

# OPERATION & MAINTENANCE MANUAL

## Water Quality Biofiltration Swale

Manual prepared: August 2017

DFI No. D00574



Figure 1: DFI No. D00574, looking northeast

## 1. Identification

Drainage Facility ID (DFI): D00574  
Facility Type: Water Quality Biofiltration Swale  
Construction Drawings: (V-File Numbers) 45V-34  
Location: District: 3  
Highway No.: 160  
Mile Post: 24.22 to 24.27, left side

## 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.

Flow direction: northeast



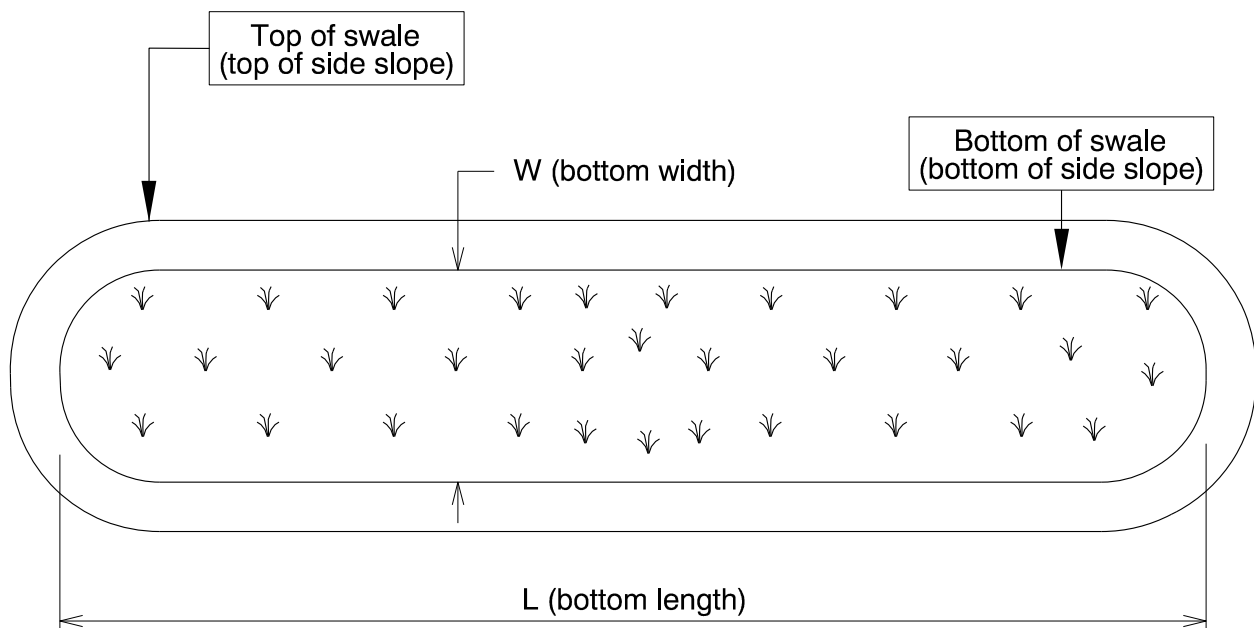
Figure 2: Facility location map

#### 4. 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:

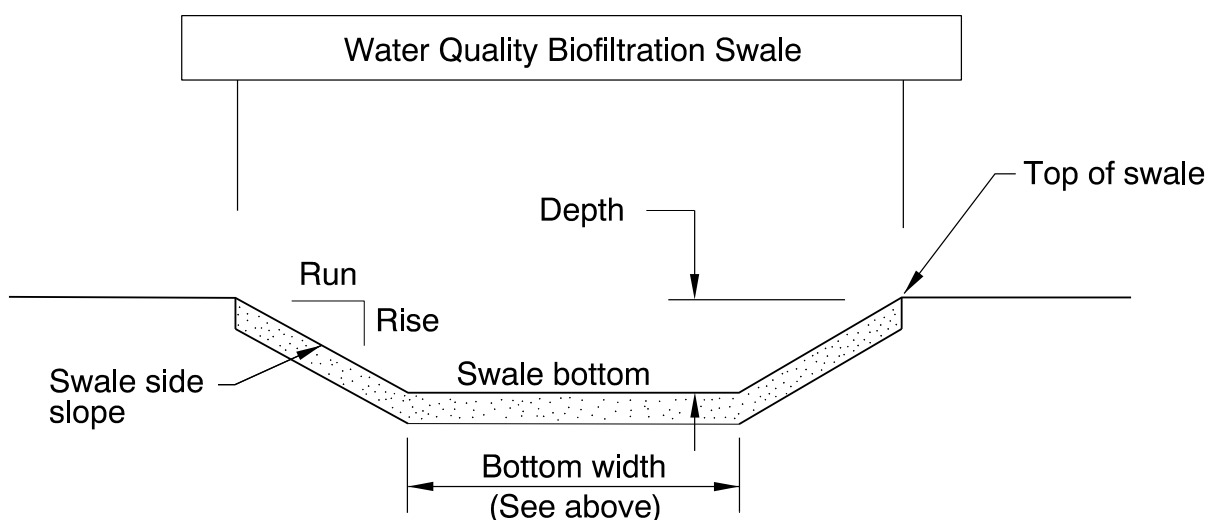
Bottom Length (feet)	Bottom Width (feet)
264	3



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)
5	1	3



**Site Specific Information:** The facility runs parallel to Cascade Highway South (OR 213). Treated stormwater outfalls into Butte Creek. The contract plans indicate that four plastic board flow spreaders were to be installed in the facility. One plastic board flow spreader was installed at the inlet. Three erosion control flow spreaders made of aggregate and straw were left in place. Runoff is directed to the facility via a drainage curb that runs below the guardrail east of the primary inlet and a culvert drainage system west of the primary inlet. The facility has an additional inlet located east of the primary inlet. This inlet is a small riprap pad that receives stormwater from a catch basin located on Cascade Highway South. It is connected to the catch basin via a 12-inch pipe.

## 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: Facility access via Douthit Lane NE, facing east

## 6. 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"/> <b>No</b>	<input type="checkbox"/> <b>Yes</b>
There is no bypass component. High flows drain 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

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 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>
Plantings	<input type="checkbox"/>	<b>S12</b>
<b>Underground Components</b>		
Geotextile fabric	<input 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: located at inlet	<input checked="" type="checkbox"/>	<b>S18</b>
Other: aggregate rock and straw check dams	<input checked="" type="checkbox"/>	<b>S19</b>
<b>Swale Outlet</b>		
Catch basin with grate	<input type="checkbox"/>	<b>S20</b>
Outlet pipe(s)	<input type="checkbox"/>	<b>S21</b>
Open channel outlet	<input type="checkbox"/>	<b>S22</b>
Auxiliary Outlet	<input type="checkbox"/>	<b>S23</b>
<b>Outfall Type</b>		
Waterbody (Creek/Lake/Ocean)	<input checked="" type="checkbox"/> <b>C</b> <input type="checkbox"/> <b>L</b> <input type="checkbox"/> <b>O</b>	<b>S24</b>
Ditch	<input type="checkbox"/>	<b>S25</b>
Storm drain system	<input type="checkbox"/>	<b>S26</b>
<b>Outfall Components</b>		
Riprap pad	<input type="checkbox"/>	<b>S27</b>
Riprap bank protection	<input checked="" type="checkbox"/>	<b>S28</b>



## 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 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)

## 8. Limitations

Access grid installed:

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

Swales are designed to allow equipment access along the bottom. 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.

## 9. 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)

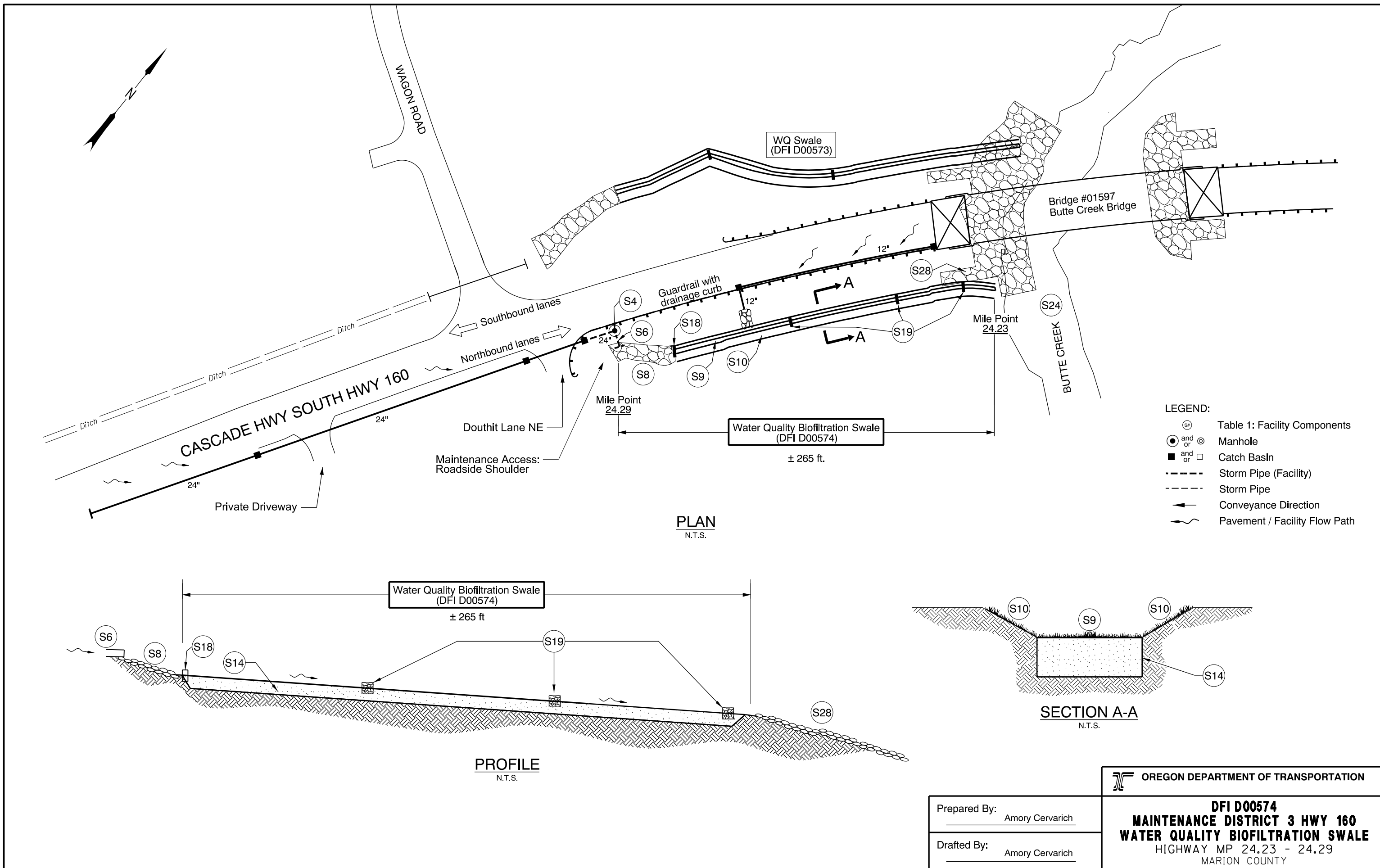
Contact any of the following for more detailed information about management of waste materials found on site:


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 D00574**




**OREGON DEPARTMENT OF TRANSPORTATION**  
**DFI D00574**  
**MAINTENANCE DISTRICT 3 HWY 160**  
**WATER QUALITY BIOFILTRATION SWALE**  
 HIGHWAY MP 24.23 - 24.29  
 MARION COUNTY

Prepared By: Amory Cervarich  
 Drafted By: Amory Cervarich

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

### **Contents:**

**Site Specific Subset of Project Contract Plan 45V-34**

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets
1A-2	Std. Drg. Nos.

STATE OF OREGON  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING, STRUCTURE, PAVING & SIGNING

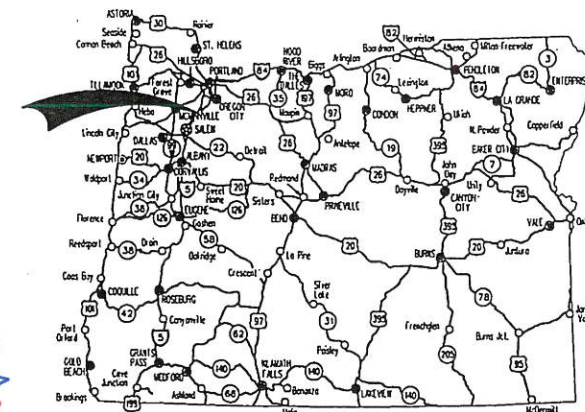
**OR213: BUTTE CREEK (JACKS) BRIDGE SEC.**

**CASCADE HIGHWAY SOUTH**

**MARION & CLACKAMAS COUNTIES**

MAY 2012

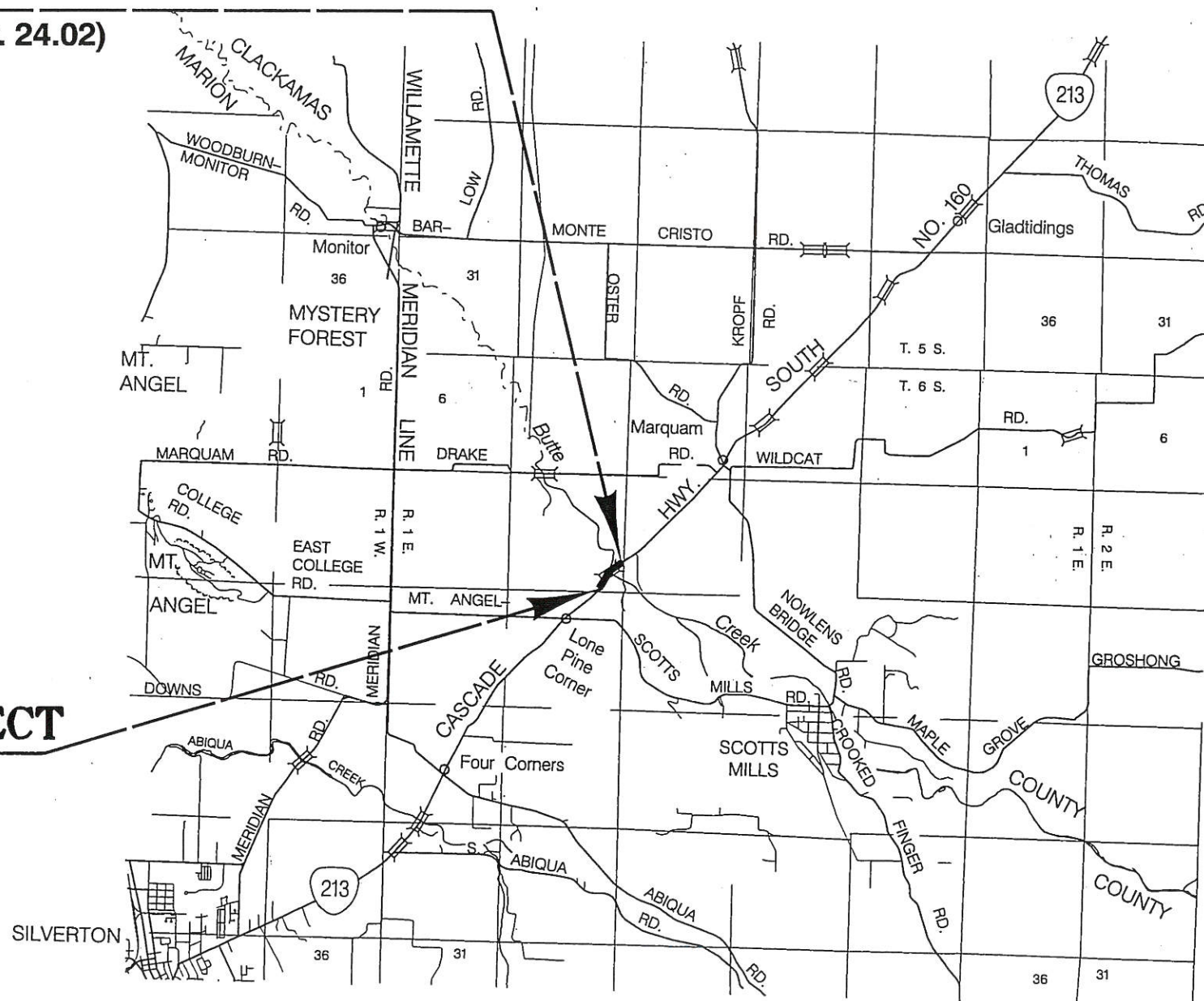
REVISED AS CONSTRUCTED  
6/24/14 CONTRACT 14457  
PROJ. MGR. *[Signature]*



Overall Length Of Project - 0.38 Miles

**BRO-S160(051)  
END OF PROJECT**

**STA. "L"674+50 (M.P. 24.02)**



**BRO-S160(051)  
BEGINNING OF PROJECT**

**STA. "L"655+50 (M.P. 24.4)**

**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.)



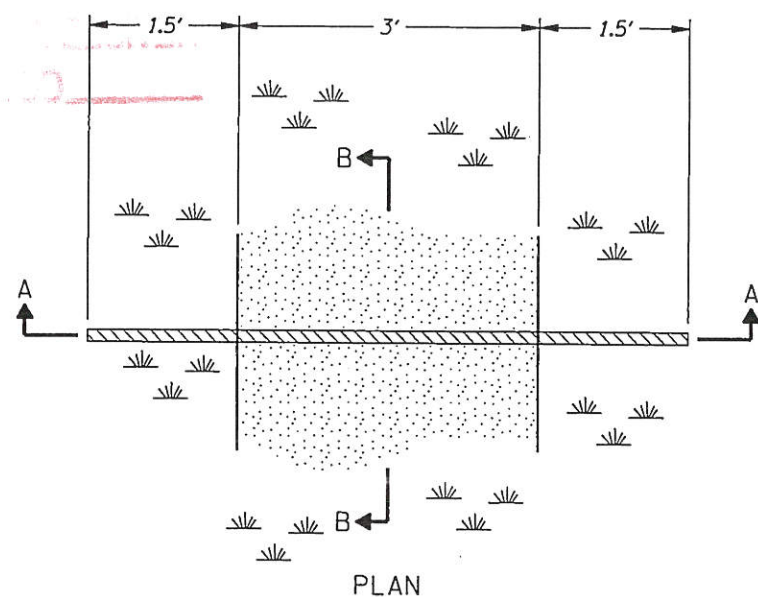
- OREGON TRANSPORTATION COMMISSION**
- Pat Egan CHAIR
  - David Lohman COMMISSIONER
  - Mary F. Olson COMMISSIONER
  - Mark Frohnmayer COMMISSIONER
  - Tommy Boney COMMISSIONER
  - Matthew L. Garrett DIRECTOR OF TRANSPORTATION

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.

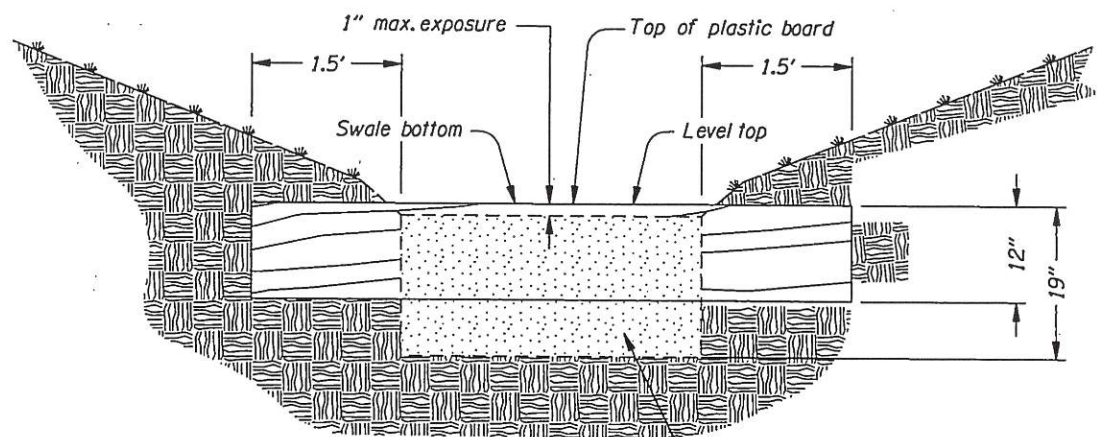
By: *[Signature]* 3/26/12  
Signature & date  
for: Carol A. Cartwright - R2 Tech Center Manager  
Print name and title  
*[Signature]*  
Concurrence by ODOT Chief Engineer

<b>OR213: BUTTE CREEK (JACKS) BRIDGE SEC.</b>		
CASCADE HIGHWAY SOUTH		
MARION & CLACKAMAS COUNTIES		
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	BRO-S160(051)	1

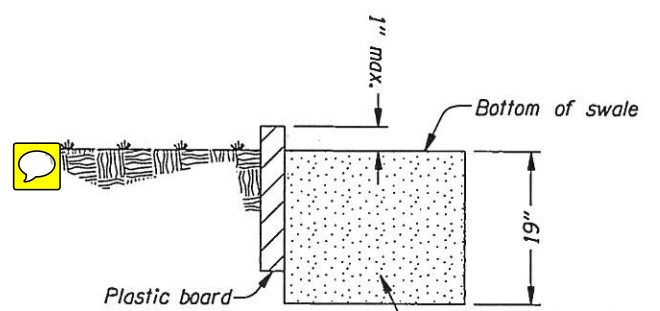
PE001452



PLAN

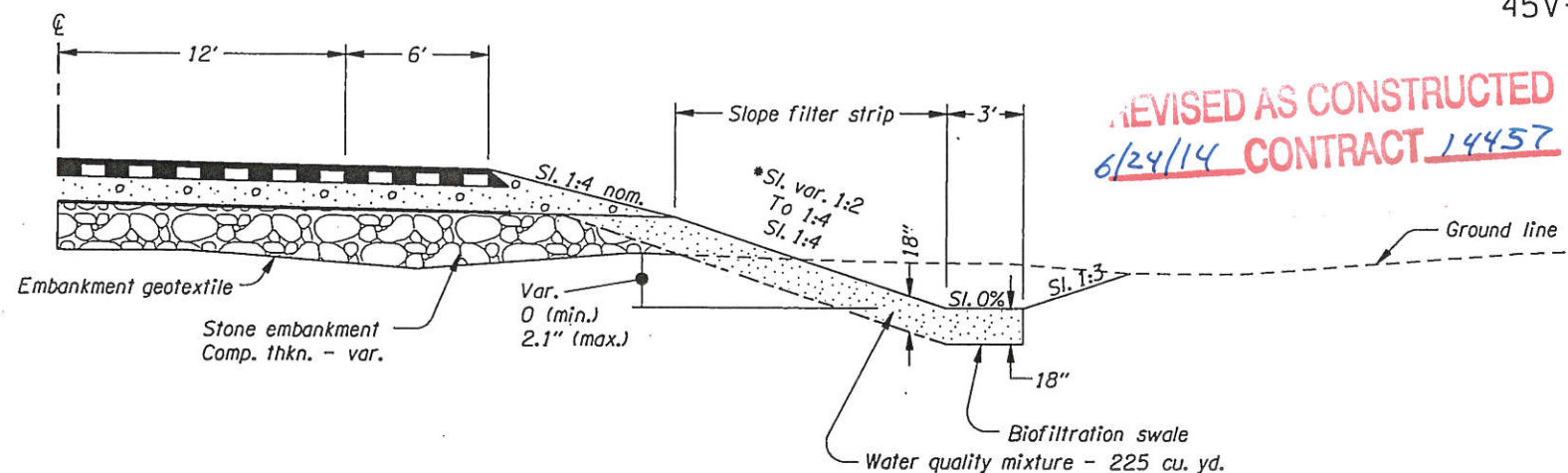


SECTION A-A



SECTION B-B

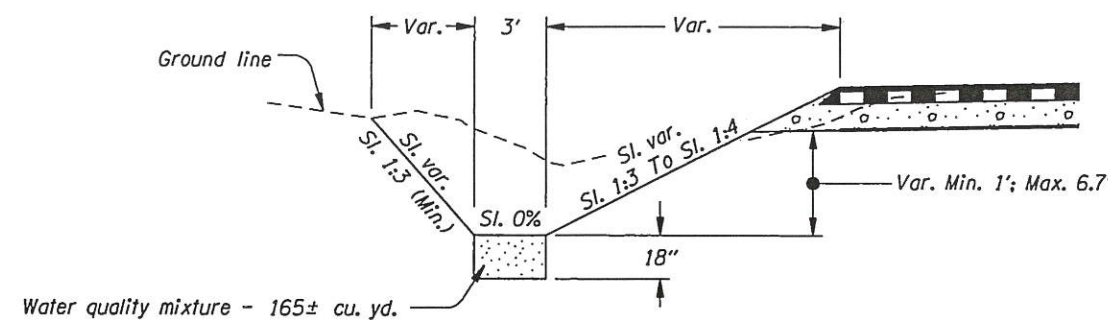
PLASTIC BOARD FLOW SPREADER



REVISED AS CONSTRUCTED  
6/24/14 CONTRACT 14457

(For surfacing details not shown, see typical sections)  
**WATER QUALITY BIOFILTRATION SWALE  
AND SLOPE FILTER STRIP**

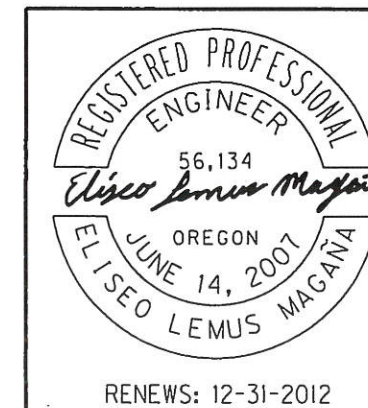
\* STA. "L"667+42 To STA. "L"668+03, Rt.  
STA. "L"668+03 To STA. "L"670+60, Rt.



(For surfacing details not shown, see typical sections)

**FLAT BOTTOM WATER QUALITY  
BIOFILTRATION SWALE**

STA. "L"661+05 To STA. "L"664+50, Lt.  
STA. "L"661+10 To STA. "L"664+10, Rt.  
STA. "L"670+60 To STA. "L"672+60, Rt.  
STA. "L"671+15 To STA. "L"672+60, Lt.



OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR213: BUTTE CREEK (JACKS) BRIDGE SEC.  
CASCADE HIGHWAY SOUTH  
MARION & CLACKAMAS COUNTIES

Design Team Leader - Edward W. Conrrell  
Designed By - Eliseo Lemus Magaña  
Drafted By - D. Gentner-Day

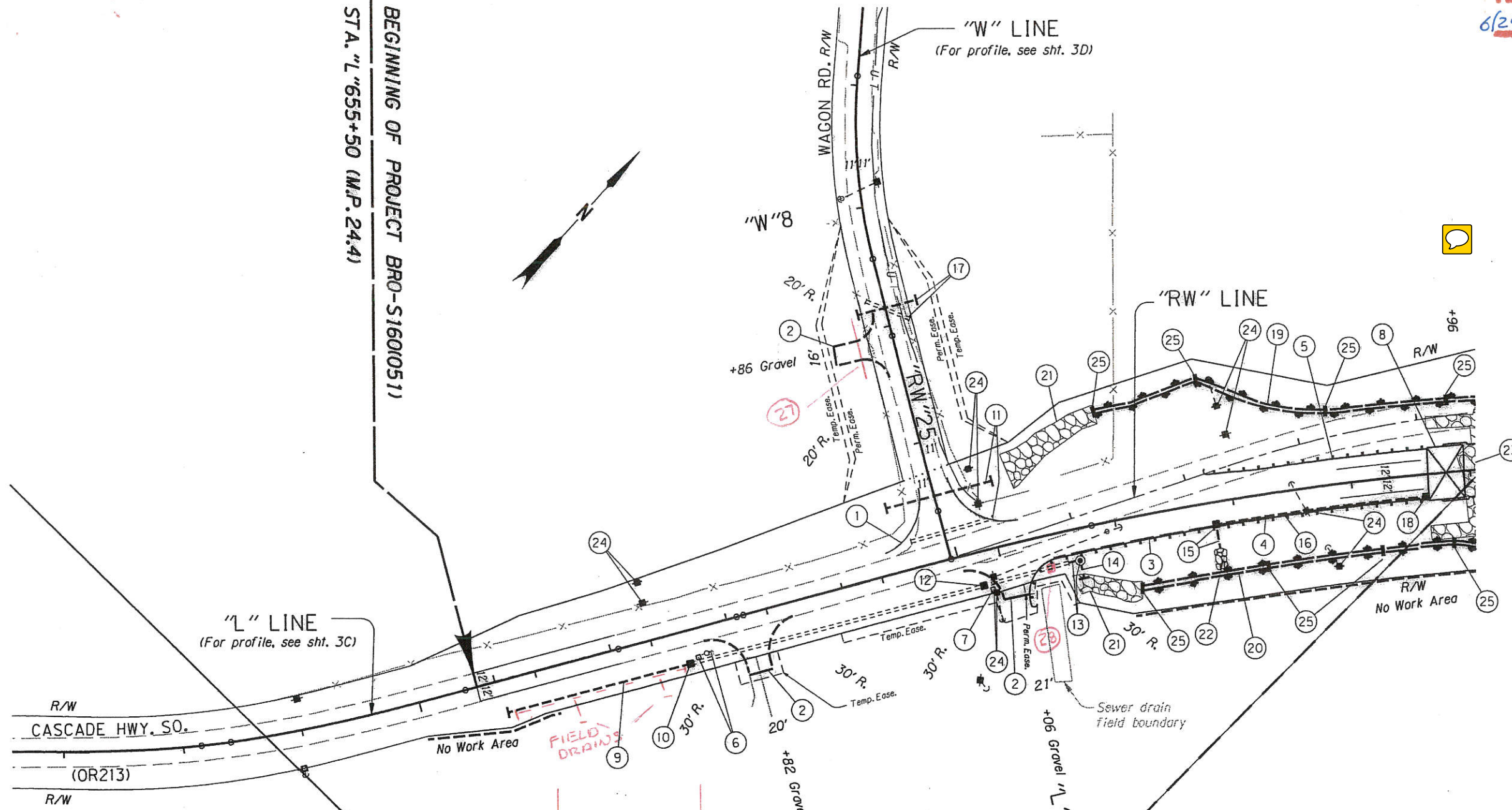
DETAILS

SHEET NO.  
2B-4

T. 6 S., R. 1 E., W.M.

**REVISED AS CONSTRUCTED**  
 6/24/14 **CONTRACT 14457**

STRUCTURAL DETAILS CHECKED



"L" LINE  
 (For profile, see sht. 3C)

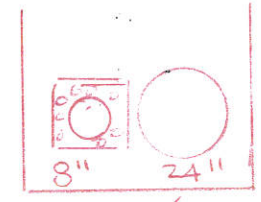
"W" LINE  
 (For profile, see sht. 3D)

"RW" LINE

R/W  
 CASCADE HWY. SO.

(OR213)

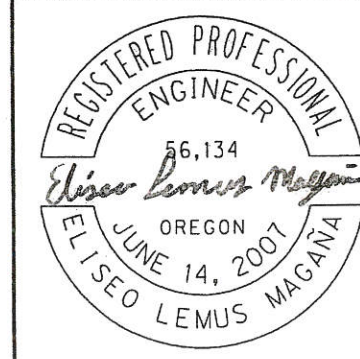
BEGINNING OF PROJECT BR0-S16010511  
 STA. "L" 655+50 (M.P. 24.4)



"L" 655  
 SEC. 8  
 SEC. 17

THOMAS P. JACK  
 DLC NO. 43

JEREMIAH JACK  
 DLC NO. 41



RENEWS: 12-31-2012

OREGON DEPARTMENT OF TRANSPORTATION	
REGION 2 TECH CENTER	
OR213: BUTTE CREEK (JACKS) BRIDGE SEC. CASCADE HIGHWAY SOUTH MARION & CLACKAMAS COUNTIES	
Design Team Leader - Edward W. Cantrell Designed By - Eliseo Lemus Magaña Drafted By - D. Gentner-Day	
GENERAL CONSTRUCTION	SHEET NO. <b>3A</b>



- ① Const. road connection
- ② Const. approach - 3  
(See drg. no. RD715)
- ③ Sta. "L"660+17.21 To Sta. "L"663+63, Rt.  
Const. guardrail - 281.5' (Type 2A)  
- 37.5' (Type 2A) (30' radius)  
- 12.5' (Type 3)  
Const. anchor - 2 (Type 1 mod.)  
Inst. end piece (Type B)  
(See drg. nos. RD400, RD415, RD440, RD450 & RD470)
- ④ Sta. "L"660+40 To Sta. "L"663+63, Rt.  
Const. drainage curb  
(See drg. no. RD701)
- ⑤ Sta. "L"661+84.9 To Sta. "L"663+65, Lt.  
Const. guardrail - 112.5' (Type 2A)  
- 12.5' (Type 3)  
Flare rate=0, W=3', E=2'  
Const. guardrail terminal, flared  
(See drg. nos. RD420)
- ⑥ Sta. "L"657+27, Rt.  
Remove extg. mailbox support  
Inst. single mailbox support  
(See drg. nos. RD100 & RD101)
- ⑦ Sta. "L"559+88, Rt.  
Inst. single mailbox support
- ⑧ Structure no. 21281  
Const. structure  
Roadway width - 40'  
and reinforced panel of bridge ends  
(For drg. nos. see sht. 1A)

- ⑨ Sta. "L"655+70 To Sta. "L"657+27, Rt.  
Inst. 24" culv. pipe - 157'  
5' Depth  
Const. slope end  
(See drg. nos. RD300, RD316, RD318, RD326,  
RD380 & RD386)
- ⑩ Sta. "L"657+27, 27.4' Rt.  
Const. type "D" inlet  
(See drg. no. RD370)
- ⑪ Sta. "L"659+17.79 To Sta. "L"660+08.79, 53.9' Lt.  
Remove extg. pipe - 78.8'  
Inst. 18" culv. pipe - 91'  
5' Depth  
Const. slope end - 2
- ⑫ Sta. "L"659+81.2, 27.8' Rt.  
Remove extg. pipe - 3'  
Const. type "D" inlet
- ⑬ Sta. "L"660+57, 26.3' Rt.  
24" culv. pipe (In pl.)  
Extend - 9' Rt., 5' depth  
Const. storm sew. manhole  
(See drg. nos. RD336, RD344 & RD346)
- ⑭ Sta. "L"660+65, Rt.  
Inst. 24" culv. pipe - 13'  
5' Depth
- ⑮ Sta. "L"661+82.7, 18.3' Rt.  
Const. type "G-2" inlet  
Inst. 12" storm sew. pipe - 17.5'  
10' Depth  
(See drg. no. RD364)

**REVISED AS CONSTRUCTED**  
**6/24/14 CONTRACT 14457**

- ⑯ Sta. "L"661+83.9 To Sta. "L"663+60.2, Rt.  
Inst. 12" storm sew. pipe - 175'  
10' Depth
- ⑰ Sta. "W"7+15  
Remove extg. culv. pipe - 39'  
Inst. 18" culv. pipe - 60'  
5' Depth  
Const. slope end - 2
- ⑱ Sta. "L"663+48, 18.3' Rt.  
Const. type "G-2" inlet
- ⑲ Sta. "L"661+05 To Sta. "L"664+50, Lt.  
Const. No. 00573 water quality biofiltration swale  
(For details, see sht. 2B-4)
- ⑳ Sta. "L"661+10 To Sta. "L"664+10, Rt.  
Const. No. 00574 water quality biofiltration swale  
(For details, see sht. 2B-4)
- ㉑ Const. ditch protection  
Const. loose riprap (Class 50) - 100 cu. yd.  
(For details, see sht. 2B-2)
- ㉒ Const. slope protection  
Const. loose riprap (Class 50) - 4 cu. yd.  
(For details, see sht. 2B-3)
- ㉓ Const. bank protection  
(For drg. nos., see sht. 1A)
- ㉔ Remove extg. power pole - 5  
Inst. power pole - 5  
(By others)
- ㉕ Inst. plastic board flow spreader - 8  
(For details, see sht. 2B-4)

⑳ INSTALL 8" DRAIN PIPE  
STA 655+80 TO 657+27 RT  
TIE INT TYP "D" INLET  
TIE 2 FIELD DRAIN  
INTO 8" PIPE

㉑ "W" 6+55 - 7+15  
INST 12 CULV PIPE -  
60' CONST. SLOPE END 2

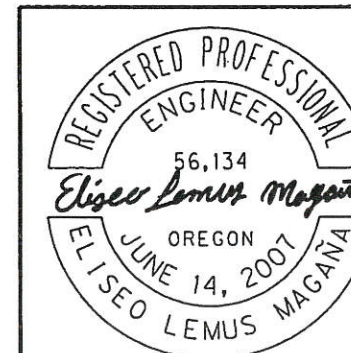
㉒ STA "L" 660+40 26.6 RT  
CONST TYPE "D" INLET.  
REMOVE EXTG PIPE - 3'

 OREGON DEPARTMENT OF TRANSPORTATION

**REGION 2 TECH CENTER**

**OR213: BUTTE CREEK (JACKS) BRIDGE SEC.**  
CASCADE HIGHWAY SOUTH  
MARION & CLACKAMAS COUNTIES

Design Team Leader - Edward W. Cantrell  
Designed By - Eliseo Lemus Magoña  
Drafted By - D. Gentner-Day



RENEWS: 12-31-2012

**NOTES**

SHEET NO.

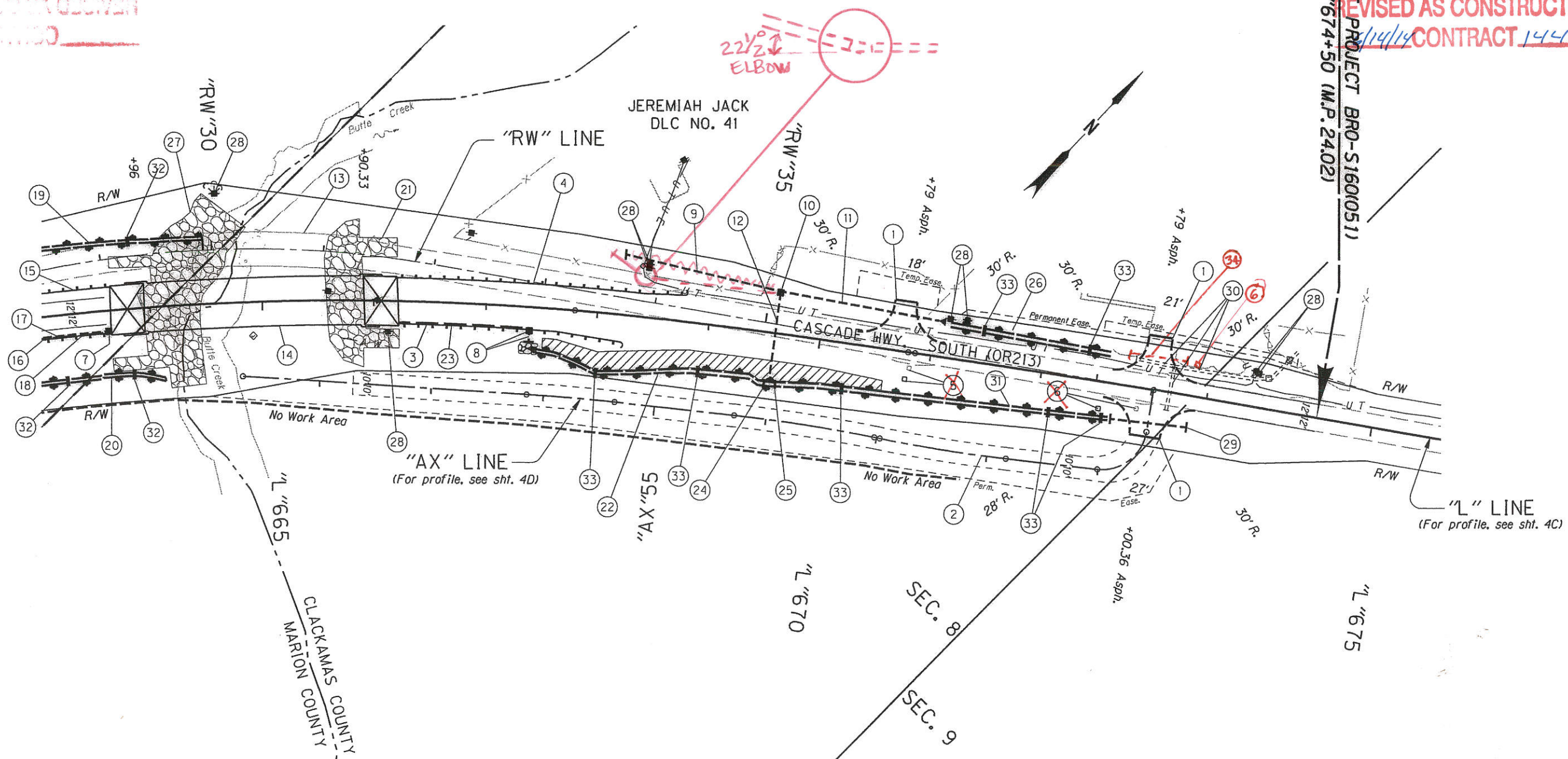
3A-2

STRUCTURAL DETAILS CHECKED

Sec. 8, T.6S., R.1E., W.M.

REVISIONS TO BE MADE  
AS NOTED

REVISED AS CONSTRUCTED  
1/14/14 CONTRACT 14457



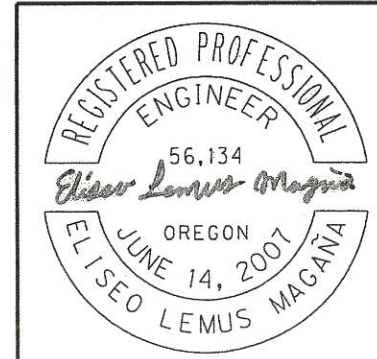
STRUCTURAL DETAILS CHECKED

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR213: BUTTE CREEK (JACKS) BRIDGE SEC.  
CASCADE HIGHWAY SOUTH  
MARION & CLACKAMAS COUNTIES

Design Team Leader - Edward W. Cantrell  
Designed By - Eliseo Lemus Magaña  
Drafted By - D. Gentner-Day

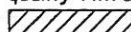


RENEWS: 12-31-2012

GENERAL CONSTRUCTION

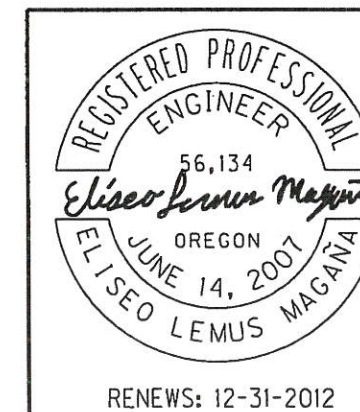
SHEET NO.  
4A


- ① Const. approach - 3
- ② Const. access road  
(For details, see sht. 2A-2)
- ③ Sta. "L"666+23.1 To Sta. "L"668+07.4, Rt.  
Const. guardrail - 112.5' (Type 2A)  
- 12.5' (Type 3)  
Flare rate=0, W=3', E=2'  
Const. guardrail terminal, flared  
Const. guardrail to bridge transition  
(See drg. nos. RD410, BR208 & BR209)
- ④ Sta. "L"666+20.55 To Sta. "L"668+76.8, Lt.  
Const. guardrail - 187.5' (Type 2A)  
- 12.5' (Type 3)  
Flare rate=0, W=3', E=2'  
Const. guardrail terminal, non-flared  
Const. guardrail to bridge transition
- ⑤ Sta. "L"670+80, Rt. **RELOCATE MAILBOX TO STA. "L"673+35 LEFT**  
Remove extg. mailbox support  
Inst. single mailbox support
- ⑥ Sta. "L"672+80, Rt. **RELOCATE "L" 673+35 LEFT**  
Remove extg. mailbox support **(B) "L" 672 + 85 Rt. MULT.**  
Inst. single mailbox support
- ⑦ See sht. 3A-2, note 18  
Const. inlet
- ⑧ Sta. "L"667+40, 18.3' Rt.  
Const. type "G-2" inlet  
Inst. 12" culv. pipe - 10'  
5' Depth  
Const. culvert slope protection  
Const. loose riprap (Class 50) - 1.5 cu. yd.  
(For details, see sht. 2B-3)
- ⑨ Sta. "L"668+19.6 To Sta. "L"669+59, Lt.  
Inst. 18" storm sew. pipe - 140.5'  
5' Depth **SEE DETAIL @ LEFT**
- ⑩ Sta. "L"669+60, 37.5' Lt.  
Const. type "D" inlet

- ⑪ Sta. "L"679+61 To Sta. 671+03.3, Lt.  
Inst. 18" storm sew. pipe - 142.5'  
5' Depth  
Const. slope end - 2
- ⑫ Sta. "L"669+60  
Inst. 18" storm sew. pipe - 79.8'  
5' Depth  
Const. slope end, Rt.
- ⑬ Remove extg. structure  
(For drg. nos. see sht. 1A)
- ⑭ See sht. 3A-2, note 8  
Const. structure
- ⑮ See sht. 3A-2, note 5  
Const. guardrail  
Const. guardrail to bridge transition
- ⑯ See sht. 3A-2, note 3  
Const. guardrail  
Const. guardrail to bridge transition
- ⑰ See sht. 3A-2, note 4  
Const. drainage curb
- ⑱ See sht. 3A-2, note 16  
Inst. storm sew. pipe
- ⑲ See sht. 3A-2, note 19  
Const. water quality biofiltration swale
- ⑳ See sht. 3A-2, note 20  
Const. water quality biofiltration swale
- ㉑ Const. bank protection  
(For drg. nos., see sht. 1A)
- ㉒ Sta. "L"667+42 To Sta. "L"670+60, Rt.  
Const. No. 00575 water quality biofiltration swale  
Const. water quality filtration strip  
Shown thus:   
(For details, see sht. 2B-4)

**REVISED AS CONSTRUCTED**  
**6/24/14 CONTRACT 14457**

- ㉓ Sta. "L"666+22.9 To Sta. "L"667+38.8, Rt.  
Const. drainage curb
- ㉔ Sta. "L"699+55, 45.4' Rt.  
Inst. steel plate  
(For details, see sht. GJ)
- ㉕ Sta. "L"699+65, 44.9' Rt.  
Inst. steel plate  
(For details, see sht. GJ)
- ㉖ Sta. "L"671+15 To Sta. "L"672+60, Lt.  
Const. No. 00608 water quality biofiltration swale  
(For details, see sht. 2B-4)
- ㉗ See sht. 3A-2, note 23  
Const. bank protection
- ㉘ Remove extg. power pole - 3  
Inst. power pole - 3  
(By others)
- ㉙ Sta. "L"672+67.4 To Sta. 673+36, Rt.  
Inst. 12" culv. pipe - 68.5'  
5' Depth  
Const. slope end - 2
- ㉚ Remove extg. pipe - 127'
- ㉛ Sta. "L"670+60 To Sta. "L"672+60, Rt.  
Const. No. 00575 water quality biofiltration swale  
(For details, see sht. 2B-4)
- ㉜ See sht. 3A-2, note 25
- ㉝ Inst. plastic board flow spreader - 8  
(For details, see sht. 2B-4)
- ㉞ **INSTALLED 12" X 60' DUCTILE IRON**



 OREGON DEPARTMENT OF TRANSPORTATION	
<b>REGION 2 TECH CENTER</b>	
OR213: BUTTE CREEK (JACKS) BRIDGE SEC. CASCADE HIGHWAY SOUTH MARION & CLACKAMAS COUNTIES	
Design Team Leader - Edward W. Cantrell Designed By - Eliseo Lemus Magaña Drafted By - D. Gentner-Day	
<b>NOTES</b>	SHEET NO. <b>4A-2</b>

REVISED AS CONSTRUCTED  
6/24/14 CONTRACT 14457

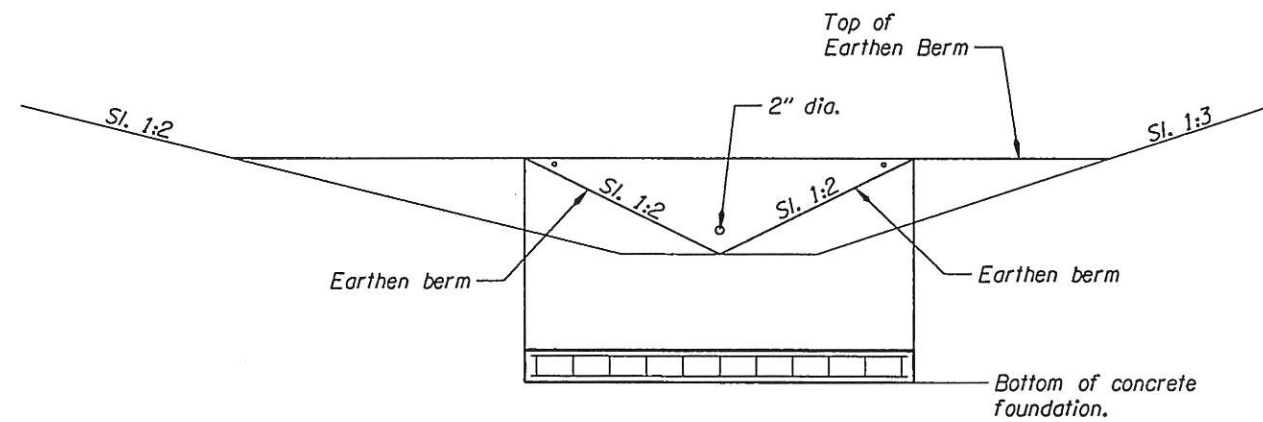
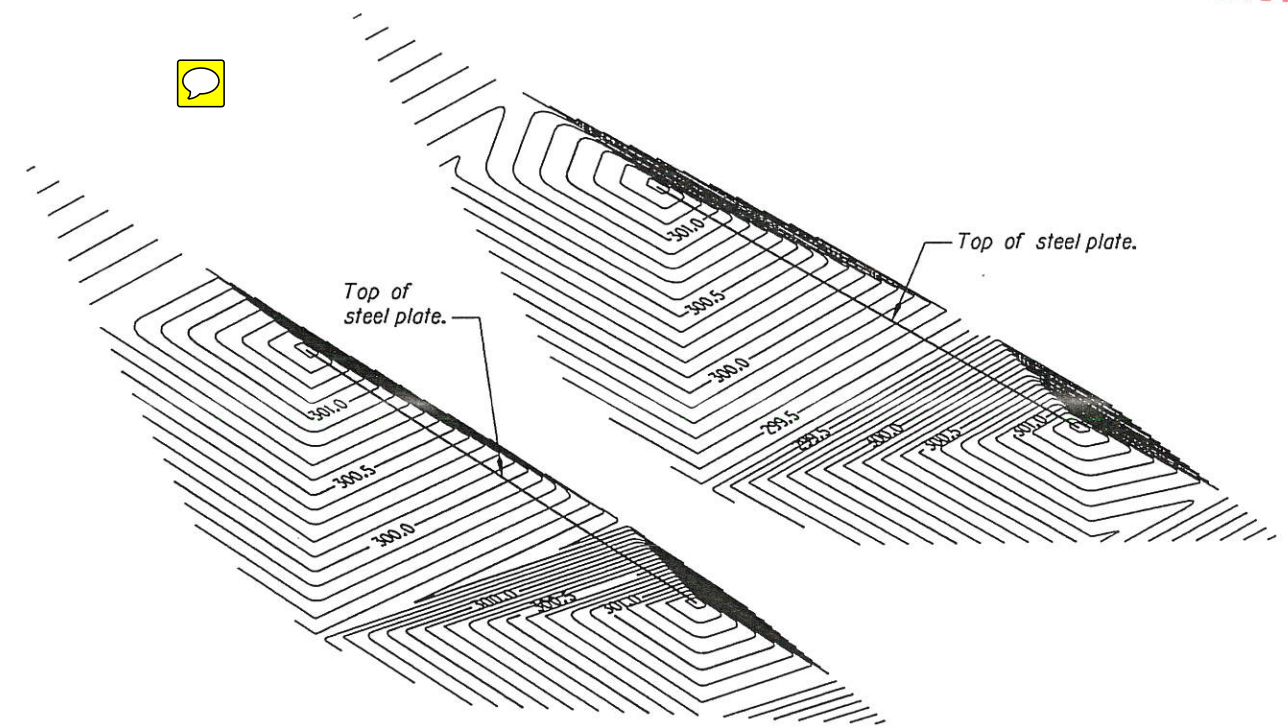
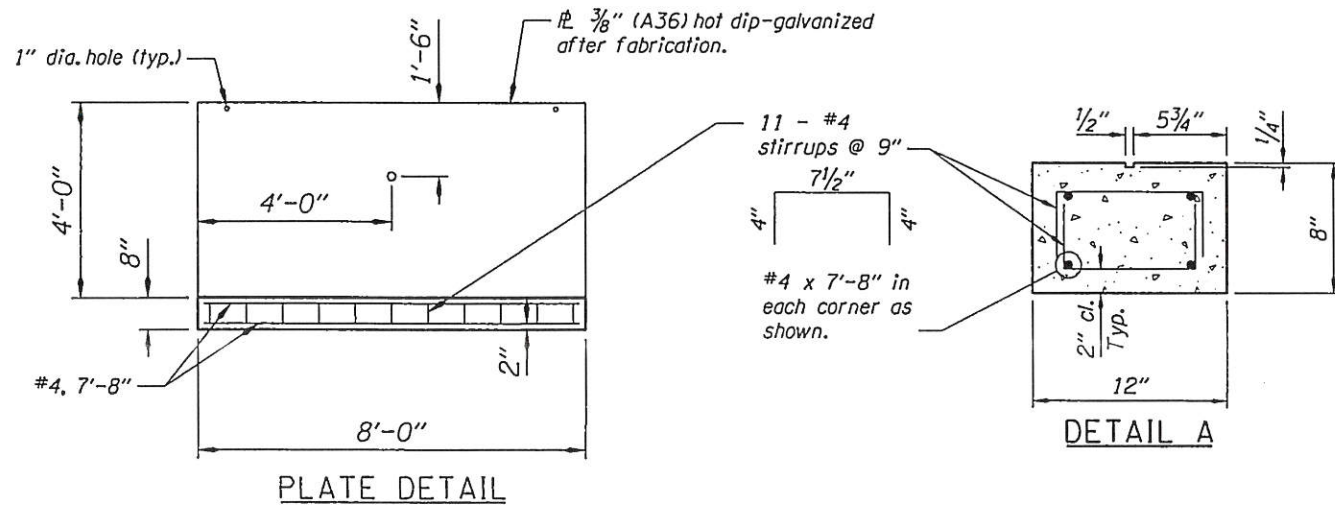
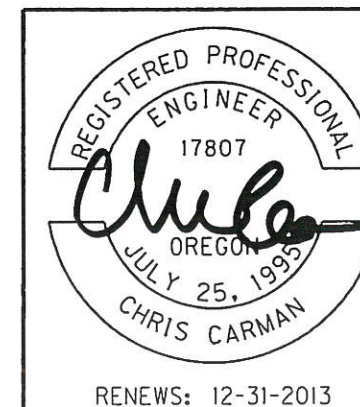


Plate Elevation Table

Station	Bottom of concrete foundation	Top of steel plate and berm
"L"669+55	296.81	301.48
"L"669+65	296.69	301.36



**OREGON DEPARTMENT OF TRANSPORTATION**

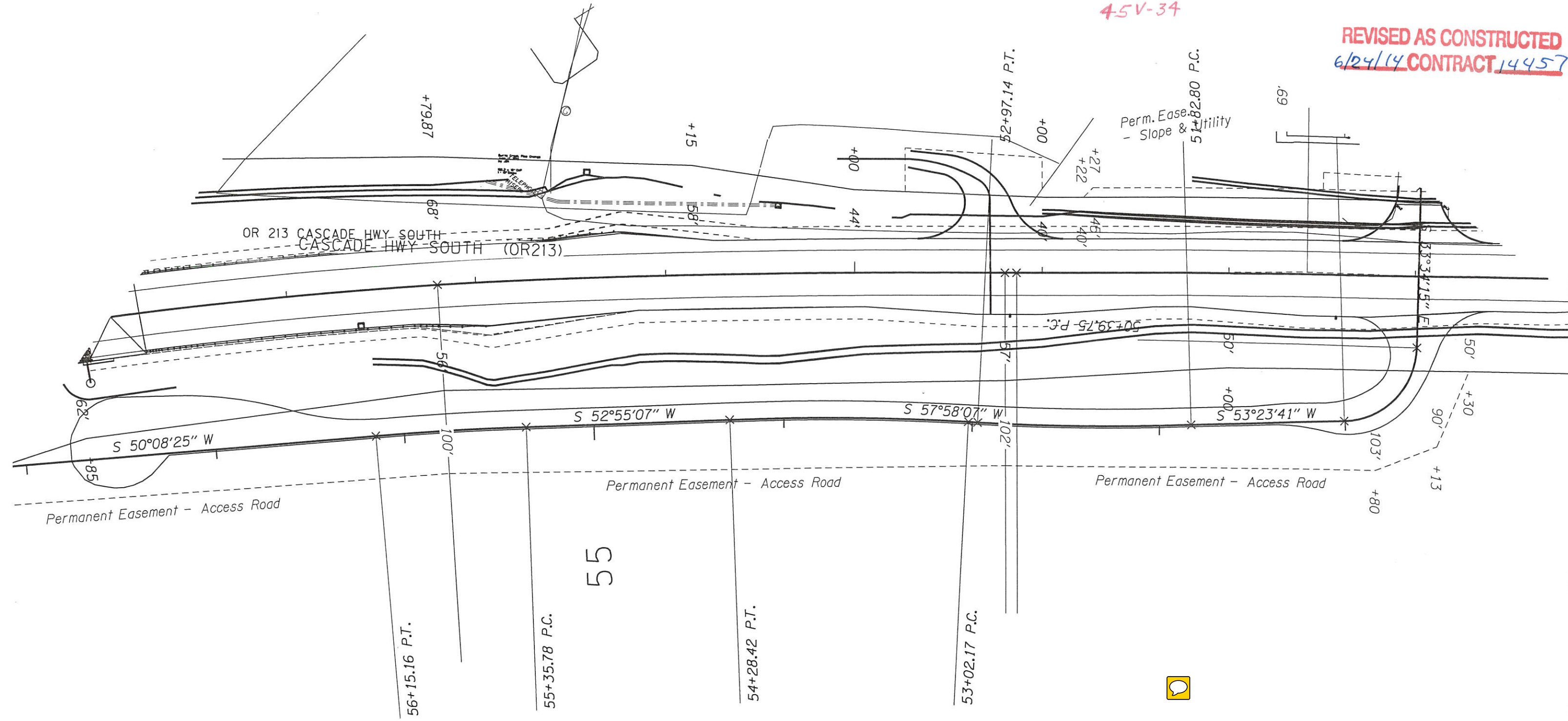
**REGION 2 TECH CENTER**

OR213: BUTTE CREEK (JACKS)  
BRIDGE NO. 01597 SEC.  
CASCADE HIGHWAY SOUTH  
MARION & CLACKAMAS COUNTIES

Reviewed By - Bruce Carmichael, P.E.  
Designed By - Chris Carman, P.E.  
Drafted By - Michael Skelton

**STORMWATER**

SHEET NO. GJ



ODOT

OR 213: BUTTE CREEK (JACK'S) BRIDGE  
CASCADE HIGHWAY SOUTH  
MARION AND CLACKAMAS COUNTIES  
"AX" ALIGNMENT - PLAN SHEET 4-SUPPL.