OPERATION & MAINTENANCE MANUAL

Water Quality Filter Strip

Manual prepared: August, 2019

DFI No. D00841

Figure 1: DFI No. D00841, looking south

1. Identification

Drainage Facility ID (DFI):	D00841
Facility Type:	Water Quality Filter Strip
Construction Drawings:	(V-File Numbers) 47V-086
Location:	District: 5
	Highway No.: 091
	Mile Post: 121.79 to 121.85, [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: southwest to northeast

Figure 2: [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)
Filter Strip	**305**	**8**

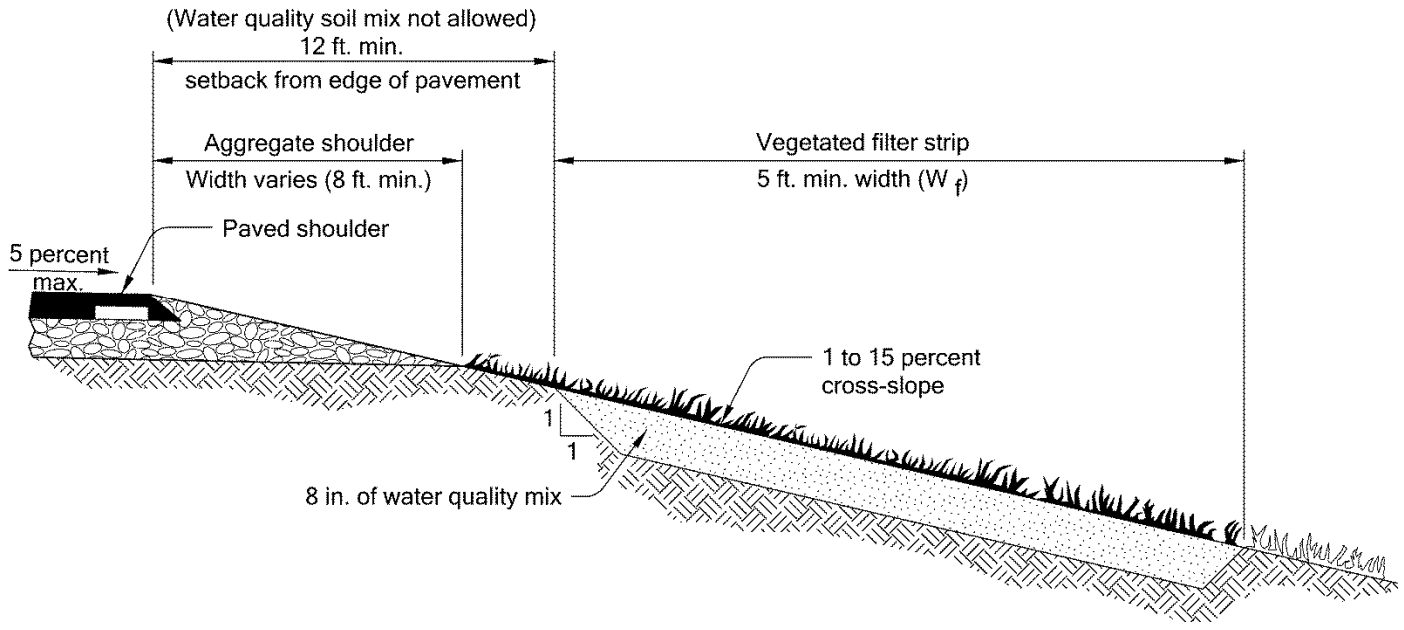


Figure 3: Filter Strip Section

Site Specific Information:

Roadway storm runoff flows pass thru existing curb cuts, across concrete splash pad, then over granular flow spreader before entering the filter strip for treatment. At high flows, storm water is conveyed through the filter strip then enters the storm drain inlet northeast of the filter strip.

5. Facility Access

Maintenance access to the facility:

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

Figure 4: 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 October, 2018) 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/Filter Strip Components		ID #
Facility Inlet		
Pavement Sheet Flow	☒	**B1**
Flow Spreader	☒	**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

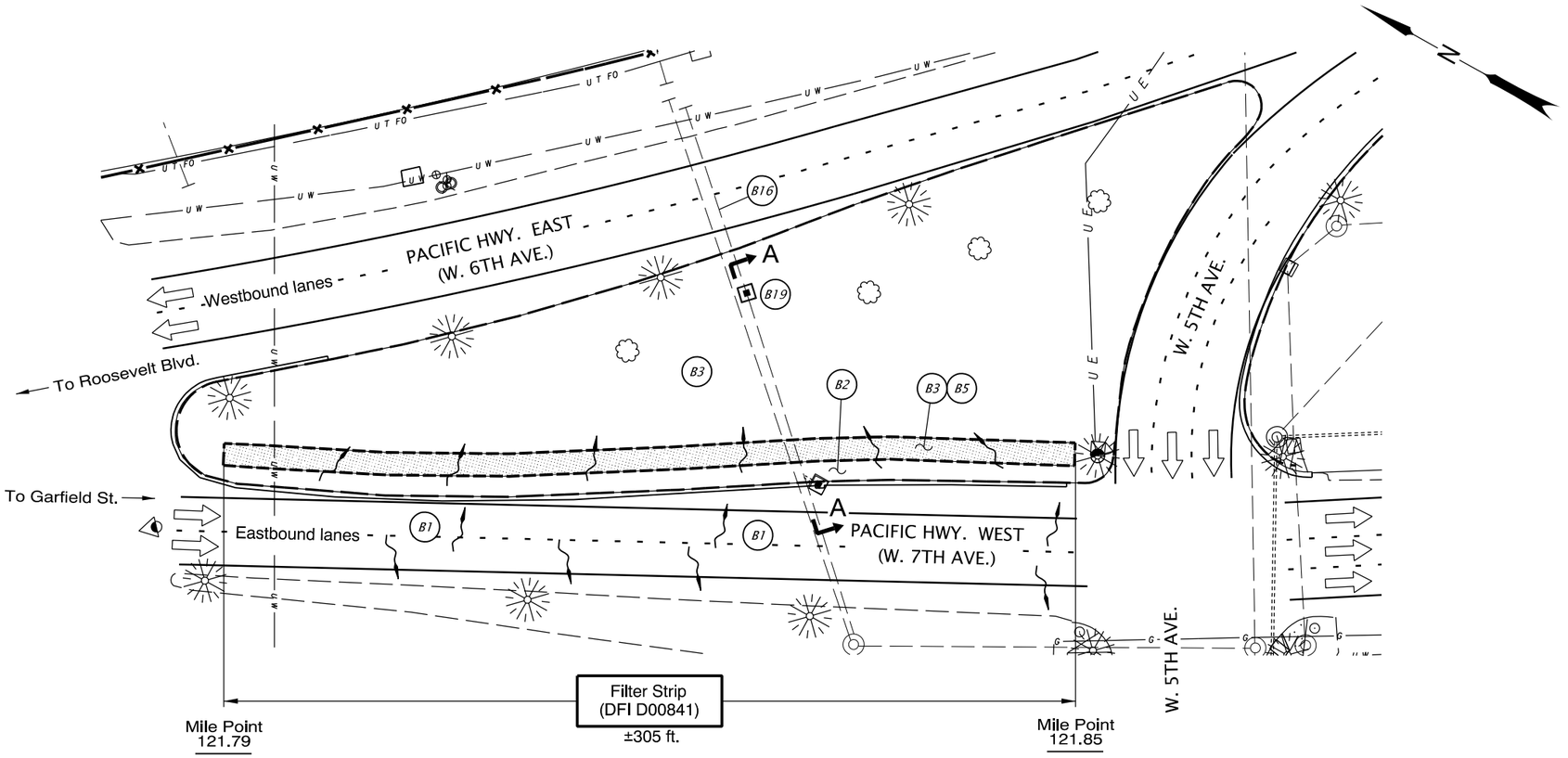
A Appendix A – Site Specific Operational Plan

Contents:

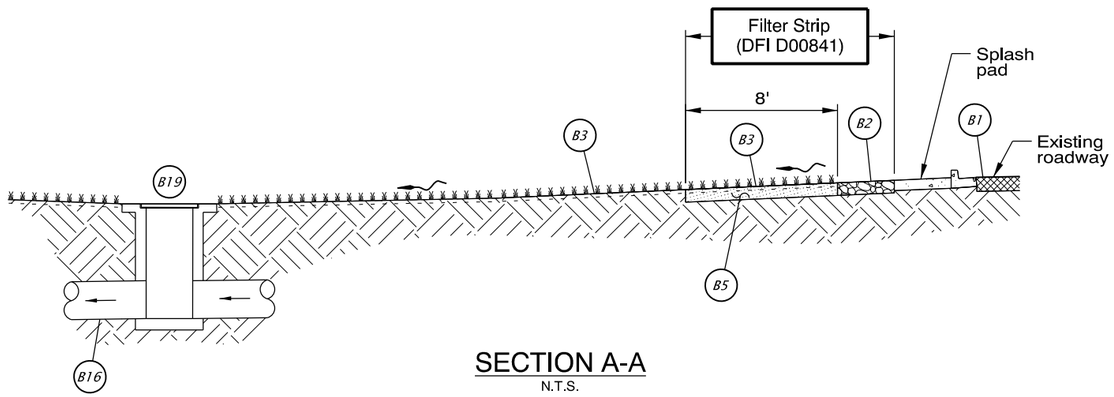
Operational Plan: DFI D00841

LEGEND:

- Photo Location / Direction
- B# — Facility Component (see table 1 in O&M Manual)
- Manhole
- Inlet
- Sheet Flow Filter Area
- Conveyance Direction
- Pavement / Facility Flow Path



PLAN
N.T.S.



SECTION A-A
N.T.S.

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Chris Carman

Drafted By: Michael Skelton

DFI D00841
MAINTENANCE DISTRICT 5 OR99
WATER QUALITY FILTER STRIP
PACIFIC HIGHWAY WEST MP 121.79 LT.
LANE COUNTY

D00841.dgn :: D00841 8/12/2019 9:42:17 AM hwye31g

Rotation: 298.9893° Scale: 1"=50'

B Appendix B – Project Contract Plans

Contents:

Site Specific Subset of Project Contract Plan 47V-086

47V-086

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

STATE OF OREGON

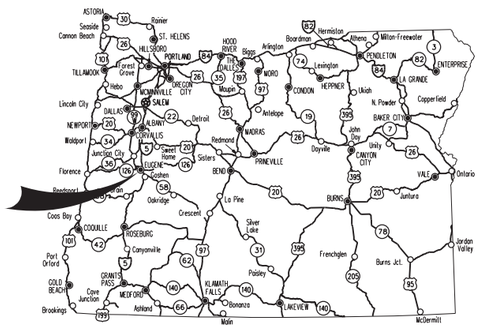
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, STRUCTURES, PAVING, & SIGNALS

OR99: ROOSEVELT BLVD - GARFIELD ST
BIKE / PED (EUGENE) SEC.

PACIFIC HIGHWAY WEST
LANE COUNTY
OCTOBER 2014



Overall Length Of Project - 1.11 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

BEGINNING OF PROJECT

STA. "L" 616+20 (M.P. 121.14)
STA. "P" 616+20

N

T. 17 S., R. 4 W., W.M.

REVISED AS CONSTRUCTED
10-15-16 CONTRACT 14706
PROJ. MGR. Steve Templin, P.E.

STA. "L" 642+00 P.O.T.
STA. "SB" 641+99.98, (26' LT.) P.O.B.
STA. "P" 642+05.05, (62.40' LT.) P.O.T.

END OF PROJECT

STA. "SB" 674+96.80 (M.P. 122.25)

OREGON TRANSPORTATION COMMISSION

David Lohman	ACTING CHAIR
Tammy Baney	COMMISSIONER
Mark Frohnmayer	COMMISSIONER
Susan Morgan	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING

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

Jeff W. Olson, Principal Engineer
Print name and title

_____
Concurrence by ODOT Chief Engineer

OR99: ROOSEVELT BLVD - GARFIELD ST BIKE/PED (EUGENE) SEC.
PACIFIC HWY WEST
LANE COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STP-S091(070)	1

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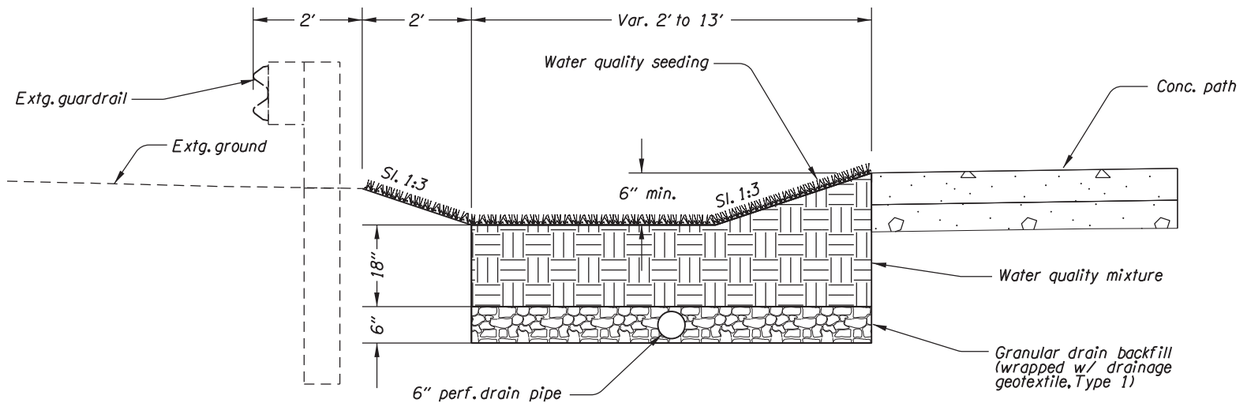
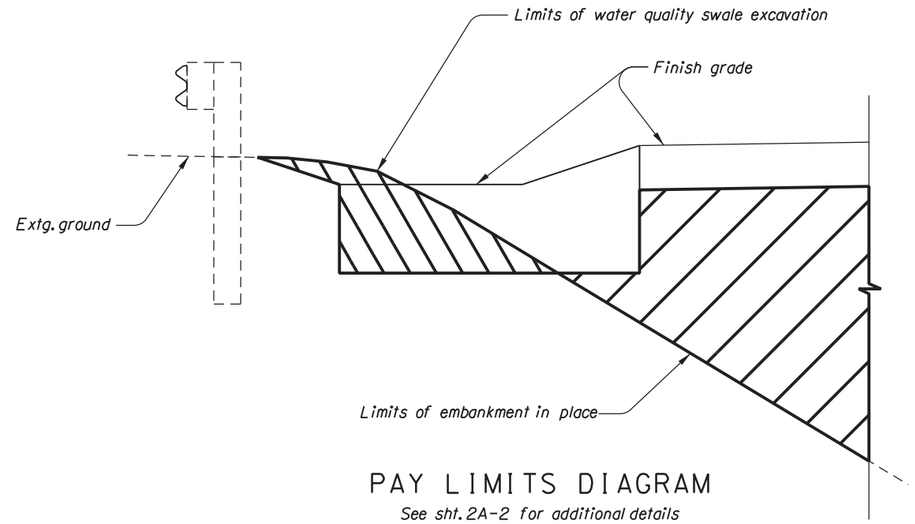
47V-086
REVISED AS CONSTRUCTED
10-15-16 CONTRACT 14706



TYPICAL SECTION



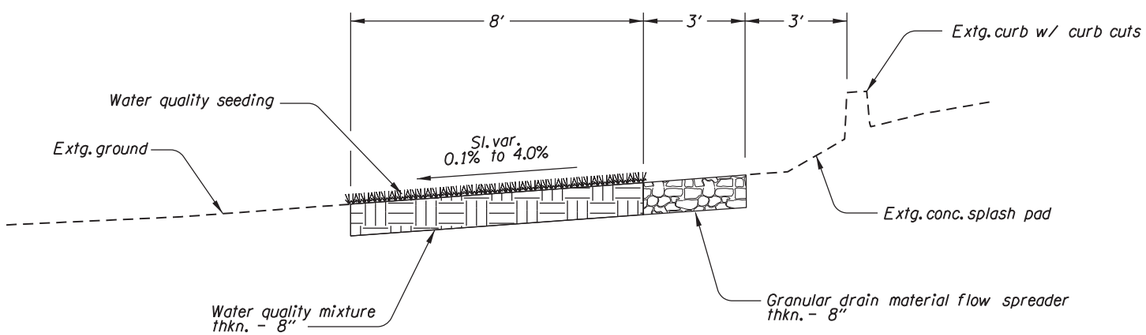
PAY LIMITS DIAGRAM

See sht. 2A-2 for additional details
(Not to Scale)

NOTES:
1. See Section 01012 for additional details and requirements.

WATER QUALITY SWALE

See sht. 3B, Note 1 and sht. 6B, Note 1
(Not to Scale)



WATER QUALITY FILTER STRIP

See sht. 9B, Note 7
(Not to Scale)

NOTES:
1. See Section 01014 for additional details and requirements.

REGISTERED PROFESSIONAL ENGINEER
56205PE
OREGON
May 13, 2003
RUSSELL W. NORTON
RENEWS: 12-31-2014

OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING

OR99: ROOSEVELT BLVD - GARFIELD ST
BIKE/PED (EUGENE) SEC.
PACIFIC HWY WEST
LANE COUNTY

Design Team Leader - Russell W. Norton
Designed By - Scott D. Robinson-Tscheu
Drafted By - RWN / SDRT

DETAILS

SHEET NO.
2B-2

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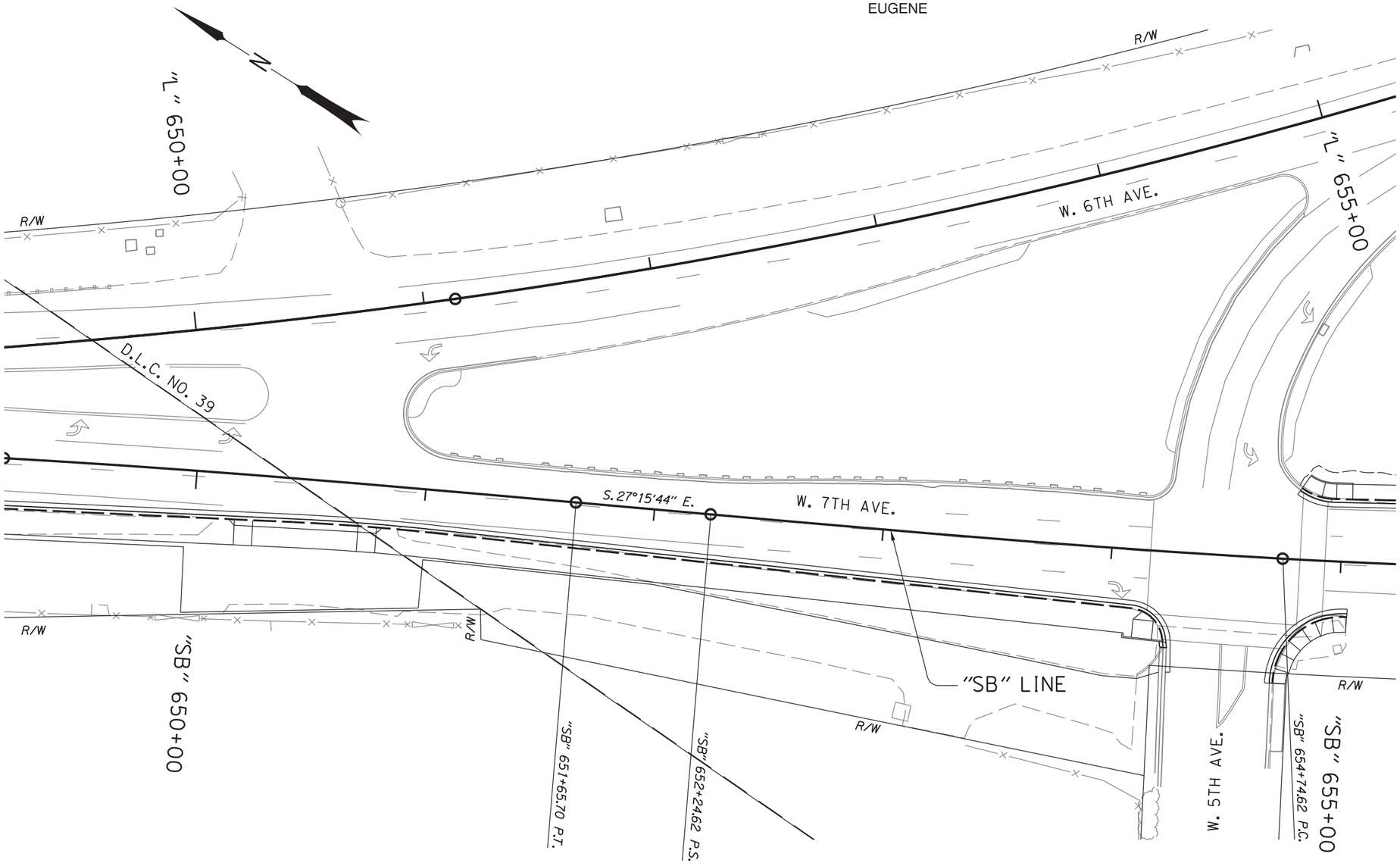
Sec. 26, 35 T. 17 S., R. 4 W., W.M.
EUGENE

47V-086
REVISED AS CONSTRUCTED
10-15-16 CONTRACT 14706



"SB"
1°15'00" C.L.
TΔ 5°00'00"
Ts 291.80'
2 - 250.00' Sp.
S 1°52'30"
a 0.600

REGISTERED PROFESSIONAL ENGINEER
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OREGON
May 13, 2003
RUSSELL W. NORTON
RENEWS: 12-31-2014

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LANE COUNTY

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Drafted By - RWN / SDRT

ALIGNMENT

SHEET NO. 9

Sec. 26, 35, T. 17 S., R. 4 W., W.M.
EUGENE

47V-086
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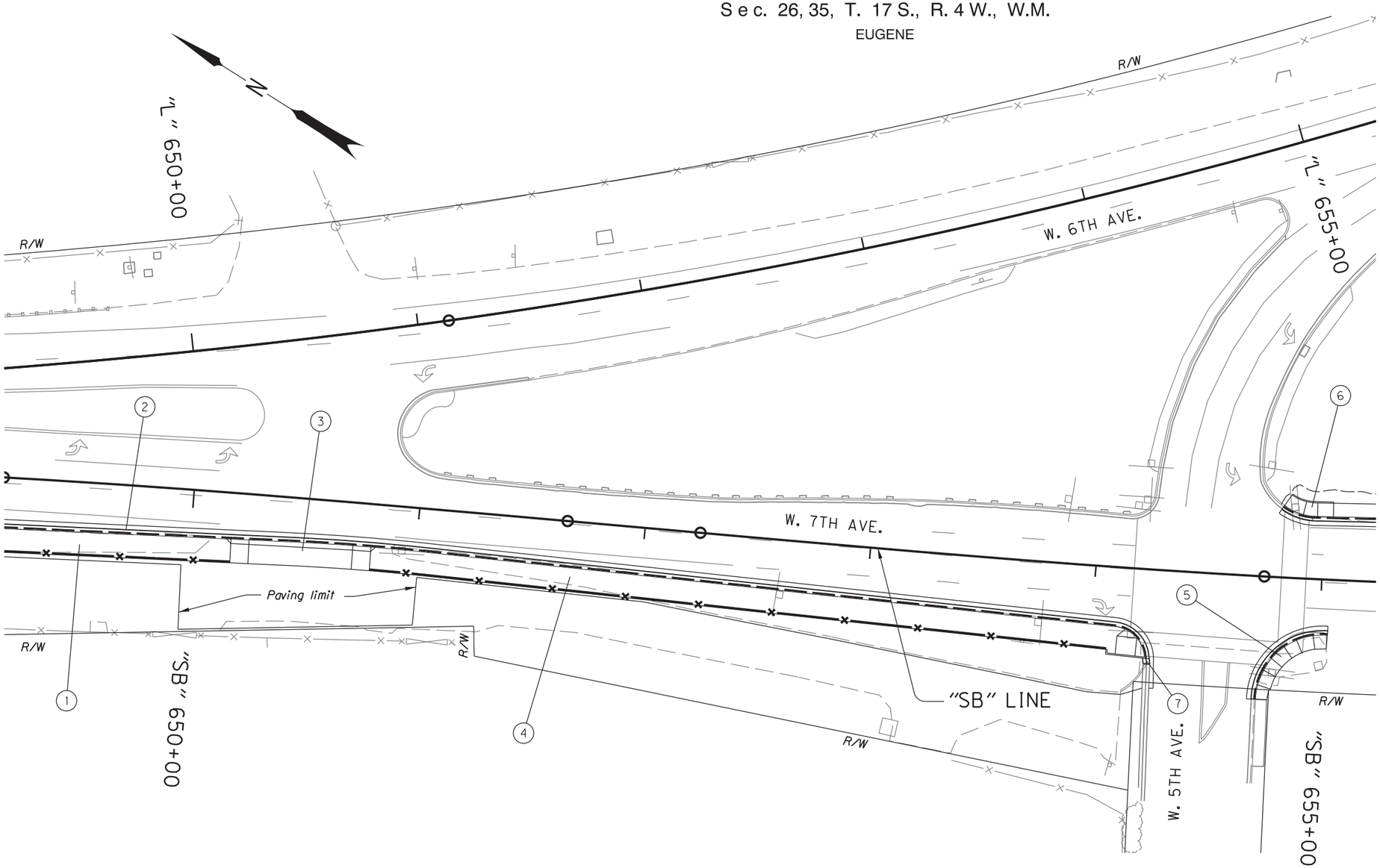
10-15-16 CONTRACT 14706



(1) See sht. 7A, Note 3
Const. PCC conc. walk, 7"
Const. Retaining Wall No. 2
Cast-in-place conc. rigid gravity
Const. CL-4 chain-link fence w/ black vinyl clad fabric and galvanized posts

(2) See sht. 7A, Note 4
Const. curb and gutter

(3) Sta. "SB" 650+17.83 to Sta. "SB" 650+79.96 Rt.
Const. conc. driveway, option F - 651 sq. ft.
46' width

(4) Sta. "SB" 650+79.96 to Sta. "SB" 654+24.70 Rt.
Const. PCC conc. walk, 7" - 3,603 sq. ft.
Const. sidewalk ramp, perpendicular, single flare
Const. Retaining Wall No. 3
Cast-in-place conc. rigid gravity
Const. CL-4 chain-link fence w/ black vinyl clad fabric and galvanized posts - 328'
(For details, see shts. GC-5, GC-6, & GC-7)
(See drg. no. RD755)

(5) Sta. "SB" 654+73.10 to Sta. "SB" 655+03.61 Rt.
Const. curb and gutter - 49'
Const. PCC conc. walk, 4" - 253 sq.ft.
Const. sidewalk ramp, parallel, option H - 2
(See drg. no. RD757)

(6) Sta. "SB" 654+80.68 to Sta "SB" 657+20.17 Lt.
Const. curb and gutter - 238'
Const. PCC conc. walk, 4" - 1,417 sq. ft.
Const. sidewalk ramp, parallel, option H

(7) Sta. "SB" 654+25, Rt.
Const. valley gutter conc. surfacing - 40 sq.ft.

REGISTERED PROFESSIONAL ENGINEER
56205PE
OREGON
May 13, 2003
RUSSELL W. NORTON
RENEWS: 12-31-2014

OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING

OR99: ROOSEVELT BLVD - GARFIELD ST BIKE/PED (EUGENE) SEC.
PACIFIC HWY WEST
LANE COUNTY

Design Team Leader - Russell W. Norton
Designed By - Scott D. Robinson-Tscheu
Drafted By - RWN / SDRT

GENERAL CONSTRUCTION

SHEET NO. 9A

Sec. 26, 35, T. 17 S., R. 4 W., W.M.

EUGENE

47V-086

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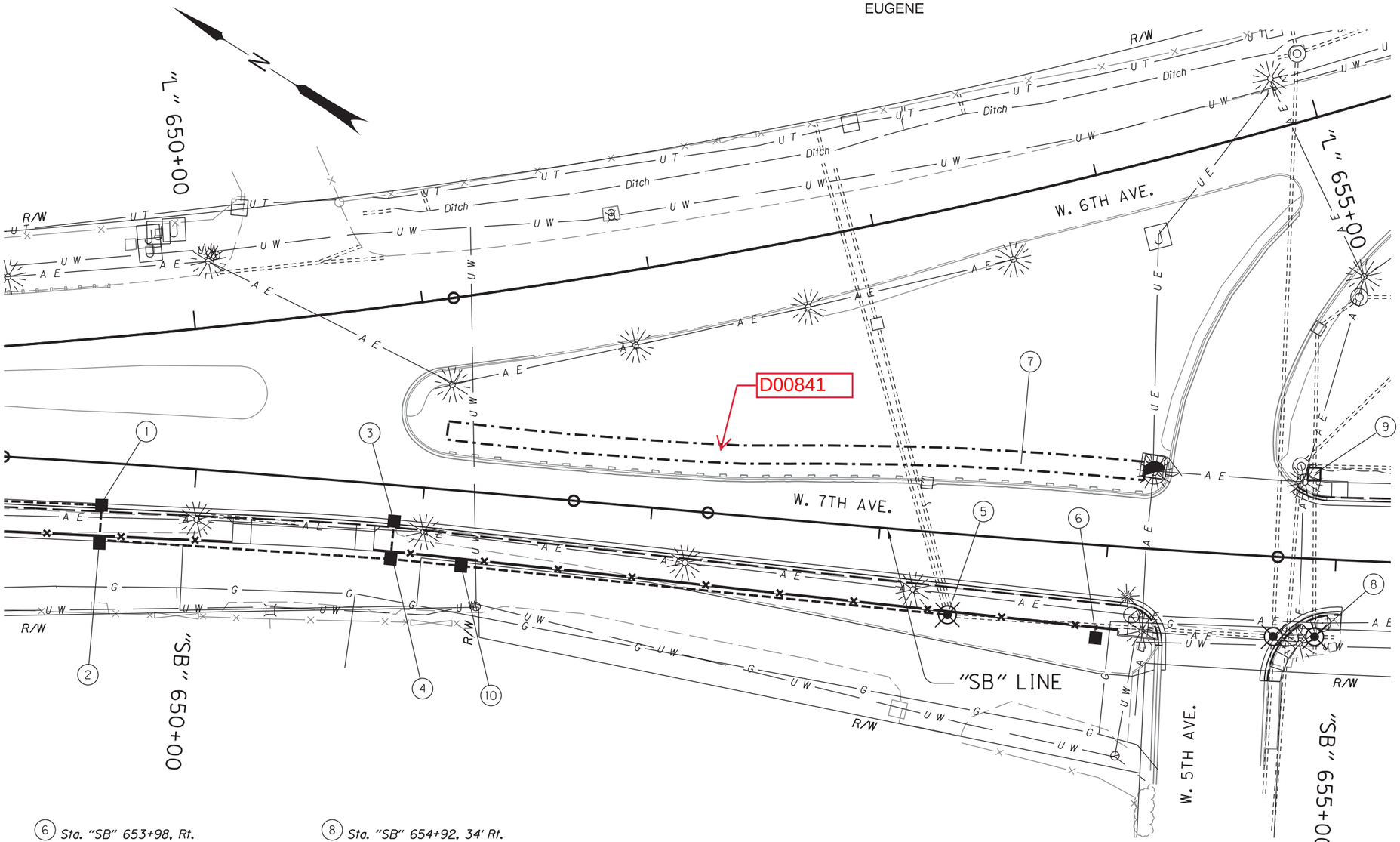
10-15-16 CONTRACT 14706



1. Sta. "SB" 649+60, Rt.
   Const. type CG-3 inlet
   Inst. 12" storm sewer pipe - 136'
   5' depth
   S = 0.005 ft/ft
   I.E. north (12" in) - 405.16
   I.E west (12" out) - 405.15

2. Sta. "SB" 649+60, Rt.
   Const. type G-2 inlet
   Inst. 12" storm sewer pipe - 14'
   5' depth
   S = 0.021 ft/ft
   I.E. east (12" in) - 404.87
   I.E. south (12" out) - 404.86

3. Sta. "SB" 650+88, Rt.
   Const. type CG-3 inlet
   I.E. west (12" out) - 402.54±

4. Sta. "SB" 650+88, Rt.
   Const. type G-2 inlet
   Inst. 12" storm sewer pipe (north) - 128'
   5' depth
   S = 0.008 ft/ft
   Inst. 12" storm sewer pipe (east) - 14'
   5' depth
   S = 0.021 ft/ft
   I.E. north (12" in) - 404.21
   I.E. east (12" in) - 404.11
   I.E. south (12" out) - 403.91

5. Sta. "SB" 653+33, 35.4' Rt.
   Inst. 12" storm sewer pipe (north) - 213'
   10' depth
   S = 0.008 ft/ft
   Connect to extg. manhole
   I.E. north (12" in) - 400.29±
   I.E. south (12" in) - 400.30±
   Minor adjust storm sewer manhole
   (See drg. nos. RD335, RD336, RD356, & RD360)

NOTES:
1. Utilities in conflict to be relocated by others prior to construction unless otherwise noted. See Section 00150.50 for details.
2. Field verify elevation call-outs noted with "±".
3. For drainage profile, see sht. 9C.

6. Sta. "SB" 653+98, Rt.
   Const. type G-2 inlet
   Inst. 12" storm sewer pipe - 6'
   10' depth
   S = 0.005 ft/ft
   I.E. north (12" out) - 399.10±
   Connect to extg. 24" conc. pipe

7. Sta. "SB" 651+08 to Sta. "SB" 654+13
   Const. water quality filter strip
   DFI No. D00841
   8' width
   (For details, see sht. 2B-2)

8. Sta. "SB" 654+92, 34' Rt.
   Minor adjust storm sewer manhole

9. Sta. "SB" 654+88, 37' Lt.
   Cap inlet
   (See drg. no. RD376)

10. Sta. "SB" 651+19 35.4' Rt
    Const. type. G-3 inlet W/ Option 1 Top
    Inst. 12" storm sewer pipe (north) - 31'
    5' depth
    S = 0.008 ft/ft
    I.E. north (12") - 403.66
    I.E. south (12") - 401.99

REGISTERED PROFESSIONAL ENGINEER
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OREGON DEPARTMENT OF TRANSPORTATION

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OR99: ROOSEVELT BLVD - GARFIELD ST BIKE/PED (EUGENE) SEC.
PACIFIC HWY WEST
LANE COUNTY

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Drafted By - RWN / SDRT

DRAINAGE & UTILITIES

SHEET NO. 9B

"SB" LINE

47V-086
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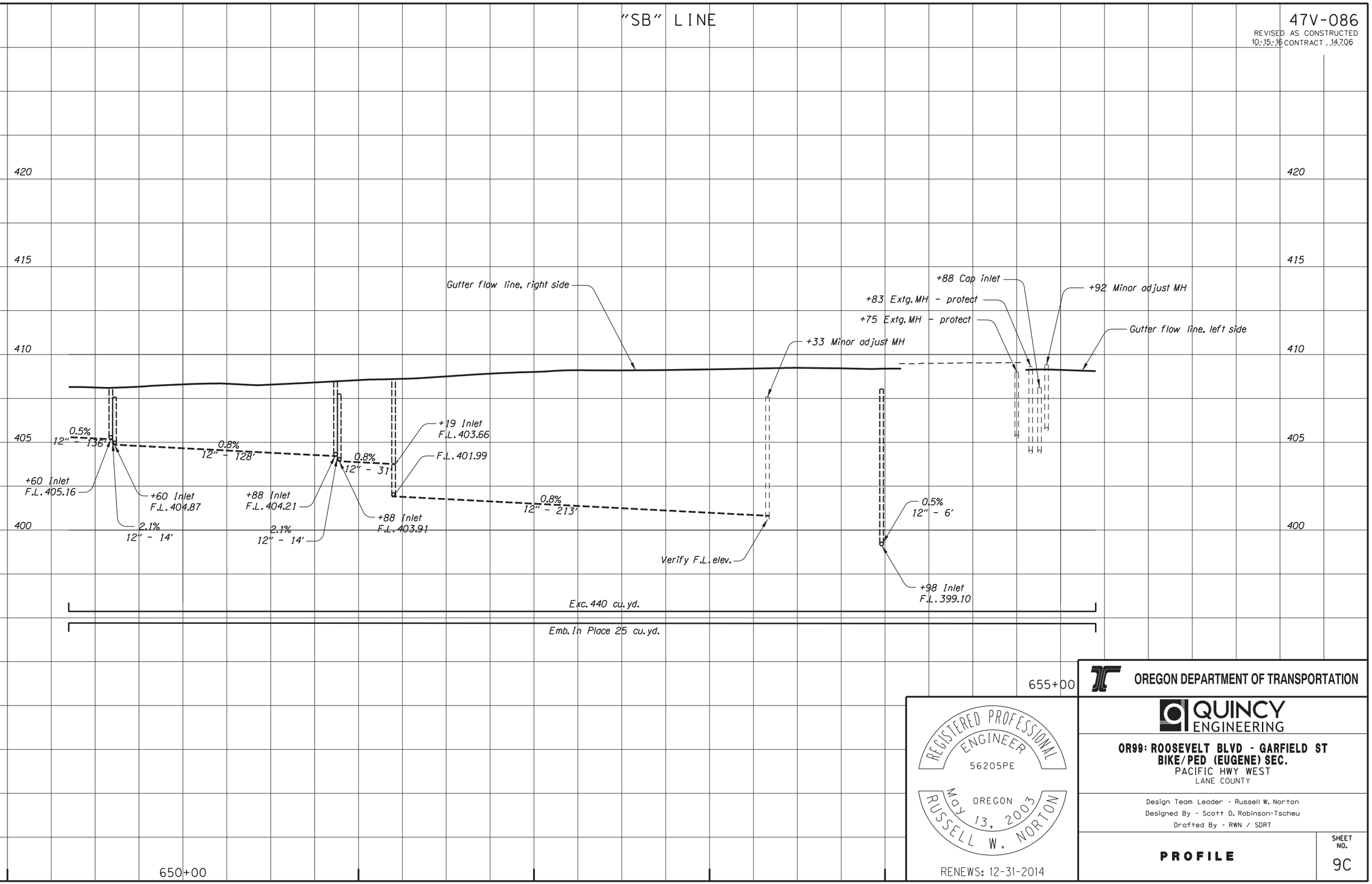
10-15-16 CONTRACT 14706



OREGON DEPARTMENT OF TRANSPORTATION

QUINCY ENGINEERING

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May 13, 2003
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LANE COUNTY

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Drafted By - RWN / SDRT

PROFILE

SHEET NO. 9C

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