OPERATION & MAINTENANCE MANUAL

Water Quality Infiltration Basin

Manual prepared: January 2018

DFI No. D00746

Figure 1: DFI No. D00746, looking North

Identification

Drainage Facility ID (DFI):	D00746
Facility Type:	Water Quality Infiltration Basin
Construction Drawings:	(V-File Numbers) 46V-040
Location:	District: 10
	Highway No.: 004
	Mile Post: 140.87 to 140.9, [RT]

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: Off ramp

Flow direction: [North]

Latitude: 44deg. 06’ 59.30” N

Longitude: 121deg. 19’ 05.97” W

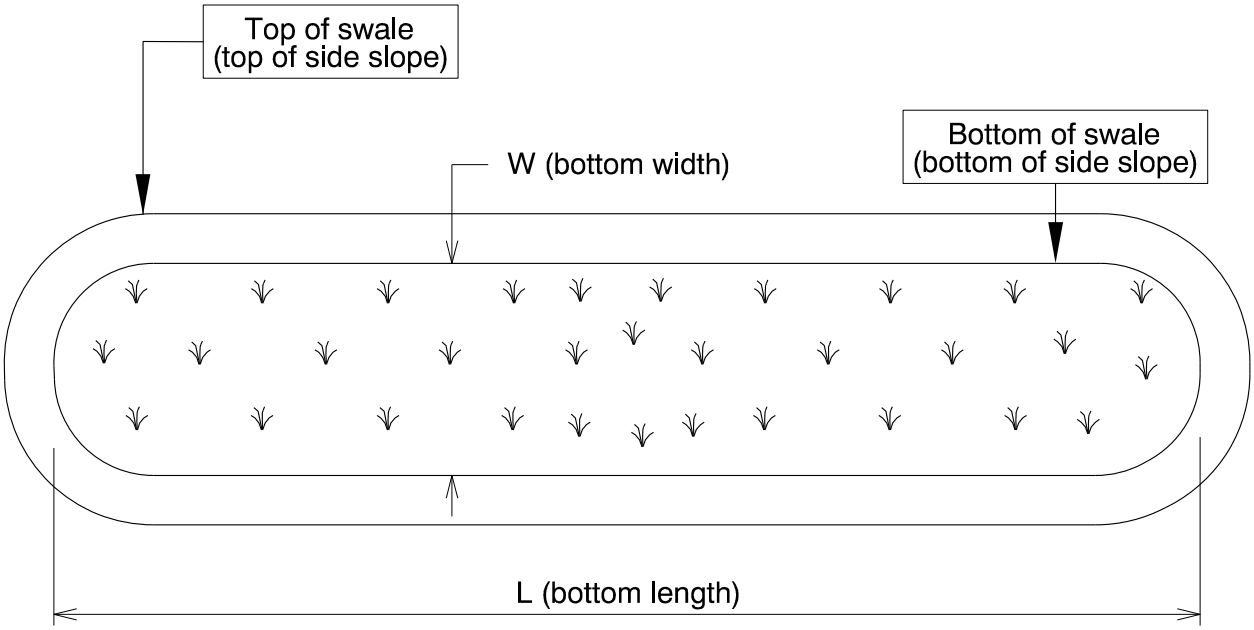
Figure 2: Facility location map

3. Facility Summary

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

The bottom length and bottom width of the basin is:

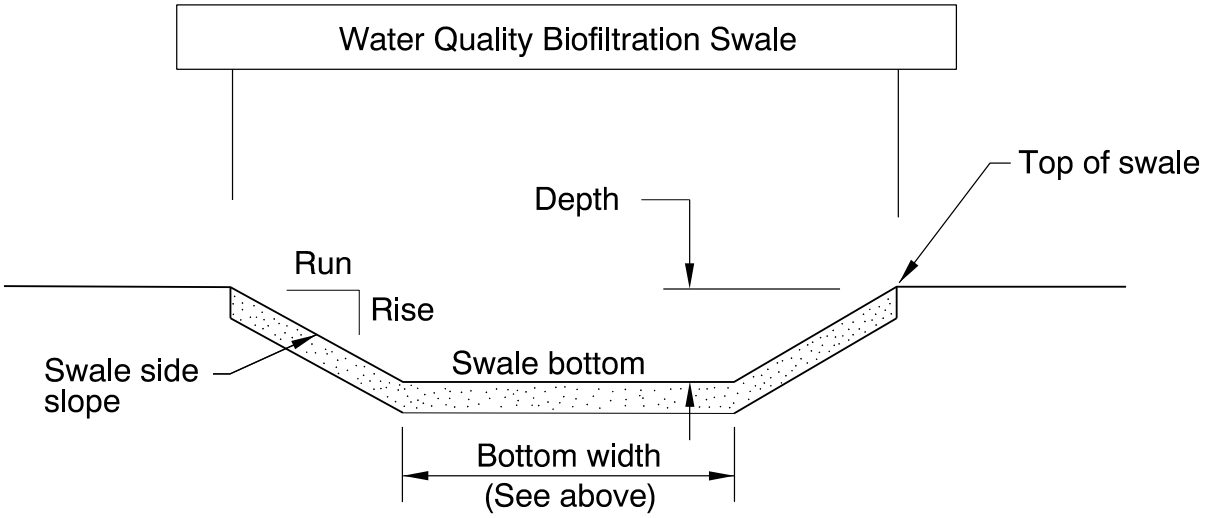
Bottom Length (feet)	Bottom Width (feet)
155	17



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

Depth and side slopes:

Depth (feet)	Rise (feet)	Run (feet)
2.75	**1**	**3**



Site Specific Information: The primary outlet for this facility is infiltration into the native soils.

4. Facility Access

Maintenance access to the facility:

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

Figure 3: Facility Access

5. Operational Components / Maintenance Items

Classification

This facility is classified as an:

☒ On-line Basin	☐ Off-line Basin
A basin that does not include a high flow bypass component; flow drains into and through the facility	A basin 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 pond has many components that assist with treatment 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 Ponds (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.

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**
Pond 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**
Granular drain rock	☐	**S11**
Plantings	☐	**S12**
Underground Components		
Geotextile fabric	☐	**S13**
Water quality mix	☒	**S14**
Perforated pipe	☐	**S15**
Porous pavers (access grid)	☐	**S16**
Flow Spreader		
Rock basin (used at inlet)	☐	**S17**
Anchored board (midpoint of swale or every 50 feet along swale bottom)	☐	**S18**
Other: describe type	☐	**S19**
Pond Outlet		
Catch basin with grate	☐	**S20**
Outlet Pipe (s)	☐	**S21**
Open channel outlet	☐	**S22**
Auxiliary Outlet: Infiltration	☒	**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 (Choose applicable weight: no, light, med., heavy) duty porous pavers installed in this swale	

Ponds are designed to allow equipment access along the bottom. If an access grid is **NOT** installed, vehicles entering the pond can create depressions (tire ruts), damage vegetation, and damage structural components. 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 pond 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

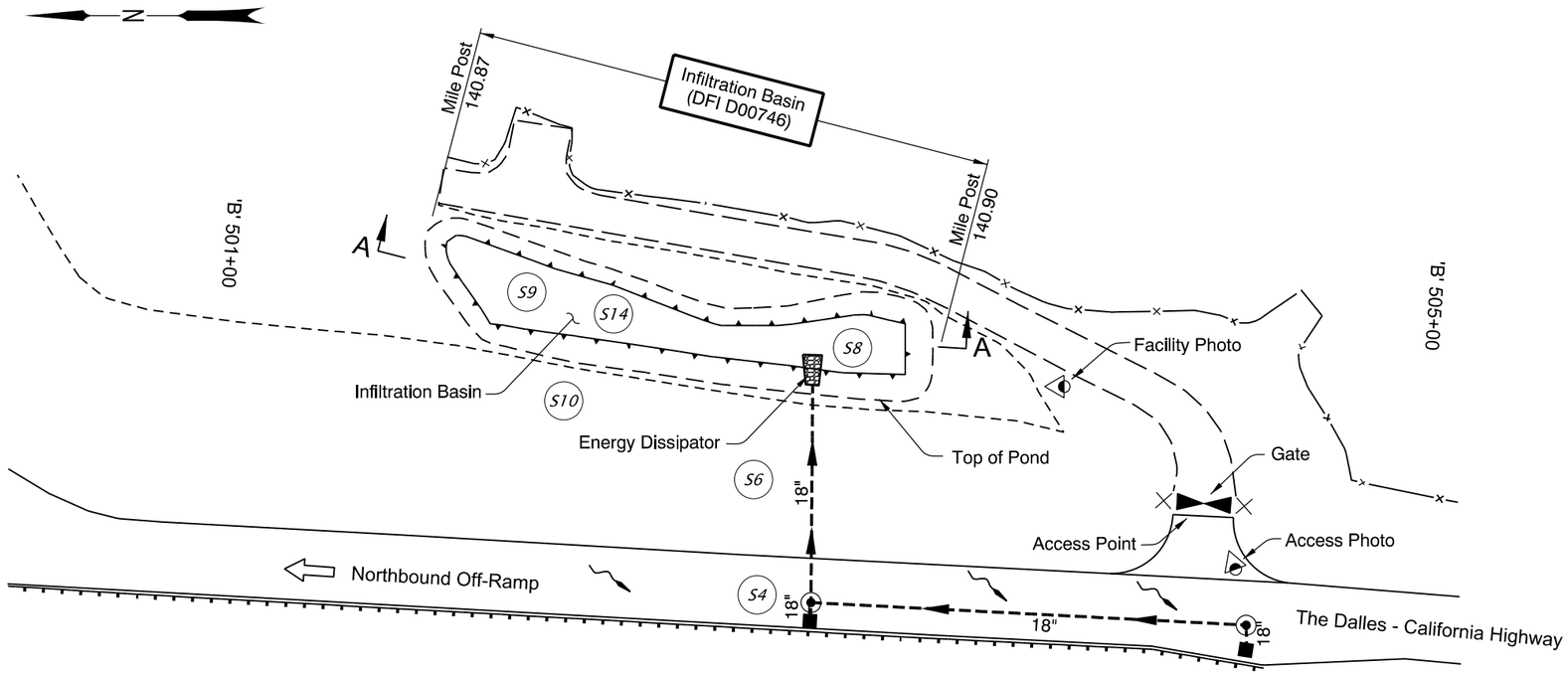
Contact any of the following for more detailed information about management of waste materials found on site:

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:

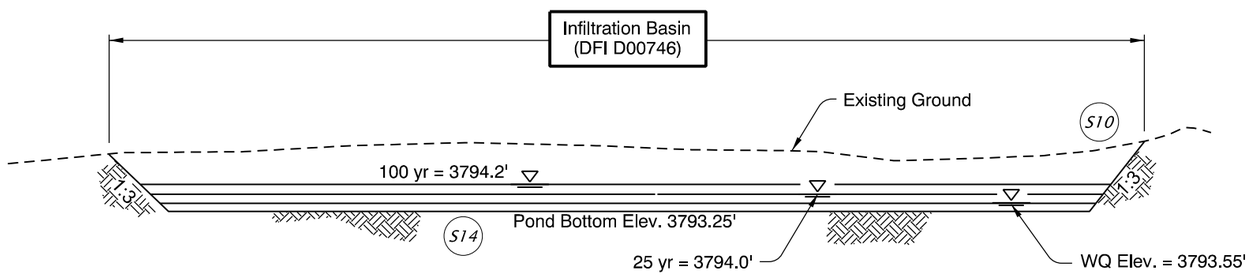
Operational Plan: DFI D00746



LEGEND

- Storm Sewer Manhole
- Inlet Type "G-2"
- 18" Storm Pipe (Dia.)
- Conveyance Direction
- Pavement / Facility Flow Path
- Photo Location/Direction

PLAN
N.T.S.



SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Michael W. Ogden

Drafted By: Michael L. Graves

DFI D00746
MAINTENANCE DISTRICT 10 HWY 004
INFILTRATION BASIN
THE DALLES-CALIFORNIA HIGHWAY MP 140.87
DESCHUTES COUNTY

F:\ODOT_DATA\Projects\O&M_DFIs\DFI_D00746.dgn hwye78x

DFI_D00746.dgn

B Appendix B – Project Contract Plans

Contents:

SiteSpecificSubsetofProjectContractPlan46V-040

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A Thru 1A-2	Index Of Sheets Cont'd.
1A-3	Standard Drg. Nos.
1B	Keymap
1C	Control Data Sheet

NOT REVISED AS CONSTRUCTED

Project Manager 1/16/15 Date

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

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

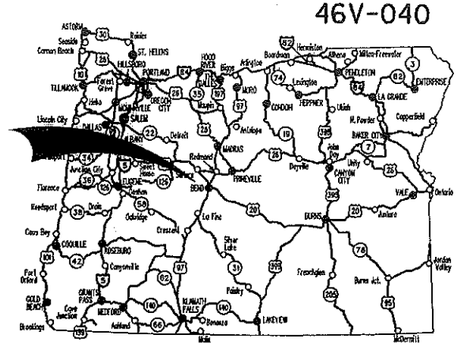
US97/MURPHY RD: BROOKSWOOD-PARRELL (BEND) PHASE 1

THE DALLES-CALIFORNIA HIGHWAY

DESCHUTES COUNTY

MAY 2013

46V-040



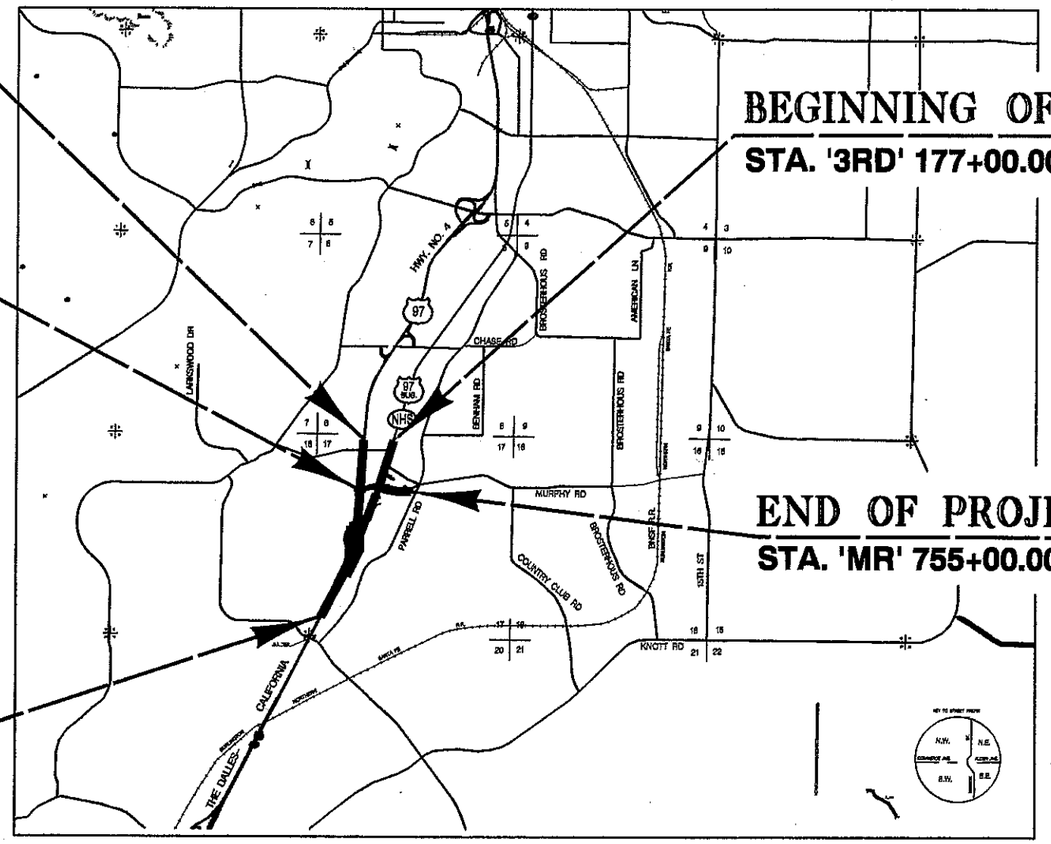
Overall Length Of Project - 2.50 Miles

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
STA. 'US97' 408+00.00 (M.P. 140.44)

BEGINNING OF PROJECT
STA. 'MR' 733+00.00

BEGINNING OF PROJECT
STA. '3RD' 177+00.00



END OF PROJECT
STA. 'MR' 755+00.00

END OF PROJECT
STA. 'US97' 454+00.00 (M.P. 142.03)

N

T. 18 S., R. 12 E., W.M.

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
David Lohman	COMMISSIONER
Mary F. Olson	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tammy Baney	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 William Adams III 3-19-13
Signature & date

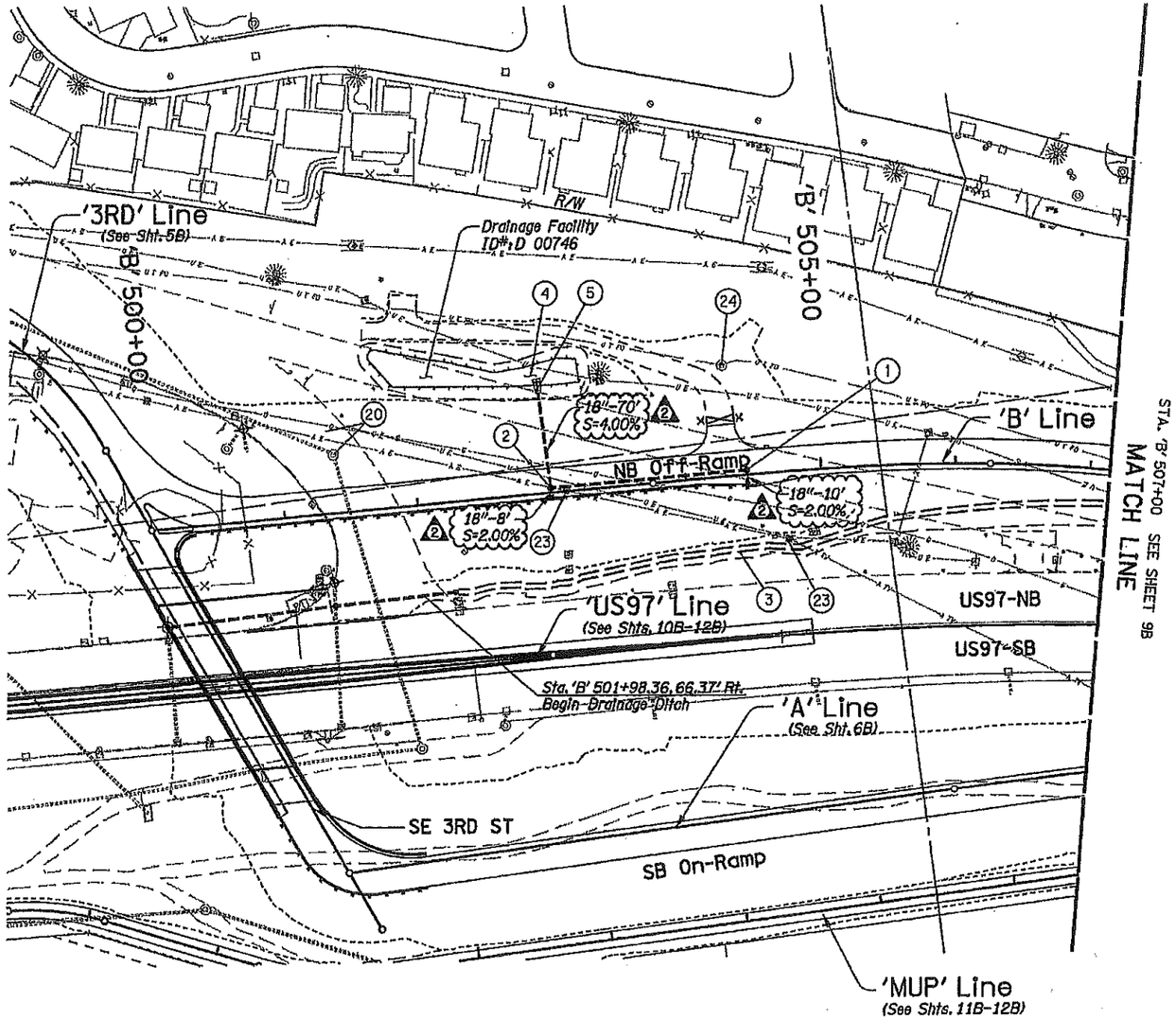
William Adams III - DM
Print name and title

Concurrence By ODOT Chief Engineer

US97/MURPHY RD: BROOKSWOOD-PARRELL (BEND) PHASE 1
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	S0-S004(169)	1

Sec. 17, T. 18 S., R 12 E., W.M.



1 Sta. 'B' 504+45.00, 3.5' Lt.
Const. Storm Sewer Manhole

Inst. 18" Sew. Pipe - 10'
5' Depth
(See Drg. Nos. RD335 & RD356)
Const. Type "G-2" Inlet W/Sump

F.L. (18" Out) 3805.18 E
(See Drg. No. RD364)

2 Sta. 'B' 503+00.00, 3.5' Lt.
Const. Storm Sewer Manhole

Inst. 18" Sew. Pipe - 145'
20' Depth
Inst. 18" Sew. Pipe - 8'
5' Depth
(See Drg. Nos. RD335 & RD356)
Const. Type "G-2" Inlet W/Sump

F.L. (18" Out) 3808.66 E
(See Drg. No. RD364)

3 Const. Ditch (See Typical Sections & Sht. 8C For Elevations)

4 Const. Infiltration Basin
(For Details, See Sht GJ-10)

1 5 Sta. 'B' 502+96.54, 73.56' Lt.
Const. Riprap Basin
Inst. 18" Sew. Pipe - 70'
20' Depth
F.L. 18" 3795.07
(For Details, See Sht. 2B-10)

20 Inst. San. Sewer Pipe
(For Details, See SS Shts.)

23 Relocate Power Pole (By Others)

24 Adjust Utility Manhole (By Others)

Rev. No.	Date	Revision
1	5-2-13	Std. Drg. References, Corrections
2	2-3-14	Revised Drainage Design

REVISED AS CONSTRUCTED

Project Manager Date

N

0 50 100 150
Scale In Feet

REGISTERED PROFESSIONAL ENGINEER
82930PE
OREGON
MAY 12, 2009
JEFFERY SHAWN STALLARD
EXPIRES: 6/30/2014
2-3-14

OREGON DEPARTMENT OF TRANSPORTATION

CH2MHILL
2020 SW 4TH AVE. - 3RD FLOOR
PORTLAND, OR 97201-4953
TEL. 503.235.5000

US97/MURPHY RD:
BROOKSWOOD-PARRELL (BEND) PHASE 1
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

Reviewed By - R. Attanasio
Designed By - J. Stallard
Drafted By - S. Atwood

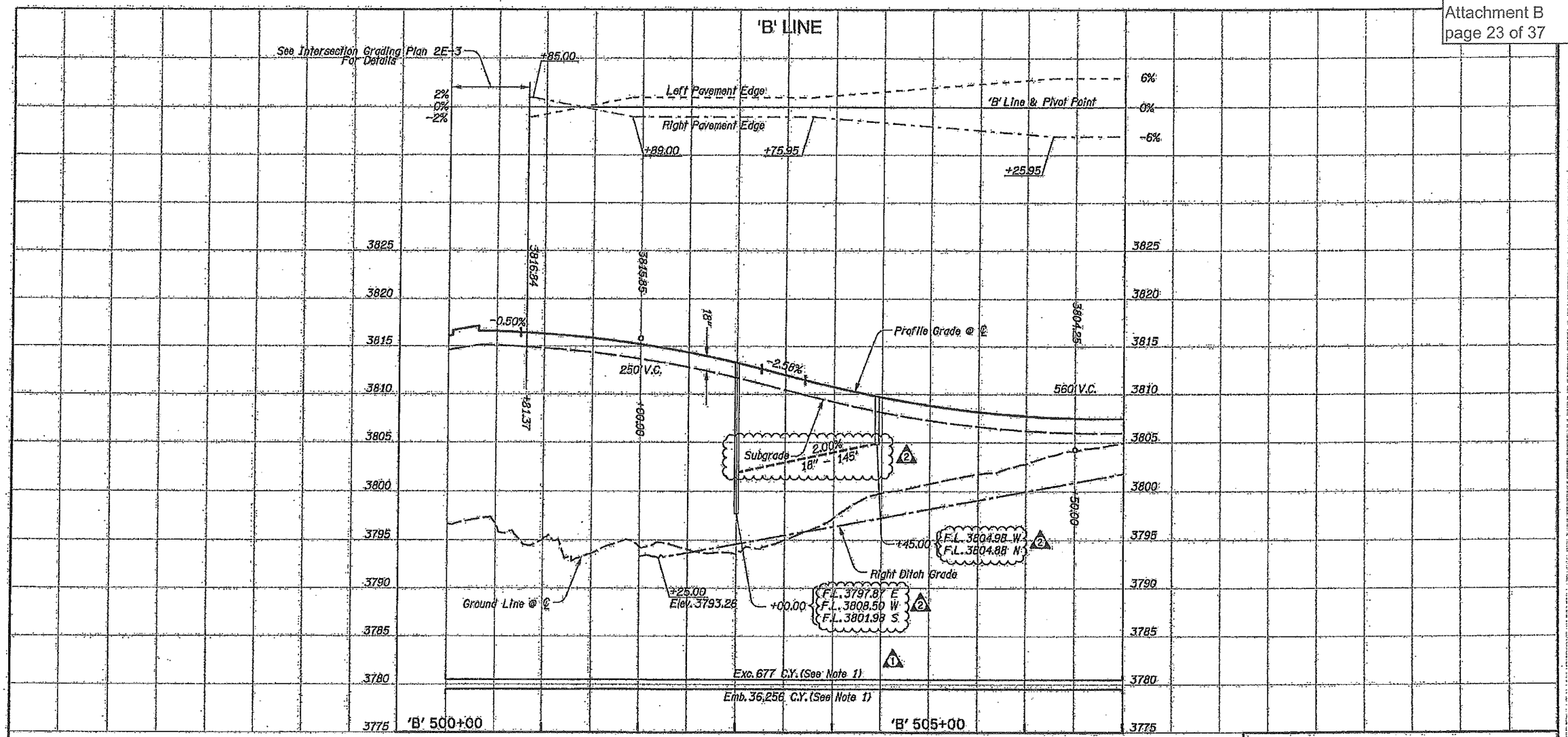
DRAINAGE & UTILITIES

SHEET NO. 8B

Bid Package 1

PW: 407067 : F407067pp08b.dlv 2/3/2014 11:00:45 AM satwood1

100%



Notes:

1. Volumes Shown This Sheet Include All Earthwork Within The Limits Of The Intersection Of 3rd Street And The Northbound Off-Ramp ('B' Line). Limits Defined Per Intersection Grading Plan 2E-3.

REVISED AS CONSTRUCTED

Project Manager Date

Rev. No.	Date	Revision
1	1-10-14	Updated Earthwork
2	2-3-14	Revised Drainage Design

0 50 100 150
Horizontal Scale In Feet

0 5 10 15
Vertical Scale In Feet

DRAINAGE

REGISTERED PROFESSIONAL ENGINEER
82930PE
OREGON
MAY 12, 2009
JEFFERY SHAWN STALLARD
EXPIRES: 6/30/2014
2-3-14

ROADWAY

REGISTERED PROFESSIONAL ENGINEER
79251PE
OREGON
JUNE 14, 2007
RYAN J. BROWN
EXPIRES: 12/31/2015
2-3-2014

OREGON DEPARTMENT OF TRANSPORTATION

CH2MHILL
2020 SW 4TH AVE. - 3RD FLOOR
PORTLAND, OR 97201-4983
TEL. 503.235.5000

US97/MURPHY RD:
BROOKSWOOD-PARRELL (BEND) PHASE 1
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

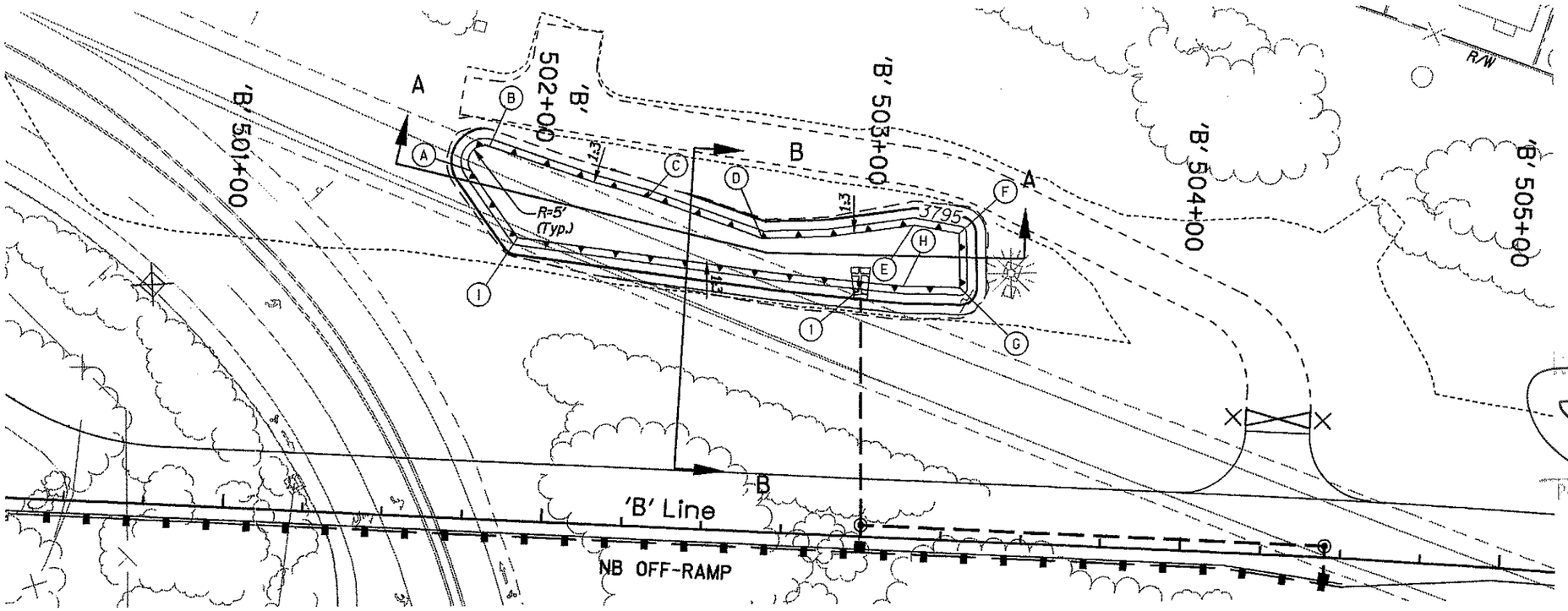
Reviewed By - S. Oaleo
Designed By - R. Brown/J. Stallard
Drafted By - J. Tyler

PROFILE

SHEET NO. 8C

Bid Package 1

46V-040



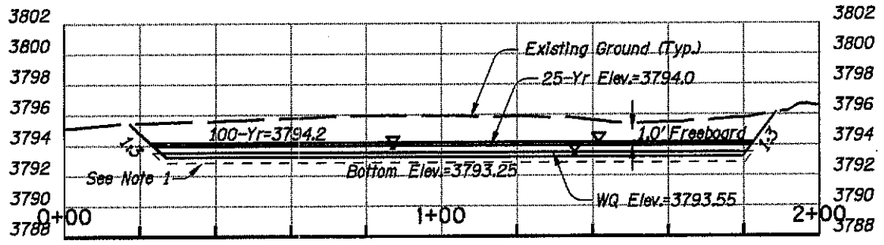
REVISED AS CONSTRUCTED

Project Manager Date

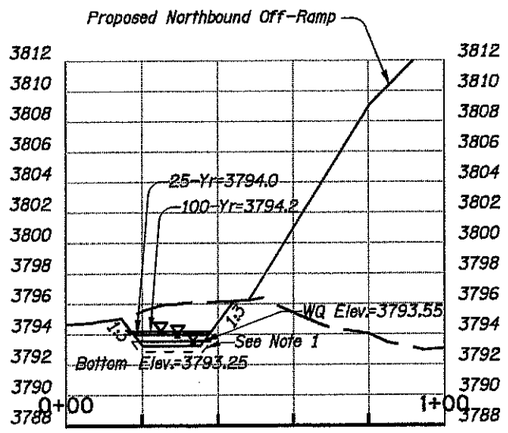
POINT CONTROL

Pt.	Station	Offset	Elev.	Pt. Description
A	Sta. 'B' 501+72.72	108.21' Lt.	3793.25	Toe of Slope
B	Sta. 'B' 501+78.08	116.06' Lt.	3793.25	Toe of Slope
C	Sta. 'B' 502+28.39	102.43' Lt.	3793.25	Toe of Slope
D	Sta. 'B' 502+64.93	91.23' Lt.	3793.25	Toe of Slope
E	Sta. 'B' 503+12.20	97.49' Lt.	3793.25	Toe of Slope
F	Sta. 'B' 503+26.24	95.52' Lt.	3793.25	Toe of Slope
G	Sta. 'B' 503+27.32	78.53' Lt.	3793.25	Toe of Slope
H	Sta. 'B' 503+09.65	78.31' Lt.	3793.25	Toe of Slope
I	Sta. 'B' 501+88.27	87.99' Lt.	3793.25	Toe of Slope

PLAN



SECTION A-A



SECTION B-B

Notes:

1. *Over Excavate For Placement Of 18" Of Compost Amended Soil.*
2. *Side Slopes Are Shown As Vert.To Horiz.*

SECTION

INFILTRATION BASIN D 00746

0 20 40 60
Horizontal Scale In Feet

0 5 10 15
Vertical Scale In Feet

REGISTERED PROFESSIONAL ENGINEER
82930PE
OREGON
MAY 12, 2009
JEFFERY SHAWN STALLARD
EXPIRES: 6/30/2014
3/11/13

OREGON DEPARTMENT OF TRANSPORTATION

CH2MHILL
2020 SW 4TH AVE. - 3RD FLOOR
PORTLAND, OR 97201-4953
TEL. 503.235.5000

US97/MURPHY RD:
BROOKSWOOD-PARRELL (BEND) PHASE 1
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

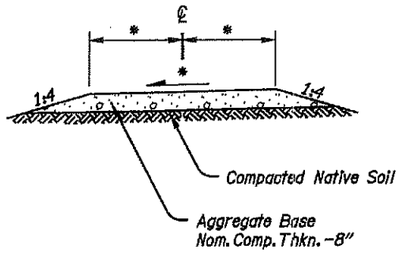
Reviewed By - R. Attanasio
Designed By - J. Stallard
Drafted By - S. Atwood

STORMWATER DETAILS

SHEET NO. GJ-10

Rev. No.	Date	Revision

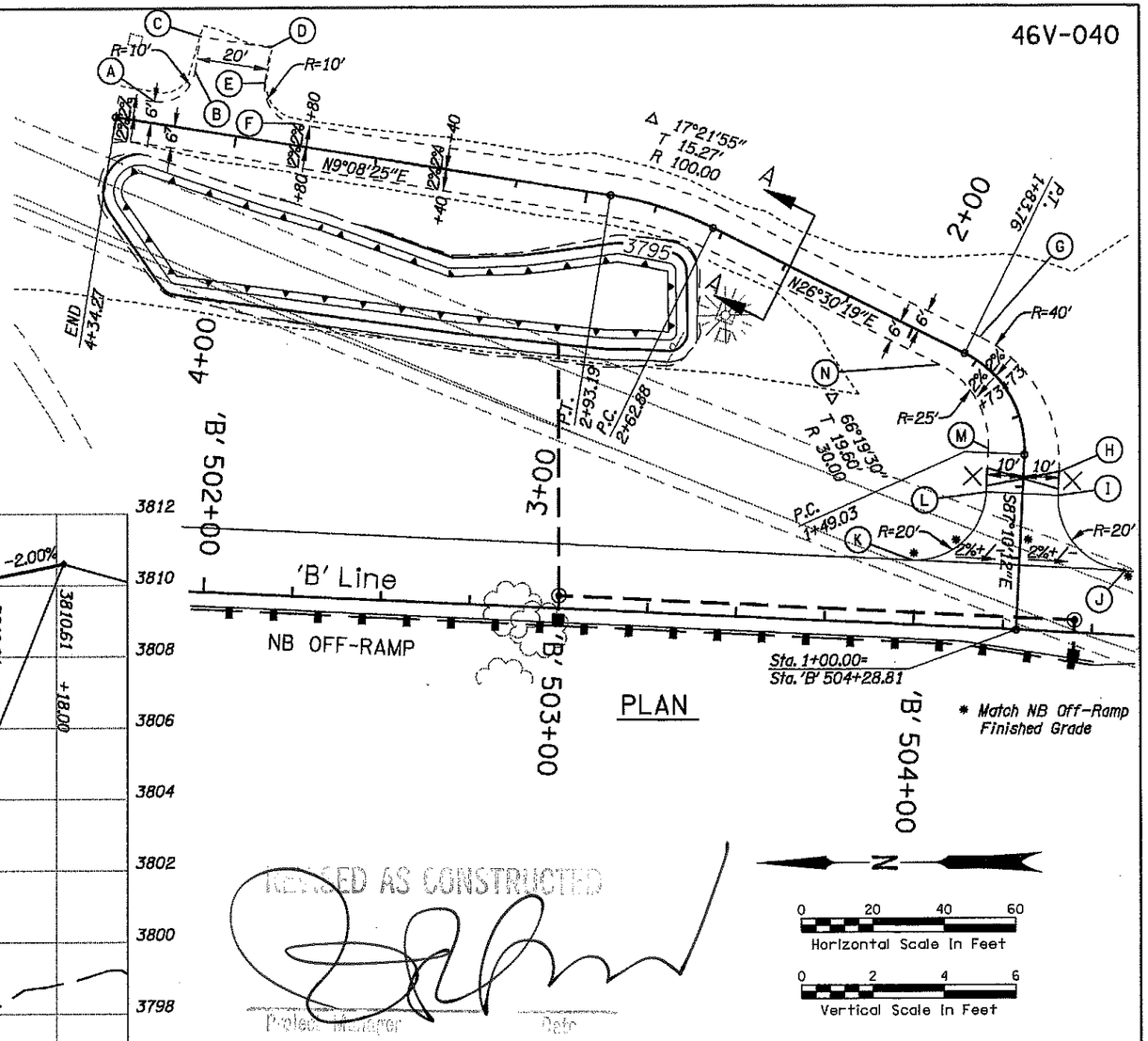
46V-040

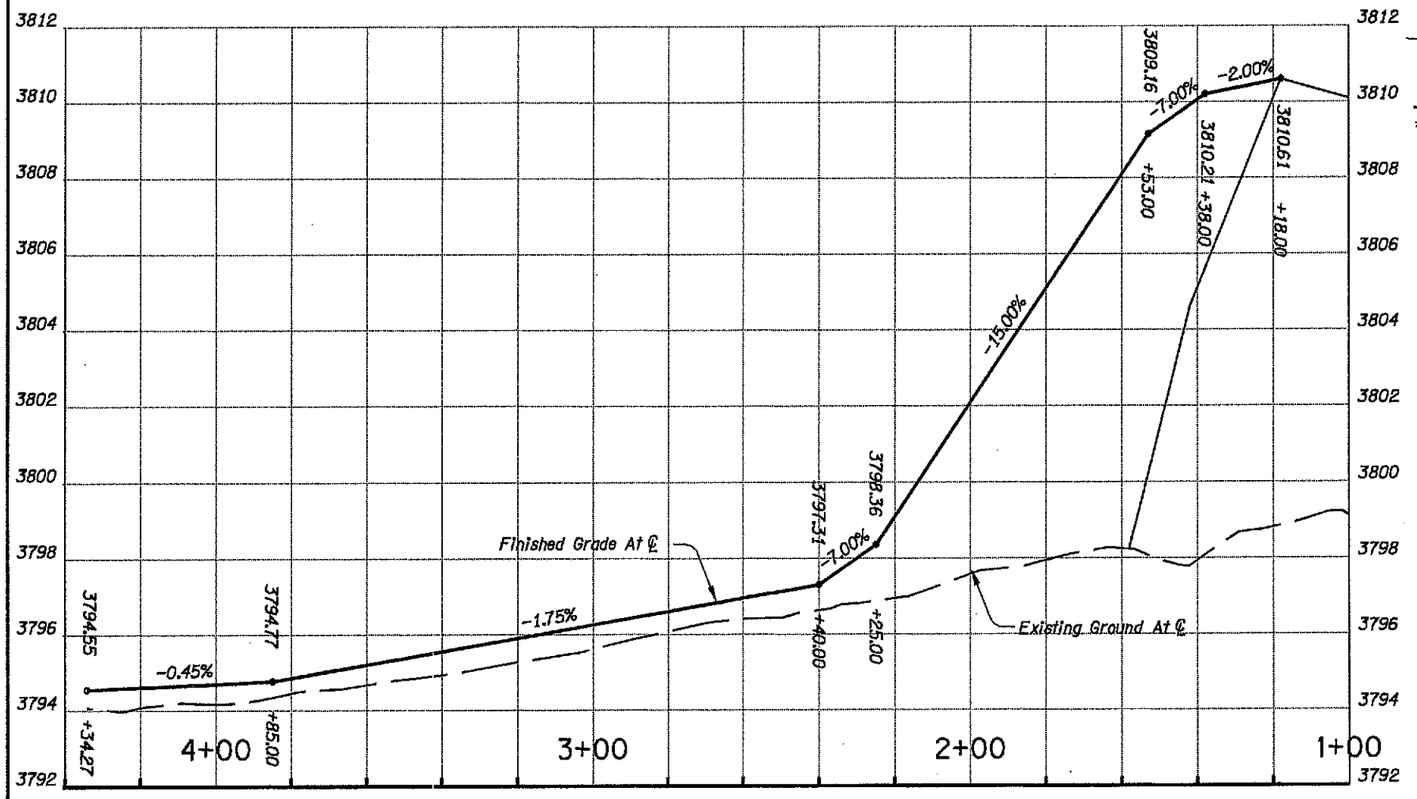


* See Plan For Dimensions And Grading

SECTION A-A

POINT CONTROL			
Pt.	Station	Offset	Elev.
Ⓐ	Sta. 4+24.27	6.00' Rt.	3794.48
Ⓑ	Sta. 4+14.27	16.00' Rt.	3794.32
Ⓒ	Sta. 4+14.27	26.00' Rt.	3793.63
Ⓓ	Sta. 3+94.27	26.00' Rt.	3794.06
Ⓔ	Sta. 3+94.27	16.00' Rt.	3794.26
Ⓕ	Sta. 3+84.27	6.00' Rt.	3794.67
Ⓖ	Sta. 1+82.30	6.04' Rt.	3804.88
Ⓗ	Sta. 1+44.66	10.00' Rt.	3809.73
Ⓘ	Sta. 1+38.09	10.00' Rt.	3810.15
Ⓙ	Sta. 1+18.09	30.00' Rt.	3810.11
Ⓚ	Sta. 1+18.09	30.00' Lt.	3811.18
Ⓛ	Sta. 1+38.09	10.00' Lt.	3810.26
Ⓜ	Sta. 1+50.68	9.97' Lt.	3809.28
Ⓝ	Sta. 1+88.78	6.00' Lt.	3803.67





PROFILE

Rev. No.	Date	Revision

INFILTRATION BASIN D 00746

REVISED AS CONSTRUCTED

Project Manager Date

REGISTERED PROFESSIONAL ENGINEER 79251PE OREGON JUNE 14, 2007 RYAN J. BROWN 3-11-13

EXPIRES: 12/31/2013

OREGON DEPARTMENT OF TRANSPORTATION

CH2MHILL 2020 SW 4TH AVE. - 3RD FLOOR PORTLAND, OR 97201-4953 TEL. 503.235.5000

US97/MURPHY RD: BROOKSWOOD-PARRELL (BEND) PHASE 1

THE DALLES-CALIFORNIA HIGHWAY

DESCHUTES COUNTY

Reviewed By - S. Daleo

Designed By - S. Christopherson

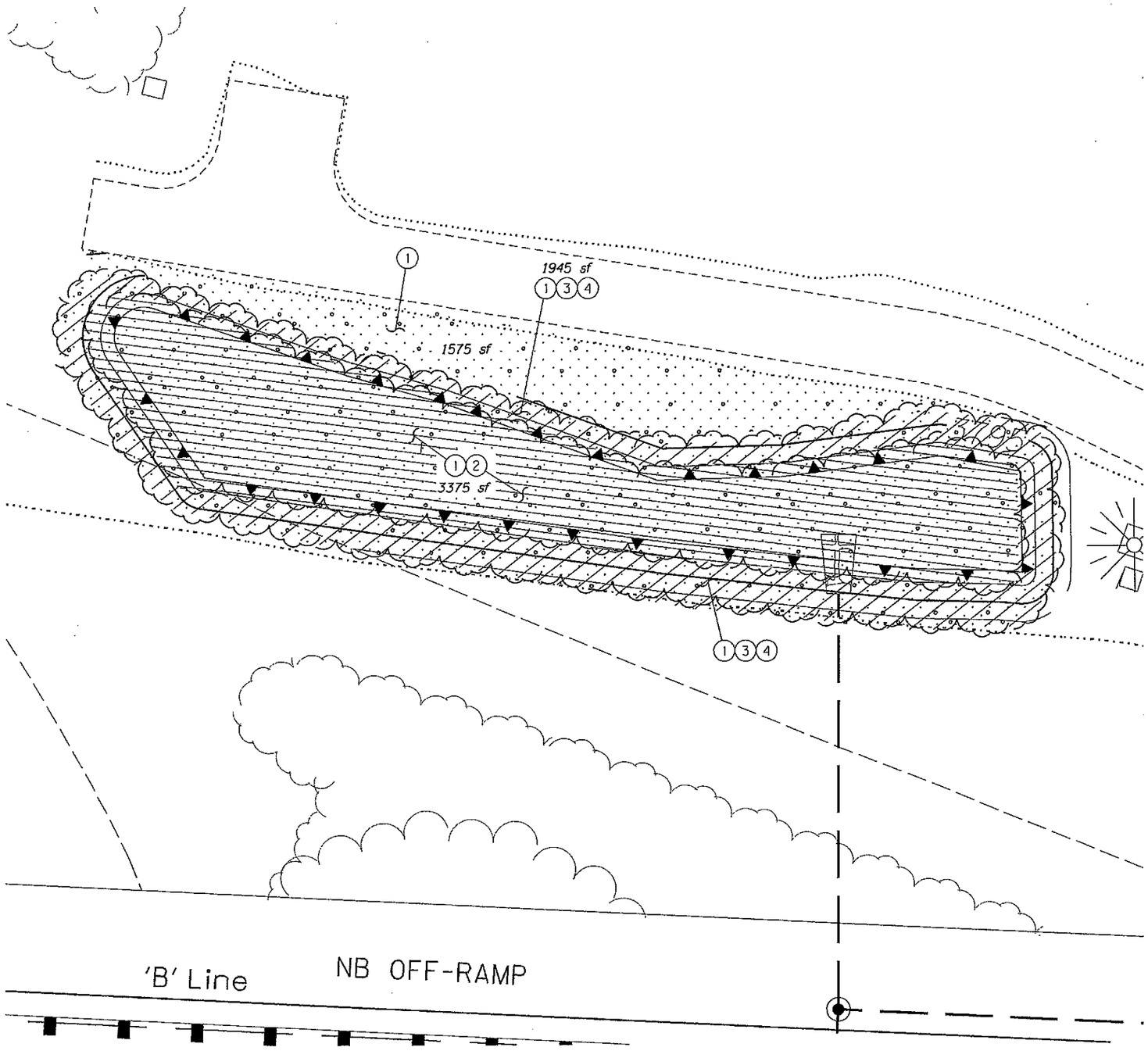
Drafted By - S. Atwood

STORMWATER ACCESS DETAILS

SHEET NO. GJ-11

46V-040

T. 18S, R. 12E, W.M.
INFILTRATION BASIN #D 00746



(1) *Seed and mulch area, but excluding access road (Approx. 6895 sq. ft.):*
Permanent Seeding, Mix No. 1 - 0.16 ac.

NOT PLANTED (2) *Plant the following 4" pot groundcover at 30" o.c. (Approx. 3375 sq. ft.):*
Lupinus lepidus - 540
Groundcover, 4" pot - 540

(3) *Plant the following No. 1 Container shrubs in uniform spacing at 6' o.c. (Approx. 1945 sq. ft.)*
Ribes cereum - 54
Shrubs, No. 1 Container - 54

(4) *Plant with the following herbaceous material (Size as noted) at 2' o.c. (Approx. 1945 sq. ft.)*
Achillea millefolium (Tubelings) - 240
Eriophyllum lanatum (Bulb) - 240
Bulbs - 240
Tubelings - 240

REVISED AS CONSTRUCTED

Project Manager Date

N

SCALE 1" = 20'

20 10 0 20
FEET

REGISTERED
317
MICHAEL D. SMYTH
OREGON
04/04/94
LANDSCAPE ARCHITECT
04/30/2013

OREGON DEPARTMENT OF TRANSPORTATION

WHPacific
9755 SW Barnes Rd Ste 300
Portland, OR 97225
t: 503.626.0455 f: 503.526.0775

US97/MURPHY ROAD:
BROOKSWOOD - PARRELL (BEND) PHASE 1
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

Reviewed By - Barry Johnson
Designed By - Mike Smyth
Drafted By - Tommy Taggart

STORMWATER FACILITY PLANTING

SHEET NO. GJ-12

C:\Documents\Work\Murphy\F407067ST.pl4 :: Default 3/11/2013 8:43:43 AM ttaggart

BIOFILTRATION PLANT MATERIAL SCHEDULE

SCIENTIFIC NAME	COMMON NAME	SIZE (CLASS)	ROOT TYPE	PLANT DESCRIPTION	A.S.N.S.	SPACING	LAYOUT	PERCENT OF AREA	QUANTITIES BY SHEET GJ-3	GJ-6	GJ-9	GJ-12	TOTAL
SHRUBS, No. 1 Container													
Ribes cereum	Wax Currant	#1	Cont.	Multi-stem, 12" ht.	2.1.3.3, Type 2	6' o.c.	Random		42	137	267	54	500
								TOTAL	**42**	**137**	**267**	**54**	**500**
GROUNDCOVER, 4" Pot													
Lupinus lepidus	Prairie Lupine	4"	Pot	Full in container	12.1.3	30" o.c.	Random		480	1110	555	540	2685
								TOTAL	**480**	**1110**	**555**	**540**	**2685**
HERBACEOUS, BULBS, BAREROOT, TUBELINGS, PROPAGULE													
Achillea millefolium	Common Yarrow		Tubeling	Full in container	6.1.2	24" o.c.	Uniform		190	615	1205	240	2250
Eriophyllum lanatum	Oregon Sunshine		Bulb		11.1	24" o.c.	Uniform		190	615	1205	240	2250
								TOTAL	**380**	**1230**	**2410**	**480**	**4500**
PERMANENT SEEDING, Ac.													
Permanent Seeding, Mix No. 1				See Spec's					0.18	0.35	0.41	0.16	1.10
								TOTAL	**0.18**	**0.35**	**0.41**	**0.16**	**1.10**

NOT PLANTED (1)

REVISED AS CONSTRUCTED

Project Manager Date

ABBREVIATION TABLE

A.S.N.S.	American Standard For Nursery Stock
B&B	Balled & Burlap
B.R.	Bare Root
Cal.	Caliper
Cont.	Container
L.C.	Live Cutting
O.C.	On Center
W.S.	Where Staked

REGISTERED 317 MICHAEL D. SMYTH OREGON 04/04/94 LANDSCAPE ARCHITECT 04/30/2013

OREGON DEPARTMENT OF TRANSPORTATION

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US97/MURPHY ROAD:
BROOKSWOOD - PARRELL (BEND) PHASE 1
THE DALLES-CALIFORNIA HIGHWAY
DESCHUTES COUNTY

Reviewed By - Barry Johnson
Designed By - Mike Smyth
Drafted By - Tommy Taggart

STORMWATER FACILITY PLANT LIST

SHEET NO. GJ-13