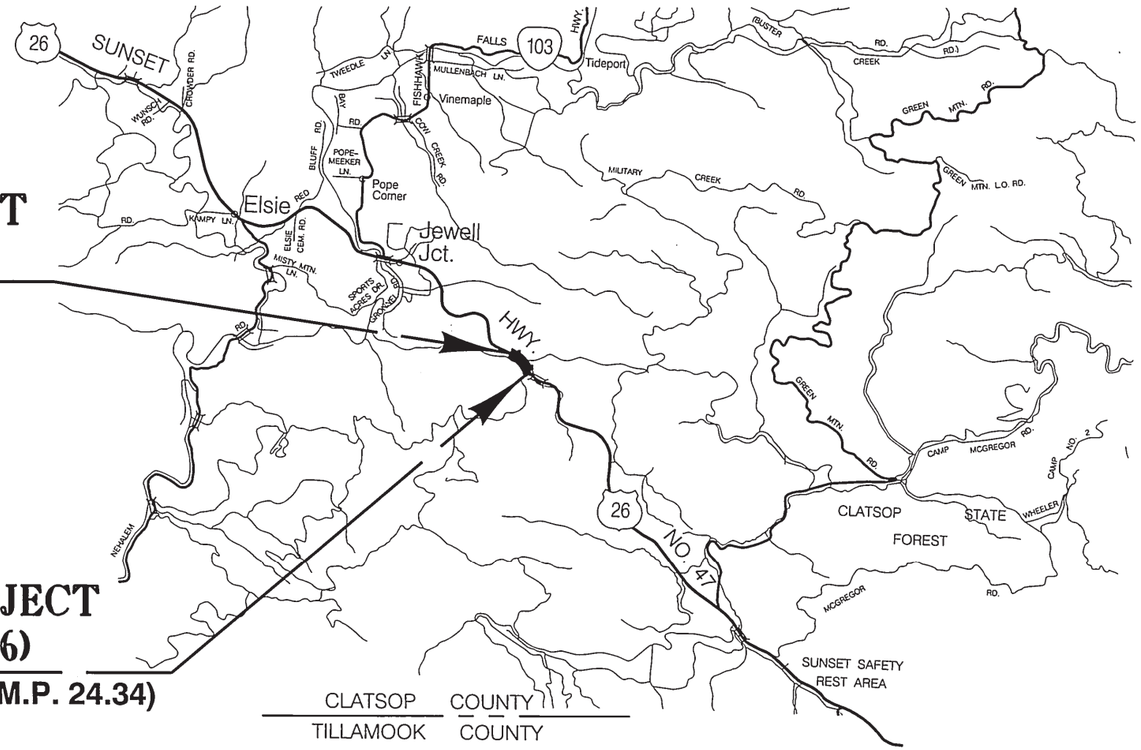


Overall Length Of Project - 0.34 Miles

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.)

BEGINNING OF PROJECT
X-BRF-S047(086)
STA. "L" 785+00 (M.P. 24.00)

END OF PROJECT
X-BRF-S047(086)
STA. "L" 802+75 (M.P. 24.34)



T. 4 N., R. 7 W., W.M.

OREGON TRANSPORTATION COMMISSION

Gail Achterman	CHAIR
Michael Nelson	VICE-CHAIR
Mary Olson	COMMISSIONER
Alan Brown	COMMISSIONER
David Lohman	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: _____
Naveen Chandra, P.E.
Region 1 Project Delivery Manager

_____
Concurrence by ODOT Chief Engineer

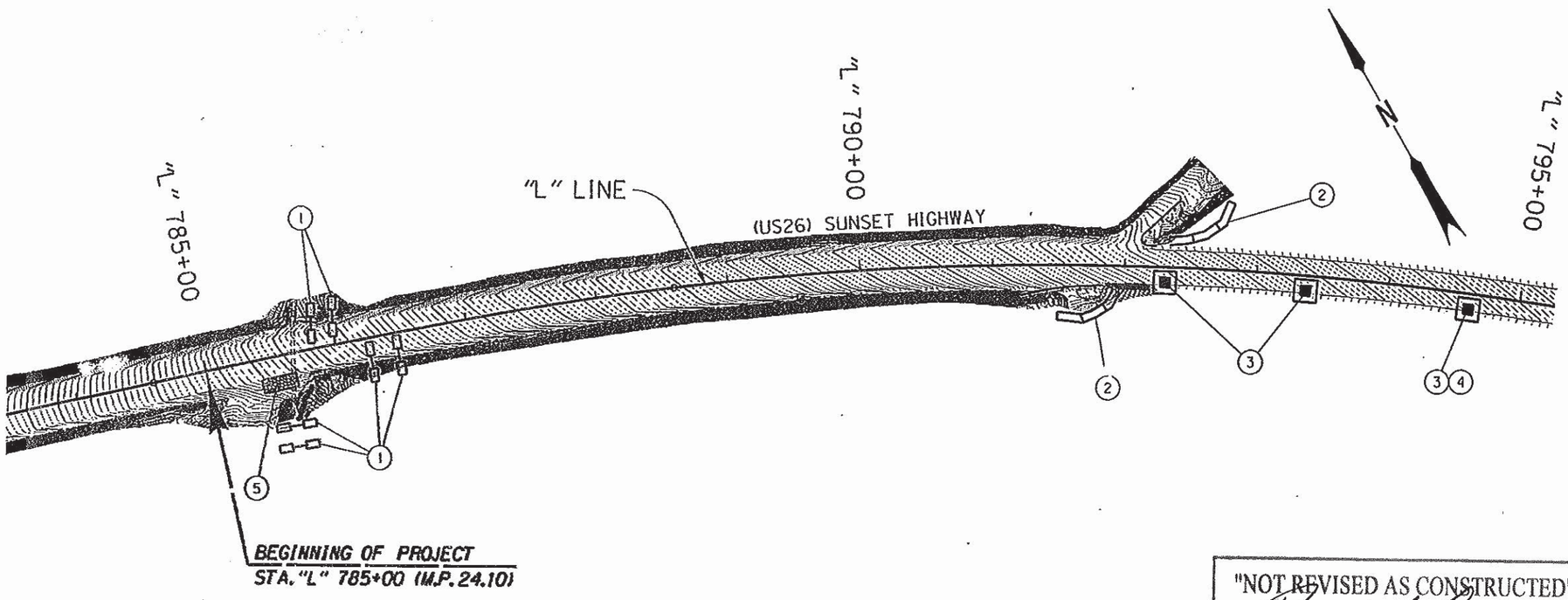
US26: NORTH FORK QUARTZ CREEK BRIDGE #02164 PROJECT
SUNSET HIGHWAY
CLATSOP COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-BRF-S047(086)	1

PE001294 010

Sec. 10, T. 4N., R. 7W., W.M.

44V-009



(1) Const. check dam - 6
Use type 1 for v-bottom ditch and type 6 for flat bottom ditch
(See drg. no. RD1005 for type 1 check dam only)
(For type 6 details, see details 5 & 6 on sht. GA-4)

(2) Const. sediment barrier, Type 8 - 110'
(For details, see shts. GA-3, GA-4 & GA-5)

(3) Const. inlet protection - 6
(5 inlets are under AC pavement of bridge deck)

(4) Permanently close scupper
After all other scuppers are made functional
(For details, see bridge shts.)

(5) Const. construction entrance
(See drg. no. RD1000)
(Field locate by engineer)

LEGEND

- Inlet Protection
- Check dam in ditch section
- Sediment barrier types 8 & 9, compost filter sock & compost filter berm, respectively
- Construction entrance

"NOT REVISED AS CONSTRUCTED"
Ronald B. Larson
PROJECT MANAGER
12/6/2011
DATE

GENERAL NOTES:

The construction, adjustment, maintenance, and upgrading of these Erosion Control measures is the responsibility of the contractor for the duration of the project.

Erosion Control measures shown on this plan are for anticipated site conditions. Adjust or upgrade these measures for unexpected storm events to ensure that sediment and sediment-laden water does not leave the site.

Place appropriate erosion & sediment control measures as needed for work not anticipated during design.

Develop a revised plan of the Erosion Control measures shown as required by Section 00280, Oregon Standard Specifications for Construction. Implement this plan for all clearing and grading activities and in segments applicable to each staging phase. Construct in such a manner so as to ensure that sediment and sediment-laden water does not enter the roadway or drainage system, or violate applicable water standards.

Install measures within the right-of-way unless directed otherwise.

Protect all inlets during surface grinding, paving, and earthwork operations to prevent pollutants from entering storm water systems.

Cover stockpiled materials to reduce sediment. Construct sediment barriers, as necessary, on perimeter of staging areas to prevent sediment from leaving the area.

STANDARD DRAWINGS

■	RD1000	Construction entrance
■	RD1005	Check dam
■	RD1010	Inlet protection type 1,2,3
□	RD1015	Inlet protection type 4
□	RD1020	Inlet protection type 5
□	RD1025	Sediment barrier type 1
□	RD1030	Sediment barrier type 2,4
■	RD1035	Sediment barrier type 3
■	RD1040	Sediment fence supported/unsupported
□	RD1045	Temporary slope drain
□	RD1050	Temporary scour basin
■	RD1055	Matting
□	RD1060	Tire wash type 1

REGISTERED PROFESSIONAL ENGINEER
19156
OREGON
JULY 15, 1997
BRUCE S. COUNCIL
RENEWAL DATE: 12-31-2011

OREGON DEPARTMENT OF TRANSPORTATION

REGION 1 - Geo/Hydro/HazMat Unit

US26: NORTH FORK QUARTZ CREEK BRIDGE #02164 PROJECT
SUNSET HIGHWAY
CLATSOP COUNTY

Reviewed By - Don Gunther
Designed By - Bruce Council
Drafted By - Charlotte Gerken

EROSION CONTROL PLAN

SHEET NO. GA

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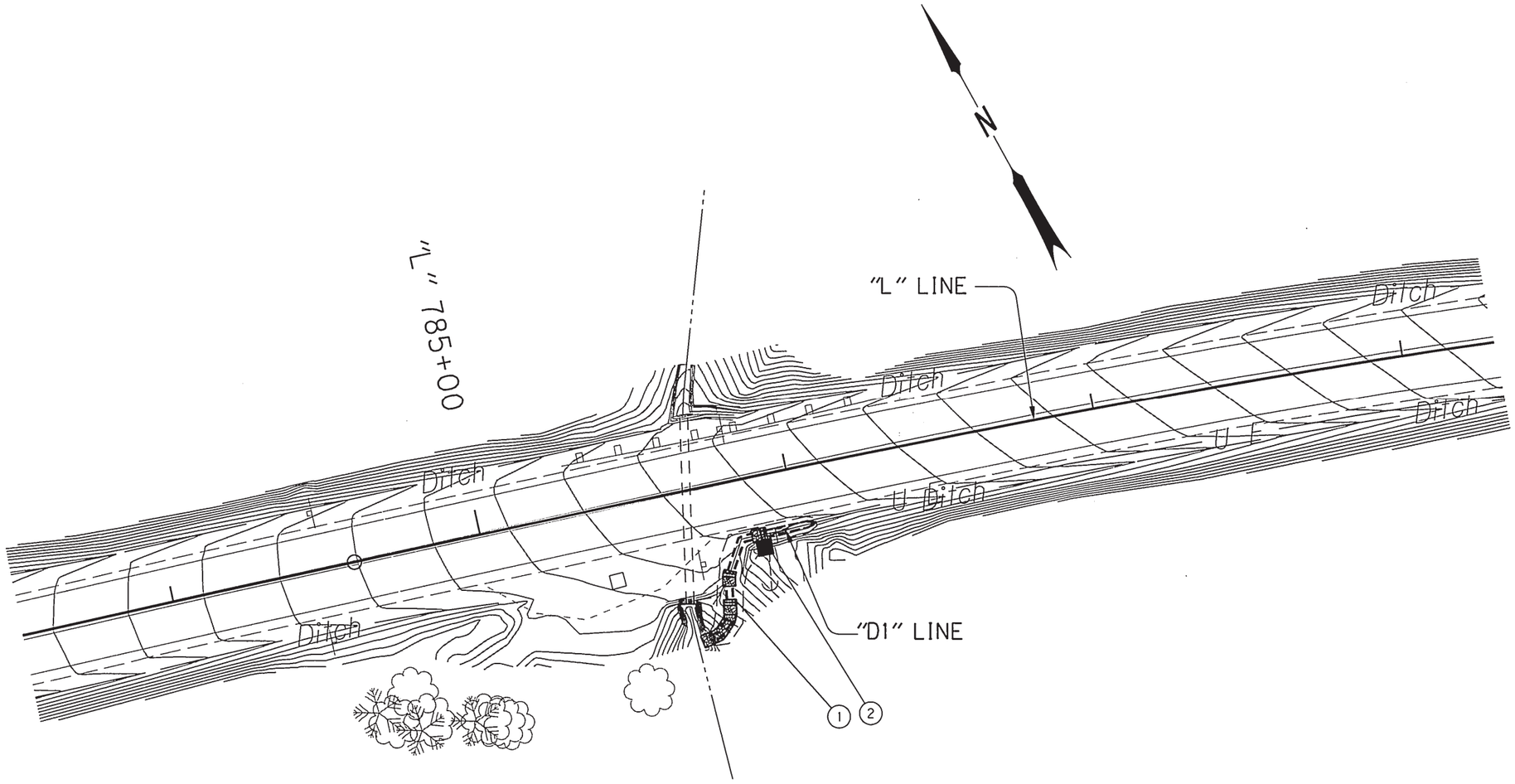
44V-009



(1) *Const. 2' flat bottom ditch*
Ditch exc. - 30 cu.yd.
Const. loose riprap (Class 50) - 3 cu.yd.
Const. loose riprap (Class 100) - 7 cu.yd.
Place compost amended topsoil - 4 cu.yd.
(For details, see shts. GJ-2 & GJ-3)

(2) *Protect existing pole*

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SUNSET HIGHWAY
CLATSOP COUNTY

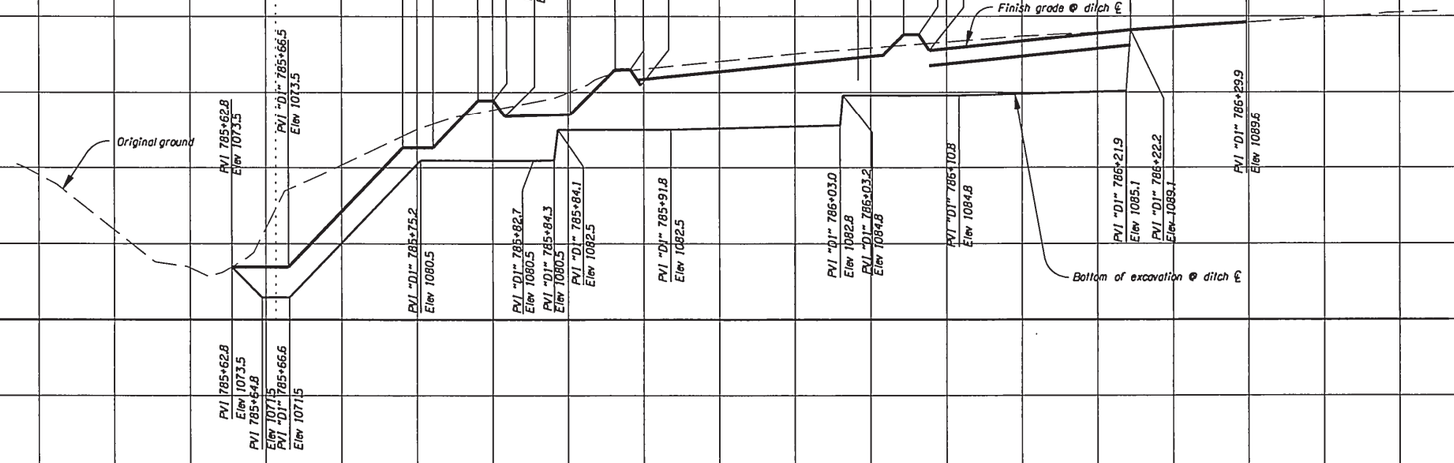
Reviewed By - Dan Gunther
Designed By - Bruce Council
Drafted By - Charlotte Gerken

WATER QUALITY PLAN

SHEET NO. GJ

44V-009

WATER QUALITY FACILITY "D-1" PROFILE



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CLATSOP COUNTY

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Designed By - Bruce Council
Drafted By - Charlotte Gerken

WATER QUALITY PROFILE

SHEET NO. GJ-2

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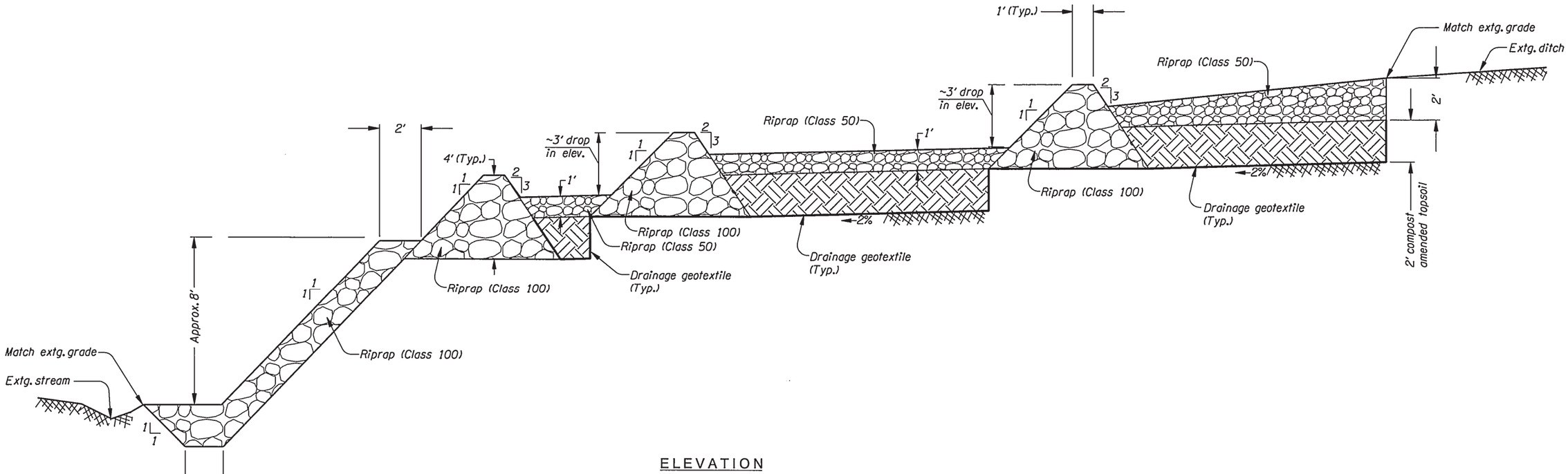
WATER QUALITY FACILTY DETAILS

44V-009



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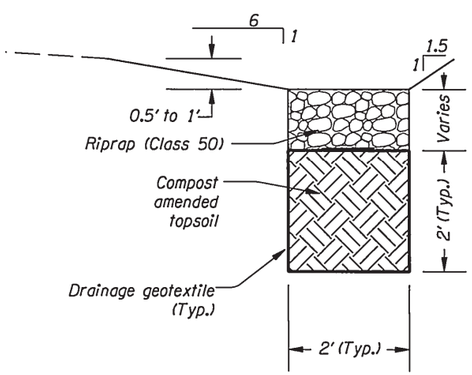

SECTION

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WATER QUALITY DETAILS

SHEET NO. GJ-3

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