# OPERATION & MAINTENANCE MANUAL

## DFI No. : D01133
## Facility Type: Infiltration area for water quality and flow control


**December, 2017**

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**APPENDIX A:** Operational Plan and Profile Drawing(s)

**APPENDIX B:** ODOT Project Plan Sheets

## 1. Identification

| | |
|---|---|
| Drainage Facility ID (DFI): | **D01133** |
| Facility Type: | Infiltration area for water quality and flow control |
| Construction Drawings: | (V-File Number) 51V-032 |
| Location: | District: 11 |
| | Highway No.: 004 (US97) |
| | Mile Post: 167.99; 168.08 |
| | Description: This facility is located on the west side of US97 between Huntington Road and Morson Street, between the curb and sidewalk. |

## 2. Facility Contact Information

Contact the Engineer of Record, Region Technical Center, or Geo-Environmental's Senior Hydraulics Engineer for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

Engineering Contacts:

Region Technical Center Hydro Unit Manager

Or

Geo-Environmental Senior Hydraulics Engineer (503) 986-3365.

## 3. Construction

Engineer of Record: Wade Coatney, ODOT Region 4 Hydraulics Designer
Ph: 541-388-6234
Email: wade.j.coatney@odot.state.or.us

Facility construction: [2018]
Contractor:

## 4. Storm Drain System and Facility Overview

This water quality bioretention pond/cell is a basin that is designed to retain and infiltrate stormwater, up to and including the check storm (100-year design recurrence storm). This facility is not a standard ODOT infiltration facility in the ODOT Hydraulics Manual, but functions as a bioretention pond/cell. The facility is a linear facility that is broken into multiple sections by driveways and sidewalk ramps. The facility shaped like a roadside ditch, with a surface depth of approximately 1 foot. Below the surface is 18 inches of drain rock, with 18 inches of amended soils below that. The surface of the facility varies between sod and cinder rock mulch. The cinder rock mulch is directly connected to the drain rock pack, but separated by a drainage geotextile to keep fines from entering the drain rock. Stormwater enters the facility via curb openings. As the facility fills with stormwater, it will quickly infiltrate through the cinder rock mulch into the drain rock pack. The drain rock pack will provide storage capacity, until stormwater infiltrates through the amended soils. This facility is designed with multiple overflow facilities between the sections. A G-1 inlet is installed as an overflow between the sections and connected with a 12 inch storm sewer pipe. This will allow the facility to overflow into other sections, if one section does not infiltrate at the design rate.

The infiltration pond/cell is located on the west side of US97 between the curb and sidewalk from Huntington Road to Morson Street. The facility can be accessed from the shoulder of the highway.

The drainage basin for this facility is the roadway and sidewalk runoff from the western half of US97 between Huntington Road and Morson Street. All stormwater is conveyed to the facility via a curb and gutter. Stormwater enters the infiltration facility through curb openings.

A. Maintenance equipment access:
   Maintenance can access the site from the shoulder of the highway. It is recommended for inspection that maintenance vehicles park on City side streets and perform inspections on foot using the sidewalk.

B. Heavy equipment access into facility:

   ☐ Allowed (no limitations)
   ☐ Allowed (with limitations)
   ☒ Not allowed

C. Special Features:

   ☒ Amended Soils
   ☒ Cinder Rock Mulch bottom

☐ Liners
☐ Underdrains

Photo 1: Infiltration area at MP 168.05.

## 5. Facility Haz Mat Spill Feature(s)

The infiltration pond/cell can be used to store a volume of liquid without any modifications to the facility. The facility will retain and infiltrate liquid entering the facility. If it is desired to keep liquid from entering the facility the curb opening inlets should be blocked.

## 6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure can not safely pass the projected high flows. Broad-crested spillway weirs and over flow risers are the two most common auxiliary outlets used in stormwater treatment facility design. The auxiliary outlet feature is either a part of the facility or an additional storm drain feature/structure.

The auxiliary outlet feature for this facility is:

DFI 1133

☒ **Designed into facility**
The auxiliary outlet for this facility is built in in two different ways. Each section of pond/cell has a type G-1 inlet connected to a storm sewer pipe that allows flow back and forth between sections. Additionally the curb openings allow stormwater to overflow back onto the highway and follow the natural drainage path, typically to the south and west.

☐ Other, as noted below

## 7. Maintenance Requirements

Routine maintenance table for non-proprietary stormwater treatment and storage/detention facilities have been incorporated into ODOT's

# Appendix A

**Content:**

- **Operational Plan and Profile Drawing(s)**

# Appendix B

**Content:**

- **ODOT Project Plan Sheets**
  - ***Cover/Title Sheet***
  - ***Water Quality/Detention Plan Sheets***
  - ***Other Details***

## 7. Maintenance Requirements

Routine maintenance table for non-proprietary stormwater treatment and storage/detention facilities have been incorporated into ODOT's Maintenance Guide. These tables summarize the maintenance requirements for ponds, swales, filter strips, bioslopes, and detention tanks and vaults. Special maintenance requirements in addition to the routine requirements are noted below when applicable.

The ODOT Maintenance Guide can be viewed at the following website:

http://www.oregon.gov/ODOT/HWY/OOM/MGuide.shtml

Maintenance requirements for proprietary structures, such as underground water quality manholes and/or vaults with filter media are noted in Appendix C when applicable.

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual or follow the Maintenance requirements outlined in Appendix C when proprietary structure is selected below:

Mark as Required and always include Table 1:

- ☒ Table 1 (general maintenance)
- ☒ Table 2 (stormwater ponds)
- ☐ Table 3 (water quality biofiltration swales)
- ☐ Table 4 (water quality filter strips)
- ☐ Table 5 (water quality bioslopes)
- ☐ Table 6 (detention tank)
- ☐ Table 7 (detention vault)
- ☐ Appendix C (proprietary structure)
- ☒ Special Maintenance requirements:

  This facility has been designed with a partial **cinder rock mulch** surface as it was requested by City of La Pine for aesthetics. The cinder rock mulch is critical to the functionality of this facility. It should be inspected twice a year, once prior to winter snows and once after. Upon regular inspections the cinder rock mulch should be inspected and evaluated for sedimentation. The surface may become crusted with fines and not allow infiltration. If this occurs, the cinder rock mulch should be raked up to break the crusted surface. If the facility becomes "choked" or "clogged" with sediment, the cinder rock mulch should be dug out, sifted and returned with little to no fines. The cinder rock mulch can also be removed and replaced with new cinder rock mulch. During the sifting or replacement of material, the drainage geotextile should be inspected and cleaned if fines have clogged the material.

## 8. Waste Material Handling

Material removed from the facility is defined as waste by DEQ. Refer to the roadwaste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options: http://egov.oregon.gov/ODOT/HWY/OOM/EMS.shtml

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

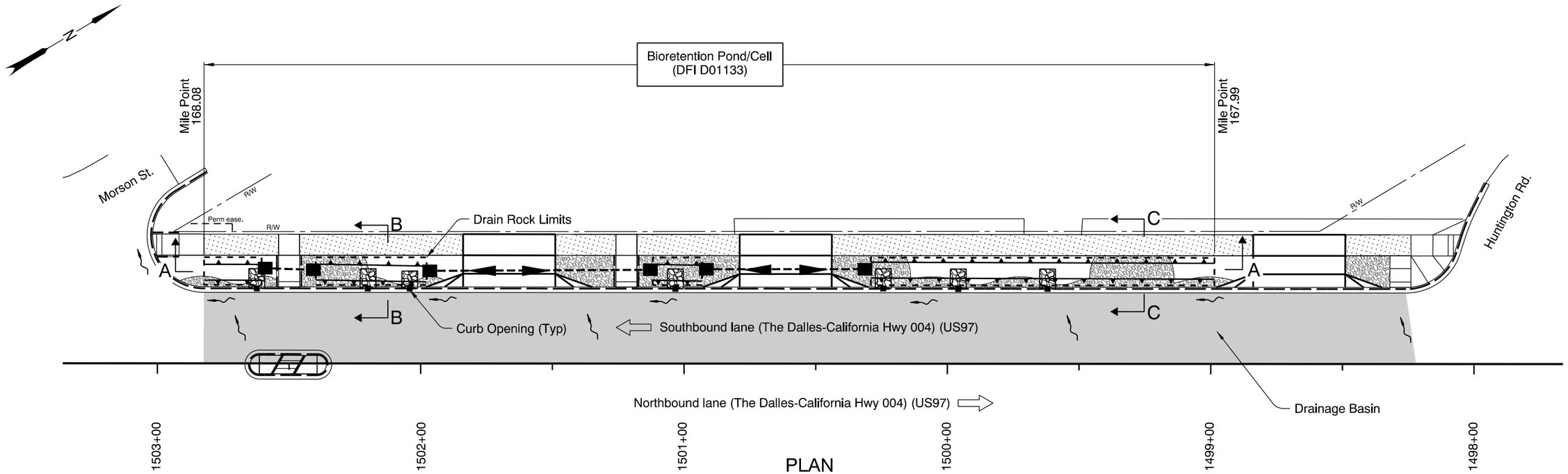
| | |
|---|---|
| ODOT Clean Water Unit | (503) 986-3008 |
| ODOT Statewide Hazmat Coordinator | (503) 229-5129 |
| ODOT Region Hazmat Coordinator | (541) 388-6088 |
| ODEQ Northwest Region Office | (503) 229-5263 |

# Appendix A

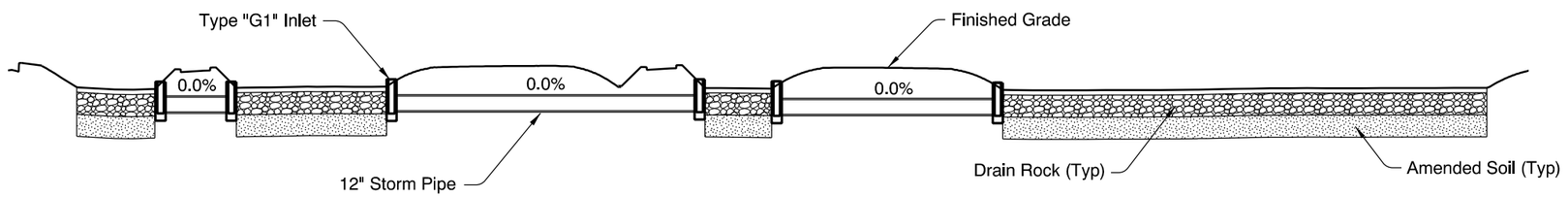
**Content:**

- **Operational Plan and Profile Drawing(s)**

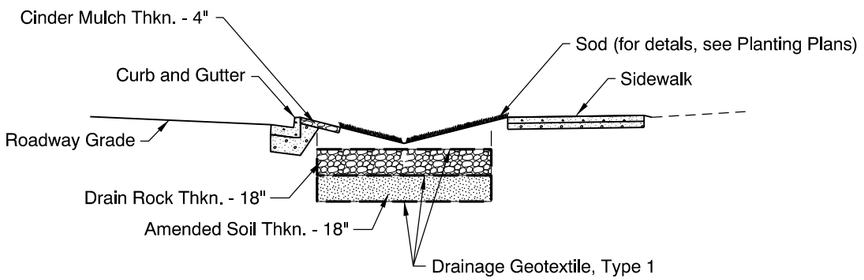
Sec. 15, T. 22 S., R. 10 E., W.M.



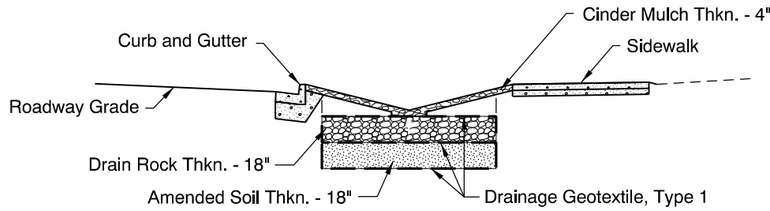

PLAN




SECTION A-A




SECTION B-B




SECTION C-C

LEGEND

- Ⓐ Facility Inlet
- Ⓑ Facility Outlet
- ■ Type "G-1" Inlet
- Storm Pipe (Facility)
- Class 50 Riprap
- Pavement/Facility Flow Path
- Storm Pipe Flow Path
- Cinder Mulch

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wade J. Coatney

Drafted By: Michael L. Graves

**DFI D01133**
**MAINTENANCE DISTRICT 11 HWY 004**
**BIORETENTION POND/CELL**
THE DALLES-CALIFORNIA HIGHWAY MP 167.99
DESCHUTES COUNTY

# Appendix B

**Content:**

- **ODOT Project Plan Sheets**
  - ***Cover/Title Sheet***
  - ***Water Quality/Detention Plan Sheets***
  - ***Other Details***

51V-032

| INDEX OF SHEETS | |
|---|---|
| SHEET NO. | DESCRIPTION |
| A01 | Title Sheet |
| A02 | Index Of Sheets Cont'd. & Std. Drg. Nos. |
| A03 & A04 | Control Data Sheet |

STATE OF OREGON

# DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

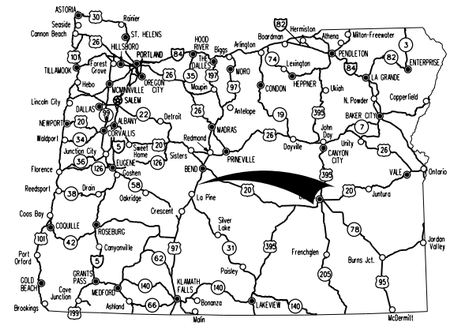
## GRADING, DRAINAGE, PAVING, SIGNING, ILLUMINATION, SIGNALS & ROADSIDE DEVELOPMENT

# FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.

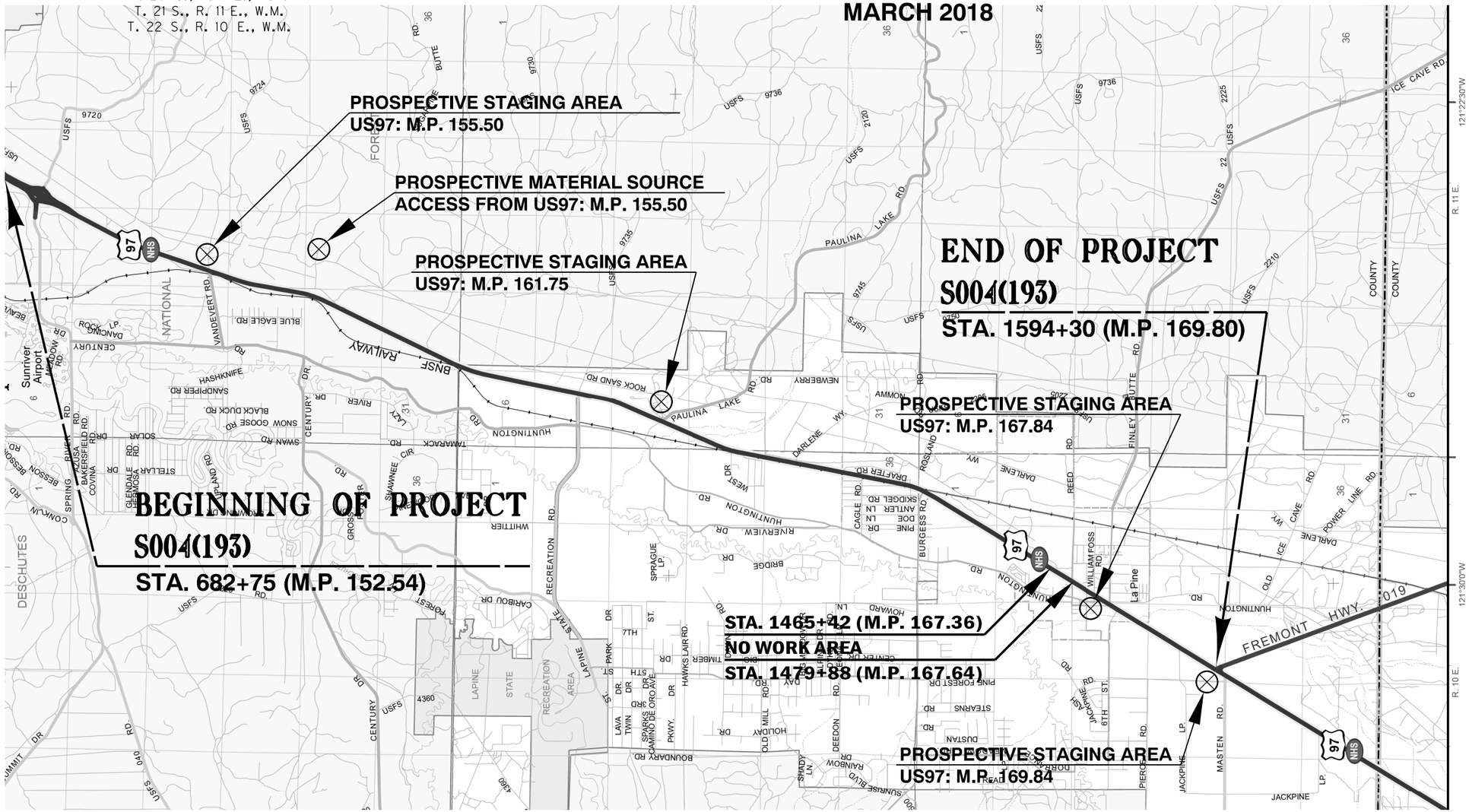
## THE DALLES-CALIFORNIA HIGHWAY

## DESCHUTES COUNTY

## MARCH 2018



T. 20 S., R. 11 E., W.M.
T. 21 S., R. 11 E., W.M.
T. 22 S., R. 10 E., W.M.




*Overall Length Of Project - 17.26 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.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

OREGON TRANSPORTATION COMMISSION

| | |
|---|---|
| Tammy Baney | CHAIR |
| Bob Van Brocklin | COMMISSIONER |
| Alando Simpson | COMMISSIONER |
| Sean O'Hollaren | COMMISSIONER |
| Paula Brown | 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: _____
Signature & date

Jon Heacock, Region 4 TCM
Print name and title

Concurrence by ODOT Chief Engineer

**FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.**
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

| FEDERAL HIGHWAY ADMINISTRATION | PROJECT NUMBER | SHEET NO. |
|---|---|---|
| OREGON DIVISION | S004(193) | A01 |

PE002424-000

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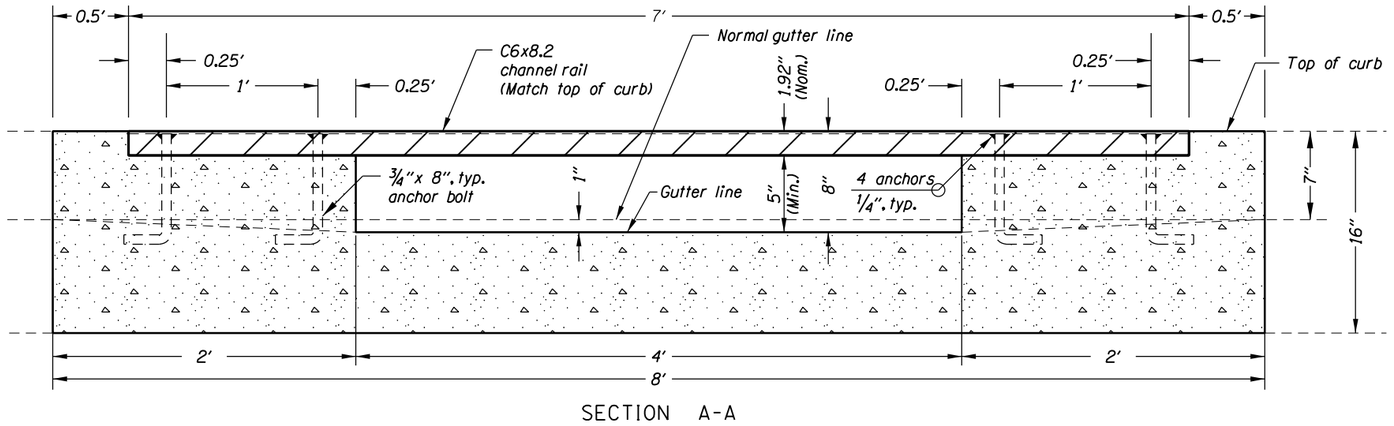
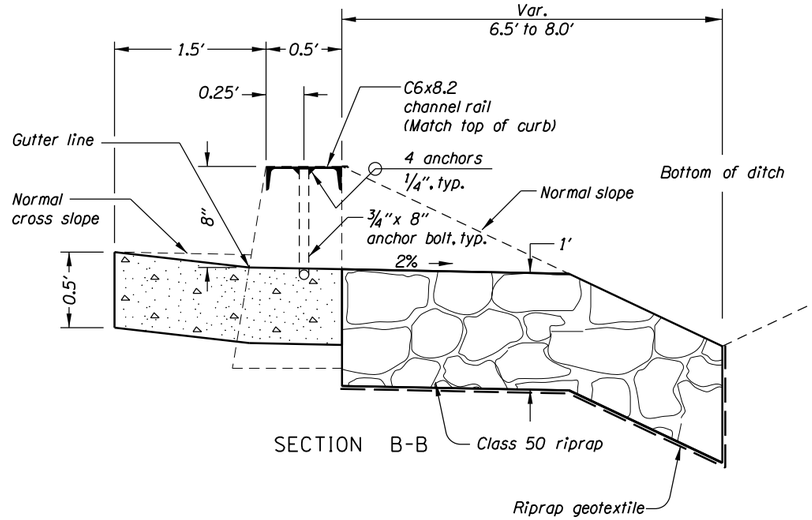
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

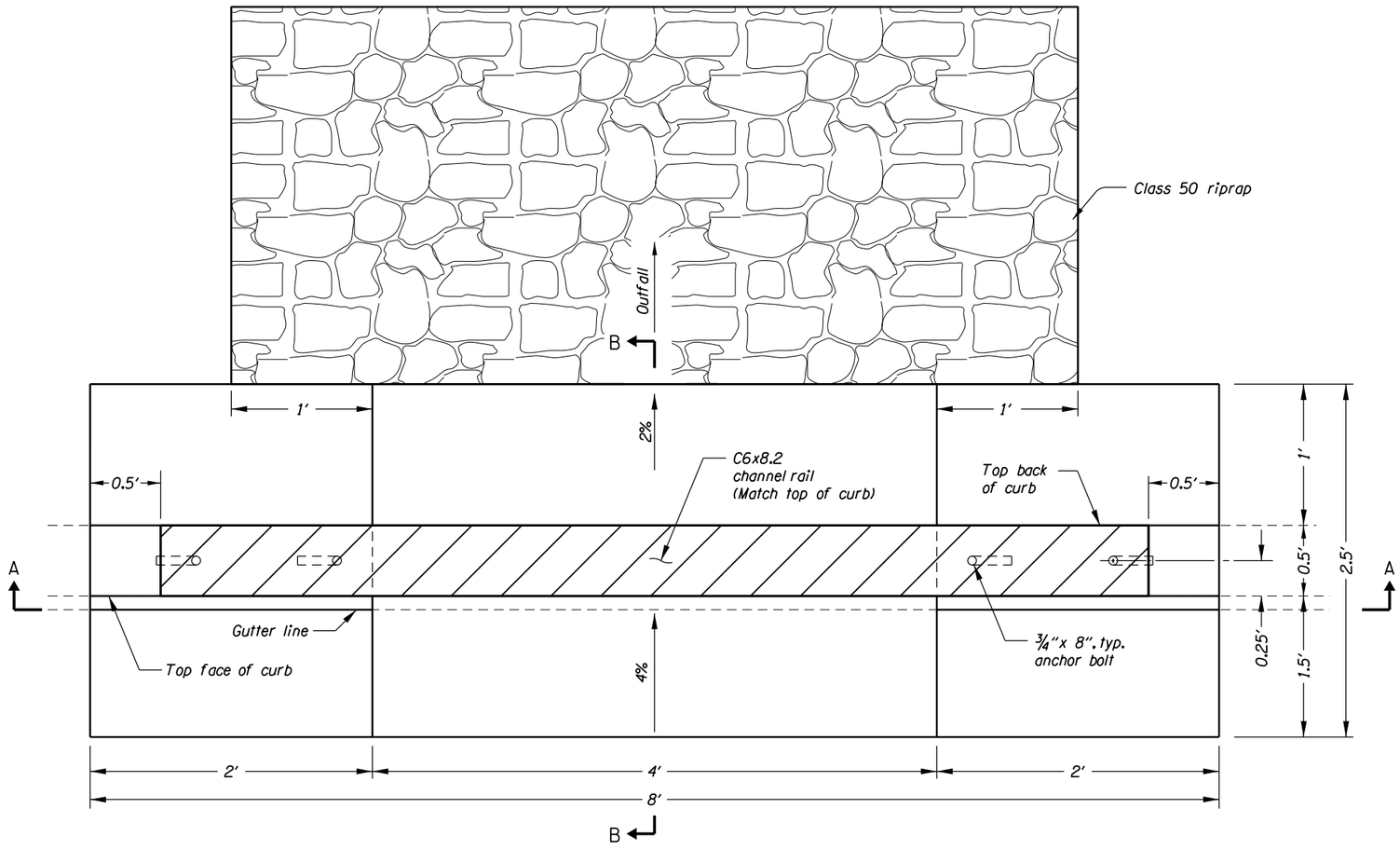
1:1200 - 001




SECTION A-A




SECTION B-B




PLAN

# CG-3 MODIFIED INLET (CURB OPENING)

REGISTERED PROFESSIONAL ENGINEER
87978PE
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2017

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

**FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.**

THE DALLES-CALIFORNIA HIGHWAY

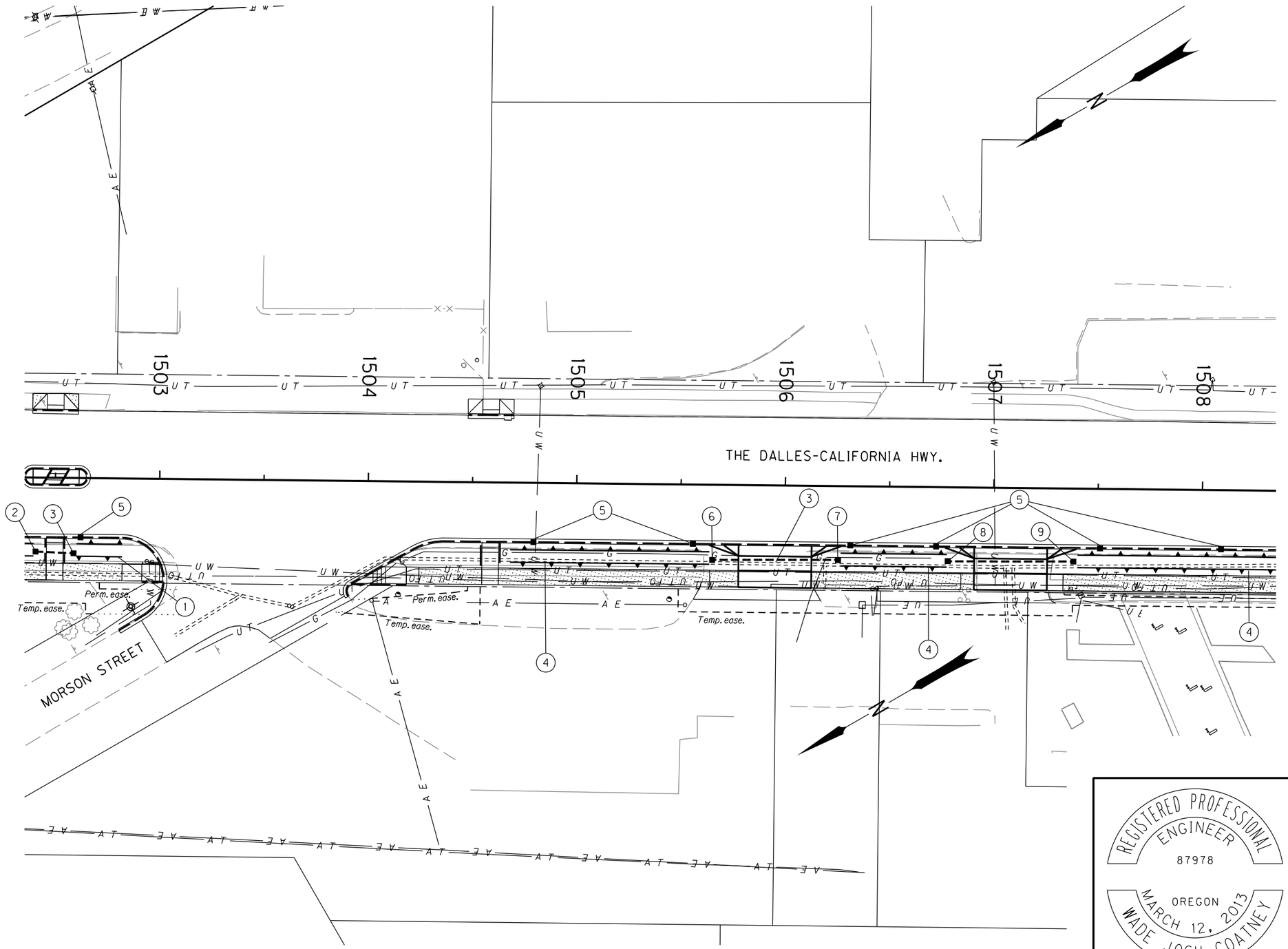
DESCHUTES COUNTY

Designer: Wade J. Coatney
Reviewer: David L. McDonald
Drafter: Joseph J. Rodriguez
Checker: N/A

**DETAILS**

SHEET NO. BB02

Sec. 15, T. 22 S., R. 10 E., W.M.




(1) See note 3, sht. C06A

(2) See note 9, sht. C06A

(3) See note 10, sht. C06A

(4) Const. bioretention pond DF1 no. D01134
(For details, see sht. HA03 and HA04)

(5) Const. type "CG-3 Modified" inlet - 7
(For details, see sht. BB02, HA03 and HA04)

(6) Sta. 1505+65.2, 36.1' Rt.
Const. type "G1" inlet
Grate elev. - 4235.25'
Inst. 12" storm sew. pipe - 60.3'
I.E. (12") - 4232.92'
s = 0.000'/ft
5' depth

(7) Sta. 1506+25.5, 35.5' Rt.
Const. type "G1" inlet
Grate elev. - 4234.83'
I.E. (12") - 4232.92'

(8) Sta. 1506+78.2, 35.5' Rt.
Const. type "G1" inlet
Grate elev. - 4234.55'
Inst. 12" storm sew. pipe - 60.3'
I.E. (12") - 4232.27'
s = 0.000'/ft
5' depth

(9) Sta. 1507+38.5, 35.0' Rt.
Const. type "G1" inlet
Grate elev. - 4234.36'
I.E. (12") - 4232.27'

REGISTERED PROFESSIONAL ENGINEER
87978
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2017

OREGON DEPARTMENT OF TRANSPORTATION

**FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.**

THE DALLES-CALIFORNIA HIGHWAY

DESCHUTES COUNTY

Designer: Wade J. Coatney | Reviewer: David L. McDonald

Drafter: Joseph J. Rodriguez | Checker: N/A

**DRAINAGE & UTILITIES**

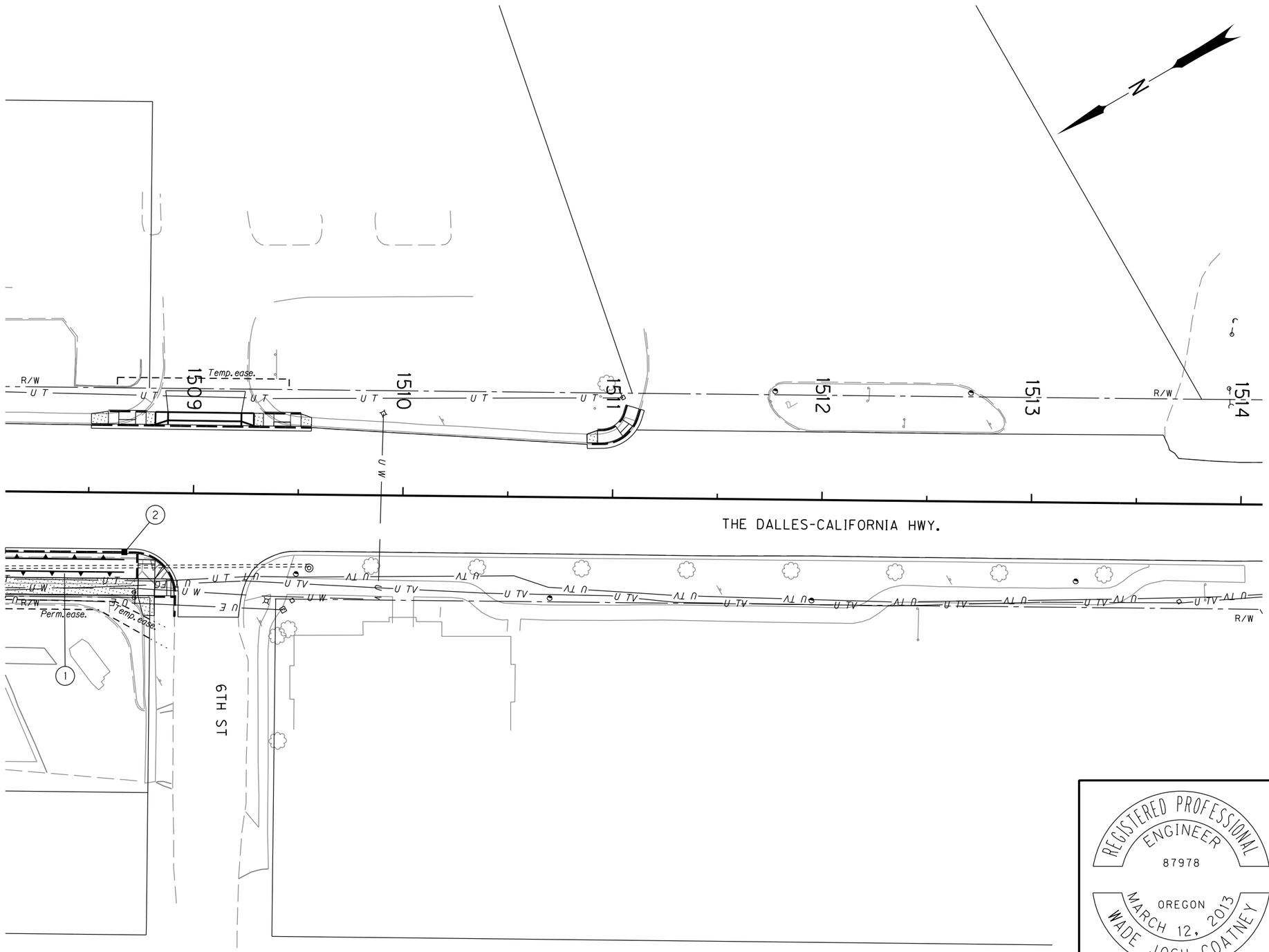
SHEET NO. C07A

51V-032

Sec. 15, T. 22 S., R. 10 E., W.M.

(1) See sht. 7A, note 4

(2) Const. type "CG-3 Modified" inlet (For details, see shts. BB02 and HA04)




REGISTERED PROFESSIONAL ENGINEER
87978
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2017

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

**FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.**

THE DALLES-CALIFORNIA HIGHWAY

DESCHUTES COUNTY

Designer: Wade J. Coatney | Reviewer: David L. McDonald

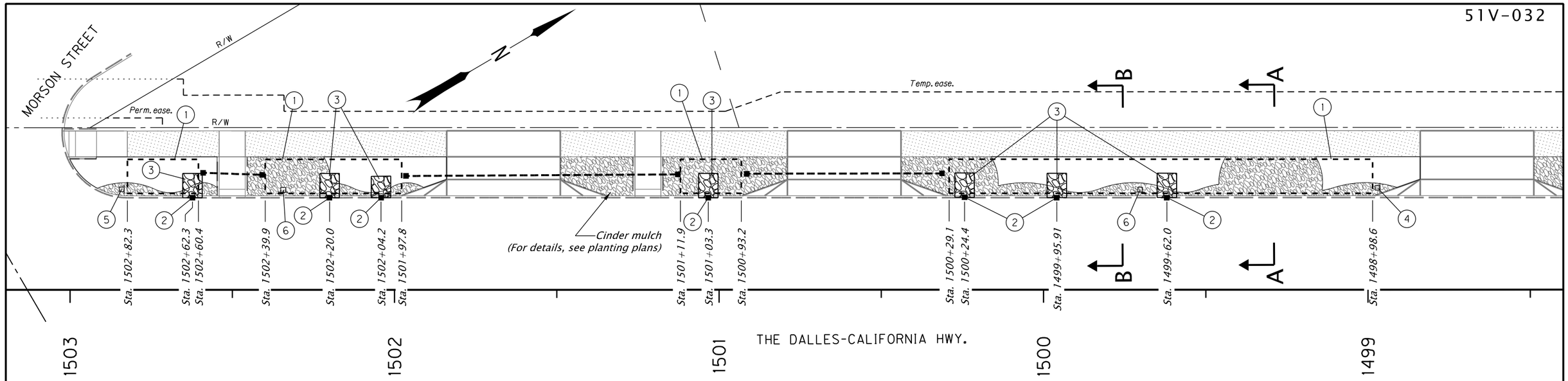
Drafter: Joseph J. Rodriguez | Checker: N/A

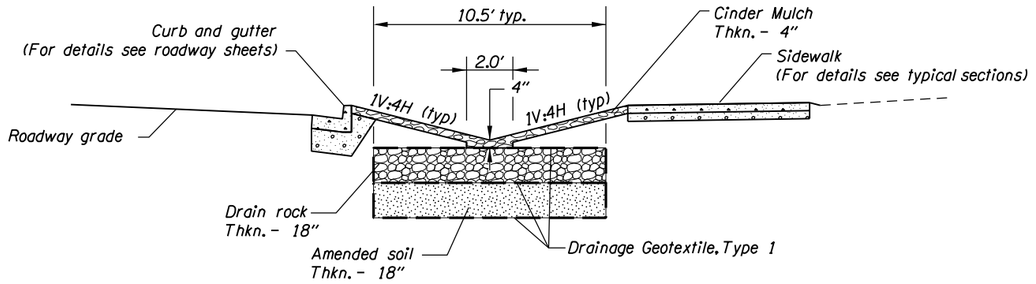
**DRAINAGE & UTILITIES**

SHEET NO. C08A

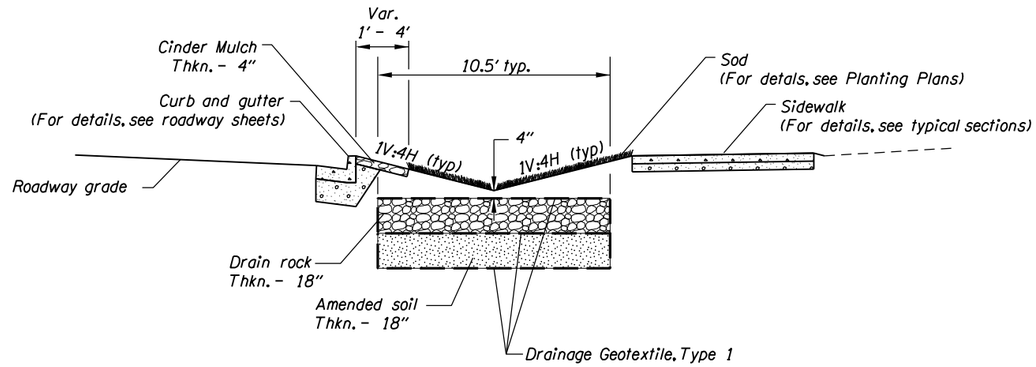
R_K18679_dr_06.dgn :: Default 12/13/2017 5:28:21 PM hwye40p

Rotation: 240° Scale: 1"=50'




SECTION A-A
(Typical section in "Cinder Mulch")




SECTION B-B
(Typical Section in "Sod")

*Construction Notes:*

1. *Const. drain rock - 125 cu.yd.*
   *Const. ammended soils - 125 cu.yd.*
   *Const. drainage geotextile - 1,000 sq.yd.*
   *Exc. - 335 cu.yd.*
2. *Const. type "CG-3" Modified inlet - 7*
   *(For details, see sht. BB02)*
3. *Const. Class 50 riprap protection - 12 cu.yd.*
   *(For details, see sht. BB02)*
4. *Inst. Type "S1" Marker - Red*
   *(See drg. no. RD399)*
5. *Inst. Type "S1" Marker - Green*
6. *Inst. Type "S2" Marker - 2*
   *(See drg. no. RD399)*

*General Notes:*

1. *For sod and plant locations see Planting Plans.*
2. *For light pole foundation locations, see Illumination Plans*
3. *For pond excavation pay limits, see sht. HA04*

REGISTERED PROFESSIONAL ENGINEER
87978PE
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2017

OREGON DEPARTMENT OF TRANSPORTATION

**FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.**

THE DALLES-CALIFORNIA HIGHWAY

DESCHUTES COUNTY

Designer: Wade J. Coatney | Reviewer: David L. McDonald

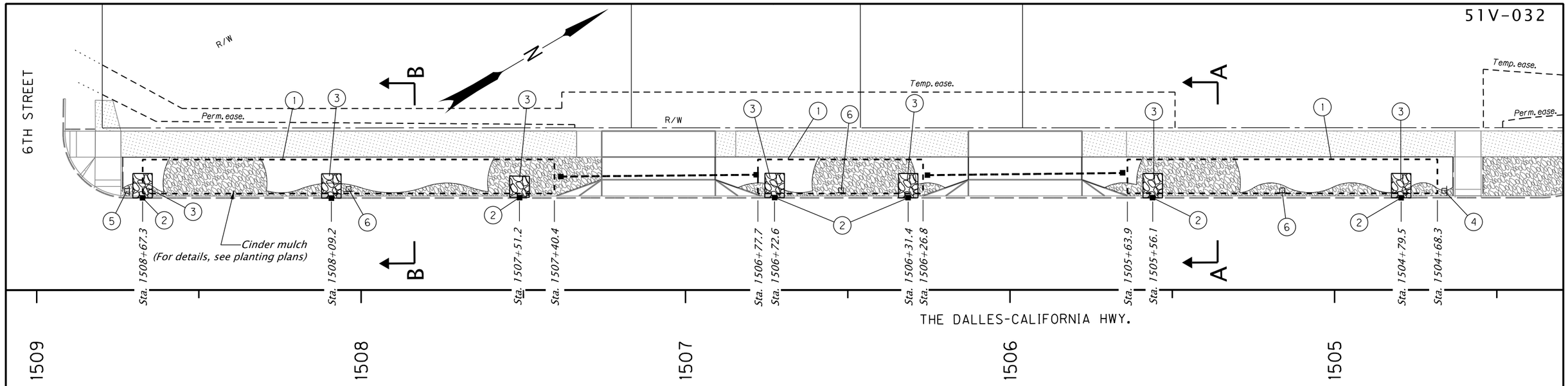
Drafter: Michael L. Graves | Checker: N/A

**WATER QUALITY POND PLAN**

DFI NO. D01133

SHEET NO. HA03

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

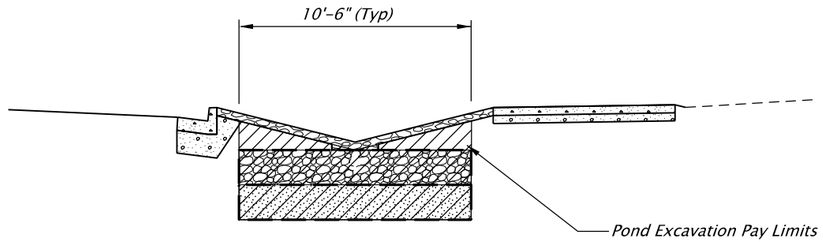



*Construction Notes:*

1. *Const. drain rock - 160 cu.yd.*
   *Const. ammended soils - 160 cu.yd.*
   *Const. drainage geotextile - 1,270 sq.yd.*
   *Exc. - 430 cu.yd.*
2. *Const. type "CG-3" Modified inlet - 7*
   *(For details, see sht. BB02)*
3. *Const. Class 50 riprap protection - 12 cu.yd.*
   *(For details, see sht. BB02)*
4. *Inst. Type "S1" Marker - Red*
5. *Inst. Type "S1" Marker - Green*
6. *Inst. Type "S2" Marker - 3*
   *DFI D01134*

*General Notes:*

*1. For sod and plant locations see Planting Plans.*
*2. For light pole foundation locations, see Illumination Plans.*
*3. For pond typical sections, see sht. HA03.*




## POND EXCAVATION PAY LIMITS

DFI NO. D01134

REGISTERED PROFESSIONAL ENGINEER
87978PE
OREGON
MARCH 12, 2013
WADE JOSH COATNEY
RENEWS: 12-31-2017

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

OREGON DEPARTMENT OF TRANSPORTATION

**FFO-US97: SUNRIVER INTERCHANGE - OR31 SEC.**

THE DALLES-CALIFORNIA HIGHWAY

DESCHUTES COUNTY

Designer: Wade J. Coatney | Reviewer: David L. McDonald
Drafter: Michael L. Graves | Checker: N/A

**WATER QUALITY POND PLAN**

SHEET NO. HA04