OPERATIONS AND MAINTENANCE MANUAL FOR STORMWATER DETENTION AND TREATMENT FACILITIES

DFI No. 01201
Facility Type: Biofiltration Swale

July, 2016

INDEX

1. Identification

Facility Types: Water Quality Biofiltration Swale 01201

Location: Pacific Highway West 91
Milepost 103.71

2. Facility Contact Information

Chris Carman, ODOT Hydraulics Engineer (503) 986-2691.

3. Construction

Engineer of Record: ODOT Designer - Region 2 Tech. Center,
Chris Carman, (503) 986-2691

Facility construction: 2017

4. Overview

The swale is located 150 feet south of Lake Slough on the east side of Pacific Highway West. Treatment of pollutants from the highway are achieved through sedimentation and infiltration through the water quality mix shown in section B-B in the operational plan.

5. Facility Haz Mat Spill Feature

The swale can be used to store a volume of liquid by blocking the outlet of the swale. A barrier such as a temporary berm made of sandbags could be used to prevent liquid from draining from the swale.

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:

☐ Designed into facility

☒ Other
This facility does not contain an auxiliary outlet feature. The facility was designed to receive runoff from the road and discharge into cross pipes.

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:

https://www.oregon.gov/ODOT/HWY/OOM/mg/02/act125_waterqualityfacilandtables.pdf

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:

☒ 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:

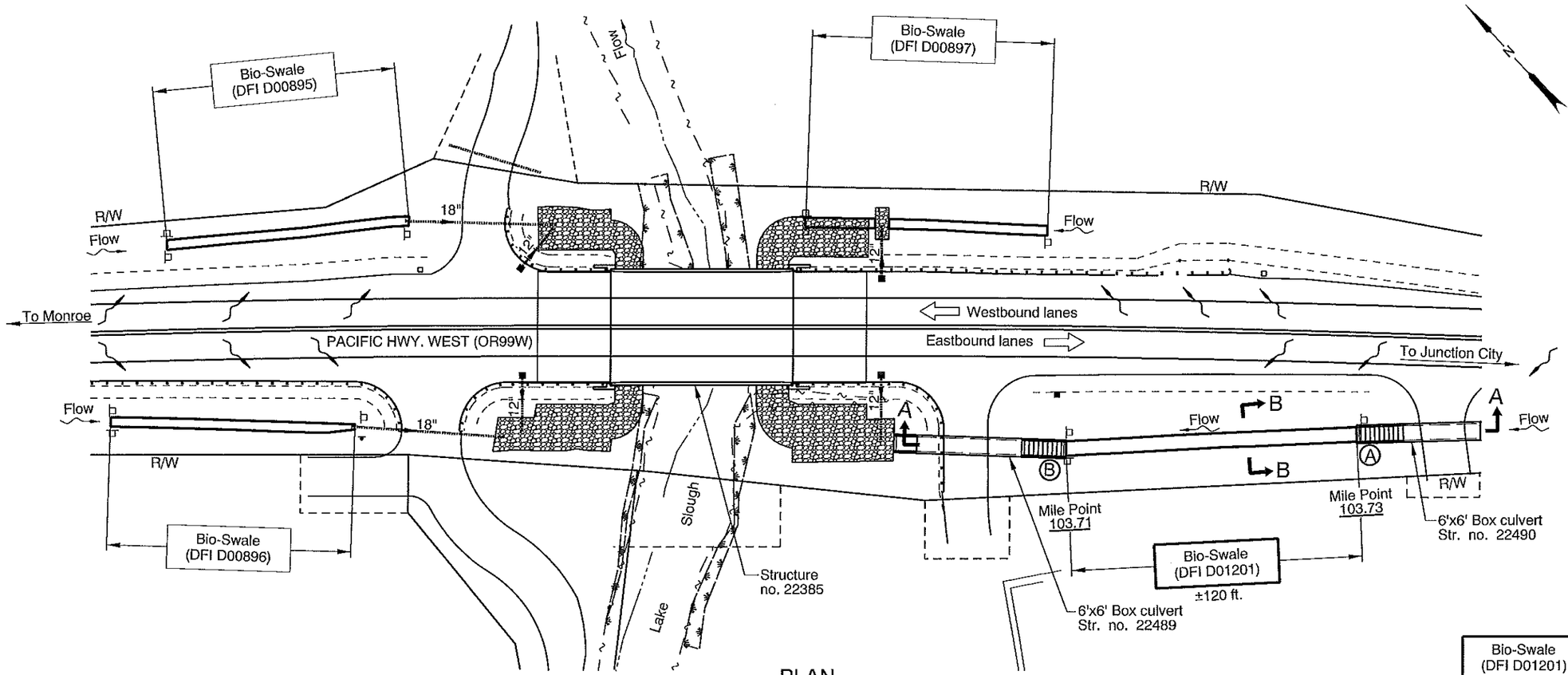
8. Waste Material Handling

Material removed from the facility is defined as waste by DEQ. Refer to the roadwaste section 5.18 of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

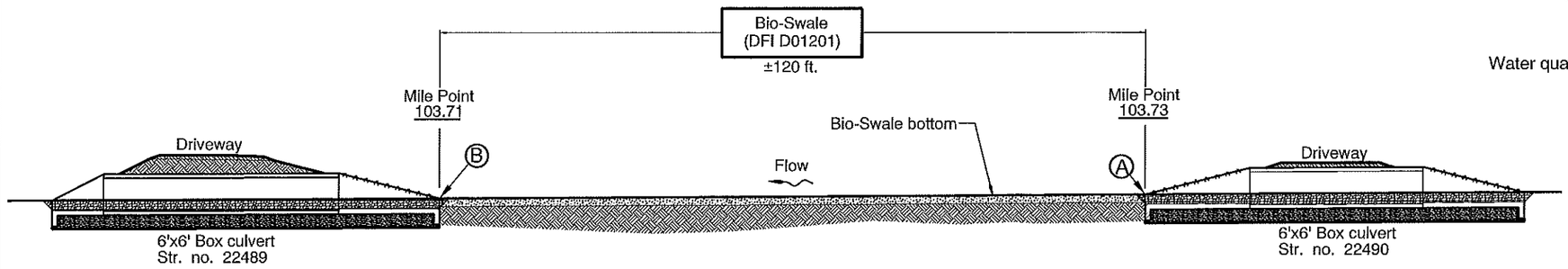
https://www.oregon.gov/ODOT/HWY/OOM/EMSdoc/ems_manual.pdf

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

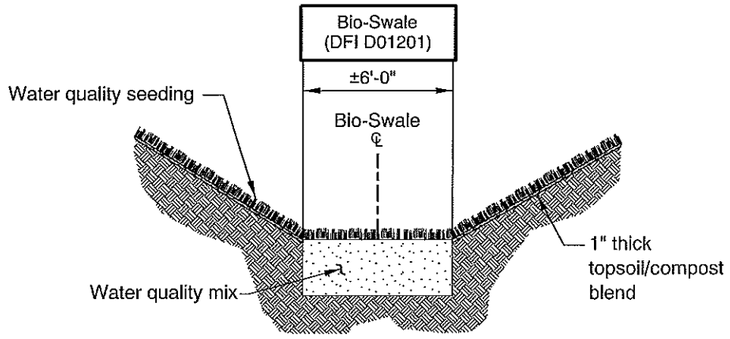
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 986-2647
ODEQ Northwest Region Office	(503) 229-5263



PLAN
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

LEGEND:
- Photo Location / Direction
- Swale Inlet
- Swale Outlet
- Storm Pipe (Facility)
- Swale Boundary
- Pavement / Facility Flow Path
- Inlet

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Chris Carman

Drafted By: Sergy Chernishoff

DFI D01201
MAINTENANCE DISTRICT 4 HWY 091
WATER QUALITY BIOFILTRATION SWALE
PACIFIC HIGHWAY WEST MP 103.71-103.73
BENTON COUNTY

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

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING, STRUCTURES & PAVING

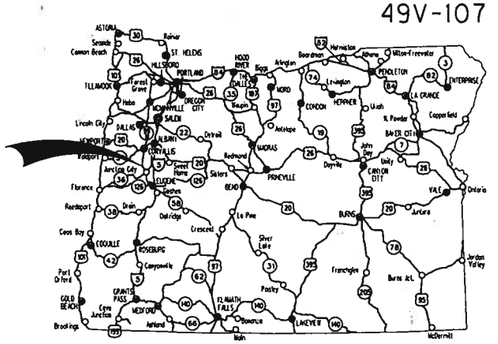
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.

PACIFIC HIGHWAY WEST

BENTON COUNTY

OCTOBER 2016

49V-107



Overall Length Of Project - 0.17 Miles

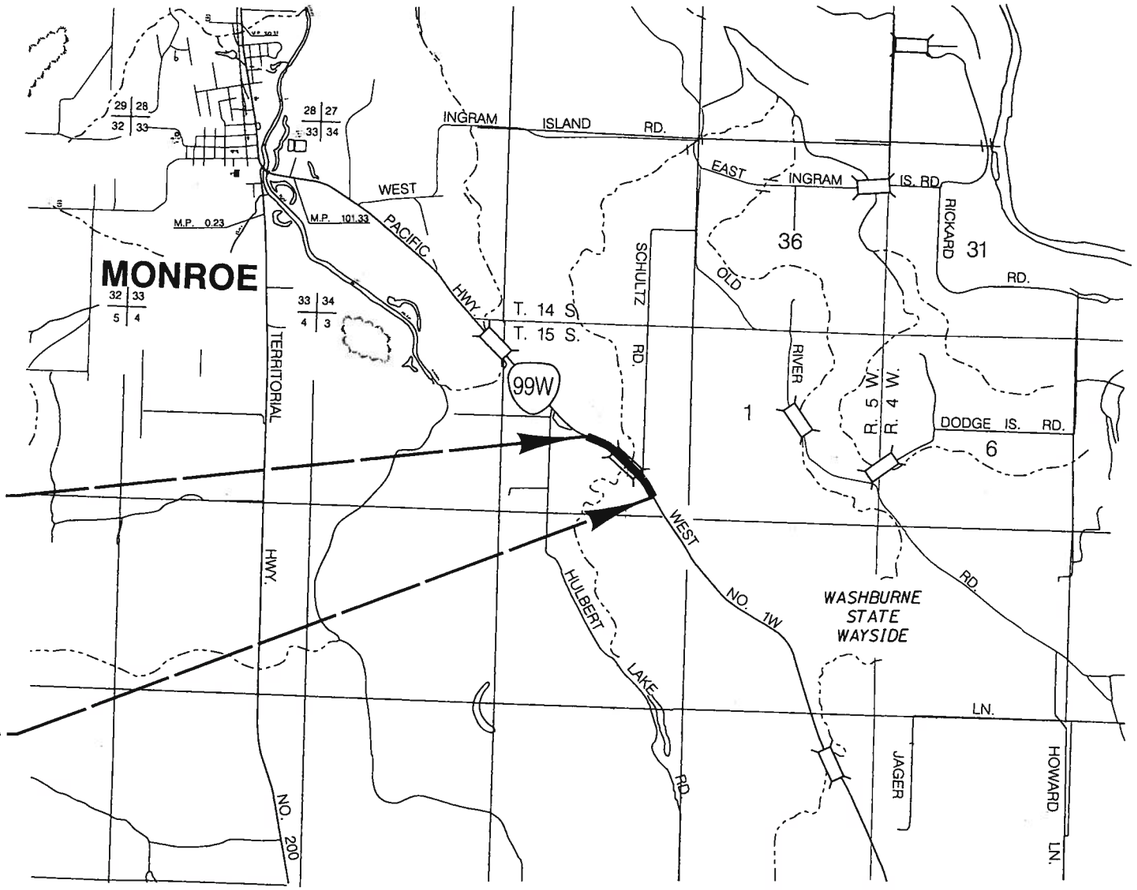
NOT REVISED AS CONSTRUCTED

STEVEN SCHULTZ, PE

DATE 01/22/18

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



STP-S091(071)
BEGINNING OF PROJECT
STA. "C" 30+66.46 (M.P. 103.59)

STP-S091(071)
END OF PROJECT
STA. "C" 39+43.62 (M.P. 103.76)

N

T. 15 S.,
R. 5 W., W.M.

OREGON TRANSPORTATION COMMISSION

Tammy Baney	CHAIR
David Lohman	COMMISSIONER
Susan Morgan	COMMISSIONER
Alando Simpson	COMMISSIONER
Sean O'Hollaren	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: 9.28.16
Signature & date

James E. West - R2 Tech Center Manager
Print name and title

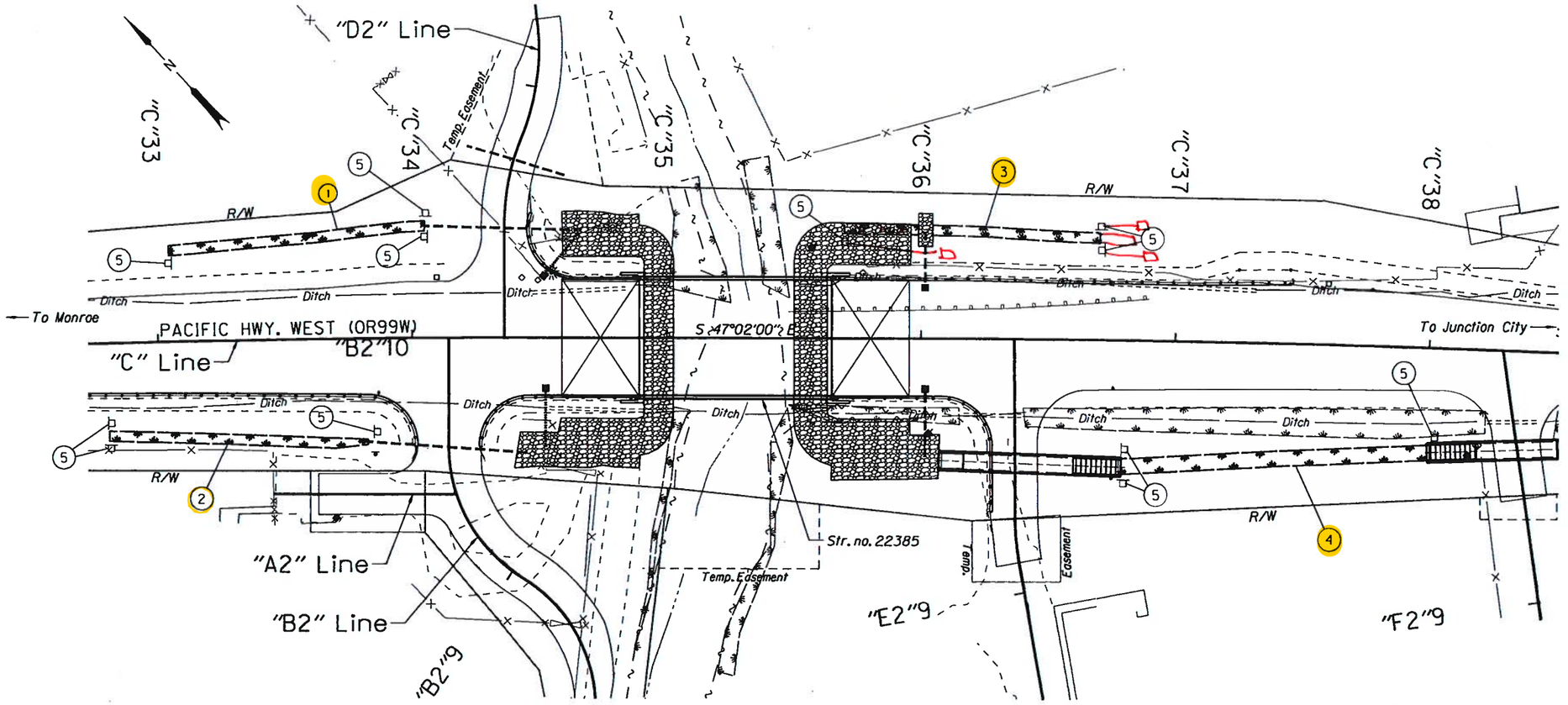
Concurrence by ODOT Chief Engineer

OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	STP-S091(071)	1

PE002314

49V-107



PLAN

(1) Sta. "C" 33+05.00 to Sta. "C" 34+05.00 Lt.
Const. Water Quality Biofiltration Swale no. 00895
Gen. exc. - 22 cu. yd.
Water quality soil mix - 22 cu. yd.

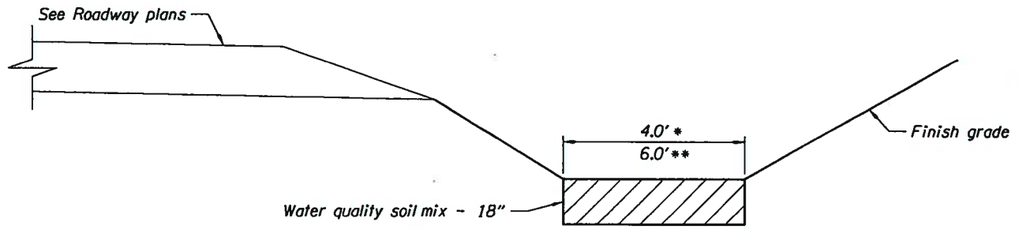
(2) Sta. "C" 32+80.00 to Sta. "C" 33+80.00 Rt.
Const. Water Quality Biofiltration Swale no. 00896
Gen. exc. - 22 cu. yd.
Water quality soil mix - 22 cu. yd.

(3) Sta. "C" 35+70.00 to Sta. "C" 36+70.00 Lt.
Const. Water Quality Biofiltration Swale no. 00897
Gen. exc. - 22 cu. yd.
Water quality soil mix - 22 cu. yd.

(4) Sta. "C" 36+79.85 to Sta. "C" 37+99.84 Lt.
Const. Water Quality Biofiltration Swale no. 01201
Gen. exc. - 43 cu. yd.
Water quality soil mix - 43 cu. yd.

(5) Inst. stormwater facility marker
(See dwg. RD399)

REVISED AS CONSTRUCTED
STEVEN SCHULTZ, PE
DATE 01/22/13



Pay Limits of Water Quality Biofiltration Swale General Excavation

* Sta. "C"33+05.00 To Sta. "C"34+05.00
"C"32+80.00 To "C"33+80.00
"C"35+70.00 To "C"36+70.00
**"C"36+79.85 To "C"37+99.84

REGISTERED PROFESSIONAL ENGINEER
17807
OREGON
JULY 25, 1995
CHRIS CARMAN
RENEWS: 12-31-2017

OREGON DEPARTMENT OF TRANSPORTATION

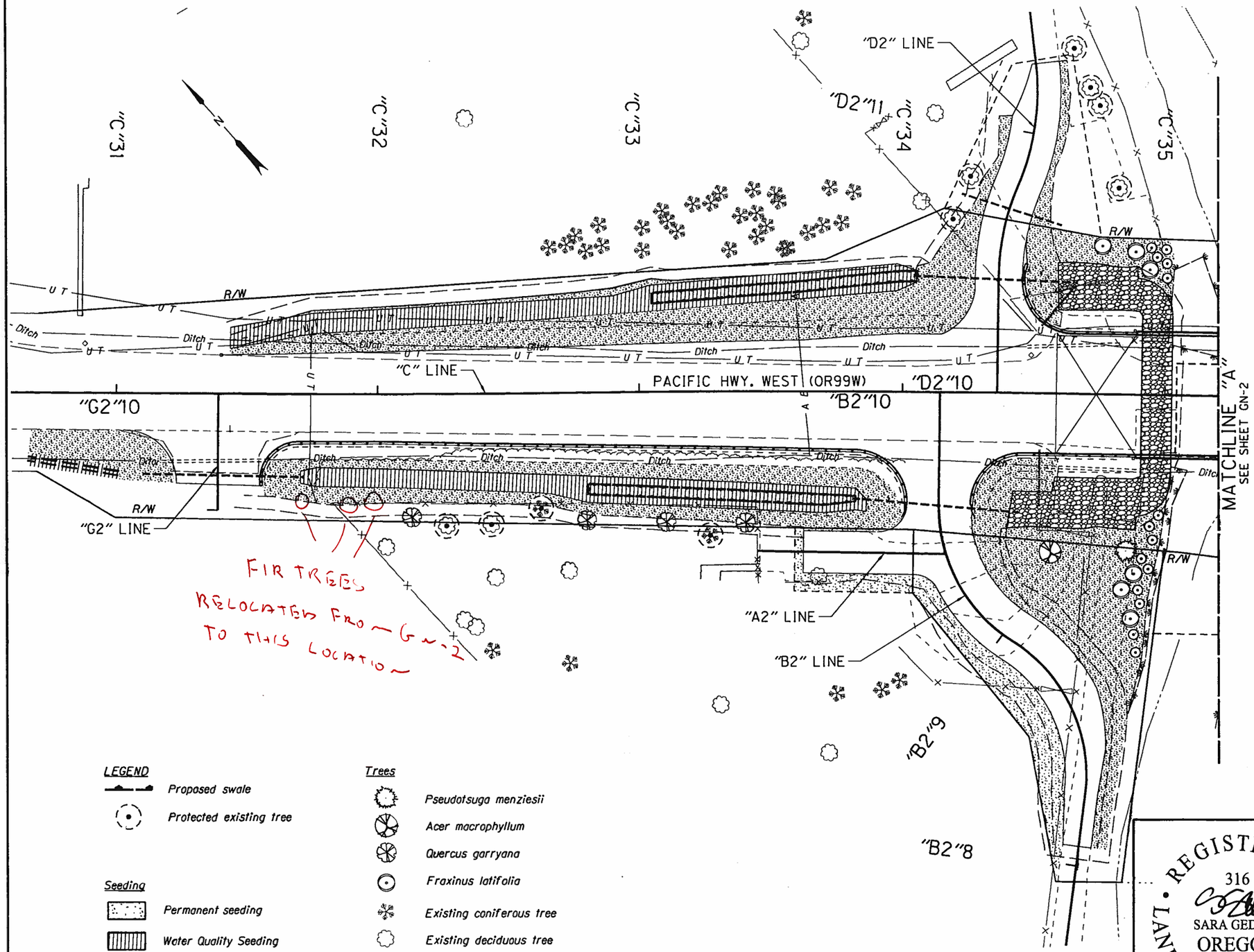
REGION 2 TECH CENTER

OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

Reviewed By - Bruce Carmichael
Designed By - Chris Carman
Drafted By - Julie Rentz

STORMWATER PLAN

SHEET NO. GJ



LEGEND

- Proposed swale
- Protected existing tree

Seeding

- Permanent seeding
- Water Quality Seeding

Trees

- Pseudotsuga menziesii
- Acer macrophyllum
- Quercus garryana
- Fraxinus latifolia
- Existing coniferous tree
- Existing deciduous tree

Shrubs

- Cornus sericea - cluster of 3

REVISED AS CONSTRUCTED
STEVEN SCHULTZ, PE
DATE 01/22/18

REGISTERED
316
SARA GEDDES
OREGON
4/14/94
LANDSCAPE ARCHITECT
RENEWS: 04/30/2017

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

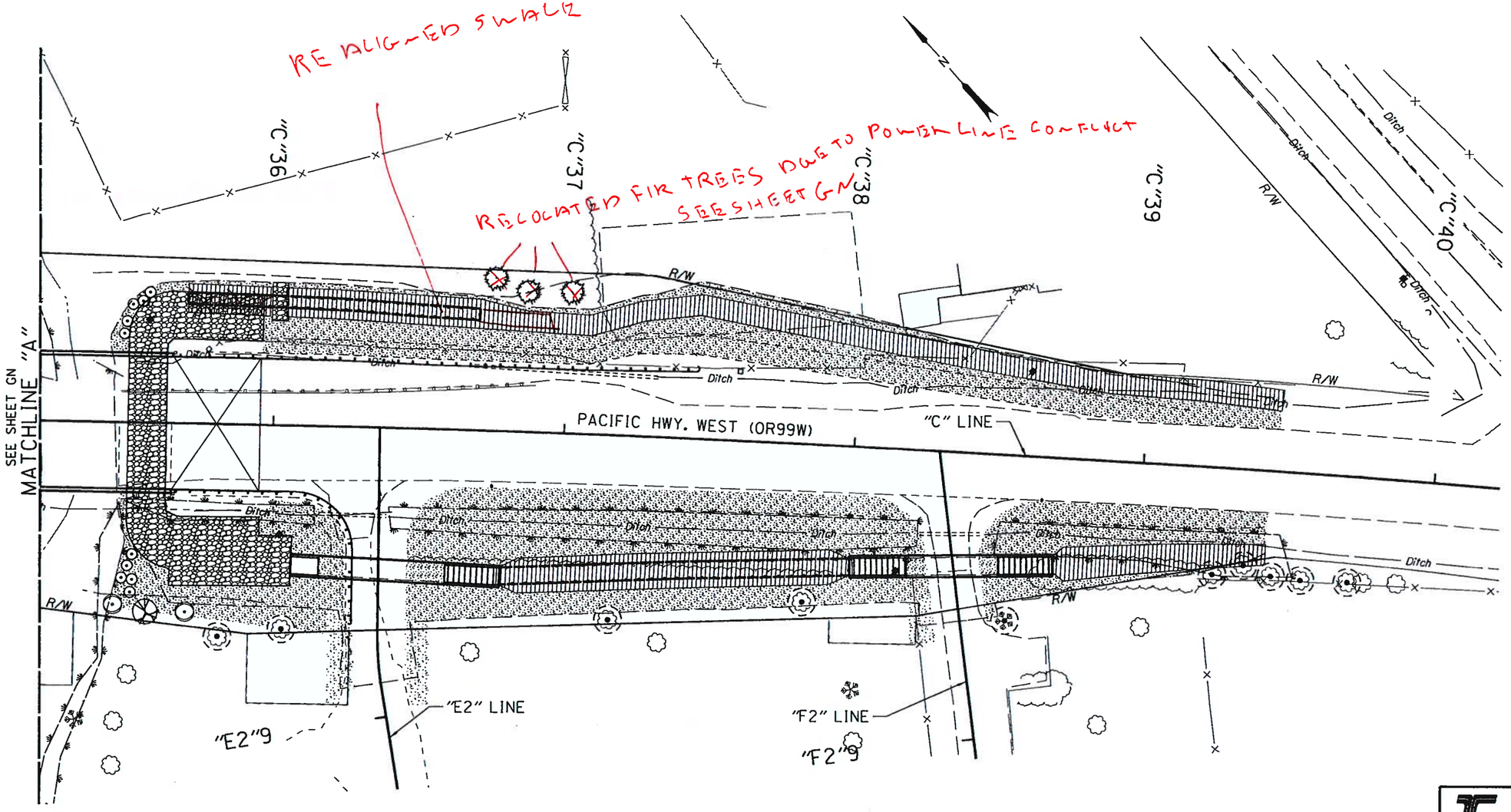
OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

Reviewed By - John Lucas
Designed By - Sara Geddes
Drafted By - Julie Rentz

ROADSIDE DEVELOPMENT PLAN

SHEET NO. GN

49V-107



LEGEND

Proposed swale

Protect existing tree

Seeding

Permanent seeding

Water Quality Seeding

Trees

Pseudotsuga menziesii

Acer macrophyllum

Fraxinus latifolia

Existing coniferous tree

Existing deciduous tree

Shrubs

Cornus sericea - cluster of 3

REVISED AS CONSTRUCTED

STEVEN SCHULTZ, PE

DATE 01/22/18

REGISTERED LANDSCAPE ARCHITECT
316
SARA GEDDES
OREGON
4/14/94

RENEWS: 04/30/2017

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

Reviewed By - John Lucas
Designed By - Sara Geddes
Drafted By - Julie Rentz

ROADSIDE DEVELOPMENT PLAN

SHEET NO. GN-2

PLANTING & SEEDING SCHEDULE

	BOTANICAL NAME	COMMON NAME	SIZE	ROOT TYPE	PLANT CONDITION	LAYOUT/SPACING	A.S.N.S. Specifications	NOTES	TOTAL AREA (sq. ft.)	QUANTITY TOTAL
Trees and Shrubs	*Acer macrophylum*	bigleaf maple	1" caliper	#5 container	single trunk	as shown on plan	1.2.1	see detail		2
	Cornus sericea	red twig dogwood	½" caliper	live stake		as shown on plan		see detail		72
	Fraxinus latifolia	Oregon Ash	1" caliper	#5 container	single trunk	as shown on plan	1.2.1	see detail		8
	Pseudotsuga menziesii	Douglas fir	4'	#5 container	single trunk	as shown on plan	3.2.4	see detail		4
	Quercus garryana	Oregon white oak	1" caliper	#5 container	single trunk	as shown on plan	1.2.1	see detail		4
	Total in Area									90
Seeding	*Permanent Seeding*				pure live seed	as shown on plan and all disturbed areas	N/A	see detail	26,571	
	Water Quality Seeding				pure live seed	as shown on plan	N/A	see detail	9,147	
	Seeding Totals (square feet)								35,718	

REVISED AS CONSTRUCTED
STEVEN SCHULTZ, PE
DATE 01/22/18

General Planting Notes:

1. *Ensure trees are planted beyond "Clear Zone". Verify with Project Manager prior to planting.*
2. *Locate underground utility lines prior to any digging or ground disturbance.*
3. *Adjust planting locations as necessary with agency approval so vegetation does not conflict with above or below-ground utilities.*
4. *Adjust planting locations as necessary with agency approval to avoid conflict with utilities, traffic sight lines, signs or other appurtenances.*
5. *See American Standard for Nursery Stock (2004) for plant quality minimum standards, such as size of root ball/mass, caliper of trunk, or height.*
6. *All dimensions shown on plan are minimum dimensions.*
7. *See Planting and Seeding Schedule for listing of plant and seed materials - names, sizes, and quantities.*
8. *Plan is schematic. Planting may be adjusted to fit site conditions with prior agency approval.*
9. *Where discrepancies exist between the Planting Schedule and the Plans, the Plans will prevail.*
10. *Tree and shrub backfill must be free of noxious weeds, weed seed, and State listed noxious plants.*
11. *Do not apply fertilizer to plans unless indicated in plans and special provisions.*
12. *Lay out plant materials in groups as indicated on schedule, details, and plan sheets.*
13. *Stake tree locations and obtain approval of agency prior to planting. Use color-coded stakes as necessary to identify species.*
14. *Obtain agency approval of plant materials prior to planting.*
15. *Provide a demonstration of tree/shrub/plug/live stake planting to agency prior to installation of plant materials.*
16. *All plant material shall be thoroughly watered (saturated backfill) within 24-hours of installation regardless of rainfall events.*
17. *Protect and avoid damage to root zones, limbs, and foliage of existing trees and shrubs to remain while completing work of this contract. Where indicated for protection on plans, provide orange mesh construction fencing at dripline.*
18. *Contractor shall comply with erosion control measures per Section 00280 and all applicable permits during construction.*
19. *Contractor shall comply with the terms and conditions from NOAA-Fisheries under Standard Local Operating Procedures for Endangered Species (SLOPES) requiring the utmost care when construction activity is taking place in or near water.*
20. *All work shall comply with Oregon Standard Specifications for Construction and Special Provisions for construction applicable to this project.*

REGISTERED LANDSCAPE ARCHITECT
316
SARA GEDDES
OREGON
4/14/94
RENEWS: 04/30/2017

OREGON DEPARTMENT OF TRANSPORTATION

REGION 2 TECH CENTER

OR99W: LAKE SLOUGH BRIDGE REPLACEMENT SEC.
PACIFIC HIGHWAY WEST
BENTON COUNTY

Reviewed By -
Designed By - Sara Geddes
Drafted By - Sergy Chernishoff

NOTES & SCHEDULES

SHEET NO. GN-3