OPERATION & MAINTENANCE MANUAL

Water Quality Bioslope

Manual prepared: July, 2019

DFI No. D00561, 00565, 00567 & 00571

Figure 1: DFI No. D00561, looking East

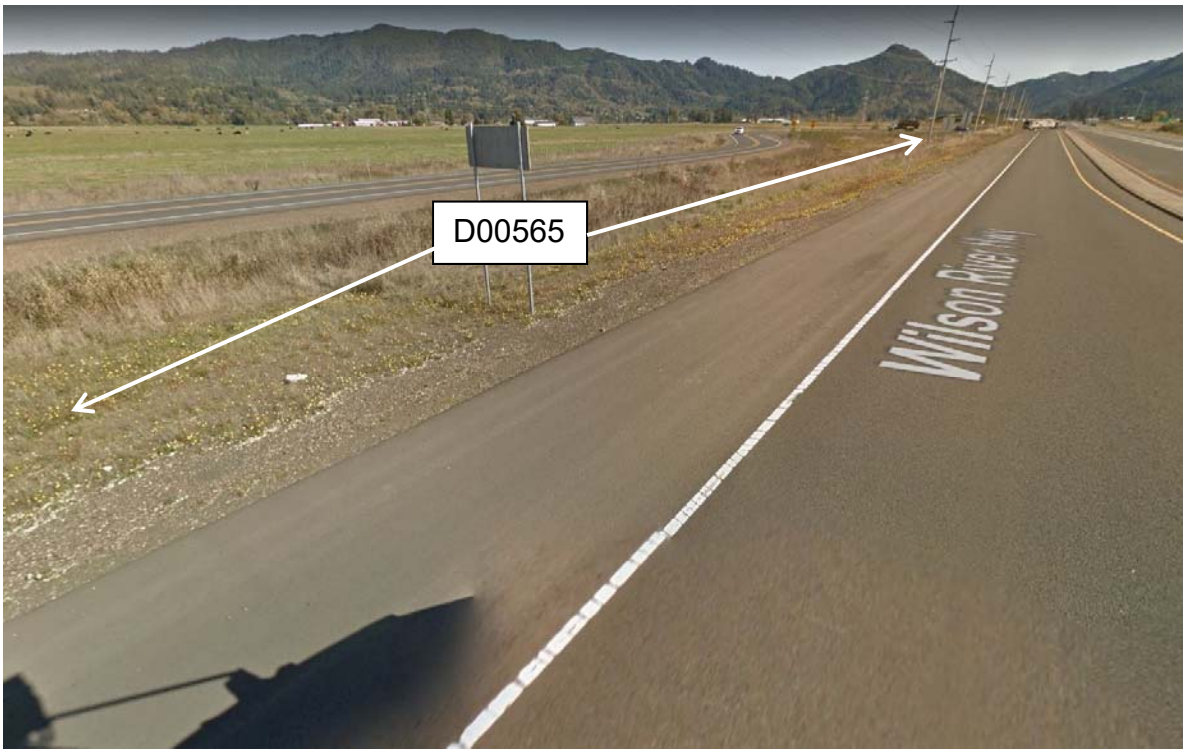


Figure 2: DFI No. D00565, looking East

Figure 3: DFI No. D00567, looking East

Figure 4: DFI No. D00571, looking East

1. Identification

Drainage Facility ID (DFI):	D00561
Facility Type:	Water Quality Bioslope
Construction Drawings:	(V-File Numbers) 45V-035
Location:	District: 1 Highway No.: 037 Mile Post: 1.0 to 1.64, [Left]

Drainage Facility ID (DFI):	D00565
Facility Type:	Water Quality Bioslope
Construction Drawings:	(V-File Numbers) 45V-035
Location:	District: 1 Highway No.: 037 Mile Post: 1.90 to 2.07, [Left]

Drainage Facility ID (DFI):	D00567
Facility Type:	Water Quality Bioslope
Construction Drawings:	(V-File Numbers) 45V-035
Location:	District: 1 Highway No.: 037 Mile Post: 2.10 to 2.31, [Left]

Drainage Facility ID (DFI):	D00571
Facility Type:	Water Quality Bioslope
Construction Drawings:	(V-File Numbers) 45V-035
Location:	District: 1 Highway No.: 037 Mile Post: 2.02 to 2.07, [Left]

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. **NOTE: Mile posts are based off of the V-File, and may vary from TransGIS mile posts.**

Facility location type: **Roadway shoulder**

Flow direction: East to West

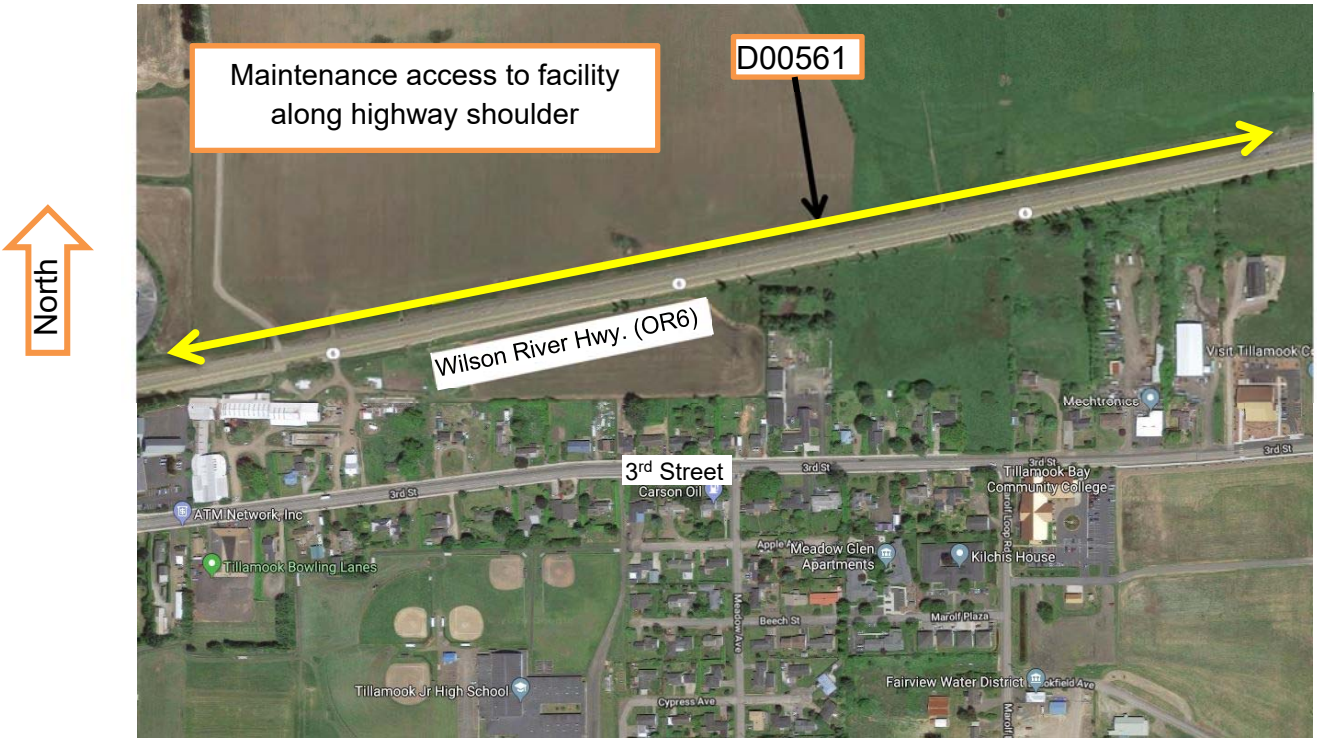


Figure 5: D00561 facility location map

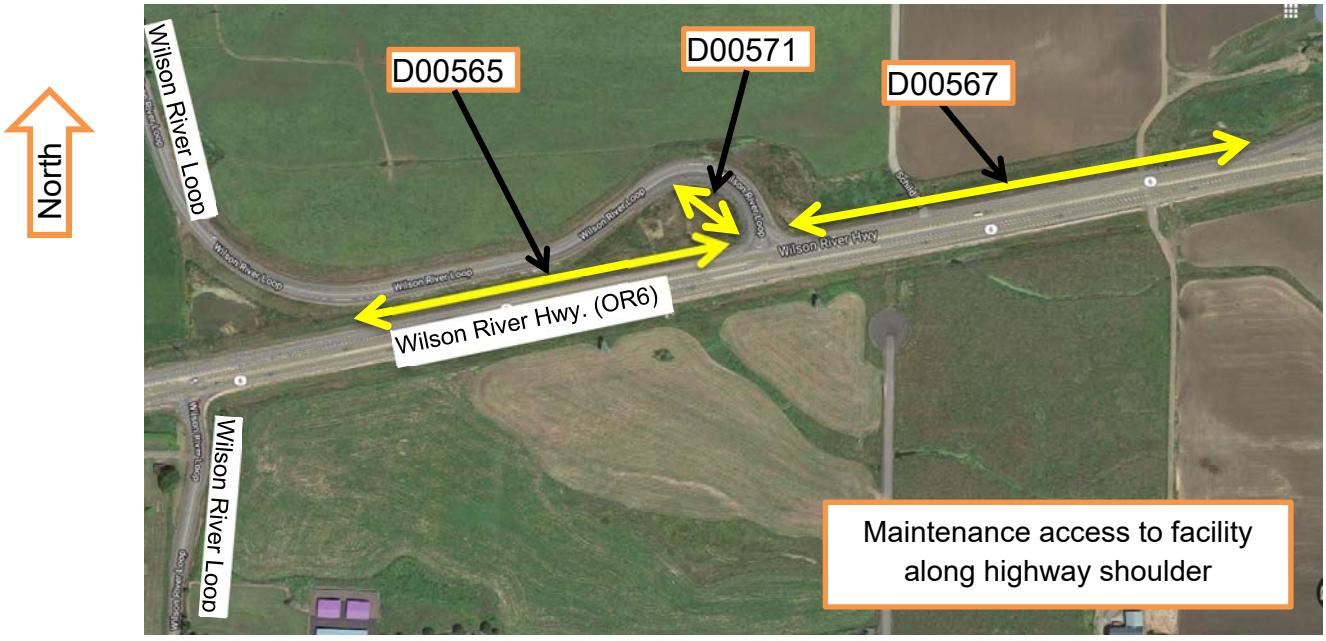


Figure 6: D00565, D00567, D00571 facility location map

4. Facility Summary

The width is measured perpendicular to the edge of pavement and is equivalent to the flow length. The length is measured parallel to the edge of pavement and is equivalent to the length of the contributing impervious area.

The length and width of the applicable facility components are:

Component	Length (feet)	Width (feet)
D00561	3,379	7
D00565	895	7
D00567	1,140	7
D00571	440	7

The slope of the facility is presented by a vertical distance (rise) followed by the horizontal distance (run).

Side Slope	Rise (feet)	Run (feet)
D00561	1	4
D00565	1	4
D00567	1	4
D00571	1	4

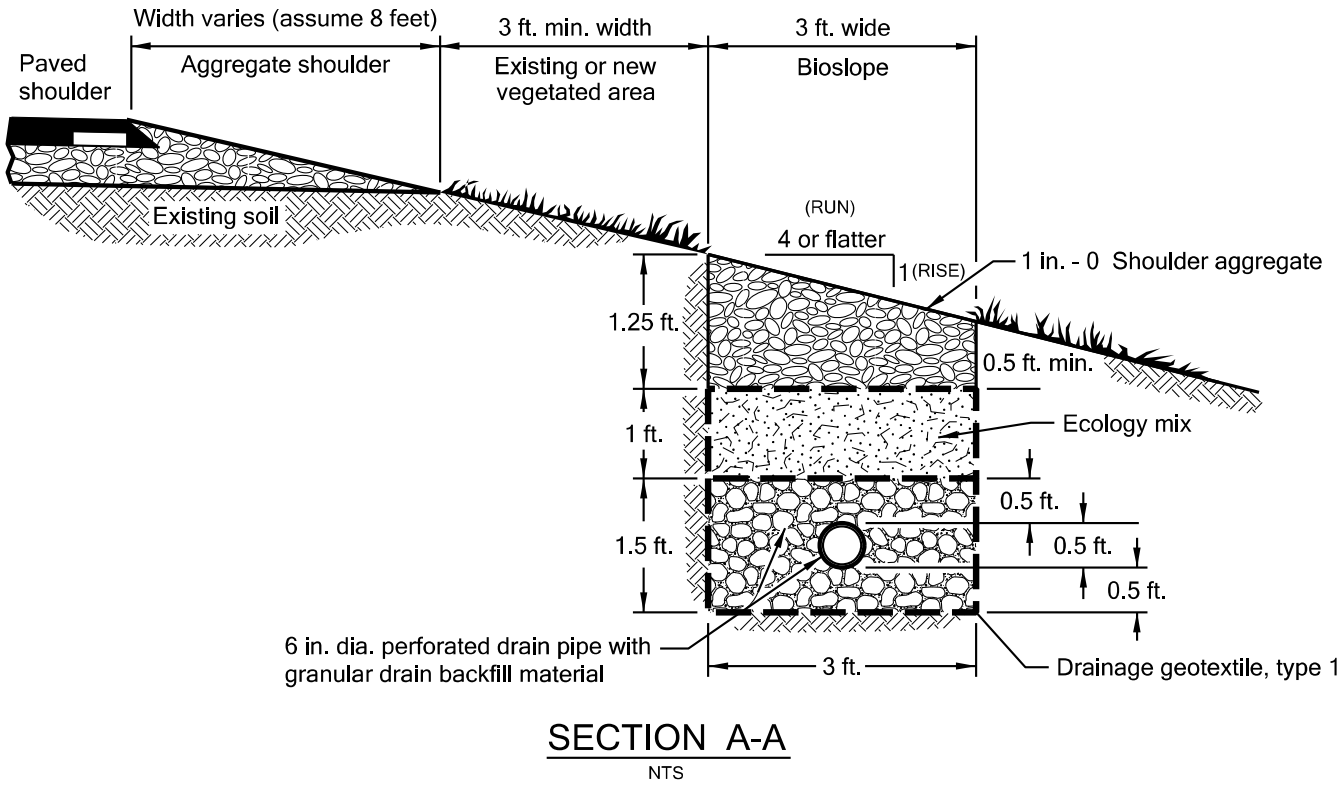


Figure 2: BioSlope Section

Site Specific Information: Control run-off and provide treatment for the intersection of Wilson River Loop and Wilson River Highway (OR6). Water flows thru project area towards Tillamook Bay located 4.5 miles northwest.

5. Facility Access

Maintenance access to the facility:

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

Figure 7: Roadside shoulder access

6. Operational Components / Maintenance Items

Classification and Standard Operational (Op) Plan:

This facility is classified as a:

☐ Filter Strip (Op Plan A)	☒ Bioslope (Op Plan B)
A filter strip consists of a vegetated or media slope located parallel to the edge of pavement. It maintains sheet flow of stormwater runoff over the width of the strip.	A bioslope consists of a filter strip and treatment zone. It is a flow-through stormwater treatment facility located along roadside embankments.
A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A, B) are provided in the Standard Operation Manual.	

See Appendix A for the site specific operational plan.

Operational Components

Filter strips and bioslopes have many components that assist with treatment, conveyance, and infiltration of stormwater runoff. The components in use can vary depending on the facility design. 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 Filter Strips and Bioslopes (implemented May 2019) 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/

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: Bioslope Components		ID #
Facility Inlet		
Pavement Sheet Flow	☒	**B1**
Shoulder Aggregate	☒	**B2**
Ground Cover		
Vegetated Slope	☒	**B3**
Aggregate Media Slope	☒	**B4**
Underground Components		
Water Quality Mix	☐	**B5**
Ecology Mix	☒	**B6**
Granular Drain Backfill Material	☐	**B7**
Geotextile Fabric	☒	**B8**
Geocell Grid	☐	**B9**
Structures		
Curb/Berm	☐	**B10**
Check Dam	☐	**B11**
Cleanout	☐	**B12**
Facility Outlet		
Perforated Drain Pipe	☐	**B13**
Open Slope Outlet	☐	**B14**
Open Channel Outlet	☐	**B15**
Storm Drain Outlet Pipe	☐	**B16**
Outfall Type		
Waterbody (**C**reek/**L**ake/**O**cean)	☐ **C** ☐ **L** ☐ **O**	**B17**
Outfall Channel	☐	**B18**
Storm Drain System	☐	**B19**
Outfall Components		
Pervious Berm	☐	**B20**
Riprap Pad	☐	**B21**

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 filter strips and bioslopes:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 4 (Water Quality Filter Strips)
- Table 5 (Water Quality Bioslopes)

The ODOT Maintenance Guide can be viewed at the following website:
http://www.oregon.gov/ODOT/HWY/OOM/pages/mguide.aspx

The *Blue Book* can be viewed at the following website:
http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

8. Limitations

Filter strips and bioslopes are NOT designed to allow the use of heavy equipment. Vehicles entering the facility 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.

9. Waste Material Handling

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

http://www.oregon.gov/ODOT/HWY/OOM/pages/ems.aspx

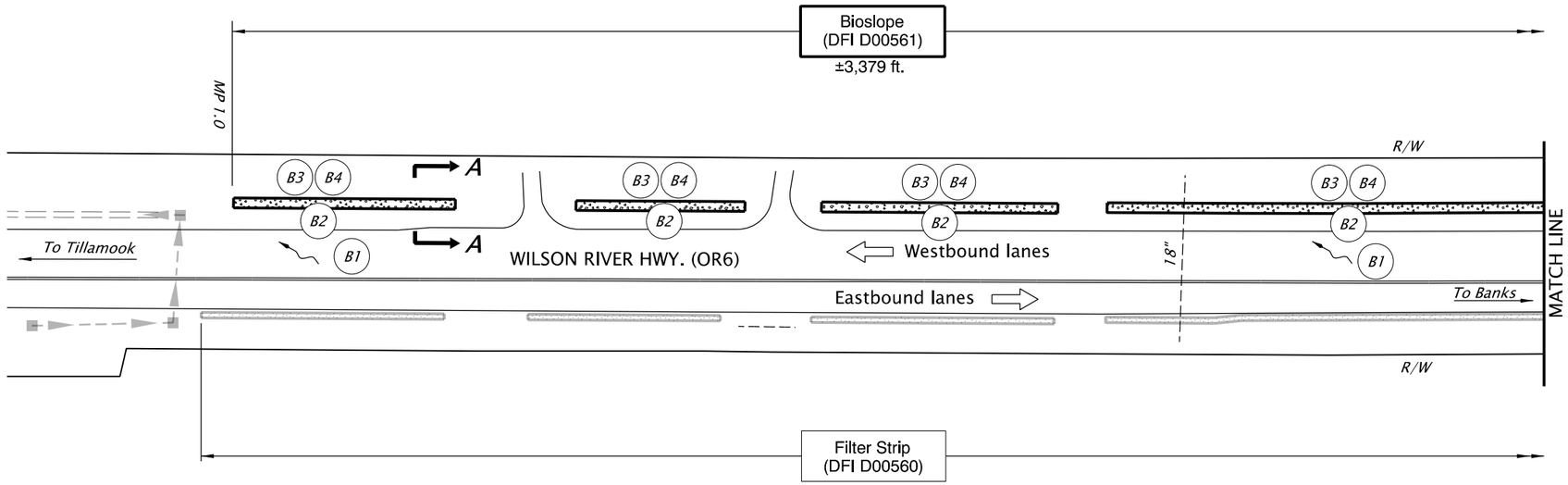
Contact any of the following for more detailed information about management of waste materials found on site:

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 D00561, 00565, 00567 & 00571



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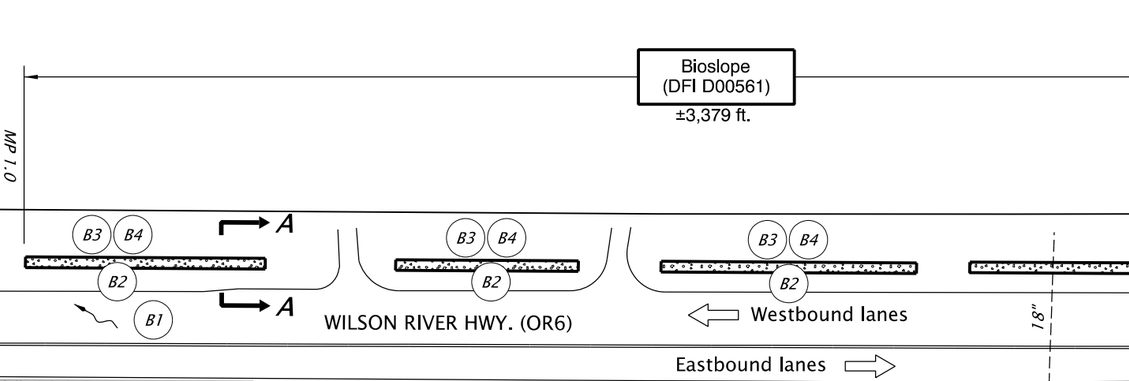

SECTION A–A
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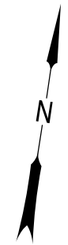


LEGEND:

- B# — *Facility Component (see table 1 in O&M Manual)*
- *and / or* — *Manhole*
- *and / or* — *Inlet*
- *Storm Pipe (Facility)*
- *Storm Pipe*
- *Ditch Line*
- *Filter Strip Boundary*
- *Bioslope Boundary*
- *Conveyance Direction*
- *Pavement / Facility Flow Path*
- *Traffic Flow Direction*

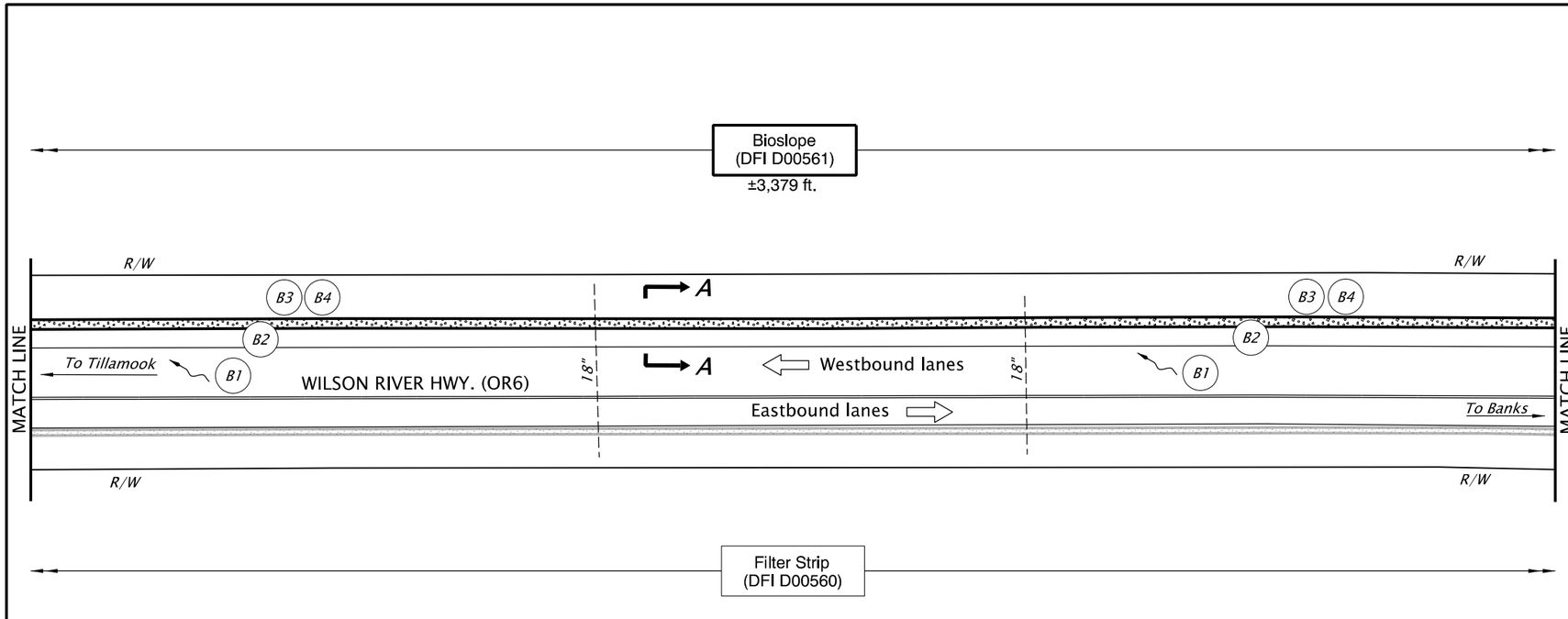
OREGON DEPARTMENT OF TRANSPORTATION

Sht. 1 of 4

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00561
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 1.0
TILLAMOOK COUNTY



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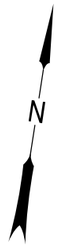

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Note:
See sheet 1 of 4 (DFI D00561)
for "SECTION A-A" details.

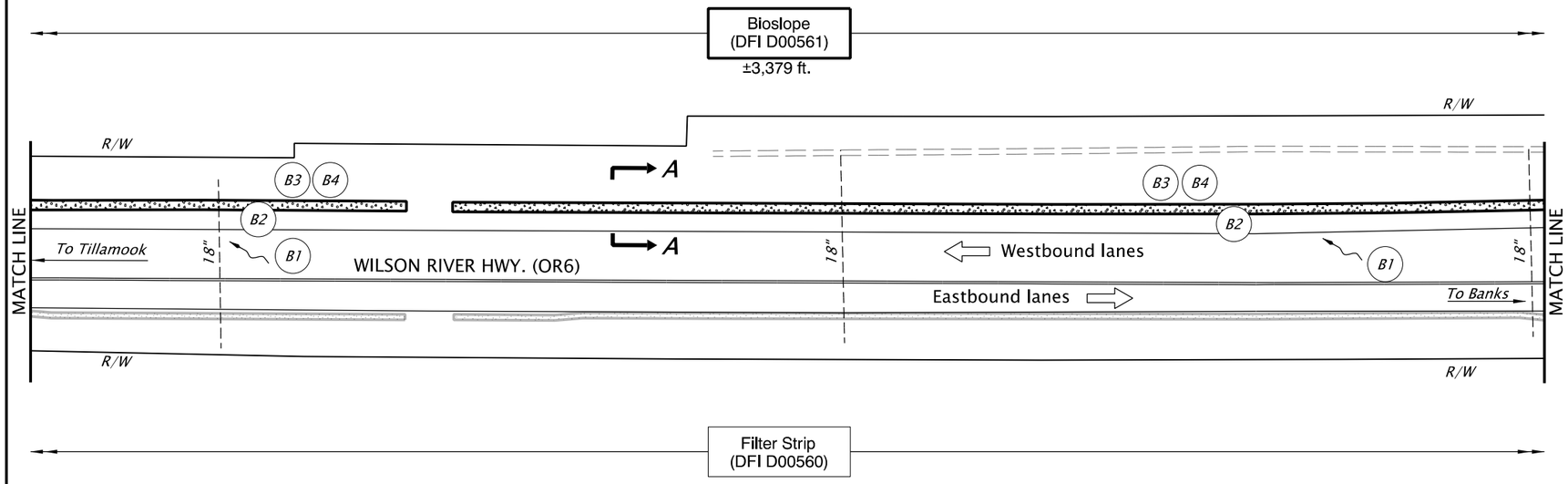
OREGON DEPARTMENT OF TRANSPORTATION

Sht. 2 of 4

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00561
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 1.0
TILLAMOOK COUNTY



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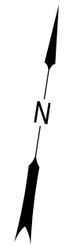

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Note:
See sheet 1 of 4 (DFI D00561) for "SECTION A-A" details.

OREGON DEPARTMENT OF TRANSPORTATION

Sht. 3 of 4

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00561
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 1.0
TILLAMOOK COUNTY

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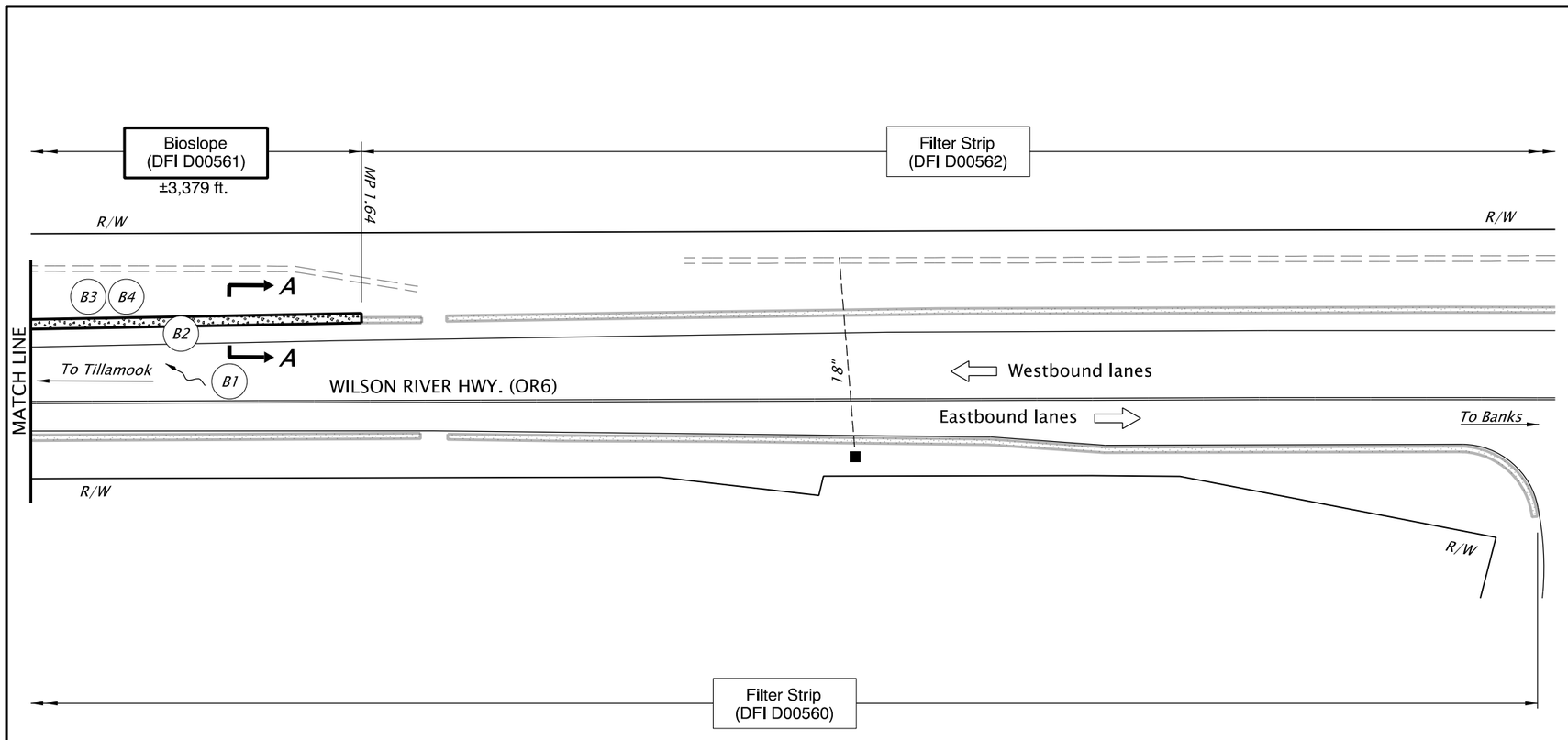

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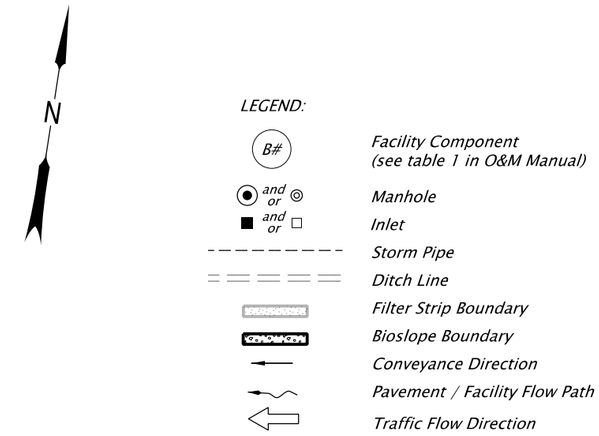


Note:
See sheet 1 of 4 (DFI D00561)
for "SECTION A-A" details.

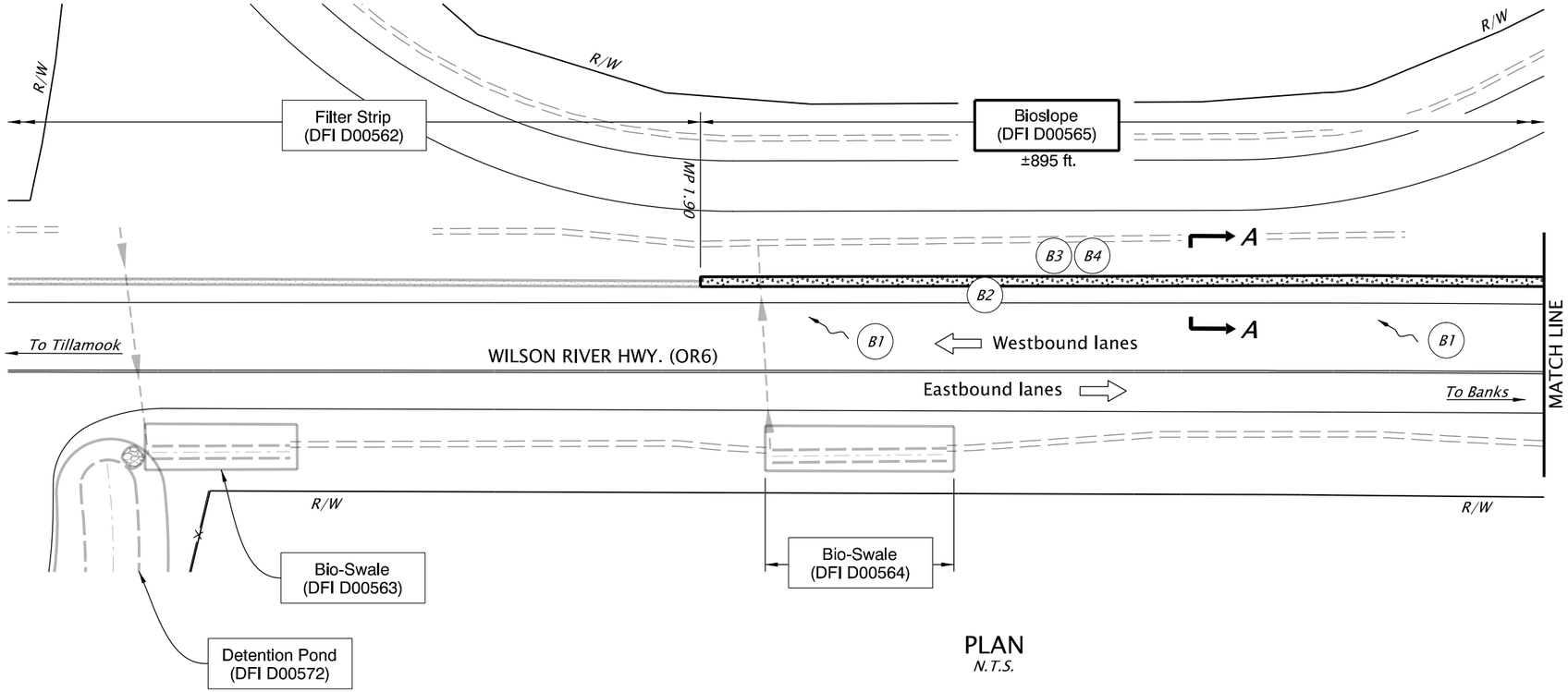
OREGON DEPARTMENT OF TRANSPORTATION

Sht. 4 of 4

Prepared By:
Ramiro Perez

Drafted By:
Jeff Coon

DFI D00561
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 1.0
TILLAMOOK COUNTY



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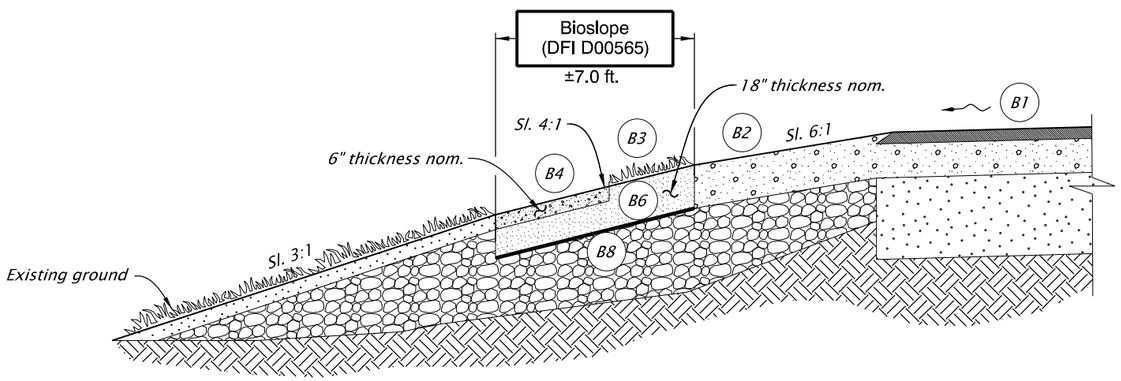

SECTION A–A
N.T.S.

Sht. 1 of 2

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00565
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 1.90
TILLAMOOK COUNTY

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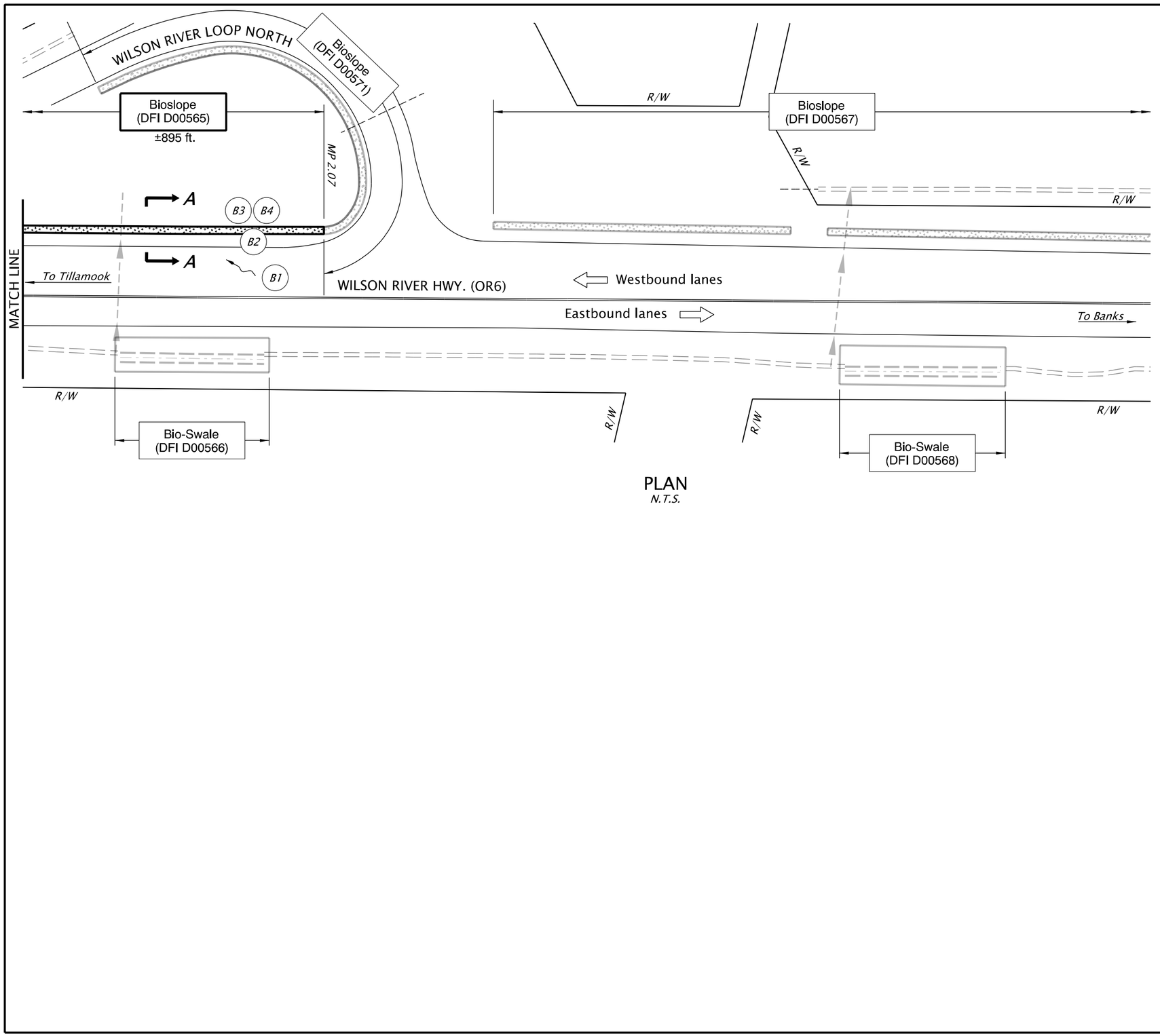

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Note:
See sheet 1 of 2 (DFI D00565) for "SECTION A-A" details.

OREGON DEPARTMENT OF TRANSPORTATION

Sht. 2 of 2

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00565
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 1.90
TILLAMOOK COUNTY

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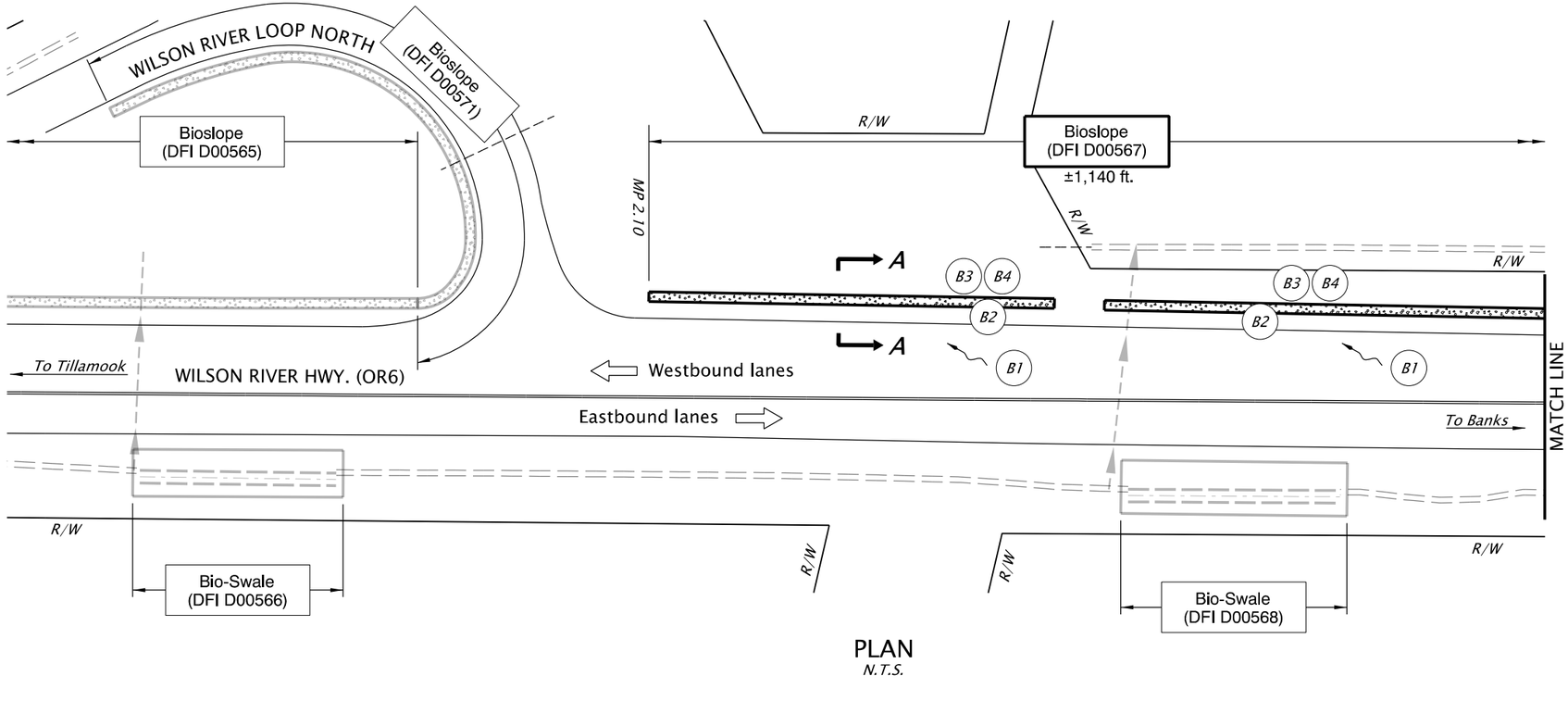

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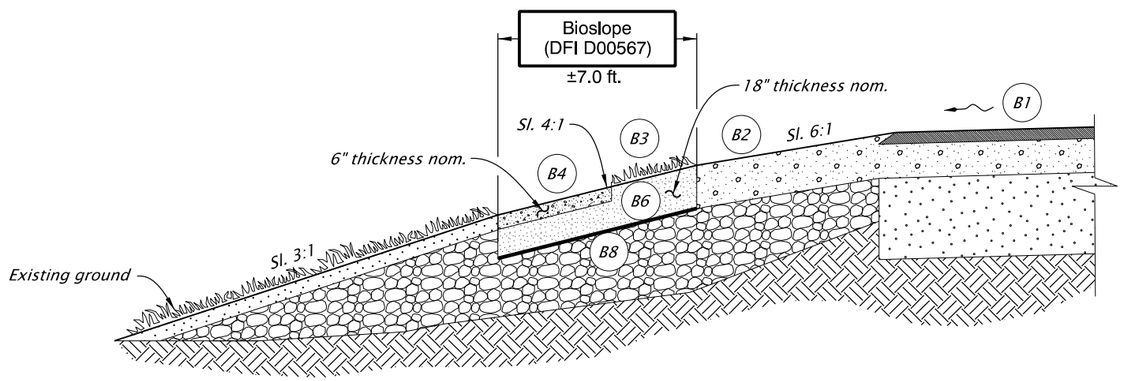

SECTION A–A
N.T.S.

N

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- *Conveyance Direction*
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- *Traffic Flow Direction*

Sht. 1 of 2

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

OREGON DEPARTMENT OF TRANSPORTATION

DFI D00567
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 2.10
TILLAMOOK COUNTY

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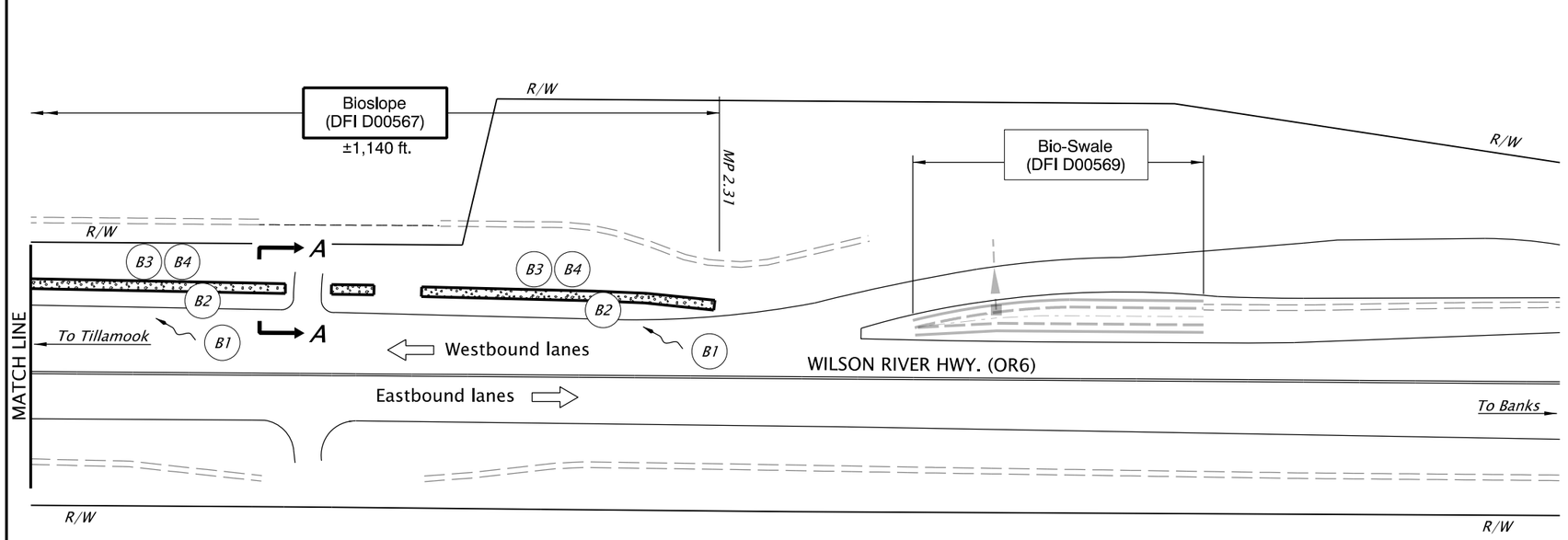

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N.T.S.

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Note:
See sheet 1 of 2 (DFI D00567) for "SECTION A-A" details.

OREGON DEPARTMENT OF TRANSPORTATION

Sht. 2 of 2

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00567
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 2.10
TILLAMOOK COUNTY

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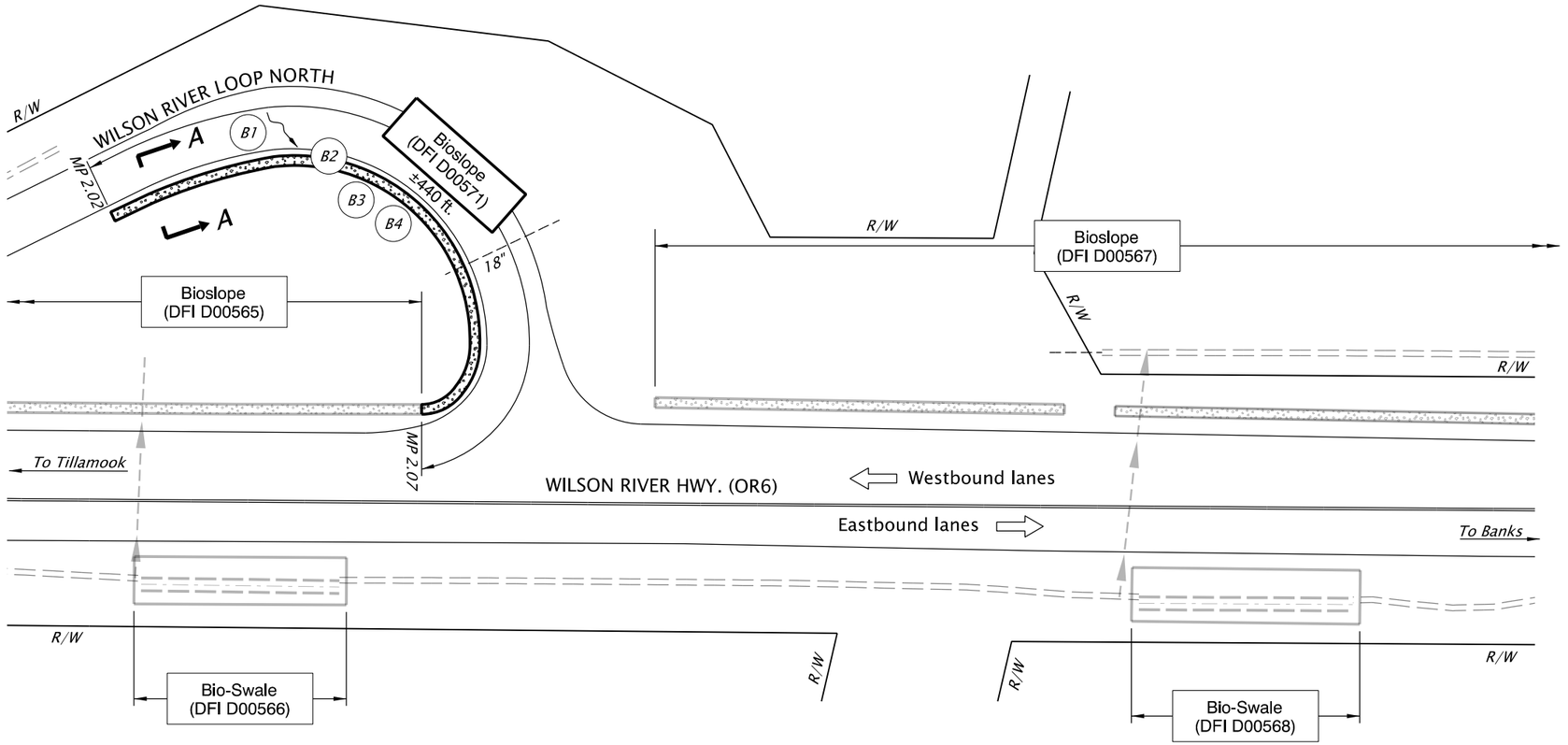

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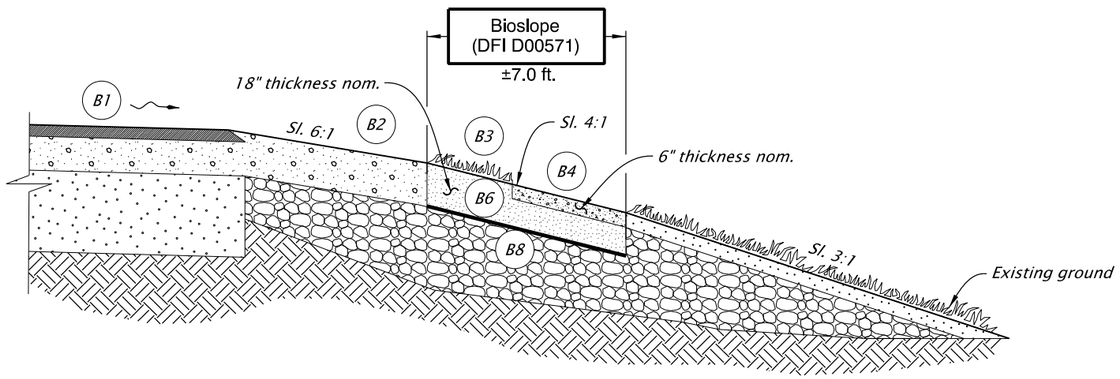

SECTION A–A
N.T.S.

N

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OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Ramiro Perez

Drafted By: Jeff Coon

DFI D00571
MAINTENANCE DISTRICT 1 HWY 37
WATER QUALITY BIOSLOPE
WILSON RIVER HIGHWAY MP 2.02
TILLAMOOK COUNTY

14479_OR6_DFI_00571.dgn :: Default-Sheet 7/9/2019 12:18:30 PM hwye31g

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B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 45V-035

45V-035

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

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

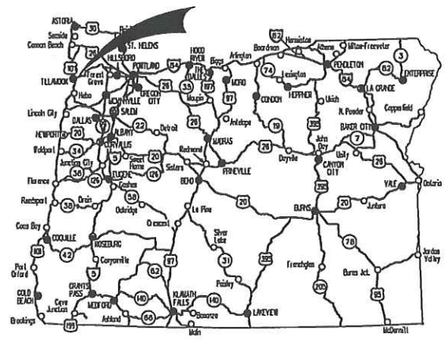
PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, AND ROADSIDE DEVELOPMENT

OR6 @ WILSON RIVER LOOP ROAD SEC.

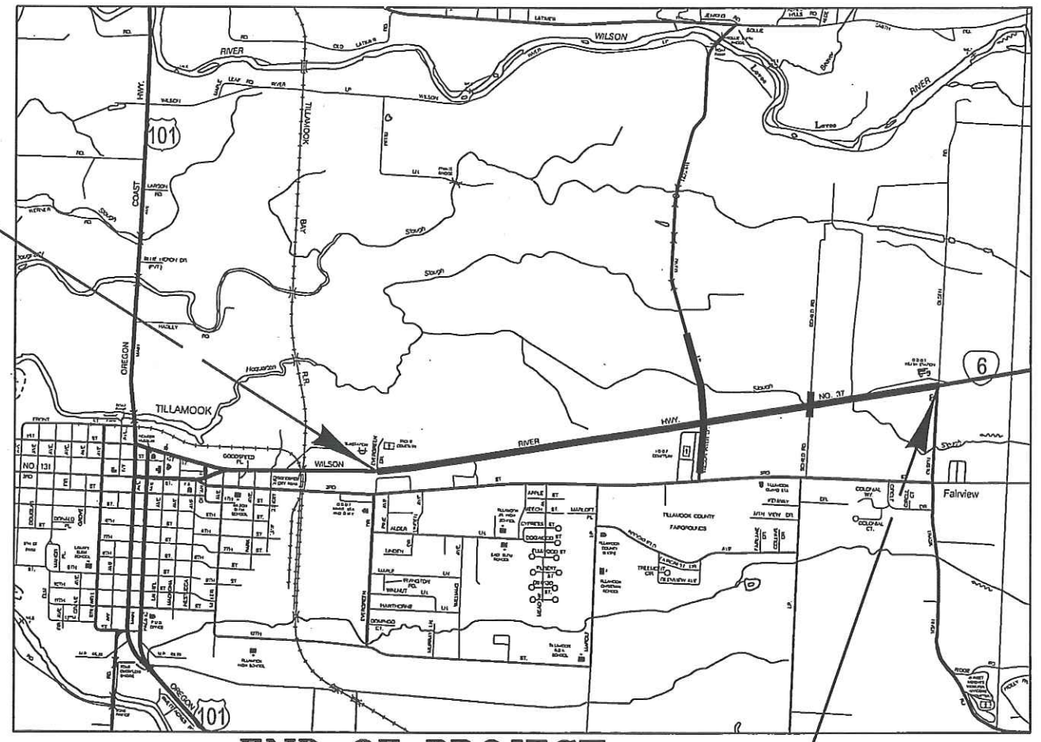
WILSON RIVER HIGHWAY

TILLAMOOK COUNTY
JUNE 2012



Overall Length Of Project - 1.78 Miles

BEGINNING OF PROJECT
NH-S037(026)
STA. "L" 39+50 (M.P. 0.75)



END OF PROJECT
NH-S037(026)
STA. "L" 133+35 (M.P. 2.52)

T. 1 S., R. 9 W., W.M.

EXPIRES: 6-30-2014

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.)

PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION
BY:

WHPacific
3470 Pipebend Place
Suite 170
Salem, OR 97301
t: 503.362.4675 f: 503.362.5078

OREGON TRANSPORTATION COMMISSION

Pat Egan	CHAIR
Mary F. Olson	COMMISSIONER
David Lohman	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Tommy 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: 4/25/12
Signature & date

Ed Chamberland, Sr. P.M.
Print name and title

Concurrence by ODOT Chief Engineer

OR6 @ WILSON RIVER LOOP ROAD SEC.
WILSON RIVER HIGHWAY
TILLAMOOK COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	NH-S037(026)	1

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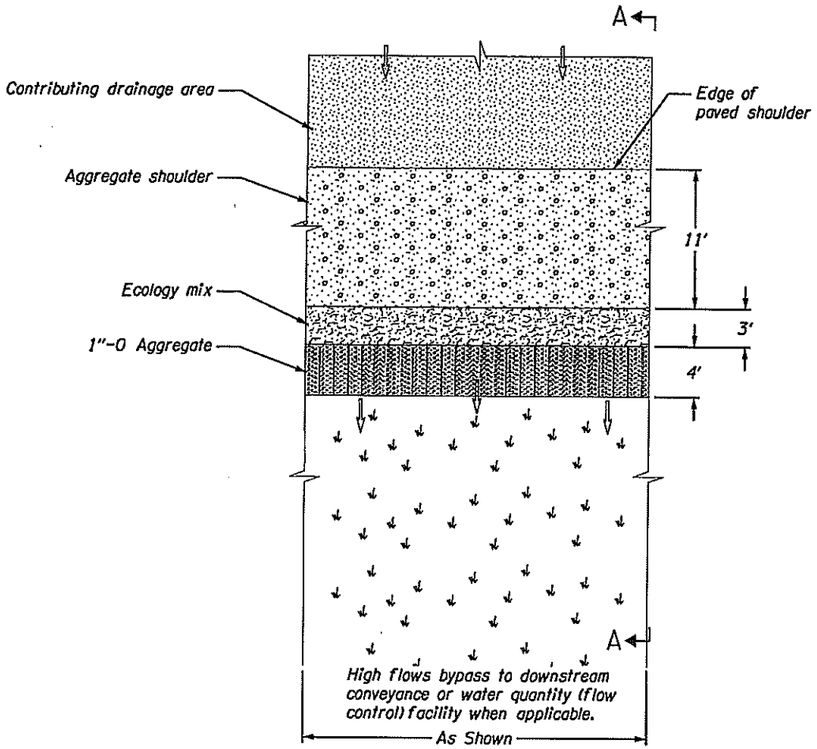
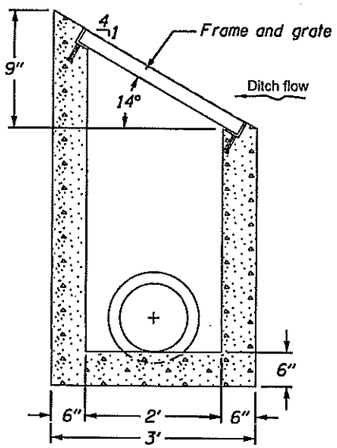
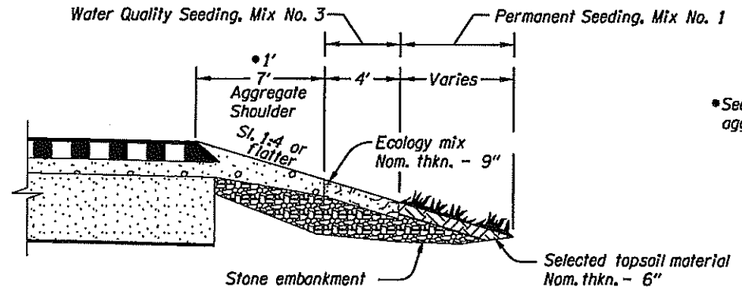


BIOSLOPE - PLAN VIEW
N.T.S.



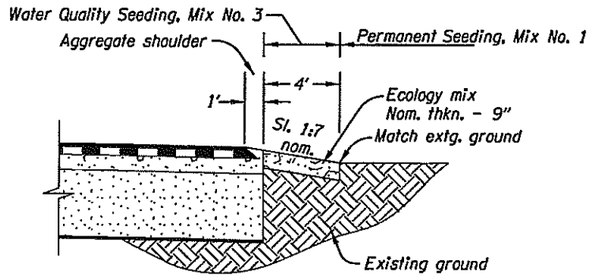
Note: Reduce standard grate and frame lengths by 4". For all other details, see drg. no. RD370.

MODIFIED TYPE D DITCH INLET
N.T.S.

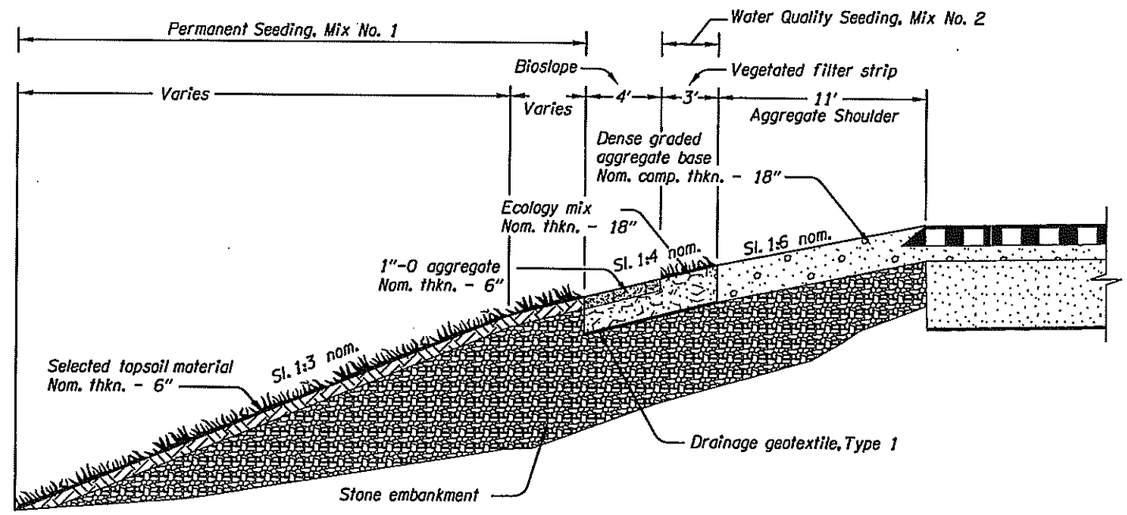


•See shts. 2 thru 2A-9 for aggregate shoulder width.

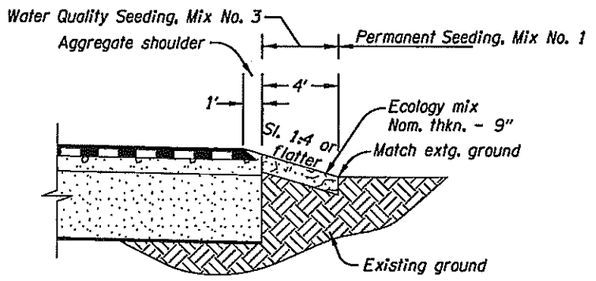
BIOFILTER STRIP
"L" LINE (FILL AREAS)
N.T.S.



BIOFILTER STRIP
"L" LINE (CUT AREAS)
N.T.S.



SECTION A-A
N.T.S.



BIOFILTER STRIP
"WRLN" LINE
N.T.S.

Note: See GN series for seed mix in ditches, wetland mitigation areas, bioslopes, bioswales, biofilter strips, and biofiltration pond.

REGISTERED PROFESSIONAL ENGINEER
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OREGON
JUL 25, 1995
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RENEWS: 12-31-2013

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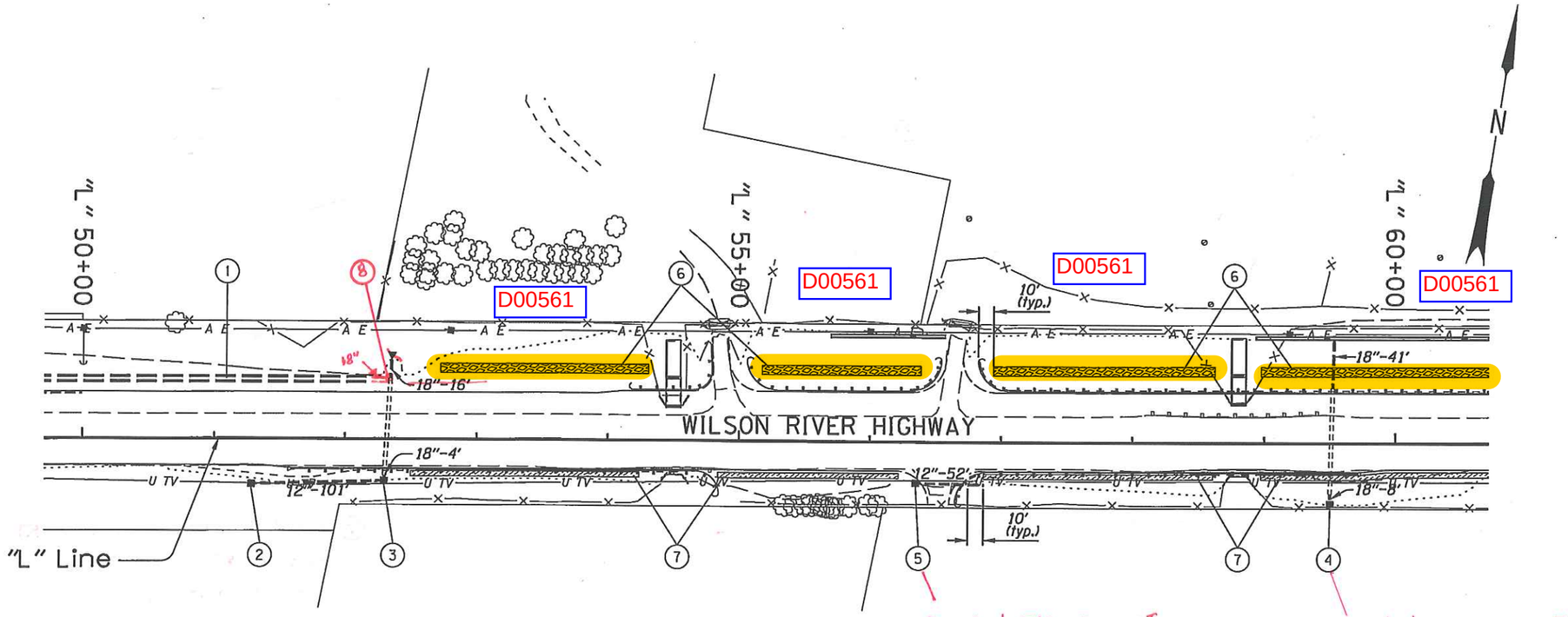
OR6 @ WILSON RIVER
LOOP ROAD SEC.
WILSON RIVER HIGHWAY
TILLAMOOK COUNTY

Design Team Leader - Ed Chamberland
Designed By - Calvin Larwood, Devin Doring
Drafted By - Linda Foote

STORMWATER DETAILS

SHEET NO. GJ



(1) See Sht. GJ-6, note 1
Const. ditch

(2) Sta. "L" 51+28, 34.3' Lt.
Const. modified Type D ditch inlet
Inst. 12" storm sewer pipe - 101', 5' depth
Rim=23.6'
Sl.=0.78%
I.E.=22.60' (W)
I.E.=21.81' (E) (field verify)
(For details, see sht. GJ)

(3) Sta. "L" 52+34
Const. modified Type D ditch inlet
Extend 18" culv. pipe - ~~16' Lt., 5' depth~~
- 4' Rt., 5' depth
Rim=23.8'
Match extg. slope
Const. paved end slope, Lt. - 30 sq.ft.
(Field verify)
(For details, see sht. GJ)

(4) Sta. "L" 59+52
~~Const. modified Type D ditch inlet~~
Extend 18" culv. pipe - 41' Lt., 5' depth
- 8' Rt., 5' depth
Rim=18.2'
Match extg. slope
(Field verify)
(For details, see sht. GJ)

(5) Sta. "L" 53+34.80, 31.3' Rt. to
Sta. "L" 56+87, 32.5' Rt.
~~Const. modified Type D ditch inlet~~
Inst. 12" storm sewer pipe - 52', 5' depth
Rim=25.4'
Sl.=0.4%
I.E.=23.90' (W)
I.E.=23.70' (E)
Regrade slope on downstream end to drain
Trench resurf. - 17.3 sq.yd.
(For details, see sht. GJ)

(6) Sta. "L" 52+70 to Sta. "L" 86+48, Lt.
Const. bioslope, DF1# D00561
(For details, see sht. GJ)

(7) Sta. "L" 52+50 to Sta. "L" 94+94, Rt.
Const. biofilter strip, DF1# D00560
(For details, see sht. GJ)

(8) Sta "L" 52+34 Lt.
Construct modified Type D ditch Inlet
Extend 18" CMP pipe West to Sta 52+33
5' depth

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CONTRACT 14479

Dave True, Project Manager DATE: 2/26/14

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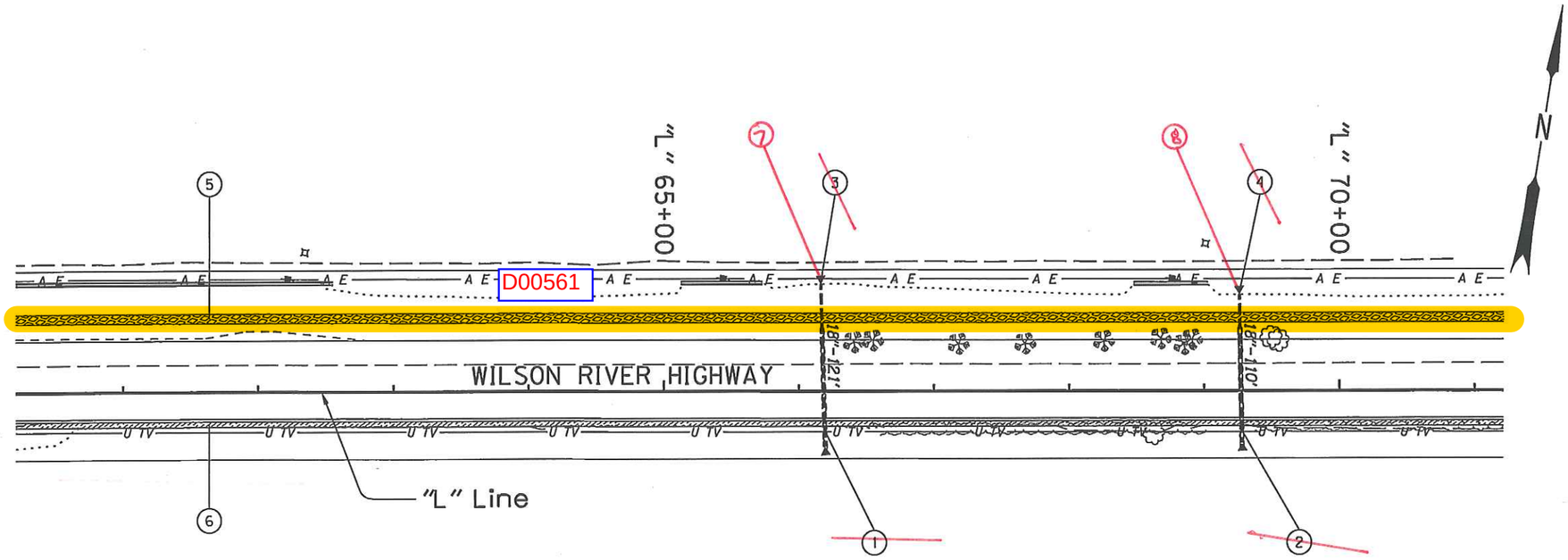
Drafted By - Linda Foote

STORMWATER PLAN

SHEET NO. GJ-7



~~1 Sta. "L" 66+17~~
~~Remove 18" pipe - 92'~~

~~2 Sta. "L" 69+26~~
~~Remove 18" pipe - 92'~~

3 Sta. "L" 66+17, 80' Lt. to 41' Rt.
Inst. 18" culv. pipe - 121', 5' depth
Sl.=2.08%
I.E.=13.40' (N)
I.E.=15.92' (S)
Const. paved end slope, Lt. & Rt. - 55 sq.ft.

4 Sta. "L" 69+26, 71.5' Lt. to 38.5' Rt.
Inst. 18" culv. pipe - 110', 5' depth
Sl.=0.5%
I.E.=15.68' (N)
I.E.+16.22' (S)
Const. paved end slope, Lt. & Rt. - 55 sq.ft.

5 See Sht. GJ-7, note 6
Const. bioslope

6 See Sht. GJ-7, note 7
Const. biofilter strip

7 STA "L" 66+17. 80' LT to 41' RT
EXTEND 18" CULVERT 20' Left
and Extend 10' RT
Construct paved End Slope Lt & RT

8 Sta "L" 69+26 71.5' Lt to 38.5' Rt
Extend 18" Culvert 20' LEFT
Extend 10' Rt
Construct Paved End Slopes Lt & RT

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Dave True, Project Manager DATE: 2/26/14

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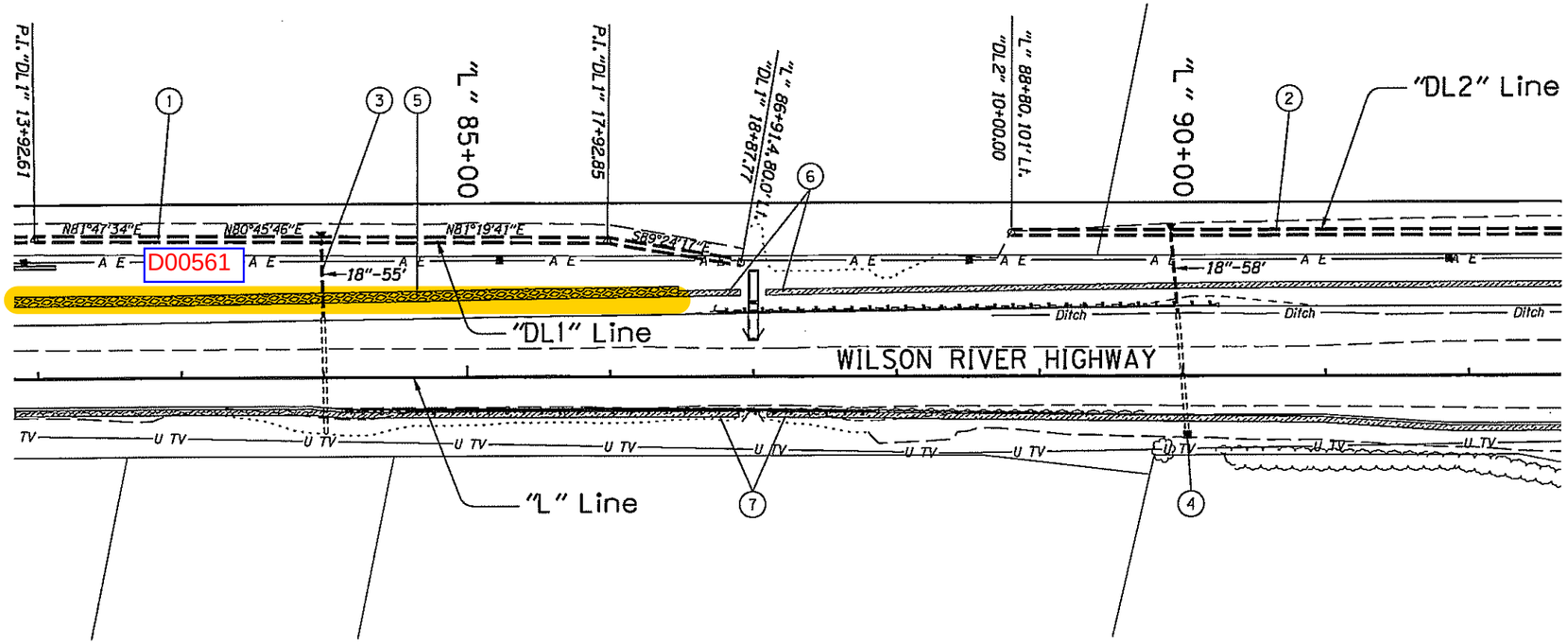
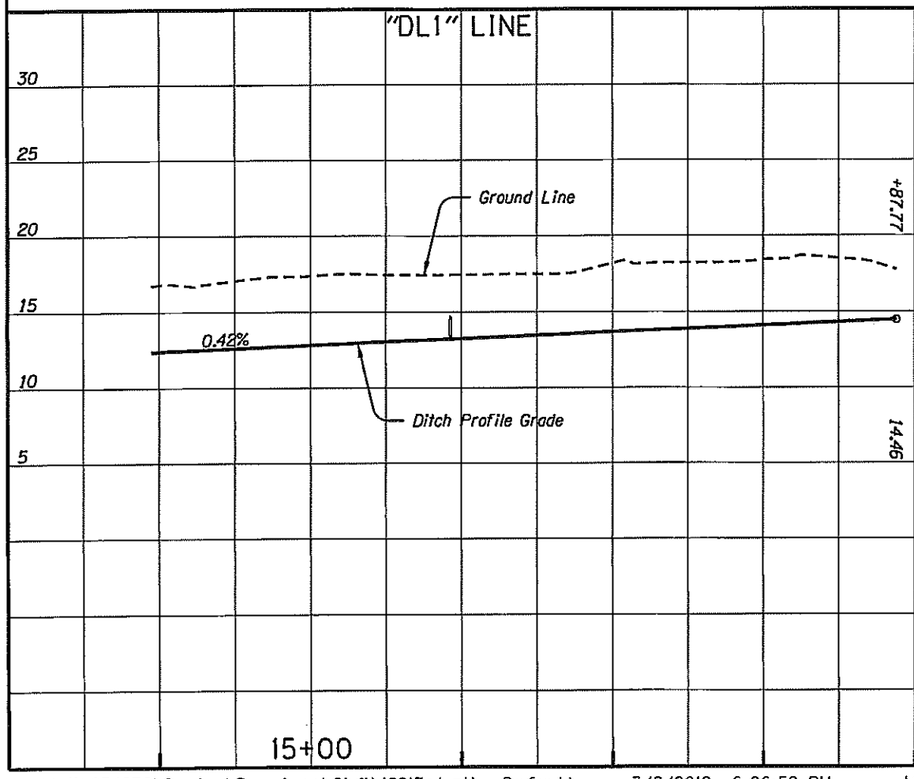
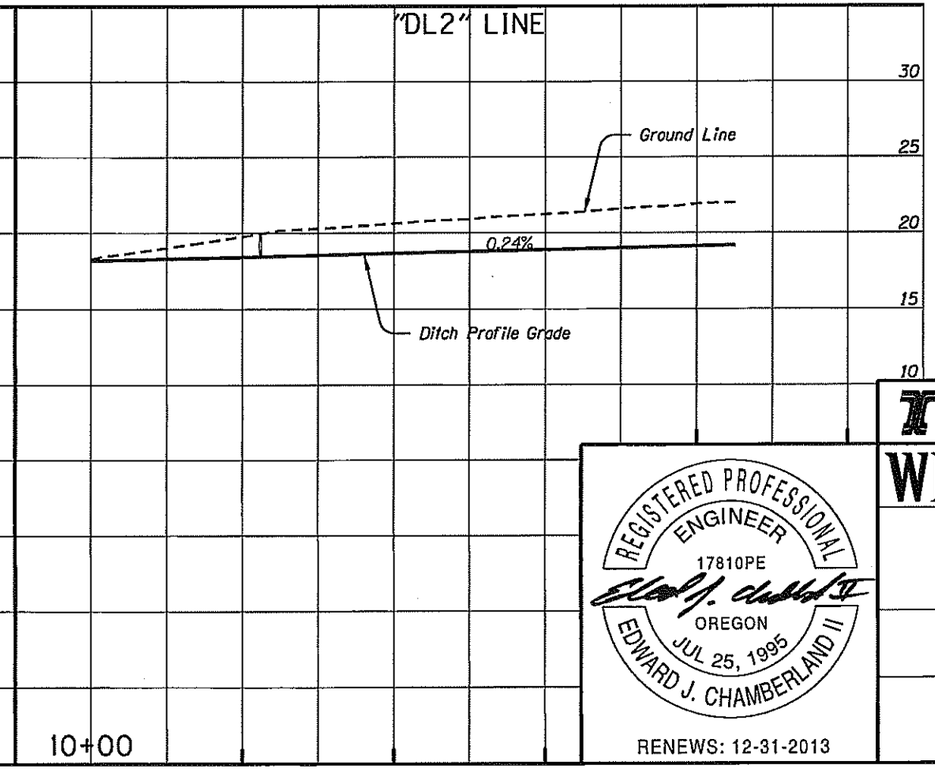
STORMWATER PLAN

SHEET NO. GJ-8



1. See Sht. GJ-9, note 1
   Const. ditch
2. Sta. "DL2" 10+00 to Sta. "DL2" 17+05
   Const. ditch
   "V" bottom, 1:4 slopes
3. Sta. "L" 83+98
   Extend 18" culv. pipe 55' Lt., 5' depth
   Match extg. slope
   Const. paved end slope, Lt. - 35 sq.ft.
4. Sta. "L" 89+96
   Const. modified Type D ditch inlet
   Extend 18" culv. pipe 58' Lt., 5' depth
   Rim=20.3'
   Match extg. slope
   Const. paved end slope, Lt. - 35 sq.ft.
   (For details, see sht. GJ)
5. See Sht. GJ-7, note 6
   Const. bioslope
6. Sta. "L" 86+48 to Sta. "L" 100+00, Lt.
   Const. biofilter strip, DF1# D00562
   (For details, see sht. GJ)
7. See Sht. GJ-7, note 7
   Const. biofilter strip





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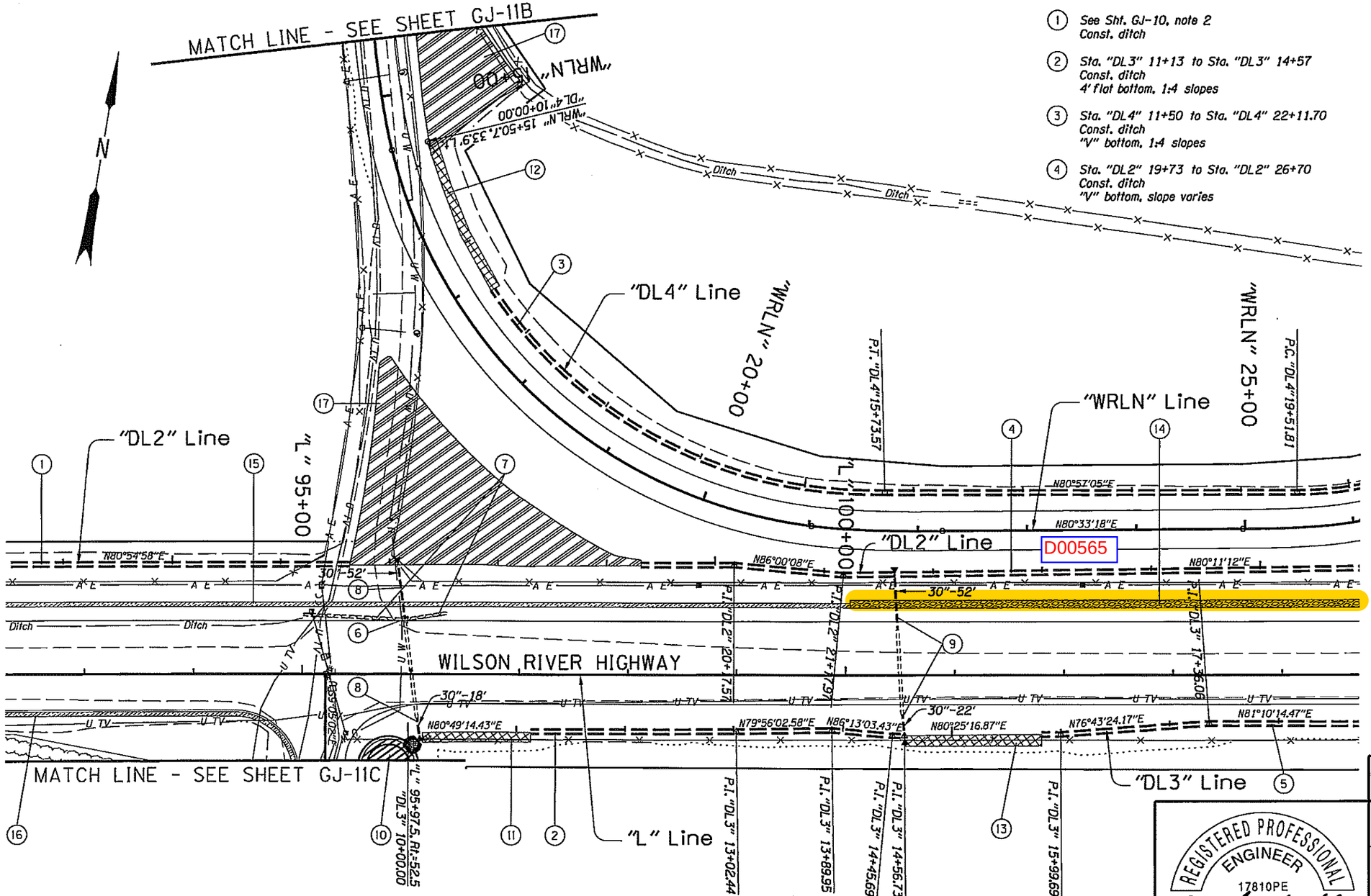
STORMWATER PLAN & PROFILE

SHEET NO. GJ-10



1. See Sht. GJ-10, note 2
   Const. ditch
2. Sta. "DL3" 11+13 to Sta. "DL3" 14+57
   Const. ditch
   4' flat bottom, 1:4 slopes
3. Sta. "DL4" 11+50 to Sta. "DL4" 22+11.70
   Const. ditch
   "V" bottom, 1:4 slopes
4. Sta. "DL2" 19+73 to Sta. "DL2" 26+70
   Const. ditch
   "V" bottom, slope varies
5. Sta. "DL3" 15+82 to Sta. "DL3" 21+05
   Const. ditch
   4' flat bottom, 1:4 slopes
6. Sta. "L" 95+94, 50' Lt.
   Remove storm junction box
7. Sta. "L" 95+01, 54.4' Lt.
   Remove 36" pipes - 133'
8. Sta. "L" 96+00
   Extend 30" culv. pipe - 52' Lt., 5' depth
   - 18' Rt., 5' depth
   Match extg. slope
   Const. paved end slope, Lt.& Rt.- 70 sq.ft.
9. Sta. "L" 100+50
   Extend 30" culv. pipe - 52' Lt., 5' depth
   - 22' Rt., 5' depth
   Match extg. slope
   Const. paved end slope, Lt.& Rt.- 110 sq.ft.
10. Const. biofiltration pond, DFI# D00572
    (For details, see sht. GJ-3)
11. Sta. "DL3" 10+00 to Sta. "DL3" 11+13
    Const. bioswale, DFI# D00563
    (For details, see sht. GJ-2)
12. Sta. "DL4" 10+00 to Sta. "DL4" 11+50
    Const. bioswale, DFI# D00570
    (For details, see sht. GJ-2)
13. Sta. "DL3" 14+57 to Sta. "DL3" 15+82
    Const. bioswale, DFI# D00564
    (For details, see sht. GJ-2)
14. Sta. "L" 100+00 to Sta. "L" 109+00. Lt.
    Const. bioslope, DFI# D00565
    (For details, see sht. GJ)
15. See Sht. GJ-10, note 6
    Const. biofilter strip
16. See Sht. GJ-7, note 7
    Const. biofilter strip
17. Const. wetlands shown thus
    (For drg. nos., see sht. 1A)

D00565

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OR6 @ WILSON RIVER LOOP ROAD SEC.
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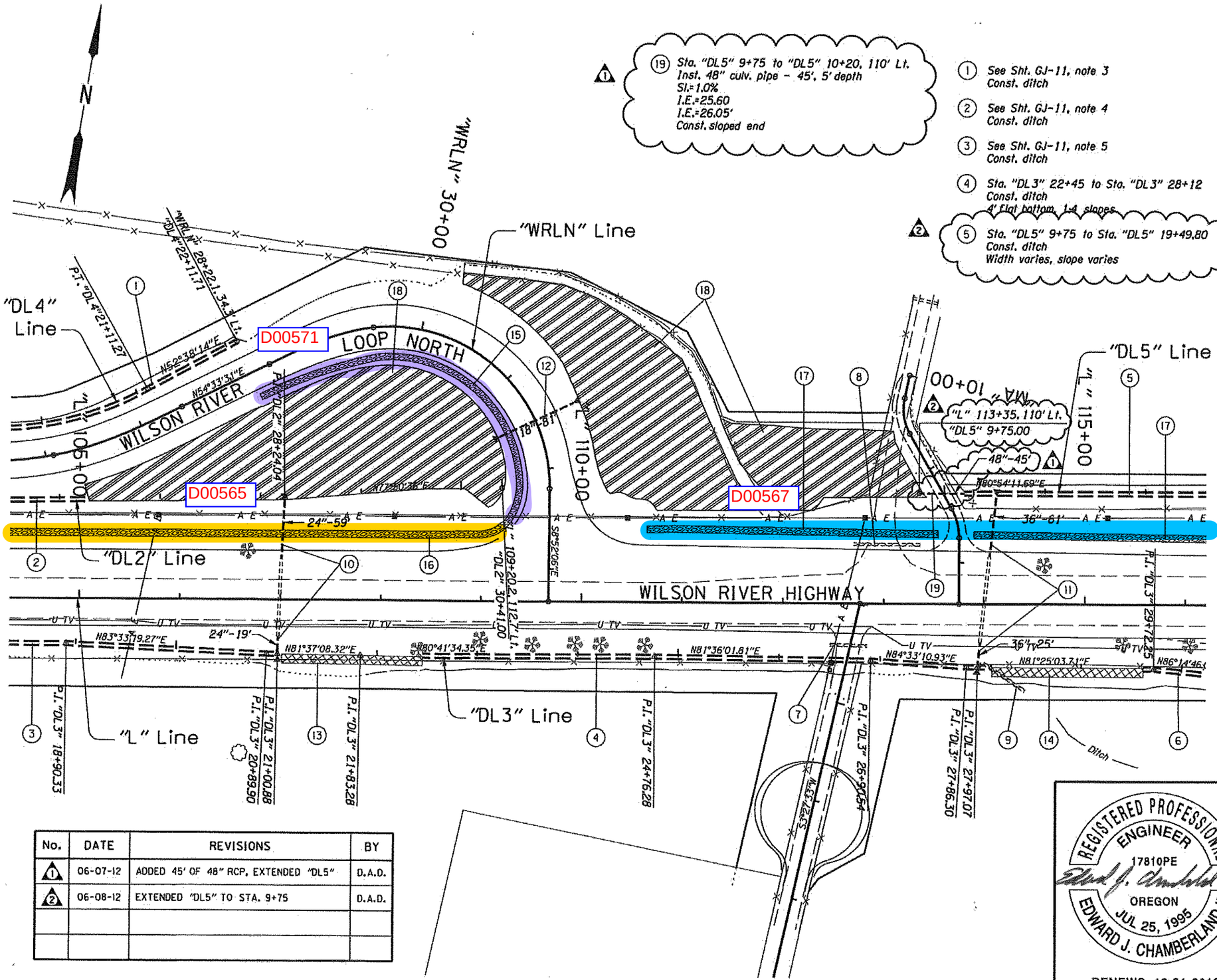
Drafted By - Linda Foote

STORMWATER PLAN

SHEET NO. GJ-11

45V-035



1. 19 Sta. "DL5" 9+75 to "DL5" 10+20, 110' Lt.
Inst. 48" culv. pipe - 45', 5' depth
Sl.= 1.0%
I.E.=25.60
I.E.=26.05'
Const. sloped end

1. See Sht. GJ-11, note 3
Const. ditch
2. See Sht. GJ-11, note 4
Const. ditch
3. See Sht. GJ-11, note 5
Const. ditch
4. Sta. "DL3" 22+45 to Sta. "DL3" 28+12
Const. ditch
4' flat bottom, 1:4 slopes

2. 5 Sta. "DL5" 9+75 to Sta. "DL5" 19+49.80
Const. ditch
Width varies, slope varies

6. Sta. "DL3" 29+62 to Sta. "DL3" 47+43.80
Const. ditch
4' flat bottom, 1:4 slopes
7. Sta. "L" 112+47, 41' Rt.
Remove 24" pipe - 45'
8. Sta. "L" 112+70, 59' Lt.
Remove 48" pipe - 66'
9. Sta. "L" 114+00, 59' Rt.
Remove 24" pipe - 50'
10. Sta. "L" 107+00
Extend 24" culv. pipe - 59' Lt., 5' depth
- 19' Rt., 5' depth
Match exist. slope
Const. paved end slope, Lt.& Rt.- 88 sq.ft.
11. Sta. "L" 114+00
Extend 36" culv. pipe - 61' Lt., 5' depth
- 25' Rt., 5' depth
Match exist. slope
Const. paved end slope, Lt.& Rt.- 115 sq.ft.
12. Sta. "WRLN" 31+50, 42' Lt. to 39' Rt.
Inst. 18" culv. pipe - 81', 5' depth
Sl.= 1.25%
I.E.=25.00' (SW)
I.E.=26.00' (NE)
Const. paved end slope, Lt.& Rt.- 70 sq.ft.
13. Sta. "DL3" 21+05 to Sta. "DL3" 22+45
Const. bioswale, DF1# D00566
(For details, see sht. GJ-2)
14. Sta. "DL3" 28+12 to Sta. "DL3" 29+62
Const. bioswale, DF1# D00568
(For details, see sht. GJ-2)
15. Sta. "WRLN" 28+20 to Sta. "WRLN" 32+60
Const. bioslope, DF1# D00571
16. See Sht. GJ-11, note 14
Const. bioslope
17. Sta. "L" 110+60 to Sta. "L" 122+00
Const. bioslope, DF1# D00567
(For details, see sht. GJ)
18. Const. wetlands shown thus
(For drg. nos., see sht. 1A)

No.	DATE	REVISIONS	BY
1	06-07-12	ADDED 45' OF 48" RCP, EXTENDED "DL5"	D.A.D.
2	06-08-12	EXTENDED "DL5" TO STA. 9+75	D.A.D.

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OR6 @ WILSON RIVER
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WILSON RIVER HIGHWAY
TILLAMOOK COUNTY

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Drafted By - Linda Foote

STORMWATER PLAN

SHEET NO. GJ-12

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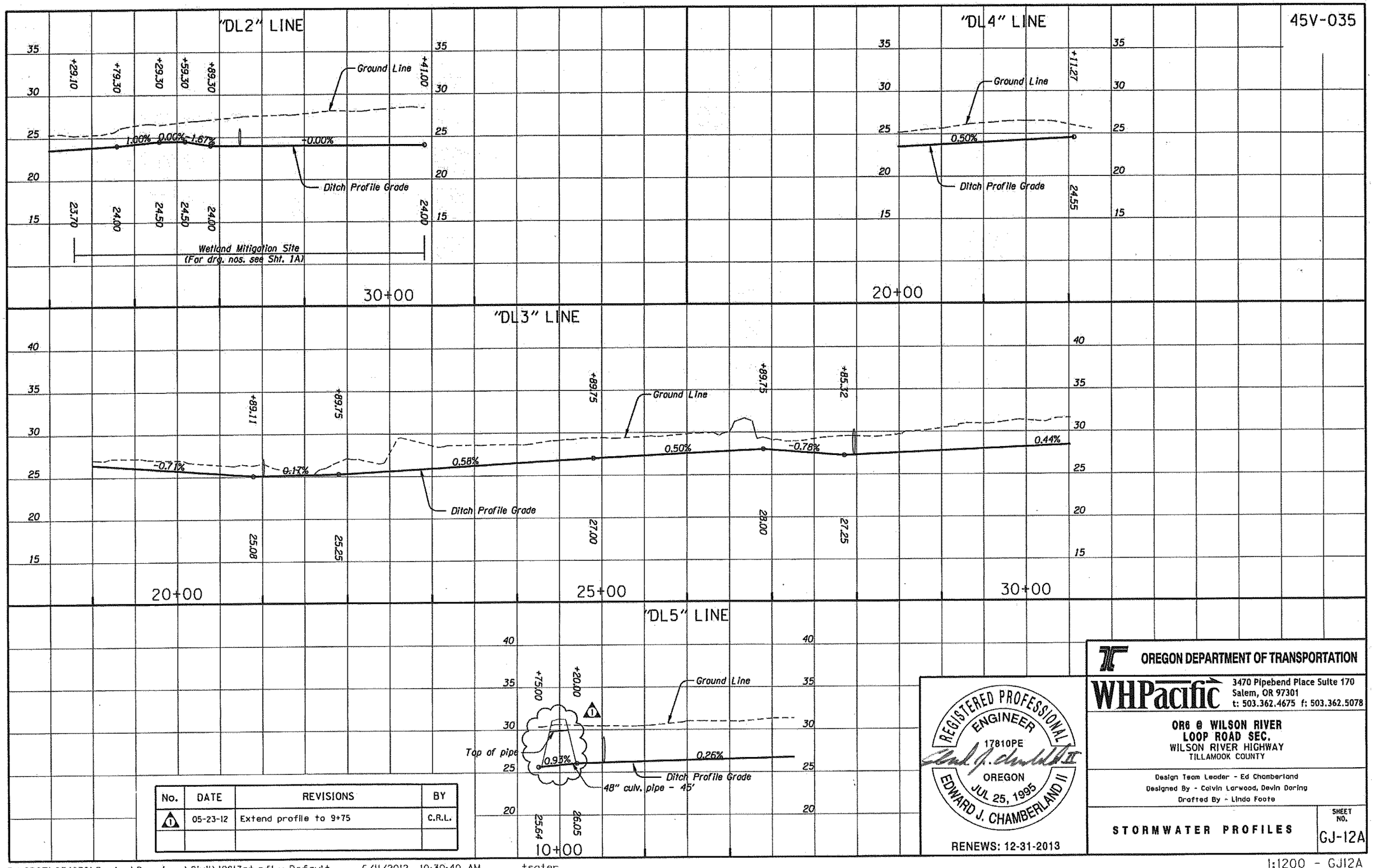

No.	DATE	REVISIONS	BY
1	05-23-12	Extend profile to 9+75	C.R.L.

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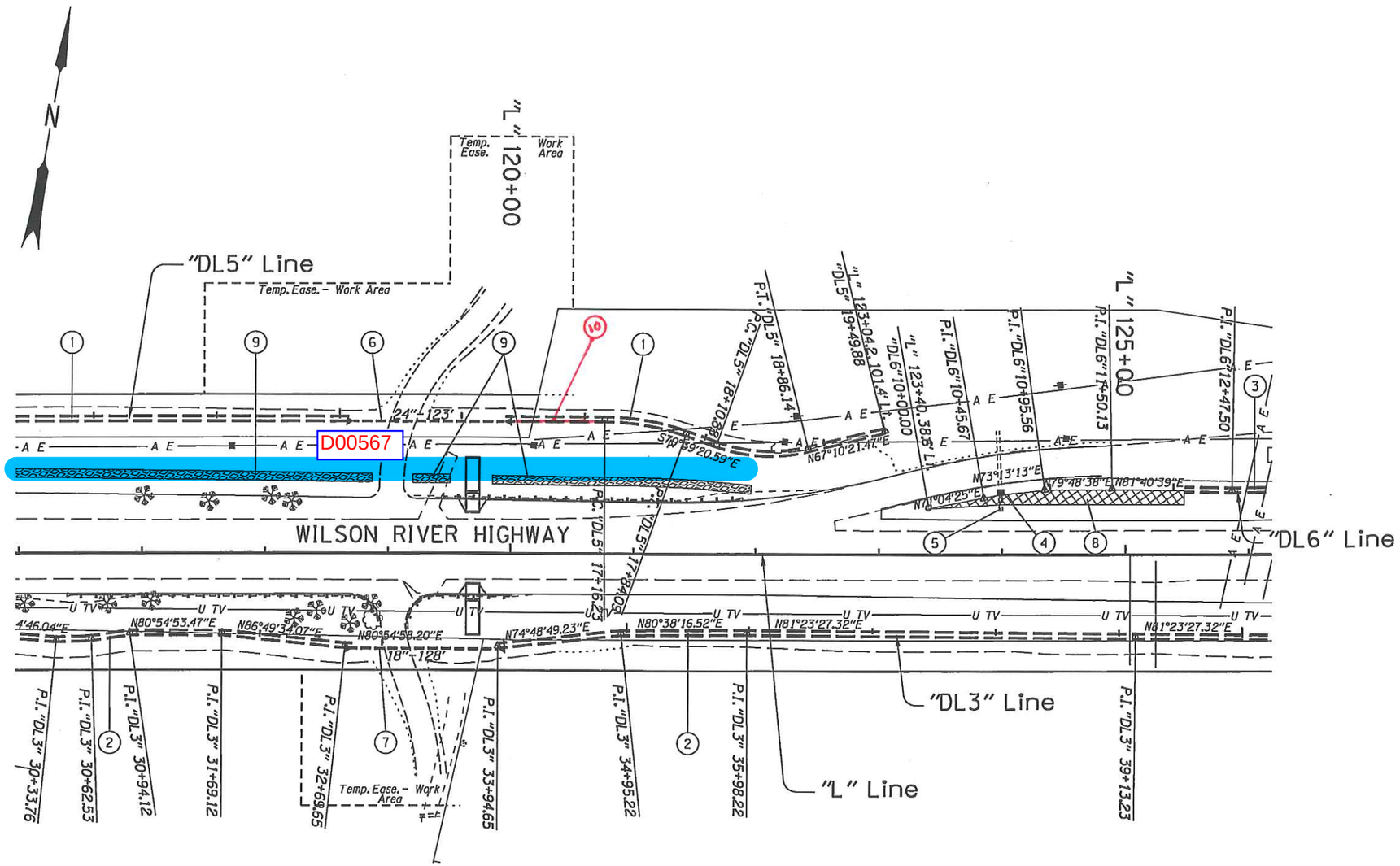
STORMWATER PROFILES

SHEET NO. GJ-12A



1. See Sht. GJ-12, note 5
   Const. ditch
2. See Sht. GJ-12, note 6
   Const. ditch
3. Sta. "DL6" 12+10 to Sta. "DL6" 19+10.70
   Const. ditch, width varies
4. Sta. "DL6" 10+60, 2.8' Lt.
   Const. modified Type D ditch inlet
   Rim=36.2'
   Connect to extg. pipe
   (For details, see sht. GJ)
5. Sta. "L" 123+99, 35.8' Lt.
   Remove 15' of 18" pipe
6. Sta. "DL5" 15+11.40 to
   Sta. "DL5" 16+34.62, 2' Rt.
   Inst. 24" culv. pipe - 123', 5' depth
   I.E.=27.34' (W)
   I.E.=27.68' (E)
   Const. paved end slope, Lt. & Rt. - 88 sq.ft.
7. Sta. "DL3" 32+75.60, 2.25' Rt. to
   Sta. "DL3" 33+94.70, 2.5' Rt.
   Inst. 18" culv. pipe - 128', 5' depth
   I.E.=29.43' (W)
   I.E.=30.03' (E)
   Const. paved end slope, Lt. & Rt. - 70 sq.ft.
8. Sta. "DL6" 10+00 to Sta. "DL6" 12+10
   Const. bioswale, width varies, DFI# D00569
   (For details, see sht. GJ-2)
9. See Sht. GJ-12, note 17
   Const. bioslope

10 Sta "DL5" 16+34.62 to 16+90.62 2' RT EXTEND 24" culvert pipe - 56' 5' depth I.E. = 27.83' (E)

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Dave True, Project Manager DATE: 2/26/14

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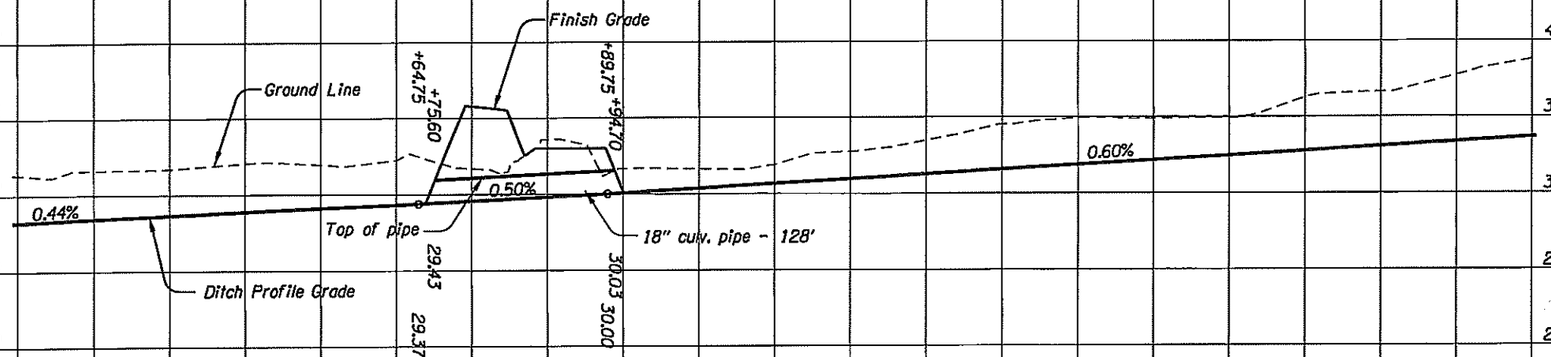
Drafted By - Linda Foote

STORMWATER PLAN

SHEET NO. GJ-13

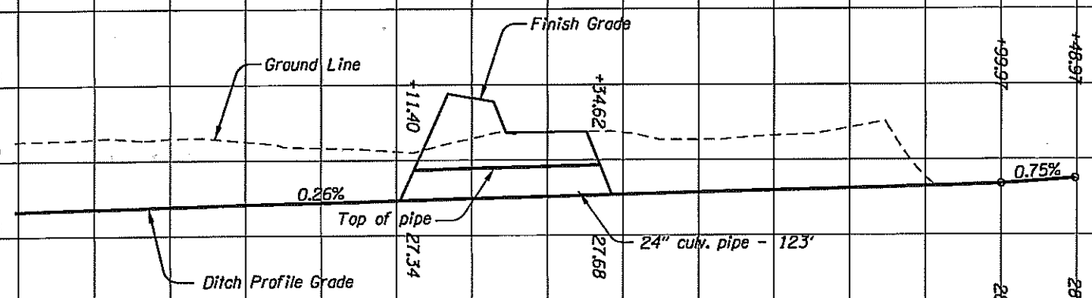
45V-035

"DL3" LINE



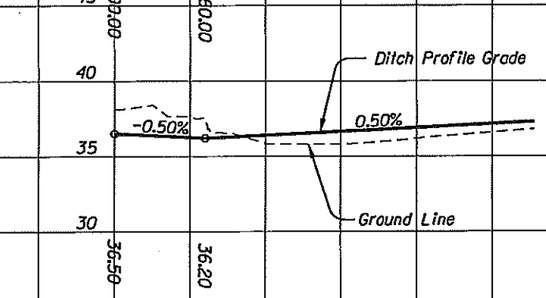
30+00 35+00 40+00

"DL5" LINE



15+00 20+00

"DL6" LINE



10+00

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STORMWATER PROFILES

SHEET NO. GJ-13A

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