



**Coos County
Planning Department
Application to Develop in a
Special Flood Hazard Area**

Official Use Only

Fee _____
Receipt No. _____
Check No./Cash _____
Date _____
Received By _____
File No. _____

The undersigned hereby makes application for a permit to develop in a designated Special Flood Hazard Area (“floodplain”). The work to be performed is described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of the Coos County Comprehensive Plan, Coos County Zoning and Land Development Ordinance, and any other applicable Local, State, and Federal regulations. This application does not create liability on the part of the Coos County Planning Department or any officer or employee thereof for any flood damage that results from the reliance on this application or any decision made lawfully thereunder.

Owner(s): Scott Elliott Telephone: 541-404-8981

Address: 61018 Selander Rd.

City/State: Coos Bay, OR Zip Code: 97420

Agent(s): Coos Watershed Association
c/o Dan Draper Telephone: 541-888-5922 x308

Address: P.O Box 388

City/State: Coos Bay, OR Zip Code: 97420

Township: 26S Section: 29

Range: 12W Tax Lot: 200, 1000 and 1300

Situs Address: _____

City/State: _____ Zip Code: _____

A. Description of Work (Complete for All Proposals):

1. Proposed Development Description:

- New Building
- Improvement to Existing Building
- Manufactured Structure
- Fill
- Other Improving Fish Passage in Seelander Creek and floodplain adjacent to Catching Slough.
Please see attached report for more details

2. Size and location of proposed development (a site plan must be attached):

Seelander Creek drains into Catching Slough at approximately river mile 7.6, with the project being located on the east side of catching Slough, in Coos County, Oregon. The tax lots affected by this project include:

26S 12W 29 - 1000 & 1300

26S 12W 29DC - 200

The property is ~45 acres with the project restoring/enhancing ~10+ acres.

3. Is the proposed development in a Special Flood Hazard Area (Zones A, AE, A1-A30, AH, AO, V, or VE)?

Yes Zone: A

No

4. Per the FIRM, what is the zone and panel number of the area of the proposed development?

Zone: A

Panel Number: 41011C0345F

5. Have any other Federal, State, or Local permits been obtained?

Yes - Copies of all permits must be attached.

No

6. Is the proposed development in an identified floodway?

Yes - A "No Rise Certification" with supporting data must be attached.

No

B. Complete for New Structures and Building Site:

1. Base Flood Elevation (BFE) at the site (complete one):

NGVD 29 _____ feet Source: _____

NAVD 88 _____ feet Source: _____

2. Required lowest floor elevation, including basement (complete one):

NGVD 29 _____ feet Source: _____

NAVD 88 _____ feet Source: _____

3. Number and area of flood openings (vents): _____

4. Enclosed area below BFE (in square feet): _____

C. Complete for Alterations, Additions, or Improvements to Existing Structures:

1. What is the estimated market value of the existing structure? Justification for the estimate must be attached and may include, but is not limited to, appraisals completed by private agencies or the County Assessor's office.

2. What is the cost of the proposed construction? Justification for the estimate must be attached. The estimate is required to include fair market value for any work provided by the property owner or without compensation.

3. If the cost of the proposed construction equals or exceeds 50 percent of the market value of the structure, then the substantial improvement provisions shall apply.

D. Complete for Non-Residential Floodproofed Construction:

1. Type of floodproofing method:

2. The required floodproofing elevation is (complete one):

NGVD 29 _____ feet Source: _____

NAVD 88 _____ feet Source: _____

3. Floodproofing certification by a registered engineer must be attached.

E. Complete for Land Divisions, Subdivisions, and Planned Unit Development:

1. Does the proposal contain 50 lots or 5 acres?

Yes - The plat or proposal must clearly identify base flood elevation.

No

2. Are the 100-year Floodplain and Floodway delineated on the site plan?

Yes

No

F. Authorization: All areas must be initialed by all applicant(s) prior to the Planning Department accepting any application.

SE

Applicant

I hereby attest that I am authorized to make the application for Application to Develop in a Special Flood Hazard Area and the statements within this application are true and correct to the best of my knowledge and belief. I affirm that this is a legally created tract, lot or parcel of land. I understand that I have the right to an attorney for verification as to the creation of the subject property. I understand that any action authorized by Coos County may be revoked if it is determined that the action was issued based upon false statements or misrepresentation.

SE

Applicant

I understand it is the function of the Planning Department to impartially review my application and to address all issues affecting it regardless of whether the issues promote or hinder the approval of my application. In the event a public hearing is required to consider my application, I agree I bear the burden of proof. I understand that approval is not guaranteed and the applicant(s) bear the burden of proof to demonstrate compliance with the applicable review criteria.

SE

Applicant

As applicant(s) I/we acknowledge that is in my/our desire to submit this application and staff has not encouraged or discouraged the submittal of this application.



Applicant(s) Original Signature

10/16/23

Date

Applicant(s) Original Signature

Date



Seelander Creek Project:

FLOODPLAIN ANALYSIS

OCTOBER 2023

Prepared By:

Kilgren Water Resources, LLC
3365 East Amazon Drive
Eugene, OR 97405

Prepared on Behalf of:

Coos Watershed Association
P.O. Box 388
Coos Bay, OR 97420



Page Intentionally Left Blank

Table of Contents

1	Introduction	1
1.1	Background	1
1.2	Proposed Project	1
1.3	Purpose of Analysis	1
1.3.1	Coos County Zoning and Land Development Ordinances: Chapter 4	2
1.3.2	NFIP Regulations 44 CFR 60.3 (d) (3).....	2
2	Hydraulic Analysis	9
2.1	Methodology.....	9
2.2	Project Datum	9
2.3	Topographic Data	9
2.4	Hydrology	9
2.5	Roughness Coefficients	10
3	Hydraulic Results.....	10
4	Conclusions	11
4.1.1	Coos County Zoning and Land Development Ordinances: Chapter 4	11
4.1.2	NFIP Regulations 44 CFR 60.3 (d) (3).....	11
5	State of Oregon Professional Engineer Certification	17
6	References.....	19

List of Figures

Figure 1.	Project area location map.	3
Figure 2.	Project area vicinity map.....	5
Figure 3.	FEMA delineated special flood hazard areas.	7
Figure 4.	Hydraulic model cross sections near the project area for flood analysis.	13

List of Tables

Table 1.	A comparison of existing and proposed flood model results. Table rows with yellow highlighting correspond to flood model cross section station numbers within the property of the proposed project.	15
----------	--	----

Appendices

Appendix A: HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models

Appendix B: Phase 1 Design Plans

Appendix C: Phase 2 Design Plans

Page Intentionally Left Blank

1 Introduction

1.1 Background

The Seelander Creek Project is being designed by Kilgren Water Resources (KWR) on behalf of the Coos Watershed Association (CoosWA). The proposed project is located within Coos County, Oregon and adjacent to the Catching Slough (Figure 1 and Figure 2). The entirety of the project area is located on property owned by Scott Elliot, identified by Coos County Tax Lot ID's:

- 26S12W29TL0100000,
- 26S12W29TL0130000, and
- 26S12W29DCTL0020000.

The project area is located within the Federal Emergency Management Agency (FEMA) delineated Special Flood Hazard Area (SFHA) Zone A mapped for the Coos River and shown on FEMA Flood Insurance Rate Map (FIRM) Map Number 41011C0345F (FEMA 2018a). The SFHA Zone A is used by FEMA to identify areas likely to be inundated by the 1-percent annual chance flood, as determined by approximate methods, rather than detailed studies, and do not have specified base flood elevations (BFE's) nor designated floodways. The flood mapping from the Digital Flood Insurance Rate Map (DFIRM) database for Coos County (FEMA 2018b) is shown on Figure 3 for the proposed project area.

1.2 Proposed Project

Prior uses of the property, including for agricultural pasture grazing, resulted in degraded wetland functions and habitat quality, and have led to difficulty in maintaining optimal pasturage. The proposed project is focused on voluntary working landscape improvements that combine improved agricultural outcomes with floodplain and wetland restoration actions that benefit native plant communities and wetland conditions to enhance habitat opportunities for populations of juvenile salmonids, among other terrestrial and aquatic wildlife species.

Implementation of the project is proposed in two phases. Phase 1 focuses on replacement of two undersized and failing tide gated culverts with modern fish friendly mitigator style tide gates, decommissioning of an unnecessary culverted agricultural crossing, and the repair of a damaged wooden beam on an agricultural crossing. These replacement structures will improve fish passage to nearly seven miles of critical spawning and rearing habitat for ESA listed coho salmon. Phase 1 design plans are included in Appendix B. Phase 2 focuses on interior drainage improvements and habitat enhancements through ditch realignment and plugging, along with installation of two agricultural crossings. Phase 2 design plans are included in Appendix C.

1.3 Purpose of Analysis

This report documents hydraulic analysis demonstrating the proposed project will maintain the flood carrying capacity of the watercourse, and with no cumulative increase in the associated base flood inundation or base flood levels per Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development. This hydraulic analysis evaluated the existing conditions and proposed conditions for the 1-percent annual chance exceedance flood event (i.e., the base flood) conditions documented in the FEMA Flood Insurance Study (FIS) for Coos County, Oregon and Incorporated Areas (FIS

Number 41011CV001C with a revised date of December 7, 2018; FEMA 2018c). The analysis and this report provide documentation and support for compliance with Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development, and the National Flood Insurance Program (NFIP) regulations governed by Title 44 of the Code of Federal Regulations (CFR) Section 60.3(d)(3). Excerpts of these provisions are provided here for reader reference:

1.3.1 Coos County Zoning and Land Development Ordinances: Chapter 4

- Section 4.11.251 General Standards, 7. Other Development

“b. Result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development will occur within a designated flood plain outside of a designated floodway.”

1.3.2 NFIP Regulations 44 CFR 60.3 (d) (3)

“prohibit encroachments, including fill, new construction, substantial improvements and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base (100-year) flood discharge.”

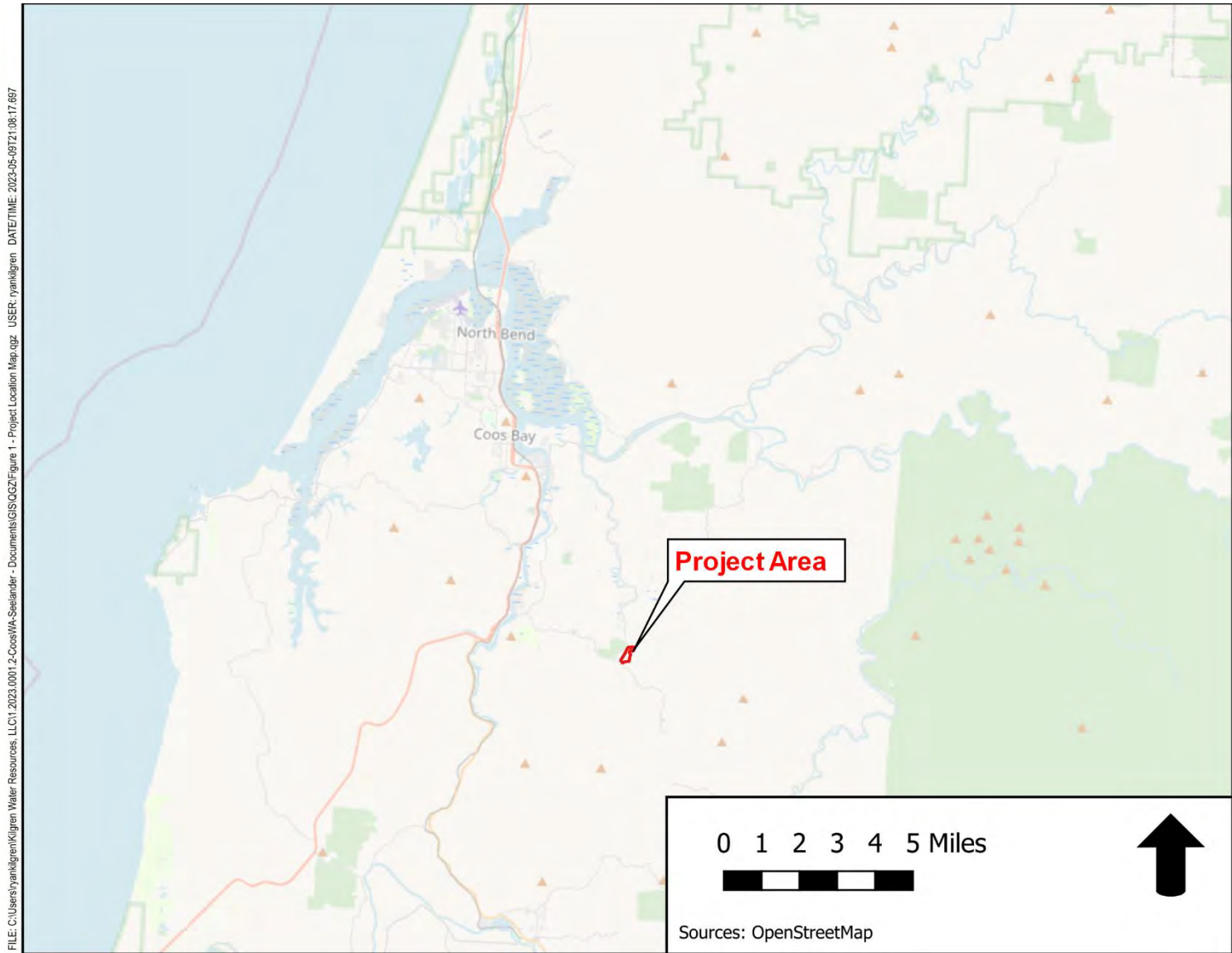


Figure 1. Project area location map.

Page Intentionally Left Blank

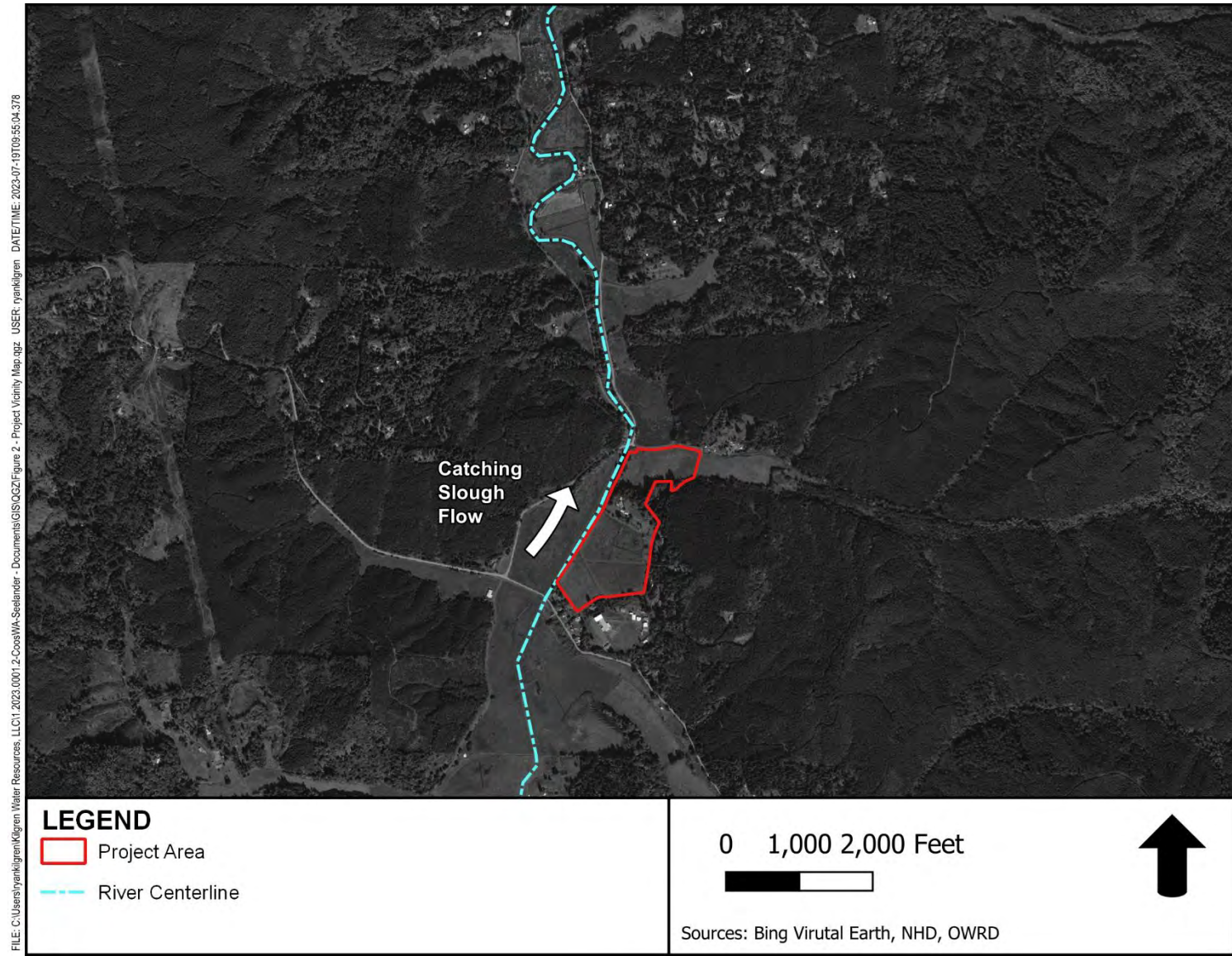


Figure 2. Project area vicinity map.

Page Intentionally Left Blank

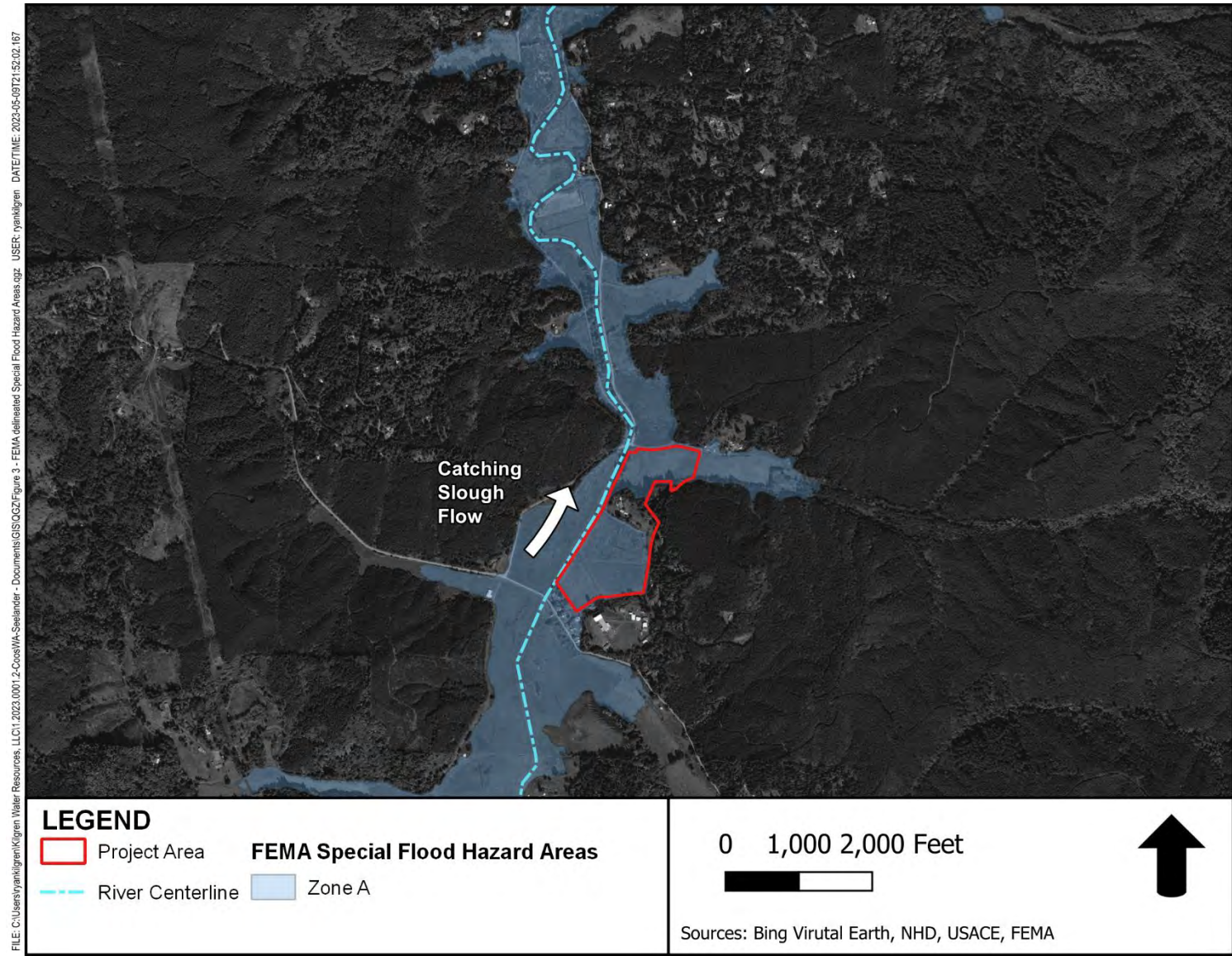


Figure 3. FEMA delineated special flood hazard areas.

Page Intentionally Left Blank

2 Hydraulic Analysis

2.1 Methodology

Hydraulic modeling analysis following FEMA guidance (FEMA 2013 and 2021b) using the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center's River Analysis System (HEC-RAS) computer program, Version 6.3 (USACE 2022), was conducted to evaluate potential floodplain effects for the proposed project. Since the FEMA Special Flood Hazard Area delineated at the proposed project is designated as Zone A, no effective FIS HEC-RAS model is available and FEMA's floodplain area is derived by approximate methods only. For the purposes of evaluating the potential effects of the proposed project on the existing floodplain conditions, a comparative hydraulic model analysis was prepared. A total of 41 cross sections were developed for the analysis, 14 of which transect the property of the proposed project (Figure 4). These cross-section locations were used for both the existing conditions and proposed conditions modeling.

2.2 Project Datum

The effective study (FEMA 2018c) uses elevations that are relative to NAVD88 with units of feet. The analyses presented in relationship to the proposed project utilizes this same (i.e., NAVD88) datum for consistency.

2.3 Topographic Data

Topographic survey data have been collected at the project area and combined with LiDAR terrain datasets for the development of the proposed designs. These datasets are used for the analysis presented in this report, and include:

- Coos River bathymetry available collected by the University of Oregon (Conroy et al. 2020);
- LiDAR based bare earth elevation digital terrain model (DTM) development from the Oregon Department of Geology and Mineral Industries (DOGAMI 2009); and,
- Topographic survey data collected by CoosWA staff in 2021, 2022, and 2023.

The LiDAR data was extracted from the DOGAMI DTM (2009) for the project area and evaluated for area specific error adjustment using the CoosWA collected survey. The error adjusted LiDAR (commonly referred to as ground truthed LiDAR) was then blended with the CoosWA collected survey and survey from University of Oregon (Conroy et al. 2020) to develop an existing conditions surface representation of the project area and for development of the proposed design surface and hydraulic model analyses. The Design Plans for Phase 1 and Phase 2 are included as Appendix B and C of this report, and show contours for both the existing and proposed surfaces. Hydraulic model cross sections for the refined model were developed using these existing conditions and proposed conditions surfaces.

2.4 Hydrology

The hydrologic input for the flood modeling performed as part of the current analyses was obtained from regional regression equations (USGS 2023). The Catching Slough 1-percent annual chance exceedance flood (commonly referred to as the 100-year flood) is provided as 1,960 cubic feet per second (USGS 2023) and was used as the upstream boundary condition for the current analysis. The downstream boundary condition for the

current analysis was assigned a normal depth slope of 0.001, which was approximated from the stream profile from the existing conditions surface.

2.5 Roughness Coefficients

Manning's coefficients were used to represent the roughness characteristics associated with the river channel and overbank areas. These roughness coefficients were derived from USACE (2022) recommended values corresponding to land cover types. Land cover types were determined for the modeled area from the National Land Cover Database 2019 (Dewitz 2021). The values generally ranged from 0.03 – 0.1 for the channel and overbank for the studied reach.

3 Hydraulic Results

A comparison of existing and proposed water surface elevations at cross sections within the extent of study is included in Table 1. The results show that the proposed conditions **do not** cause a cumulative increase the water surface elevation for the modeled 1-percent annual chance exceedance flood above the one-foot allowance per Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development. The proposed conditions meet the Coos County General Standards for other development and will not impact the natural flood carrying capacity. The standard summary table for the existing and proposed conditions hydraulic modeling is provided in Appendix A.

4 Conclusions

The proposed actions for the Seelander Creek Project seek to restore degraded wetland functions and habitat quality and improve agricultural use conditions. The proposed project was evaluated using a hydraulic analysis for potential impacts on flooding. The results of this analysis demonstrate compliance with the requirements of the regulations referenced in Section 1.3 of this report and as summarized here:

4.1.1 Coos County Zoning and Land Development Ordinances: Chapter 4

- Section 4.11.251 General Standards, 7. Other Development

The proposed actions are located within the SFHA Zone A, only, and do not have specified BFE's or a designated floodway, as shown on FEMA FIRM Map Number 41011C0345F (FEMA 2018a). The SFHA Zone A extent in the vicinity of the proposed project are depicted on Figure 3 and in Appendix B and C of this report.

Pursuant to subpart b, proposed project during the base flood discharge has no cumulative effect on the flood levels.

4.1.2 NFIP Regulations 44 CFR 60.3 (d) (3)

The proposed actions are located within designated SFHA Zone A areas, only, and **do not have specified BFE's or a floodway.** These extents are shown on the FEMA FIRM Map Number 41011C0345F (FEMA 2018a).

Page Intentionally Left Blank

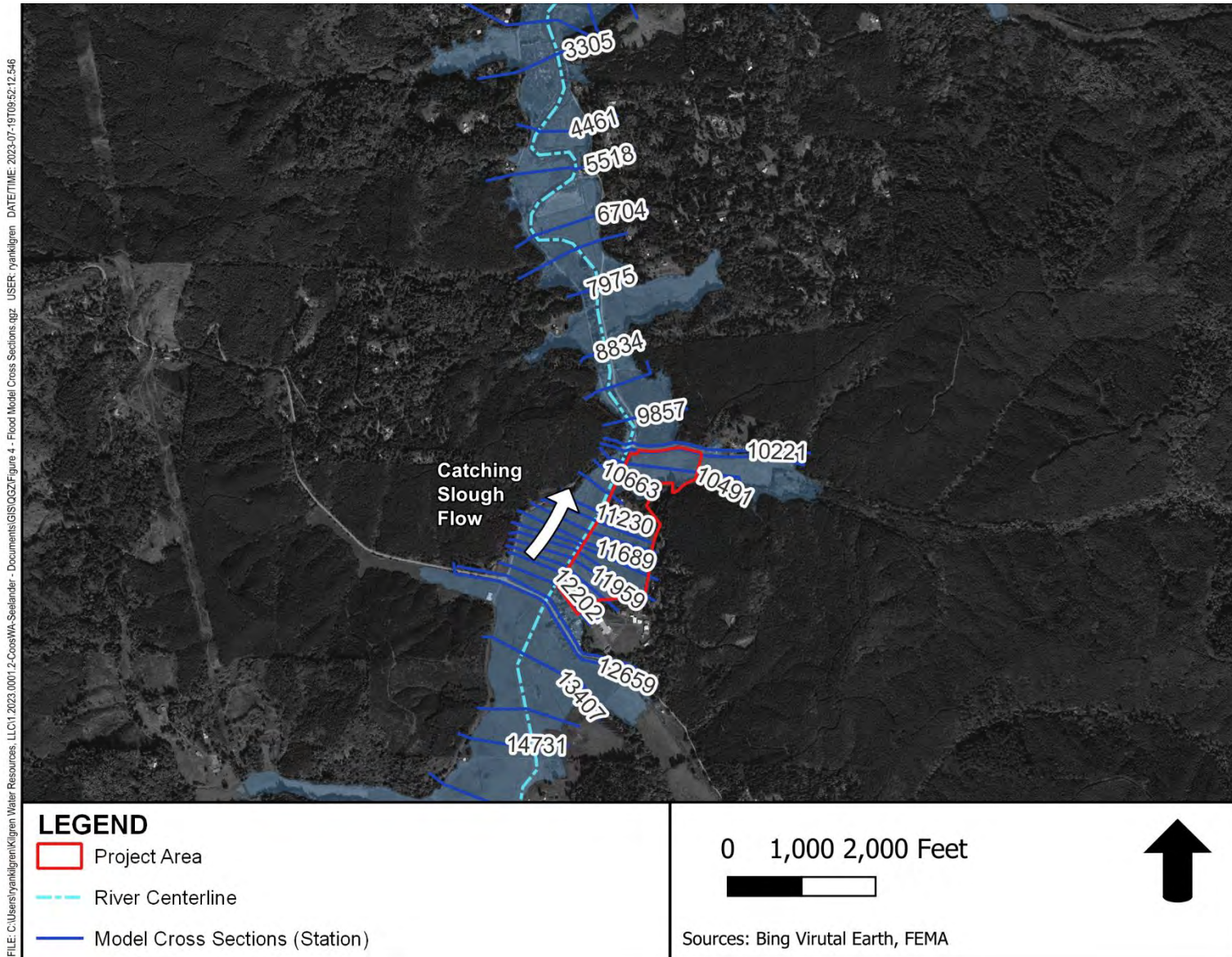


Figure 4. Hydraulic model cross sections near the project area for flood analysis.

Page Intentionally Left Blank

Table 1. A comparison of existing and proposed flood model results. Table rows with yellow highlighting correspond to flood model cross section station numbers within the property of the proposed project.

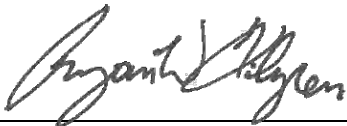
Flood model cross section station number	Water surface elevation (Feet)		Change in water surface elevation (proposed conditions minus existing conditions) [Feet]
	Existing conditions	Proposed conditions	
14731	13.08	13.08	0.00
14183	11.52	11.53	0.01
13407	10.99	11.00	0.01
12659	10.92	10.94	0.02
12578	10.92	10.93	0.01
12370	10.90	10.92	0.02
12202	10.89	10.91	0.02
12098	10.88	10.90	0.02
11959	10.88	10.89	0.01
11839	10.87	10.89	0.02
11753	10.87	10.89	0.02
11689	10.87	10.89	0.02
11528	10.87	10.89	0.02
11360	10.86	10.88	0.02
11230	10.85	10.86	0.01
10948	10.75	10.75	0.00
10663	10.69	10.69	0.00
10491	10.68	10.68	0.00
10314	10.68	10.68	0.00
10221	10.67	10.67	0.00
9857	10.64	10.64	0.00
9343	10.57	10.57	0.00
8834	10.46	10.46	0.00

Page Intentionally Left Blank

5 State of Oregon Professional Engineer Certification

I Ryan W. Kilgren am a qualified civil engineer licensed to practice in the State of Oregon. I certify that the engineering analyses provided in this memorandum indicate compliance with the required regulations:

- Coos County Zoning and Land Development Ordinances Chapter 4 Section 4.11.251(7b) General Standards for other development; and,
- NFIP regulations governed by Title 44 of the CFR, Section 60.3(d)(3).



Signature

October 17, 2023

Date

Civil & Water Resources Engineer

Title

83634PE

License No.



RENEWS: 6/30/2025

Page Intentionally Left Blank

6 References

- Conroy, T., D. A. Sutherland, and D. K. Ralston. 2020. Estuarine Exchange Flow Variability in a Seasonal, Segmented Estuary. *Journal of Physical Oceanography*. Volume 50(3). March 2020.
- Coos Watershed Association (CoosWA). 2021, 2022, and 2023. Topographic Survey at the Seelander Creek Project Area. Performed by CoosWA staff with direction and review assistance from Kilgren Water Resources, LLC.
- Dewitz, J., and U.S. Geological Survey. 2021. National Land Cover Database (NLCD) 2019 Products (ver. 2.0, June 2021): U.S. Geological Survey data release, <https://doi.org/10.5066/P9KZCM54>.
- Federal Emergency Management Agency (FEMA). 2013. Procedures for “No-Rise” Certification For Proposed Developments in the Regulatory Floodway. US Department of Homeland Security Region X. October 2013.
- FEMA. 2018a. Flood Insurance Rate Map (FIRM) Map Number 41011C0345F. Revised Date: December 7, 2018.
- FEMA. 2018b. Digital Flood Insurance Rate Map (DFIRM) database for Coos County, Oregon and Incorporated Areas. Database Revision Date December 7, 2018.
- FEMA. 2018c. Flood Insurance Study (FIS), Coos County, Oregon and Incorporated Areas. Flood Insurance Study Number 41011CV001C. Revised Date: December 7, 2018.
- FEMA. 2021b. Guidance for Flood Risk Analysis and Mapping; Floodway Analysis and Mapping, Guidance Document No. 79. November 2021.
- Oregon Department of Geology and Mineral Industries (DOGAMI). 2009. LiDAR Remote Sensing Data Collection; Department of Geology and Mineral Industries; South Coast, Oregon. Submitted by Watershed Sciences. May 8, 2009.
- United States Army Corps of Engineers (USACE). 2022. HEC-RAS Analysis System: Hydraulic Reference Manual. Version 6.3. Available online at: <http://www.hec.usace.army.mil/software/hec-ras>
- United States Geological Survey (USGS). 2023. StreamStats program for Oregon. Available online at: <https://streamstats.usgs.gov/ss/>

Page Intentionally Left Blank

Appendix A

HEC-RAS STANDARD SUMMARY TABLE FOR EXISTING CONDITIONS AND PROPOSED CONDITIONS HYDRAULIC MODELS

Page Intentionally Left Blank

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models.

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	18056	1-PCT AEP	Existing Conditions	1960	28.91	32.29	31.39	32.43	0.006124	2.36	663.66	359.6	0.35
Seelander	18056	1-PCT AEP	Proposed Conditions	1960	28.91	32.29	31.39	32.43	0.006124	2.36	663.66	359.6	0.35
Seelander	17765	1-PCT AEP	Existing Conditions	1960	28.53	28.9		29.1	0.013626	0.71	550.9	439.7	0.24
Seelander	17765	1-PCT AEP	Proposed Conditions	1960	28.53	28.9		29.1	0.013626	0.71	550.9	439.7	0.24
Seelander	17387	1-PCT AEP	Existing Conditions	1960	26	26.27		26.5	0.005232	0.29	511.77	436.04	0.14
Seelander	17387	1-PCT AEP	Proposed Conditions	1960	26	26.27		26.5	0.005232	0.29	511.77	436.04	0.14
Seelander	17271	1-PCT AEP	Existing Conditions	1960	24.24	25.43	24.97	25.58	0.02438	5.83	654.94	549.36	1.07
Seelander	17271	1-PCT AEP	Proposed Conditions	1960	24.24	25.43	24.97	25.58	0.02438	5.83	654.94	549.36	1.07
Seelander	16880	1-PCT AEP	Existing Conditions	1960	21.38	24.19		24.2	0.001521	0.67	1880.21	782.03	0.1
Seelander	16880	1-PCT AEP	Proposed Conditions	1960	21.38	24.19		24.2	0.001521	0.67	1880.21	782.03	0.1
Seelander	16254	1-PCT AEP	Existing Conditions	1960	17.34	22.57	21.78	22.72	0.019336	3.8	630.29	367.79	0.39
Seelander	16254	1-PCT AEP	Proposed Conditions	1960	17.34	22.57	21.78	22.72	0.019336	3.8	630.29	367.79	0.39

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	15751	1-PCT AEP	Existing Conditions	1960	14	16.46		16.57	0.009094	5.62	822.79	569.48	0.73
Seelander	15751	1-PCT AEP	Proposed Conditions	1960	14	16.46		16.57	0.009094	5.62	822.79	569.48	0.73
Seelander	15695	1-PCT AEP	Existing Conditions	1960	13.19	15.89		15.98	0.006124	4.06	863.83	773.09	0.62
Seelander	15695	1-PCT AEP	Proposed Conditions	1960	13.19	15.89		15.98	0.006124	4.06	863.83	773.09	0.62
Seelander	15630	1-PCT AEP	Existing Conditions	1960	13	15.04		15.06	0.001938	1.78	1749.03	843.8	0.3
Seelander	15630	1-PCT AEP	Proposed Conditions	1960	13	15.04		15.06	0.001938	1.78	1749.01	843.8	0.3
Seelander	14731	1-PCT AEP	Existing Conditions	1960	10.12	13.08		13.11	0.002967	0.97	1464.44	905.7	0.14
Seelander	14731	1-PCT AEP	Proposed Conditions	1960	10.12	13.08		13.11	0.002971	0.97	1463.82	905.67	0.14
Seelander	14183	1-PCT AEP	Existing Conditions	1960	8.44	11.52		11.55	0.003995	1.08	1453.28	936.42	0.17
Seelander	14183	1-PCT AEP	Proposed Conditions	1960	8.44	11.53		11.56	0.003942	1.07	1459.64	936.45	0.16
Seelander	13407	1-PCT AEP	Existing Conditions	1960	7.03	10.99		11	0.000297	0.4	3173.73	1199.66	0.05
Seelander	13407	1-PCT AEP	Proposed Conditions	1960	7.03	11		11.01	0.000292	0.4	3192.46	1202.88	0.05

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	12659	1-PCT AEP	Existing Conditions	1960	3.2	10.92		10.93	0.000047	0.89	4044.37	1818.38	0.07
Seelander	12659	1-PCT AEP	Proposed Conditions	1960	3.2	10.94		10.95	0.000046	0.89	4075.08	1824.62	0.07
Seelander	12578	1-PCT AEP	Existing Conditions	1960	1.97	10.92		10.92	0.000148	1.09	3292.8	1204.57	0.11
Seelander	12578	1-PCT AEP	Proposed Conditions	1960	1.97	10.93		10.94	0.000146	1.08	3313.34	1210.32	0.1
Seelander	12370	1-PCT AEP	Existing Conditions	1960	1.59	10.9		10.9	0.000065	0.24	4538.96	1145.2	0.02
Seelander	12370	1-PCT AEP	Proposed Conditions	1960	1.59	10.92		10.92	0.000065	0.24	4558.7	1146.42	0.02
Seelander	12202	1-PCT AEP	Existing Conditions	1960	1.28	10.89		10.89	0.000073	0.29	5533.95	1266.23	0.03
Seelander	12202	1-PCT AEP	Proposed Conditions	1960	1.28	10.91		10.91	0.000072	0.29	5555.96	1266.36	0.03
Seelander	12098	1-PCT AEP	Existing Conditions	1960	1.09	10.88		10.88	0.000049	0.21	6495.16	1347.79	0.02
Seelander	12098	1-PCT AEP	Proposed Conditions	1960	1.09	10.9		10.9	0.000049	0.21	6518.72	1349.88	0.02
Seelander	11959	1-PCT AEP	Existing Conditions	1960	0.78	10.88		10.88	0.000024	0.14	8766.64	1604.01	0.01
Seelander	11959	1-PCT AEP	Proposed Conditions	1960	0.78	10.89		10.9	0.000023	0.14	8794.75	1604.13	0.01

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	11839	1-PCT AEP	Existing Conditions	1960	0.5	10.87		10.88	0.000015	0.14	10381.81	1854.3 6	0.01
Seelander	11839	1-PCT AEP	Proposed Conditions	1960	0	10.89		10.89	0.000014	0.14	10481.75	1854.9 9	0.01
Seelander	11753	1-PCT AEP	Existing Conditions	1960	0.26	10.87		10.87	0.000013	0.12	10653.84	1829.4 1	0.01
Seelander	11753	1-PCT AEP	Proposed Conditions	1960	0.26	10.89		10.89	0.000013	0.12	10680.29	1829.4 4	0.01
Seelander	11689	1-PCT AEP	Existing Conditions	1960	0.09	10.87		10.87	0.000017	0.14	9802.15	1729.2 9	0.01
Seelander	11689	1-PCT AEP	Proposed Conditions	1960	0.09	10.89		10.89	0.000017	0.14	9827.99	1729.4	0.01
Seelander	11528	1-PCT AEP	Existing Conditions	1960	-0.09	10.87		10.87	0.000024	0.16	8507.66	1474.8 6	0.01
Seelander	11528	1-PCT AEP	Proposed Conditions	1960	-0.09	10.89		10.89	0.000023	0.16	8533.66	1474.9 9	0.01
Seelander	11360	1-PCT AEP	Existing Conditions	1960	-0.25	10.86		10.86	0.000036	0.21	6835.69	1226.6 4	0.02
Seelander	11360	1-PCT AEP	Proposed Conditions	1960	-0.25	10.88		10.88	0.000035	0.21	6857.37	1226.7 3	0.02
Seelander	11230	1-PCT AEP	Existing Conditions	1960	-0.41	10.85		10.85	0.000201	0.52	3016.55	597.36	0.04
Seelander	11230	1-PCT AEP	Proposed Conditions	1960	-0.41	10.86		10.87	0.000278	0.61	2738.93	597.59	0.05

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	10948	1-PCT AEP	Existing Conditions	1960	-0.66	10.75		10.77	0.000354	0.67	1951.74	433.89	0.06
Seelander	10948	1-PCT AEP	Proposed Conditions	1960	-0.66	10.75		10.77	0.000354	0.68	1951.44	433.88	0.06
Seelander	10663	1-PCT AEP	Existing Conditions	1960	-0.72	10.69		10.7	0.000188	0.5	3497.85	745.42	0.04
Seelander	10663	1-PCT AEP	Proposed Conditions	1960	-0.72	10.69		10.7	0.000188	0.5	3497.31	745.41	0.04
Seelander	10491	1-PCT AEP	Existing Conditions	1960	-0.72	10.68		10.68	0.000042	0.24	6820.02	1790.8 5	0.02
Seelander	10491	1-PCT AEP	Proposed Conditions	1960	-0.72	10.68		10.68	0.000042	0.24	6818.71	1790.8 3	0.02
Seelander	10314	1-PCT AEP	Existing Conditions	1960	-0.72	10.68		10.68	0.000012	0.21	7139.41	1904.5 7	0.02
Seelander	10314	1-PCT AEP	Proposed Conditions	1960	-0.72	10.68		10.68	0.00001	0.21	7765.49	1953.5 5	0.01
Seelander	10221	1-PCT AEP	Existing Conditions	1960	-0.72	10.67		10.67	0.000094	0.82	2652.9	672.27	0.06
Seelander	10221	1-PCT AEP	Proposed Conditions	1960	-0.72	10.67		10.67	0.000094	0.82	2652.9	672.27	0.06
Seelander	9857	1-PCT AEP	Existing Conditions	1960	-0.72	10.64		10.64	0.000065	0.82	2733.66	618.93	0.06
Seelander	9857	1-PCT AEP	Proposed Conditions	1960	-0.72	10.64		10.64	0.000065	0.82	2733.66	618.93	0.06

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	9343	1-PCT AEP	Existing Conditions	1960	-0.72	10.57		10.58	0.000332	0.88	2093.83	618.6	0.07
Seelander	9343	1-PCT AEP	Proposed Conditions	1960	-0.72	10.57		10.58	0.000332	0.88	2093.83	618.6	0.07
Seelander	8834	1-PCT AEP	Existing Conditions	1960	-0.72	10.46		10.5	0.000102	1.74	2099.25	540.63	0.11
Seelander	8834	1-PCT AEP	Proposed Conditions	1960	-0.72	10.46		10.5	0.000102	1.74	2099.25	540.63	0.11
Seelander	7975	1-PCT AEP	Existing Conditions	1960	-0.72	10.37		10.38	0.000169	0.77	2556.28	557.44	0.05
Seelander	7975	1-PCT AEP	Proposed Conditions	1960	-0.72	10.37		10.38	0.000169	0.77	2556.28	557.44	0.05
Seelander	7350	1-PCT AEP	Existing Conditions	1960	-0.72	10.24		10.25	0.000269	0.77	2800.2	755.3	0.05
Seelander	7350	1-PCT AEP	Proposed Conditions	1960	-0.72	10.24		10.25	0.000269	0.77	2800.2	755.3	0.05
Seelander	6704	1-PCT AEP	Existing Conditions	1960	-0.72	10.22		10.22	0.000024	0.72	6185.54	911.79	0.05
Seelander	6704	1-PCT AEP	Proposed Conditions	1960	-0.72	10.22		10.22	0.000024	0.72	6185.54	911.79	0.05
Seelander	5518	1-PCT AEP	Existing Conditions	1960	-0.72	10.13		10.15	0.001087	1.56	1743.02	824.31	0.1
Seelander	5518	1-PCT AEP	Proposed Conditions	1960	-0.72	10.13		10.15	0.001087	1.56	1743.02	824.31	0.1

HEC-RAS standard summary table for existing conditions and proposed conditions hydraulic models (Continued).

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Seelander	4461	1-PCT AEP	Existing Conditions	1960	-0.72	9.86		9.86	0.000195	0.67	3348.91	766.77	0.05
Seelander	4461	1-PCT AEP	Proposed Conditions	1960	-0.72	9.86		9.86	0.000195	0.67	3348.91	766.77	0.05
Seelander	3305	1-PCT AEP	Existing Conditions	1960	-0.72	9.5		9.52	0.000621	1.28	2041.42	542.91	0.08
Seelander	3305	1-PCT AEP	Proposed Conditions	1960	-0.72	9.5		9.52	0.000621	1.28	2041.42	542.91	0.08
Seelander	2834	1-PCT AEP	Existing Conditions	1960	-0.72	9.33		9.34	0.000227	0.91	2678.13	702.61	0.05
Seelander	2834	1-PCT AEP	Proposed Conditions	1960	-0.72	9.33		9.34	0.000227	0.91	2678.13	702.61	0.05
Seelander	2106	1-PCT AEP	Existing Conditions	1960	-0.72	9.02		9.06	0.000821	1.66	1292.88	368.23	0.12
Seelander	2106	1-PCT AEP	Proposed Conditions	1960	-0.72	9.02		9.06	0.000821	1.66	1292.88	368.23	0.12
Seelander	1578	1-PCT AEP	Existing Conditions	1960	-0.88	8.54	1.22	8.58	0.001001	1.6	1242.1	236.16	0.11
Seelander	1578	1-PCT AEP	Proposed Conditions	1960	-0.88	8.54	1.22	8.58	0.001001	1.6	1242.1	236.16	0.11

Page Intentionally Left Blank

Appendix B

PHASE 1 DESIGN PLANS

Page Intentionally Left Blank

SEELANDER CREEK DESIGN SUPPORT, PHASE I COOS BAY, OR

PROJECT PARTNERS



SHEET INDEX		
SHT NO	DWG NO	SHT TITLE
1	G01	COVER SHEET AND DRAWING INDEX
2	G02	GENERAL NOTES ABBREVIATIONS AND SYMBOLS
3	C01	EROSION AND SEDIMENT CONTROL NOTES
4	C02	EROSION AND SEDIMENT CONTROL PLAN
5	C03	EXISTING CONDITIONS PLAN
6	C04	CULVERT 1 PLAN
7	C05	CULVERT 2 DEMOLITION PLAN
8	C06	CULVERT 3 PLAN
9	C07	CULVERT PROFILES
10	C08	CULVERT TYPICAL DETAILS AND NOTES
11	C09	BRIDGE BEAM REPAIR TYPICAL DETAILS AND NOTES

ADDITIONAL ODOT STD BMP DWGS AND DETS ATTACHED FOR CONTRACTOR REFERENCE ONLY. SEE SHTS C01 AND C02 FOR INFORMATION ON CONTRACTOR PREPARED ESCP AND BMP RESPONSIBILITIES.

PROJECT DESCRIPTION

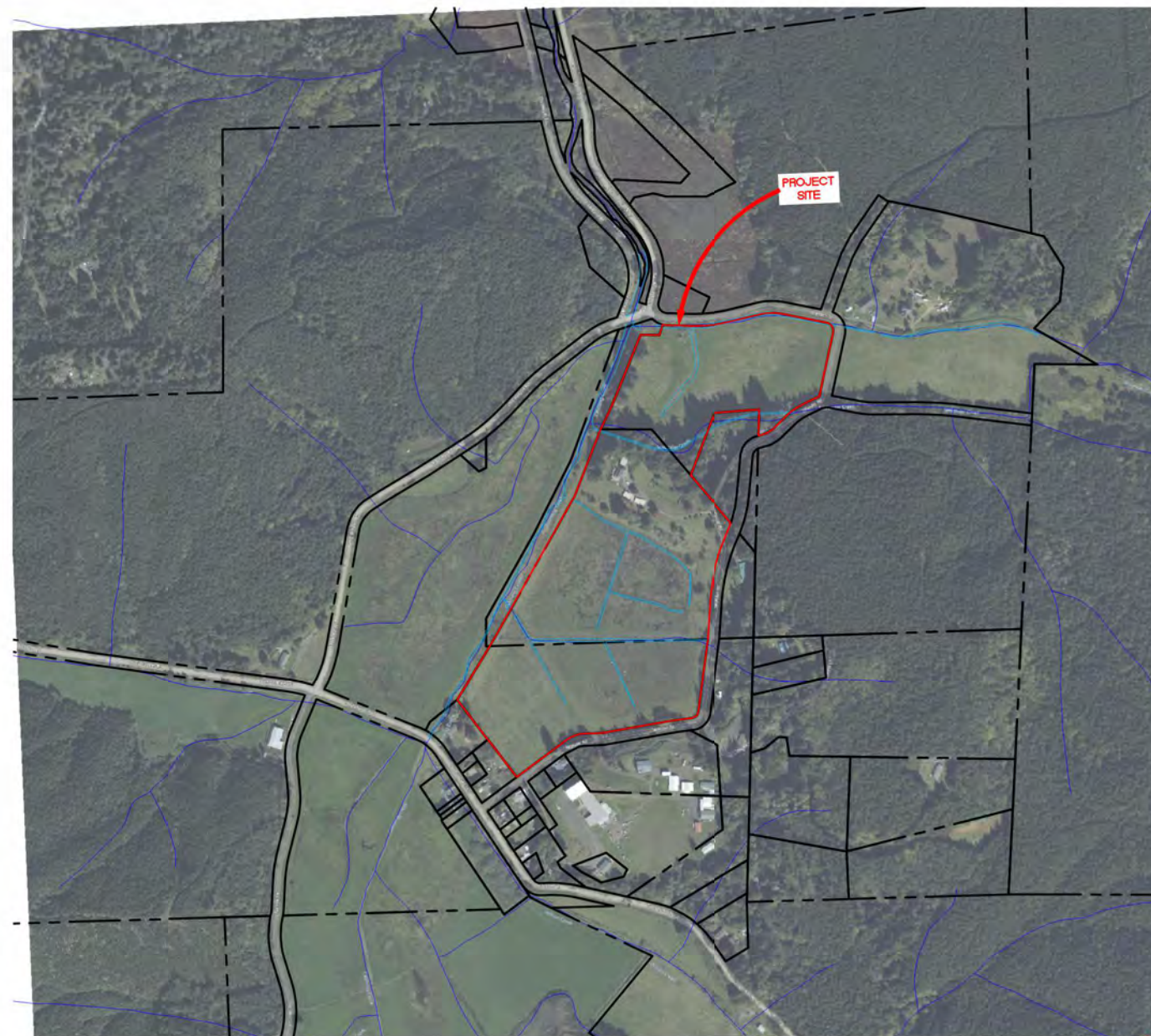
THE SEELANDER CREEK PROJECT SEEKS TO RESTORE WATERSHED FUNCTION THROUGH RIPARIAN PLANTING/FENCING, IMPROVING FISH PASSAGE, AND ENHANCING ACCESS TO OFF-CHANNEL HABITAT BY ADDRESSING 10 UNDERSIZED AND FAILING WATERWAY CROSSINGS. THE PROJECT PROPOSES TO INSTALL 13,250 FEET OF LIVESTOCK EXCLUSION FENCING ALONG 1.9 MILES OF STREAM AND WETLAND HABITAT TO PROVIDE RIPARIAN SETBACKS RANGING BETWEEN 20 FEET AND 40 FEET WIDE. THESE SETBACKS WILL SUPPORT DEVELOPMENT OF 10.3 ACRES OF RIPARIAN BUFFER PLANTED WITH NATIVE TREE, SHRUB, AND WETLAND PLANT SPECIES. PLANT ESTABLISHMENT ACTIVITIES WILL OCCUR INCREMENTALLY OVER 5 YEARS TO ACHIEVE A GOAL OF 80% PLANT SURVIVAL.

TO ADDRESS THE 10 FAILING AND UNDERSIZED (24-72 INCH DIA) WATERWAY CROSSINGS, COOSWA HAS PARTNERED WITH THE COOS COUNTY ROAD DEPT TO REPLACE 2 CROSSINGS, WORK WITH PRIVATE LOWLAND LANDOWNERS TO UPGRADE AN AG BRIDGE AND 2 AG CULVERTS, FULLY DECOMMISSION 2 AG CROSSINGS, AND REPLACE 3 OUTDATED AND FAILING CULVERT/TIDEGATE STRUCTURES WITH 2 MODERN FISH FRIENDLY MITIGATOR STYLE TIDEGATES. ALL CROSSINGS HAVE BEEN SIZED TO MEET NOAA FISH PASSAGE CRITERIA (1.5XACW AND >20% EMBEDDEDNESS). THESE STRUCTURES WILL IMPROVE ACCESS TO KEY COHO HABITATS AND PROVIDE ACCESS TO NEARLY 7 MILES OF CRITICAL SPAWNING AND REARING HABITAT (KEY LIMITING FACTORS), UPPER CATCHING SLOUGH AND SEELANDER CREEK RANKED VERY HIGH IN THE RECENT COOS WATERSHED COHO STRATEGIC ACTION PLAN.

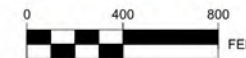
IMPLEMENTATION OF THE PROJECT IS IN TWO PHASES. PHASE I FOCUSES ON REPLACEMENT OF UNDERSIZED AND FAILING TIDE GATED CULVERTS WITH MODERN FISH FRIENDLY MITIGATOR STYLE TIDE GATES, DECOMMISSIONING OF AN UNNECESSARY AGRICULTURAL TIDE GATED CULVERT CROSSING, AND REPAIR OF A DAMAGED WOODEN BEAM ON AN AGRICULTURAL CROSSING. PHASE II FOCUSES ON INTERIOR DRAINAGE IMPROVEMENTS AND HABITAT ENHANCEMENTS THROUGH DITCH REALIGNMENT AND PLUGGING, BANK PULL BACK, AND INSTALLATION OF TWO AGRICULTURAL CROSSINGS.



1 VICINITY MAP
SCALE: NOT TO SCALE



2 PROJECT AREA
SCALE: 1:400



2 VICINITY MAP
SCALE: NOT TO SCALE

ODFW IN-WATER WORK WINDOW FOR THE MILLICOMA RIVER, SOUTH FORK COOS RIVER, AND TRIBUTARIES: JULY 1 TO SEPTEMBER 15 AND PER GENERAL ESCP NOTE 12 ON SHT C01

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.17 13:01:27-4700



PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I
COVER SHEET AND DRAWING INDEX

DRAWING NO.
G01
SHEET NO.
1
OF
11

GENERAL NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING REQUIREMENTS SET FORTH IN THE PERMITS OBTAINED FOR THIS PROJECT. THE CONTRACTOR SHALL MAINTAIN A COPY OF ALL PERMITS ONSITE DURING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE CONDITIONS AND THE SAFETY OF HUMAN LIFE DURING THE COURSE OF CONSTRUCTION. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY DURING THE PERIOD OF CONSTRUCTION AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. THE CONTRACTOR SHALL KEEP THE JOB SITE AREA CLEAN AND HAZARD-FREE, AND SHALL DISPOSE OF ALL DEBRIS, RUBBISH, AND CONSTRUCTION WASTE. UNLESS OTHERWISE DIRECTED BY THE CAR, ALL DISTURBED AREAS SHALL BE REHABILITATED TO A SMOOTH GRADE MATCHED TO UNDISTURBED ADJACENT GRADES SO AS TO FACILITATE POST-CONSTRUCTION SHEET FLOW RUNOFF AND PREVENT CONCENTRATED OR IMPEDED RUNOFF FLOWS.
4. THE CONTRACTOR SHALL PROTECT THE STAGING AREA SO THAT EQUIPMENT AND MATERIALS DO NOT DAMAGE ADJACENT VEGETATED AREAS OR WATERWAYS.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE WITH THE CAR AND CONFIRM THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE.

SURVEY CONTROL AND CONSTRUCTION LIMITS NOTES:

1. EXISTING GROUND ELEVATION AND SURVEY CONTROL POINT DATA IS FROM COOSWA SURVEYS IN 2021 AND 2022.
2. PROJECTED COORDINATE SYSTEM
HORIZONTAL: NAD83 OREGON STATE PLANE (POLYCONIC), SOUTH ZONE, WITH UNITS OF US SURVEY FEET (ESRI:102727)
VERTICAL: NAVD88 WITH UNITS OF FEET
3. ALL STATIONING REFERS TO THE CENTERLINE OF CONSTRUCTION, OR AS SHOWN, AND IS THE MEASURED HORIZONTAL DISTANCE.
4. CONSTRUCTION LIMITS, CENTERLINE, AND OFFSET STAKING TO BE PERFORMED BY THE CONTRACTOR, UNLESS OTHERWISE DIRECTED BY CAR.
5. ALL CONSTRUCTION ACTIVITY, INCLUDING STAGING AND STOCKPILING, SHALL BE CONFINED TO THE LIMITS OF THE GRADING, TEMPORARY CONSTRUCTION ACCESS, AND TEMPORARY CONSTRUCTION STAGING AREAS SHOWN IN THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING REQUIRED DATUM, BENCHMARKS, CONTROL LINES AND LEVELS. DO NOT DISTURB, EXCAVATE, OR WORK BEYOND THE CONSTRUCTION LIMITS WITHOUT APPROVAL FROM CAR.
6. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND IN SOME CASES HAVE NOT BEEN SURVEYED. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING OREGON UTILITY NOTIFICATION CENTER AT 800.332.2344 72-HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING MARKINGS.

SURVEY CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEV	DESCRIPTION
634	610247.831	3950402.933	14.138	CP2
635	612233.150	3950313.432	13.442	CP1

ENVIRONMENTAL PROTECTION NOTES:

1. IF THE CONTRACTOR ENCOUNTERS POTENTIALLY HAZARDOUS MATERIALS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CAR. ALL CONSTRUCTION SPOILS AND WASTE MATERIALS THAT CONTACT OR CONTAIN HAZARDOUS MATERIALS SHALL BE DISPOSED OF AT AN APPROVED LANDFILL FACILITY.
2. EXISTING ON-SITE MATERIALS SHALL BE CAREFULLY REMOVED AND STORED OR DISPOSED OF. COMPLETELY REMOVE STUMPS, ROOTS, WILLOWS, SHRUBS, WEEDS, AND OTHER DEBRIS PROTRUDING FROM THE GROUND WITHIN THE LIMITS OF GRADING AND AS DIRECTED BY THE CAR.
3. TREES AND LAND AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL BE PROTECTED FROM DAMAGE. EXERCISE CARE TO AVOID DAMAGE TO NATURAL VEGETATION. ANY TREE TRIMMING OR REMOVAL, INCLUDING WITHIN THE GRADING LIMITS, SHALL BE PRE-APPROVED BY CAR.

TEMPORARY CONSTRUCTION FACILITIES NOTES:

1. ALL TEMPORARY UTILITIES AND FACILITIES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. A CONSTRUCTION TRAILER IS NOT REQUIRED. ANY USE OF POTABLE WATER OR ELECTRICITY FROM EXISTING CONNECTIONS ON-SITE MUST BE COORDINATED WITH THE CAR FOR LANDOWNER WRITTEN AGREEMENT PRIOR TO USE. A CHEMICAL TOILET OF SUITABLE TYPE SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR AT ALL TIMES.

ABBREVIATIONS AND NOTATIONS:

ACW	ACTIVE CHANNEL WIDTH	N	NORTH, NORTHING
AG	AGRICULTURAL	NAD83	NORTH AMERICAN DATUM OF 1983
ALIGN	ALIGNMENT	NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
APPROX	APPROXIMATELY	NMFS	NATIONAL MARINE FISHERIES SERVICE, NOAA FISHERIES
BMP	BEST MANAGEMENT PRACTICE(S)	NO, #	NUMBER
CAR	CONTRACTING AGENCY REPRESENTATIVE, COOS WATERSHED ASSOCIATION (COOSWA)	NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
CFS	CUBIC FEET PER SECOND	NOM	NOMINAL
CL	CENTERLINE	NSG4MA	NEHALEM MARINE SIDE HINGED GATE FOR 4 FOOT DIAMETER CULVERT PIPE WITH A MITIGATOR AND AUXILIARY DOOR
COOSWA	COOS WATERSHED ASSOCIATION	NTS	NOT TO SCALE
CUYD, CY	CUBIC YARD	ODOT	OREGON DEPARTMENT OF TRANSPORTATION
DBH	DIAMETER AT BREAST HEIGHT	ODFW	OREGON DEPARTMENT OF FISH AND WILDLIFE
DEPT	DEPARTMENT	OR	OREGON
DEQ	OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
DET	DETAIL	PT	POINT
DIA, Ø	DIAMETER	SHT	SHEET
DS	DOWNSTREAM	SPEC	SPECIFICATION(S)
DWG	DRAWING	SQ	SQUARE
E	NORTH, EASTING	STD	STANDARD
EA	EACH	STA	STATION
EG	EXISTING GROUND	SY, SQYD	SQUARE YARD
EL, ELEV	ELEVATION	TB	TURBIDITY BARRIER
ESCP	EROSION AND SEDIMENT CONTROL PLAN	TBD	TO BE DEVELOPED, TO BE DETERMINED
EX, EXIST	EXISTING	TEMP	TEMPORARY
FG	FINISHED GROUND	TN	TON
FT, '	FOOT OR FEET	TYP	TYPICAL
GPM	GALLONS PER MINUTE	US	UNITED STATES, UPSTREAM
HORZ	HORIZONTAL	USGS	UNITED STATES GEOLOGICAL SURVEY
IN, "	INCH	VERT	VERTICAL
IE	INVERT ELEVATION	W	WITH
LF	LINEAR FEET	W/O	WITHOUT
LTR	LETTER	°	DEGREE
MAX	MAXIMUM	@	AT
MHW	MEAN HIGH WATER	%	PERCENT
MIN	MINIMUM		
MM	MILLIMETER		

SYMBOLS:



LEGEND	
EXISTING	PROPOSED
MAJOR CONTOUR ---5---	MAJOR CONTOUR —5—
MINOR CONTOUR ---1---	MINOR CONTOUR —1—
PROPERTY LINE - - - - -	TEMPORARY TURBIDITY BARRIER
MHW - - - - - MHW	TEMPORARY SILT FENCE
CULVERT	TEMPORARY CHECK DAM, TYPE 3
OVERHEAD ELECTRIC — OE —	TEMPORARY PUMP
ROADWAY ————	TEMPORARY CONSTRUCTION ACCESS
WATERWAY	THIN SPREAD FILL AREAS
WETLAND AREA FROM USFWS	RIPRAP / PIPE BEDDING / PIPE ZONE
	TIDE GATE AND SLEEVE
	CULVERT
	LAYOUT COORDINATE

FILE: c:\Users\jankilgren\Documents\1-2022-0001-1-cooswa-seelander - documents\CAD\Sheets\G02_GENERAL NOTES ABBREVIATIONS AND SYMBOLS.dwg USER: jankilgren DATE/TIME: 10/17/2023 12:49 PM

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document.
 Date: 2023.10.13:01:31-7'00"



PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I
GENERAL NOTES ABBREVIATIONS AND SYMBOLS

DRAWING NO.
G02
SHEET NO.
2
OF
11

GENERAL EROSION AND SEDIMENT CONTROL PLAN (ESCP) NOTES:

1. EROSION AND SEDIMENT CONTROL PLAN (ESCP) ELEMENTS AND SEQUENCED WORK AREAS SHOWN IN THESE PLANS ARE A SCHEMATIC REPRESENTATION OF ONE POSSIBLE OPTION ONLY, CONTRACTOR MAY PROPOSE AN ALTERNATIVE APPROACH. CONTRACTOR TO SUBMIT ESCP FOR APPROVAL BY CAR 5 DAYS (MIN) PRIOR TO COMMENCING WORK. CONTRACTOR SUBMITTED ESCP SHALL INCORPORATE ALL BMP MEASURES PER PROJECT PERMIT REQUIREMENTS. CONTRACTOR TO COORDINATE WITH CAR REGARDING PERMIT REQUIREMENTS.
2. CONTRACTOR TO VERIFY SITE CONDITIONS PRIOR TO DEVELOPMENT OF ESCP.
3. CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR PREVENTING SILT-LADEN RUNOFF FROM DISCHARGING FROM THE PROJECT SITE. FAILURE BY THE CONTRACTOR CAN RESULT IN A FINE. THE CONTRACTOR DEVELOPED ESCP SHALL IDENTIFY THE CONTRACTOR'S DESIGNATED CONTACT PERSON. THE DESIGNATED CONTACT PERSON MUST BE AVAILABLE FOR CONTACT BY TELEPHONE ON A 24-HOUR- BASIS THROUGHOUT CONSTRUCTION AND UNTIL THE PROJECT HAS BEEN COMPLETED AND ACCEPTED BY THE CAR.
4. ADJACENT PROPERTIES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION BY APPROPRIATE USE OF SEDIMENT BARRIERS OR FILTERS, CHECK DAMS, STRAW BALES, OR BY A COMBINATION OF THESE MEASURES AND OTHER APPROPRIATE BMPS.
5. TEMPORARY ESCP BMP'S TO REMAIN IN PLACE UNTIL THE SITE IS STABILIZED AFTER CONSTRUCTION.
6. EMERGENCY EROSION CONTROL MATERIALS SHALL BE AVAILABLE AT THE SITE, INCLUDING A SUPPLY OF SEDIMENT CONTROL MATERIALS AND AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER OR WETLAND AREAS ARE WITHIN 150 FEET OF ACTIVE AND IDLE MACHINERY.
7. CONTRACTOR TO COORDINATE WITH CAR REGARDING PRESENCE OF AQUATIC ORGANISM EXCLUSION AND SALVAGE WITHIN WATERWAYS ADJACENT TO THE WORK AREAS AND FISH EXCLUSION REQUIREMENTS PER CAR AND ODFW BIOLOGIST. CONTRACTOR SHALL NOTIFY CAR 5 DAYS PRIOR TO IMPLEMENTING WORK AREA ISOLATION, INCLUDING WHEN WORKING IN THE WET IF CONTRACTOR PREPARED ESCP ELECTS, AND FISH EXCLUSION MEASURES.
8. CONSTRUCTION ACCESS IS ASSUMED TO OCCUR FROM SELANDER ROAD THROUGH PRIVATE FIELD GATES AND ALONG CONTRACTOR ESTABLISHED TEMPORARY CONSTRUCTION ACCESS ROUTES.
9. TEMPORARY CONSTRUCTION ACCESS ROUTES SHALL UTILIZE EXISTING DIKE AND FIELD ACCESS ROUTES TO MINIMIZE DISTURBANCE.
10. STAGING AREAS SHALL BE KEPT TO THE MINIMAL PRACTICAL EXTENT TO MINIMIZE DISTURBANCE.
11. TEMPORARY CONSTRUCTION ACCESS ROUTES AND STAGING AREAS SHALL BE RESTORED PER DIRECTION OF CAR.
12. ALL WORK BELOW MHW ON CATCHING SLOUGH AND ITS TRIBUTARIES MUST BE CONDUCTED DURING THE IN-WATER WORK PERIOD, JULY 1 TO SEPTEMBER 15, UNLESS A WRITTEN EXTENSION IS RECEIVED BY THE CAR FROM PERMITTING AGENCIES AS RECOMMENDED BY ODFW AND NMFS.

ODEQ STANDARD ESCP NOTES FROM NARRATIVE PART III SECTION 2 (HTTPS://WWW.OREGON.GOV/DEQ/WQ/DOCUMENTS/ESCPFORMSREV2F.PDF):

1. ONCE KNOWN, INCLUDE A LIST OF ALL CONTRACTORS THAT WILL ENGAGE IN CONSTRUCTION ACTIVITIES ON SITE, AND THE AREAS OF THE SITE WHERE THE CONTRACTOR(S) WILL ENGAGE IN CONSTRUCTION ACTIVITIES. REVISE THE LIST AS APPROPRIATE UNTIL PERMIT COVERAGE IS TERMINATED (SECTION 4.4.C.1). IN ADDITION, INCLUDE A LIST OF ALL PERSONNEL (BY NAME AND POSITION) THAT ARE RESPONSIBLE FOR THE DESIGN, INSTALLATION AND MAINTENANCE OF STORMWATER CONTROL MEASURES (E.G. ESCP DEVELOPER, BMP INSTALLER (SEE SECTION 4.10), AS WELL AS THEIR INDIVIDUAL RESPONSIBILITIES. (SECTION 4.4.C.II)
2. VISUAL MONITORING INSPECTION REPORTS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS. (SECTION 6.5)
3. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS. (SECTION 6.5.Q)
4. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. (SECTION 4.7)
5. THE PERMIT REGISTRANT MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SECTIONS 4 AND 4.11)
6. THE ESCP MUST BE ACCURATE AND REFLECT SITE CONDITIONS. (SECTION 4.8)
7. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT WITHIN 10 DAYS. (SECTION 4.9)
8. SEQUENCE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SECTION 2.2.2)
9. CREATE SMOOTH SURFACES BETWEEN SOIL SURFACE AND EROSION AND SEDIMENT CONTROLS TO PREVENT STORMWATER FROM BYPASSING CONTROLS AND PONDING. (SECTION 2.2.3)
10. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SECTION 2.2.1)
11. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SECTION 2.2.5)
12. MAINTAIN AND DELINEATE ANY EXISTING NATURAL BUFFER WITHIN THE 50-FOET OF WATERS OF THE STATE. (SECTION 2.2.4)
13. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE. (SECTIONS 2.1.3)
14. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS. (SECTIONS 2.1.1. AND 2.2.16)
15. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY. (SECTIONS 2.2.6 AND 2.2.13)
16. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SECTION 2.2.14)
17. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES. TEMPORARY OR PERMANENT STABILIZATIONS MEASURES ARE NOT REQUIRED FOR AREAS THAT ARE INTENDED TO BE LEFT UNVEGETATED, SUCH AS DIRT ACCESS ROADS OR UTILITY POLE PADS.(SECTIONS 2.2.20 AND 2.2.21)
18. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SECTION 2.3.7)
19. KEEP WASTE CONTAINER LIDS CLOSED WHEN NOT IN USE AND CLOSE LIDS AT THE END OF THE BUSINESS DAY FOR THOSE CONTAINERS THAT ARE ACTIVELY USED THROUGHOUT THE DAY. FOR WASTE CONTAINERS THAT DO NOT HAVE LIDS, PROVIDE EITHER (1) COVER (E.G., A TARP, PLASTIC SHEETING, TEMPORARY ROOF) TO PREVENT EXPOSURE OF WASTES TO PRECIPITATION, OR (2) A SIMILARLY EFFECTIVE MEANS DESIGNED TO PREVENT THE DISCHARGE OF POLLUTANTS (E.G., SECONDARY CONTAINMENT). (SECTION 2.3.7)
20. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. (SECTION 2.2.7)
21. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SECTION 2.2.7.F)
22. CONTROL PROHIBITED DISCHARGES FROM LEAVING THE CONSTRUCTION SITE, I.E., CONCRETE WASH-OUT, WASTEWATER FROM CLEANOUT OF STUCCO, PAINT AND CURING COMPOUNDS. (SECTIONS 1.5 AND 2.3.9)
23. ENSURE THAT STEEP SLOPE AREAS WHERE CONSTRUCTION ACTIVITIES ARE NOT OCCURRING ARE NOT DISTURBED. (SECTION 2.2.10)
24. PREVENT SOIL COMPACTION IN AREAS WHERE POST-CONSTRUCTION INFILTRATION FACILITIES ARE TO BE INSTALLED. (SECTION 2.2.12)
25. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. (SECTIONS 2.2.15 AND 2.3)
26. PROVIDE PLANS FOR SEDIMENTATION BASINS THAT HAVE BEEN DESIGNED PER SECTION 2.2.17 AND STAMPED BY AN OREGON PROFESSIONAL ENGINEER. (SEE SECTION 2.2.17.A)
27. IF ENGINEERED SOILS ARE USED ON SITE, A SEDIMENTATION BASIN/IMPONDEMENT MUST BE INSTALLED. (SEE SECTIONS 2.2.17 AND 2.2.18)
28. PROVIDE A DEWATERING PLAN FOR ACCUMULATED WATER FROM PRECIPITATION AND UNCONTAMINATED GROUNDWATER SEEPAGE DUE TO SHALLOW EXCAVATION ACTIVITIES. (SEE SECTION 2.4)
29. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SECTION 2.3)
30. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SECTION 2.2.9)
31. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SECTION 2.3.5)
32. IF AN ACTIVE TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN ENVIRONMENTAL MANAGEMENT PLAN APPROVAL FROM DEQ BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SECTION 1.2.9)
33. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SECTION 2.2)
34. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS. (SECTION 2.2.8)
35. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SECTION 2.1.5.B)
36. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL. (SECTION 2.1.5.C)
37. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SECTION 2.1.5.D)
38. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DEPARTMENT OF STATE LANDS REQUIRED TIMEFRAME. (SECTION 2.2.19.A)
39. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SECTION 2.2.19)
40. DOCUMENT ANY PORTION(S) OF THE SITE WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WILL BE TEMPORARILY INACTIVE FOR 14 OR MORE CALENDAR DAYS. (SECTION 6.5.F.)
41. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SECTION 2.2.20)
42. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS MUST BE REMOVED AND DISPOSED OF PROPERLY, UNLESS NEEDED FOR LONG TERM USE FOLLOWING TERMINATION OF PERMIT COVERAGE. (SECTION 2.2.21)

OREGON DEQ STANDARD REQUIRED ESCP INSPECTION TABLE	
SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	ON INITIAL DATE THAT LAND DISTURBANCE ACTIVITIES COMMENCE. WITHIN 24 HOURS OF ANY STORM EVENT, INCLUDING RUNOFF FROM SNOW MELT, THAT RESULTS IN DISCHARGE FROM THE SITE. AT LEAST ONCE EVERY 14 DAYS, REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
2. INACTIVE PERIODS GREATER THAN FOURTEEN (14) CONSECUTIVE CALENDAR DAYS	THE INSPECTOR MAY REDUCE THE FREQUENCY OF INSPECTIONS IN ANY AREA OF THE SITE WHERE THE STABILIZATION STEPS IN SECTION 2.2.20 HAVE BEEN COMPLETED TO TWICE PER MONTH FOR THE FIRST MONTH, NO LESS THAN 14 CALENDAR DAYS APART, THEN ONCE PER MONTH.
3. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER	IF SAFE, ACCESSIBLE AND PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT DISCHARGE POINT OR DOWNSTREAM LOCATION OF THE RECEIVING WATERBODY.
4. PERIODS DURING WHICH CONSTRUCTION ACTIVITIES ARE SUSPENDED AND RUNOFF IS UNLIKELY DUE TO FROZEN CONDITIONS.	VISUAL MONITORING INSPECTIONS MAY BE TEMPORARILY SUSPENDED. IMMEDIATELY RESUME MONITORING UPON THAWING, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.
5. PERIODS DURING WHICH CONSTRUCTION ACTIVITIES ARE CONDUCTED AND RUNOFF IS UNLIKELY DURING FROZEN CONDITIONS.	VISUAL MONITORING INSPECTIONS MAY BE REDUCED TO ONCE A MONTH. IMMEDIATELY RESUME MONITORING UPON THAWING, OR WHEN WEATHER CONDITIONS MAKE DISCHARGES LIKELY.

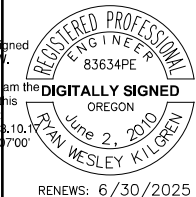
NOTES AND INSPECTION TABLE PROVIDED FOR CONTRACTOR CONVENIENCE. SECTIONS REFERENCES ARE FROM ODEQ'S 1200-C CONSTRUCTION STORMWATER GENERAL PERMIT (https://www.oregon.gov/deq/FilterPermitsDocs/1200Cpermit.pdf)

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.13 01:35:47'00



PROJECT NO. 1.2022.0001.1
DESIGNED BY RWK
DRAWN BY RWK

SELANDER CREEK DESIGN SUPPORT, PHASE I

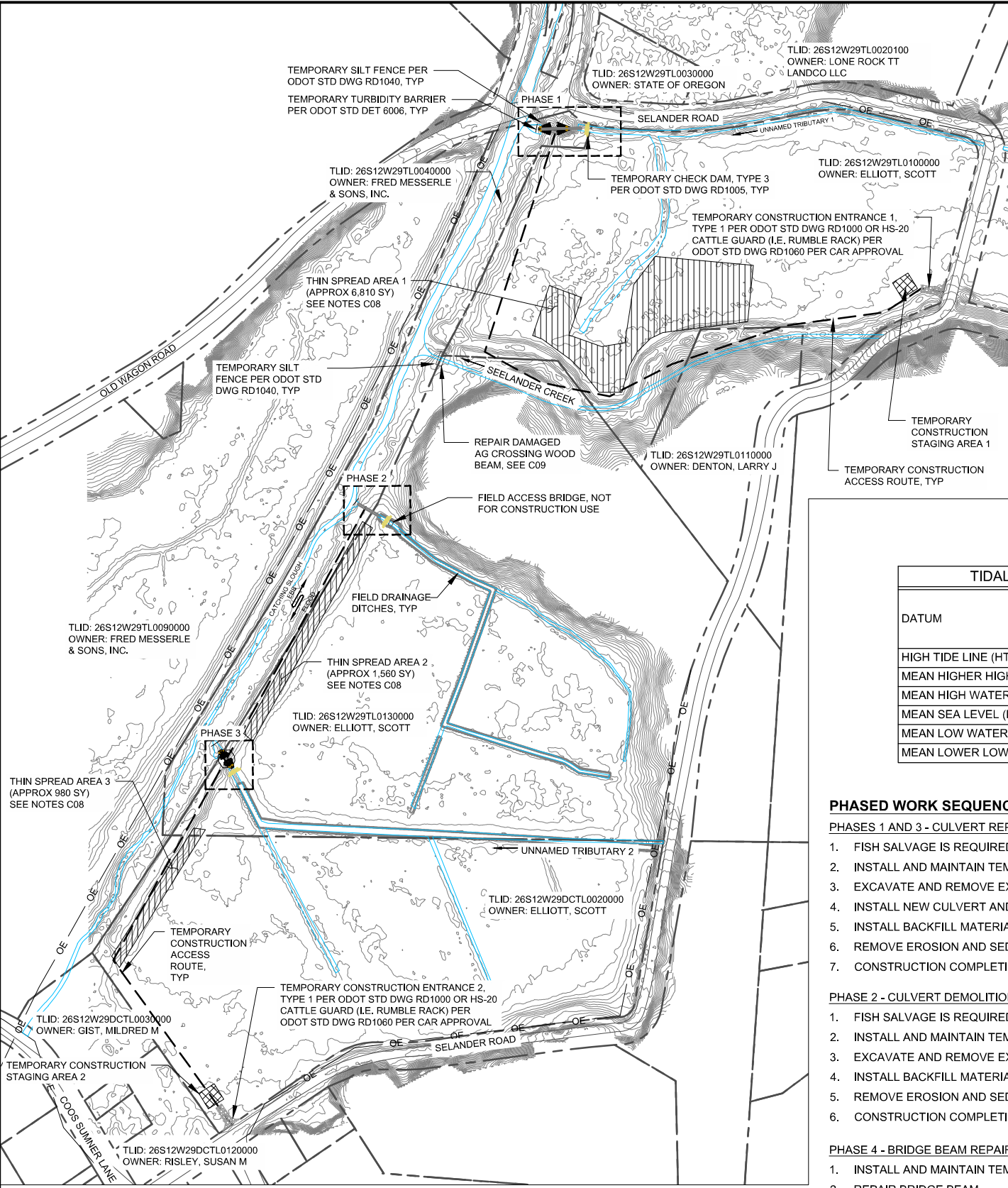
EROSION AND SEDIMENT CONTROL NOTES

DRAWING NO. C01
SHEET NO. 3
OF 11

FILE: c:\Users\jankilgren\Documents\CAD\Sheets\C01 EROSION AND SEDIMENT CONTROL NOTES.dwg USER: jankilgren DATE/TIME: 10/17/2023 12:49 PM



FILE: c:\Users\rvankilgren\Documents\CAD\Sheets\C02 EROSION AND SEDIMENT CONTROL PLAN.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:50 PM



GENERAL NOTES:

- AS PER ESCP NOTE 1 ON C01, THE ELEMENTS AND SEQUENCED WORK AREAS SHOWN IN THESE PLANS ARE A SCHEMATIC REPRESENTATION OF ONE POSSIBLE OPTION ONLY, USING WORKING IN THE WET METHODS AND ASSUMING CONTRACTOR WORK AT LOW TIDES. CONTRACTOR MAY PROPOSE AN ALTERNATIVE APPROACH, INCLUDING PARTIAL OR FULL ISOLATION, PER THESE PLANS AND DIRECTION OF THE CAR.
- CATCHING SLOUGH IS INFLUENCED BY TIDAL FLUCTUATIONS AND UPSTREAM FLOWS.
- SITE SPECIFIC TIDAL DATUM ARE PROVIDED FOR CONTRACTOR REFERENCE ONLY. SITE SPECIFIC TIDAL DATUM ARE DERIVED USING NOAA MONTHLY MEANS SIMULTANEOUS COMPARISON METHOD BETWEEN NOAA'S CHARLESTON TIDE STATION (9432780) AND COOSWAS INSTALLED WATER LEVEL LOGGER NEAR THE CATCHING SLOUGH SIDE OF CULVERT 1 (CATCHING SLOUGH) AND THE INTERIOR DITCH SIDE OF CULVERT 1 (INTERIOR). THE WATER LEVEL TIMESERIES USED FOR ANALYSIS SPANS AUGUST 4, 2021 UNTIL DECEMBER 8, 2021. WATER LEVELS WITHIN THE WORK AREA ARE SUBJECT TO TIDAL AND LOCALIZED RUNOFF INFLOWS AND MAY VARY BEYOND THE ELEVATIONS SHOWN HERE. SITE SPECIFIC LOW WATER DATUM MAY BE INFLUENCED BY SEDIMENTATION WITHIN THE DRAINAGE CHANNEL. HIGH TIDE LINE (HTL) DATUM VALUES SHOWN FOR THE SITE ARE THE HIGHEST MEASURED COOSWA LOGGER VALUES ANALYZED WITH NOAA'S TIDAL ANALYSIS DATUM CALCULATOR, AND ARE ASSUMED TO ALIGN WITH ELEVATIONS ASSOCIATED WITH WRACKED DEBRIS OR SCUM LINES IF FIELD DELINEATED. THUS, THESE HTL VALUES ARE ASSUMED TO MEET THE REQUIREMENTS OF 33 CODE OF FEDERAL REGULATIONS SECTION 328.3 AND THE USACE JURISDICTIONAL BOUNDARY EXTENT UNDER SECTION 404 PERMITTING.
- IF PUMPS ARE NECESSARY OR REQUIRED, ALL PUMP INTAKES SHALL BE EXCLUDED FROM FISH ACCESS PER CAR, ODFW, AND NMFS REQUIREMENTS.
 - FISH SCREEN CRITERIA FROM NMFS SLOPES V
 - SUBMIT TO NMFS FOR REVIEW AND APPROVAL FISH SCREEN DESIGNS FOR SURFACE WATER DIVERTED BY GRAVITY OR BY PUMPING AT A RATE THAT EXCEEDS 3 CFS.
 - ALL OTHER DIVERSIONS WILL HAVE A FISH SCREEN THAT MEETS THE FOLLOWING SPECIFICATIONS:
 - AN AUTOMATED CLEANING DEVICE WITH A MIN EFFECTIVE SURFACE AREA OF 2.5 SQUARE FEET PER CFS, AND A NOMINAL MAXIMUM APPROACH VELOCITY OF 0.4 FEET PER SECOND, OR NO AUTOMATED CLEANING DEVICE, A MIN EFFECTIVE SURFACE AREA OF 1 SQUARE FOOT PER CFS, AND A NOM MAX APPROACH RATE OF 0.2 FOOT PER SECOND; AND
 - A ROUND OR SQUARE SCREEN MESH THAT IS NO LARGER THAN 2.38 MM (0.094") IN THE NARROW DIMENSION, OR ANY OTHER SHAPE THAT IS NO LARGER THAN 1.75 MM (0.069") IN THE NARROW DIMENSION.
 - EACH FISH SCREEN WILL BE INSTALLED, OPERATED, AND MAINTAINED ACCORDING TO NMFS'S FISH SCREEN CRITERIA.
- PUMPED WATER MAYBE DISCHARGED WITHIN UPSLOPE FIELDS OR UNNAMED TRIBUTARY CHANNELS PROVIDED THAT SUFFICIENT ENERGY DISSIPATION IS ACHIEVED SO AS TO PREVENT EROSION AND SCOUR. ENERGY DISSIPATION MAY BE POSSIBLE USING EXISTING VEGETATION FOR FLOW DISPERSION OR ANOTHER CONTRACTOR PROPOSED AND CAR APPROVED BMP.
- THE ESTIMATED UNNAMED TRIBUTARY DISCHARGES ARE PROVIDED FOR CONTRACTOR CONVENIENCE. THESE ARE ESTIMATED VALUES ONLY AND ARE BASED ON USGS REGIONAL REGRESSIONS EXTRAPOLATED WITH UNKNOWN ERRORS DUE TO PARAMETERS OUTSIDE OF THE SUGGESTED REGRESSION GOODNESS OF FIT RANGE. SIZING OF THE TEMPORARY WATER MANAGEMENT PUMPS, PIPES, HOSES, SEDIMENT CONTROL FACILITIES, ENERGY DISSIPATORS, AND OTHER APPURTENANCES IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE BASED ON SITE AND FLOW CONDITIONS DURING THE CONSTRUCTION PERIOD.
- MINIMIZE EXCAVATION OF SHALLOW SUMPS FOR PUMP PLACEMENT TO THE EXTENT PRACTICAL.
- IF PARTIAL OR FULL ISOLATION METHODS ARE USED BY THE CONTRACTOR, MAINTAIN 2 FEET MIN FREEBOARD BETWEEN THE CATCHING SLOUGH WATER SURFACE AND THE TOP OF THE INSTALLED ISOLATION BARRIER.
- ACTUAL LOCATIONS FOR TURBIDITY BARRIER, ISOLATION, PUMP, AND OTHER ESCP BMPS SHALL BE BASED ON SITE TOPOGRAPHY, EASEMENTS, AND ADJUSTED BASED ON SITE AND FLOW CONDITIONS DURING CONSTRUCTION.

TIDAL DATUM ELEVATION (FEET NAVD88), SEE GENERAL NOTE 3			
DATUM	NOAA CHARLESTON TIDE STATION (9432780)	CATCHING SLOUGH (COOSWA LOGGER)	INTERIOR (COOSWA LOGGER)
HIGH TIDE LINE (HTL)	10.68	8.77	5.87
MEAN HIGHER HIGH WATER (MHHW)	7.12	6.76	5.42
MEAN HIGH WATER (MHW)	6.46	6.13	5.18
MEAN SEA LEVEL (MSL)	3.58	3.92	3.60
MEAN LOW WATER (MLW)	0.77	2.02	2.08
MEAN LOWER LOW WATER (MLLW)	-0.50	1.86	1.94

UNNAMED TRIBUTARIES AT SEELANDER PROJECT SITE ESTIMATED FLOWS FOR TEMPORARY WATER MANAGEMENT				
MONTH DURING IN-WATER WORK WINDOW	MONTHLY AVERAGE DAILY DISCHARGE IN CUBIC FEET PER SECOND (GALLONS PER MINUTE)			
	5-PERCENT EXCEEDANCE FLOW ¹	25-PERCENT EXCEEDANCE FLOW ²	50-PERCENT EXCEEDANCE FLOW ³	95-PERCENT EXCEEDANCE FLOW ⁴
JULY	0.012 (5.3)	0.005 (2.5)	0.003 (1.3)	0 (0)
AUGUST	0.008 (3.6)	0.003 (1.3)	0.001 (0.6)	0 (0)
SEPTEMBER	0.019 (8.5)	0.002 (0.7)	0.0005 (0.2)	0 (0)
NOTES				
1	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 2 DAYS EACH MONTH			
2	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 8 DAYS EACH MONTH			
3	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 16 DAYS EACH MONTH			
4	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 29 DAYS EACH MONTH			

PHASED WORK SEQUENCE:

PHASES 1 AND 3 - CULVERT REPLACEMENT

- FISH SALVAGE IS REQUIRED, COORDINATE WITH CAR AND ODFW PRIOR TO ESTABLISHING WORKING IN THE WET OR ISOLATION ACTIVITIES TO ENSURE SALVAGE OF AQUATIC ORGANISMS.
- INSTALL AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL BMPS TO PREVENT OFFSITE CONVEYANCE OF SEDIMENT LADEN WATER AND MINIMIZE EROSION.
- EXCAVATE AND REMOVE EXISTING CULVERT, DISPOSE OF REMOVED CULVERT AND TIDEGATE PER PLANS.
- INSTALL NEW CULVERT AND TIDEGATE PER PLANS AND MANUFACTURER'S INSTRUCTIONS.
- INSTALL BACKFILL MATERIALS AND VERTICAL PIER LOGS PER PLANS AND DIRECTION OF CAR.
- REMOVE EROSION AND SEDIMENT CONTROL BMPS.
- CONSTRUCTION COMPLETION AND STABILIZATION WILL INCLUDE REMOVAL OF ALL EROSION AND SEDIMENT CONTROL BMPS, AND ALLOWING WATER TO FLOW IN THE NEW CULVERT AND RESTORED CHANNELS/DITCHES.

PHASE 2 - CULVERT DEMOLITION

- FISH SALVAGE IS REQUIRED, COORDINATE WITH CAR AND ODFW PRIOR TO ESTABLISHING WORKING IN THE WET OR ISOLATION ACTIVITIES TO ENSURE SALVAGE OF AQUATIC ORGANISMS.
- INSTALL AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL BMPS TO PREVENT OFFSITE CONVEYANCE OF SEDIMENT LADEN WATER AND MINIMIZE EROSION.
- EXCAVATE AND REMOVE EXISTING CULVERT.
- INSTALL BACKFILL MATERIALS PER PLANS.
- REMOVE EROSION AND SEDIMENT CONTROL BMPS.
- CONSTRUCTION COMPLETION AND STABILIZATION WILL INCLUDE REMOVAL OF ALL EROSION AND SEDIMENT CONTROL BMPS, AND ALLOWING WATER TO FLOW IN THE NEW CULVERT AND RESTORED CHANNELS/DITCHES.

PHASE 4 - BRIDGE BEAM REPAIR

- INSTALL AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL BMPS TO PREVENT OFFSITE CONVEYANCE OF SEDIMENT LADEN WATER AND MINIMIZE EROSION.
- REPAIR BRIDGE BEAM
- REMOVE EROSION AND SEDIMENT CONTROL BMPS.
- CONSTRUCTION COMPLETION WILL INCLUDE REMOVAL OF ALL EROSION AND SEDIMENT CONTROL BMPS.

1 EROSION AND SEDIMENT CONTROL PLAN
SCALE: 1:150

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.13 13:01:39 -0700

PROJECT NO.
1.2022.0001.1

DESIGNED BY
RWK

DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I

EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO.
C02

SHEET NO.
4
OF
11

FILE: c:\Users\mankilgren\Documents\CAD\Sheets\EXISTING CONDITIONS PLAN.dwg USER: mankilgren DATE/TIME: 10/17/2023 12:50 PM



1 EXISTING CONDITIONS PLAN
SCALE: 1:150



WETLAND AREA TABLE							
NO	USFWS NATIONAL WETLAND INVENTORY CLASSIFICATION						AREA (ACRES)
	SYSTEM	CLASS	SUBCLASS	WATER REGIME	SPECIAL MODIFIERS	CODE	
1	PALUSTRINE	EMERGENT	PERSISTENT	TEMPORARILY FLOODED	PARTLY DRAINED/DITCHED	PEM1Ad	5.43
2	PALUSTRINE	EMERGENT	PERSISTENT	SEASONALLY FLOODED	PARTLY DRAINED/DITCHED	PEM1Cd	5.52
3	PALUSTRINE	FORESTED		TEMPORARILY FLOODED	DIKED/IMPOUNDED	PFOAh	0.61
4	PALUSTRINE	EMERGENT	PERSISTENT	SEASONALLY FLOODED-FRESH TIDAL	-	PEM1R	1.65
5	PALUSTRINE	EMERGENT	PERSISTENT	SEASONALLY FLOODED	PARTLY DRAINED/DITCHED	PEM1Cd	21.81
Total							35.02

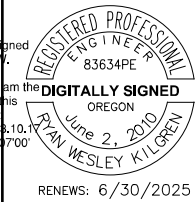
* WETLAND TYPES AND AREAS FROM USFWS NATIONAL WETLAND INVENTORY, AVAILABLE ONLINE AT [HTTP://WWW.FWS.GOV/PROGRAM/NATIONAL-WETLANDS-INVENTORY](http://www.fws.gov/program/national-wetlands-inventory)

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document.
Date: 2023.10.13 13:01:43 -7'00'

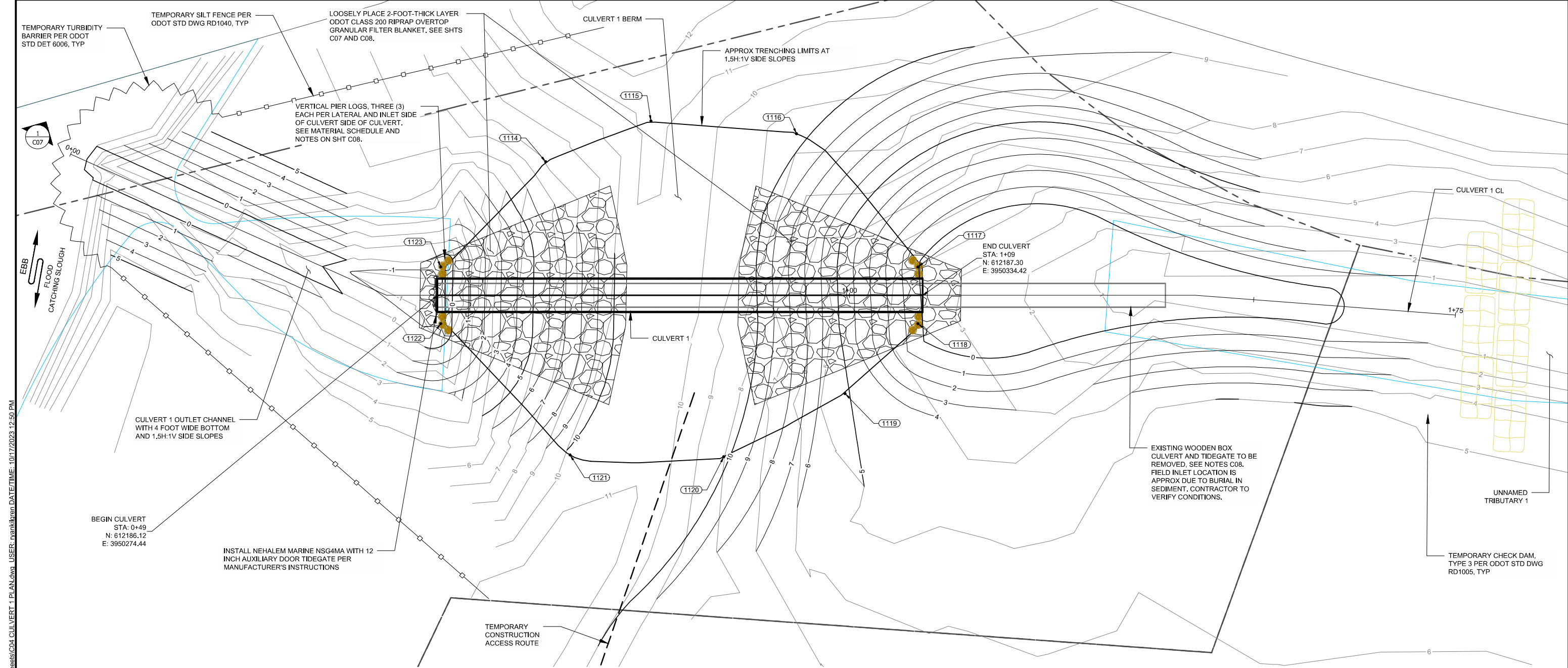


PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I
EXISTING CONDITIONS PLAN

DRAWING NO.
C03
SHEET NO.
5
OF
11





FILE: c:\Users\rvankilgren\Documents\water resources\161.2022.0001.1-cooswa-seelander - documents\CAD\Sheets\C04_CULVERT 1 PLAN.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:50 PM

CULVERT 1 MATERIAL SCHEDULE			
MATERIAL	QUANTITY	DIA (INCHES)	LENGTH (FEET)
TRIPLE WALL ADS SANTITE® HP PIPE (OR APPROVED EQUIVALENT)	1	48	60
NEHALEM MARINE NSG4MA WITH 12 INCH AUXILIARY DOOR AND 4 FOOT PIPE SLEEVE (OR APPROVED EQUIVALENT)	1	48	-
ODOT CLASS 200 RIPRAP	105 TN	-	-
GRANULAR FILTER BLANKET	24 TN	-	-
PIPE BEDDING	10 TN	-	-
PIPE ZONE	50 TN	-	-
VERTICAL PIER LOGS	12	12	20

1 CULVERT 1 PLAN
Scale: 1:6



CUT AND FILL SUMMARY			
SITE	CUT (CY)	FILL (CY)	BALANCE (CY)*
CULVERT 1 BERM	170	50	120
CULVERT 1 OUTLET CHANNEL	35	0	35
TRENCH CUT AND BACKFILL	330	180	150
THIN SPREAD**	0	305	5
TOTAL	535	535	0

* NEGATIVE BALANCE VALUES DENOTE SITE FILL VOLUME DEFICIT AND SITE REQUIRING MORE FILL THAN CUT PER PLAN TO ACHIEVE BALANCE.
** SEE SHTS C02 AND C08 FOR APPROX THIN SPREAD LOCATIONS AND NOTES.

CULVERT 1 TRENCH LAYOUT COORDINATES TABLE			
POINT #	NORTHING	EASTING	ELEV
1114	612202.900	3950288.000	8.049
1115	612208.200	3950300.000	11.409
1116	612206.900	3950318.000	10.353
1117	612190.800	3950334.000	-0.617
1118	612183.800	3950334.000	-0.617
1119	612175.000	3950325.000	5.146
1120	612166.900	3950310.000	10.350
1121	612166.700	3950291.000	10.206
1122	612182.600	3950275.000	-0.617
1123	612189.600	3950275.000	-0.617

* LAYOUT COORDINATES FOR ASSUMED 1.5H:1V CULVERT TRENCHING FOR CONTRACTOR REFERENCE ONLY, CONTRACTOR MAY PROPOSE ALTERNATE TRENCHING METHODOLOGY.

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document.
Date: 2023.10.13 13:01:47 -0700
RENEWS: 6/30/2025



PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I

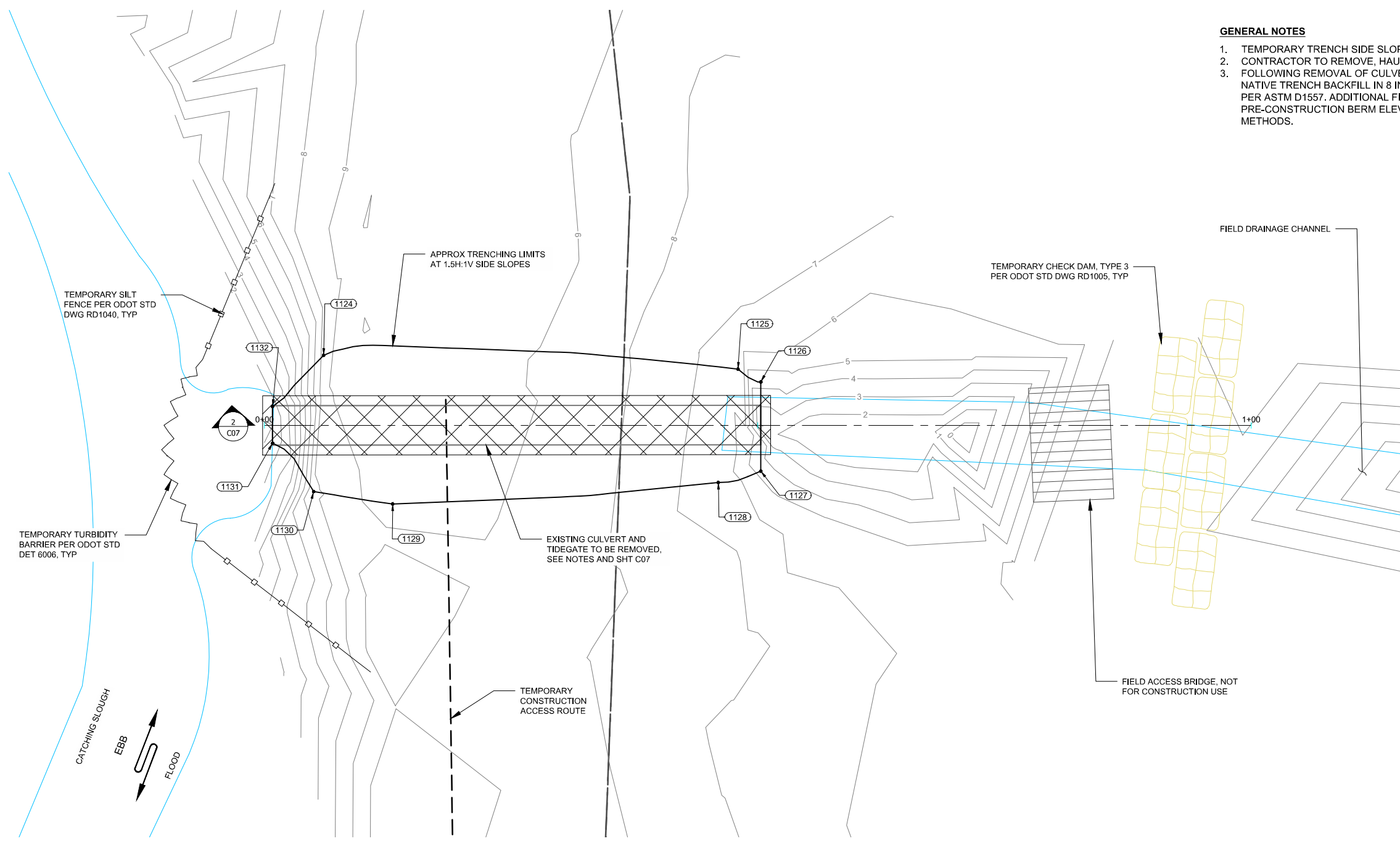
CULVERT 1 PLAN

DRAWING NO.
C04
SHEET NO.
6
OF
11

FILE: c:\Users\mankilgren\kiltren water resources\1.2022.0001\1-cooswa-seelander - documents\CAD\Sheets\C05\CULVERT 2 DEMOLITION PLAN.dwg USER: mankilgren DATE/TIME: 10/17/2023 12:50 PM

GENERAL NOTES

1. TEMPORARY TRENCH SIDE SLOPES ASSUMED AS 1.5:1.
2. CONTRACTOR TO REMOVE, HAUL, AND DISPOSE OF CULVERT 2 AT APPROPRIATE OFF-SITE DISPOSAL FACILITY.
3. FOLLOWING REMOVAL OF CULVERT 2, CONTRACTOR TO RESTORE BERM TO PRE-CONSTRUCTION GRADES BY PLACING NATIVE TRENCH BACKFILL IN 8 INCH (MAX) LIFT HEIGHTS, AND COMPACTING EACH LIFT TO 95% MAXIMUM DRY DENSITY PER ASTM D1557. ADDITIONAL FILL FROM CULVERT 1 OR CULVERT 3 TRENCH EXCAVATIONS MAY BE NEEDED TO ACHIEVE PRE-CONSTRUCTION BERM ELEVATIONS AT CULVERT 2 DUE TO VOLUME ASSOCIATED WITH CULVERT AND COMPACTION METHODS.



1 CULVERT 2 DEMOLITION PLAN
Scale: 1:6

CUT AND FILL SUMMARY			
SITE	CUT (CY)	FILL (CY)	BALANCE (CY)*
ASSUMED TRENCH CUT AND BACKFILL FOR CULVERT 2 REMOVAL	120	125	-5
TOTAL	120	125	-5

* NEGATIVE BALANCE VALUES DENOTE SITE FILL VOLUME DEFICIT AND SITE REQUIRING MORE FILL THAN CUT PER PLAN TO ACHIEVE BALANCE

CULVERT 2 TRENCH LAYOUT COORDINATES TABLE*			
POINT #	NORTHING	EASTING	ELEV
1124	611363.700	3949881.000	8.393
1125	611341.700	3949917.000	6.299
1126	611339.400	3949919.000	4.356
1127	611331.600	3949914.000	4.702
1128	611332.700	3949910.000	6.424
1129	611347.200	3949880.000	9.676
1130	611352.200	3949874.000	7.794
1131	611358.600	3949873.000	0.450
1132	611361.800	3949874.000	0.623

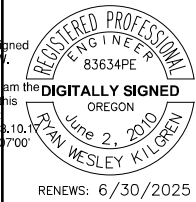
* LAYOUT COORDINATES FOR ASSUMED 1.5H:1V CULVERT TRENCHING FOR CONTRACTOR REFERENCE ONLY, CONTRACTOR MAY PROPOSE ALTERNATE TRENCHING METHODOLOGY.

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023

COOS Watershed Association
Improving the Health of Our Watershed
COOS WATERSHED ASSOCIATION
P.O. BOX 388
COOS BAY, OR 97420
PHONE: 541-888-5922

Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document.
Date: 2023.10.13 01:51:47'00"



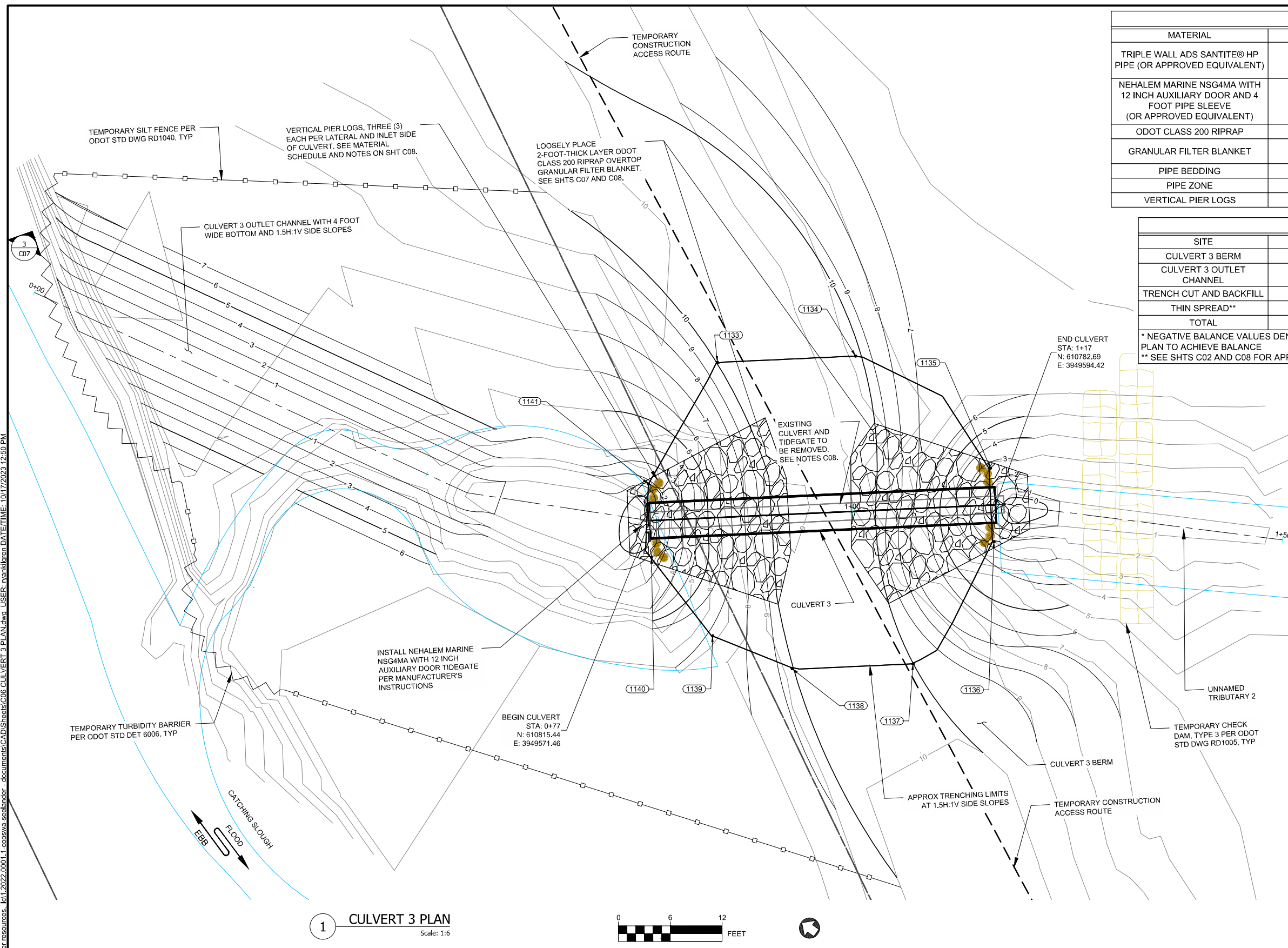
PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I
CULVERT 2 DEMOLITION PLAN

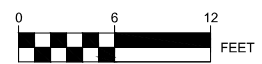
DRAWING NO.
C05
SHEET NO.
7
OF
11



FILE: c:\Users\mankilgren\Documents\CAD\Sheets\C06_CULVERT 3 PLAN.dwg USER: mankilgren DATE/TIME: 10/17/2023 12:50 PM



1 CULVERT 3 PLAN
Scale: 1:6



CULVERT 3 MATERIAL SCHEDULE			
MATERIAL	QUANTITY	DIA (INCHES)	LENGTH (FEET)
TRIPLE WALL ADS SANTITE® HP PIPE (OR APPROVED EQUIVALENT)	1	48	40
NEHALEM MARINE NSG4MA WITH 12 INCH AUXILIARY DOOR AND 4 FOOT PIPE SLEEVE (OR APPROVED EQUIVALENT)	1	48	-
ODOT CLASS 200 RIPRAP	75 TN	-	-
GRANULAR FILTER BLANKET	15 TN	-	-
PIPE BEDDING	8 TN	-	-
PIPE ZONE	38 TN	-	-
VERTICAL PIER LOGS	12	12 (MIN)	20

CUT AND FILL SUMMARY			
SITE	CUT (CY)	FILL (CY)	BALANCE (CY)*
CULVERT 3 BERM	40	50	-10
CULVERT 3 OUTLET CHANNEL	110	0	110
TRENCH CUT AND BACKFILL	190	80	110
THIN SPREAD**	0	210	-210
TOTAL	340	340	0

* NEGATIVE BALANCE VALUES DENOTE SITE FILL VOLUME DEFICIT AND SITE REQUIRING MORE FILL THAN CUT PER PLAN TO ACHIEVE BALANCE
** SEE SHTS C02 AND C08 FOR APPROX THIN SPREAD LOCATIONS AND NOTES.

CULVERT 3 TRENCH LAYOUT COORDINATES TABLE			
POINT #	NORTHING	EASTING	ELEV
1133	610818.700	3949591.000	10.000
1134	610805.600	3949600.000	10.000
1135	610785.400	3949598.000	0.883
1136	610780.600	3949591.000	0.883
1137	610780.900	3949574.000	10.000
1138	610792.400	3949566.000	9.943
1139	610802.200	3949564.000	7.142
1140	610813.000	3949568.000	0.883
1141	610817.900	3949575.000	0.883

* LAYOUT COORDINATES FOR ASSUMED 1.5H:1V CULVERT TRENCHING FOR CONTRACTOR REFERENCE ONLY, CONTRACTOR MAY PROPOSE ALTERNATE TRENCHING METHODOLOGY.

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023

COOS WATERSHED ASSOCIATION
P.O. BOX 388
COOS BAY, OR 97420
PHONE: 541-888-5922

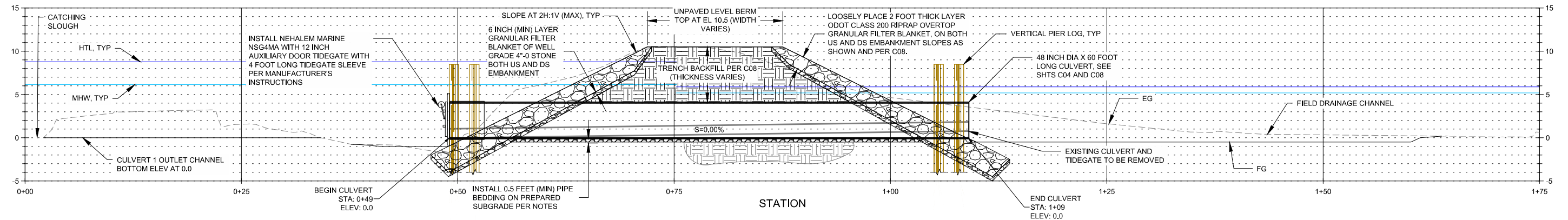
Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.17 13:01:55 -0700
RENEWS: 6/30/2025

PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

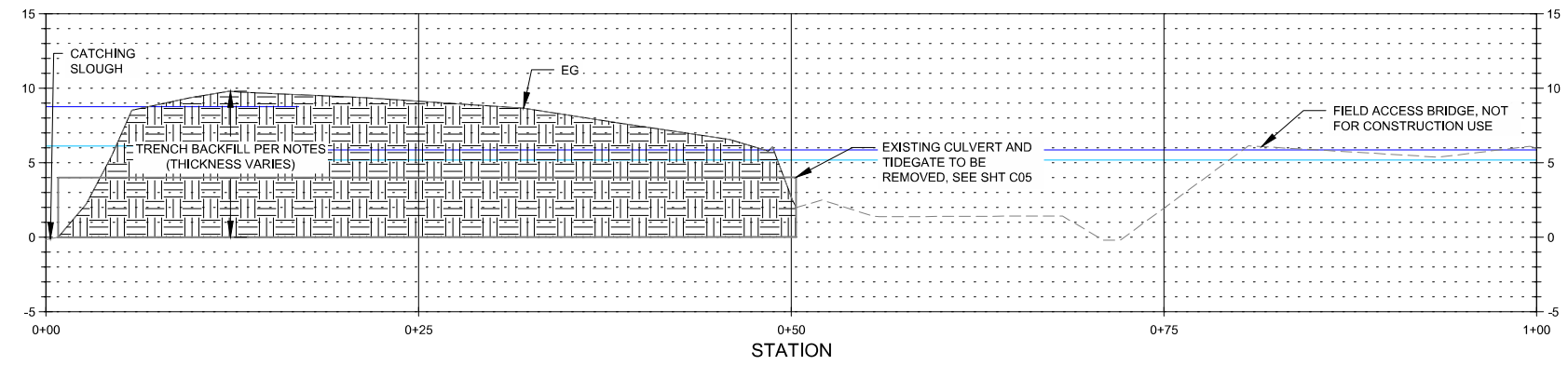
SEELANDER CREEK DESIGN SUPPORT, PHASE I
CULVERT 3 PLAN

DRAWING NO.
C06
SHEET NO.
8
OF
11

FILE: c:\Users\rvanildgren\Documents\CAD\Sheets\C07_CULVERT PROFILES.dwg USER: rvanildgren DATE/TIME: 10/17/2023 12:51 PM

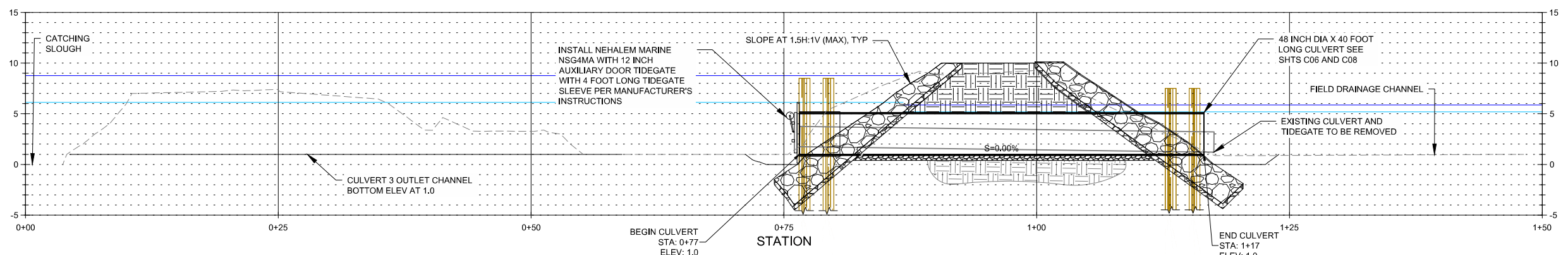


1
C04
CULVERT 1 PROFILE
Scale: HOZ: 1:6 VERT: 1:6



2
C05
CULVERT 2 DEMOLITION PROFILE
Scale: HOZ: 1:6 VERT: 1:6

NOTE
1. VERTICAL PIER LOGS SHOWN FOR SCHEMATIC REPRESENTATION ONLY AND LOWER ELEVATION EMBEDMENT OMITTED FROM PROFILE VIEWS FOR CLARITY. SEE PLAN VIEWS AND C08 FOR ADDITIONAL INSTALLATION GUIDANCE.



1
C06
CULVERT 3 PROFILE
Scale: HOZ: 1:6 VERT: 1:6

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.13 13:01:59 -0700
RENEWS: 6/30/2025



PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

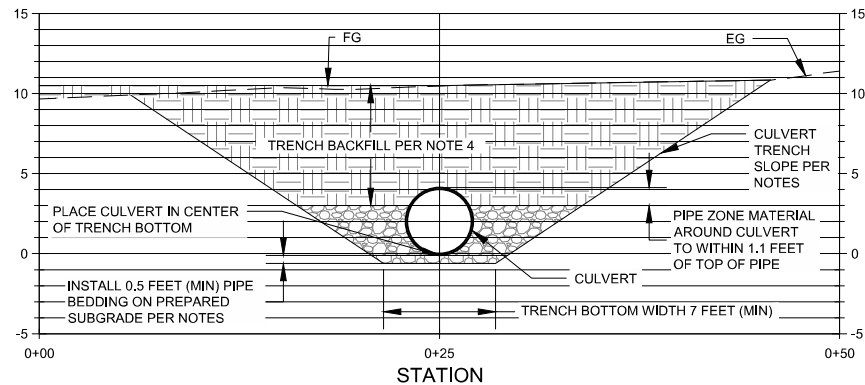
SEELANDER CREEK DESIGN SUPPORT, PHASE I

CULVERT PROFILES

DRAWING NO.
C07
SHEET NO.
9
OF
11



FILE: c:\Users\rvankilgren\Documents\CAD\Sheets\C08_CULVERT_TYPICAL_DETAILS_AND_NOTES.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:51 PM



1 TYPICAL CULVERT TRENCH SECTION
Scale: 1:6

GENERAL NOTES

1. NEW CULVERT PIPES SHALL BE TRIPLE WALL ADS SANTITE® HP PIPE (OR APPROVED EQUIVALENT).
2. NEW TIDEGATES SHALL BE NEHALEM MARINE NSG4MA WITH 12 INCH AUXILIARY DOOR AND 4 FOOT PIPE SLEEVE (OR APPROVED EQUIVALENT).
3. TEMPORARY TRENCH SIDE SLOPES ASSUMED AS 1.5H:1V. MINIMIZE TEMPORARY TRENCH EXCAVATION AS PRACTICAL AND IN ACCORDANCE WITH OSHA REQUIREMENTS SO AS TO LIMIT THE DISTURBANCE OF NATIVE SUBGRADE AND QUANTITY OF IMPORTED PIPE BEDDING AND PIPE ZONE MATERIAL.
4. CONTRACTOR TO REMOVE, HAUL, AND DISPOSE OF EXISTING CULVERTS AND TIDEGATES AT APPROPRIATE OFF-SITE DISPOSAL FACILITY.
5. SUBGRADE SURFACES SHALL BE GRADED AND COMPACTED TO BE SMOOTH. PREPARED SUBGRADE SURFACES SHALL BE FREE FROM MOUNDS, DIPS, CUTS, AND DEBRIS. POCKETS OF SAND OVER 2 CUBIC FEET IN SUBGRADE SHALL BE OVEREXCAVATED AND REPLACED WITH COMPACTED PIPE BEDDING MATERIAL.
6. TRENCH BACKFILL SHALL BE ODOT CLASS A EXCAVATED NATIVE MATERIAL, FREE FROM ORGANIC OR DELETERIOUS MATERIALS, ROCKS OR BROKEN CONCRETE, OR OTHER FOREIGN MATERIALS. TRENCH BACKFILL SHALL BE APPROVED BY ENGINEER PRIOR TO PLACEMENT. PLACE TRENCH BACKFILL IN 8 INCH (MAX) LIFT HEIGHTS AND COMPACT EACH LIFT TO 95% MAXIMUM DRY DENSITY PER ASTM D1557.
7. GRANULAR FILTER BLANKET IS SPECIFIED ONLY WHERE RIPRAP WILL BE PLACED. GRANULAR FILTER BLANKET SHALL BE 6" (MIN) LAYER OF WELL GRADED 4"-0 STONE PER ODOT STD SPEC 00330.16 TO PROVIDE SEPARATION BETWEEN FINER SUBSURFACE FILLS AND COARSER RIPRAP PLACE ON TOP OF GRANULAR FILTER BLANKET.
8. RIPRAP SHALL BE LOOSELY PLACED ON TOP OF GRANULAR FILTER BLANKET PER ODOT STD SPEC 00390.44(b). DO NOT DUMP OR DROP RIPRAP MATERIAL ONTO GRANULAR FILTER BLANKET.
9. PIPE BEDDING AND PIPE ZONE MATERIAL SHALL BE 3/4"-0 AGGREGATE, OR WITH ENGINEER APPROVAL QUARRY SCALPS/REJECT MAY BE SUBSTITUTED. CONTRACTOR TO PROVIDE 2 GALLON (MIN) SAMPLE OF PIPE BEDDING AND PIPE ZONE MATERIAL FOR CAR INSPECTION 5 DAYS (MIN) PRIOR TO MATERIAL DELIVERY TO SITE. PLACE AND COMPACT PIPE BEDDING SURFACE TO 95% MAXIMUM DRY DENSITY PER ASTM D1557 AND GRADE SHOWN. HAND TAMP PIPE ZONE MATERIAL AROUND CULVERT TO WITHIN 1.1 FEET OF TOP OF PIPE.
10. VERTICAL PIER LOGS ARE INTENDED TO SUPPORT RETENTION OF RIPRAP AND PREVENT RIPRAP PARTICLES FROM OBSTRUCTING TIDEGATE AND CULVERT OPERATION IF PARTICLES ARE MOBILIZED DOWN ARMORED SLOPES. VERTICAL PIER LOGS SHALL BE UNTREATED WHOLE LOGS AND SOURCED FROM CEDAR, DOUGLAS FIR, OR OTHER CONIFER SPECIES WITH PRIOR CAR APPROVAL. PIER LOG LIMBS SHALL BE REMOVED TO WITHIN 1 INCH OF LOG STEM. VERTICAL PIER LOGS SHALL HAVE A MAXIMUM DIAMETER TAPER OF 1 INCH PER 10 FEET, OR AS OTHERWISE APPROVED BY THE ENGINEER. VERTICAL PIER LOGS SHALL BE DRIVEN AT A VERTICAL ORIENTATION OR WITH SLIGHT LANDWARD BATTER TO A BOTTOM TIP ELEVATION OF -11.5 FEET OR REFUSAL. ENSURE LOG-TO-LOG CONTACT BETWEEN ADJACENT PIER LOGS TO FORM A CONTINUOUS RETENTION FACE, REPOSITION AND RE-DRIVE PIER LOGS IF NECESSARY TO ACHIEVE LOG-TO-LOG CONTACT. A LENGTH OF 2 FEET MAX FROM THE TERMINAL ENDS OF THE PIER LOGS MAY BE SHARPENED OR MITER CUT PRIOR TO DRIVING INTO THE SUBGRADE. PIER LOG TOPS SHALL EXTEND A MINIMUM 4 FEET ABOVE THE FINISHED RIPRAP SURFACE.
11. EXCESS CUT MATERIAL MAY BE THIN SPREAD ALONG EXISTING BERM TOPS AND LANDWARD SIDE SLOPES TO REHABILITATE SURFACE DEFORMITIES AND AS OTHERWISE DIRECTED BY CAR. THIN SPREAD MATERIAL SHALL BE PLACED IN A SINGLE UNCOMPACTED LIFT WITH A LAYER HEIGHT NOT TO EXCEED 3 INCHES. TRACK WALK THIN SPREAD MATERIAL AND APPLY PERMANENT EROSION CONTROL SEEDING AND PLANTING PER CAR. SEE SHT C02 FOR APPROX THIN SPREAD AREAS TO BE DELINEATED BY CAR.



2 SIDE HINGED TIDEGATE WITH MITIGATOR PRIOR TO INSTALLATION - SIDE VIEW
Scale: NTS



3 SIDE HINGED TIDEGATE WITH MITIGATOR PRIOR TO INSTALLATION - ELEVATION VIEW
Scale: NTS



4 SIDE HINGED TIDEGATE WITH MITIGATOR AFTER INSTALLATION
Scale: NTS

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023

COOS Watershed Association
Improving the Health of Our Watershed
COOS WATERSHED ASSOCIATION
P.O. BOX 388
COOS BAY, OR 97420
PHONE: 541-888-5922

Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.13 13:02:03 -0700
RENEWS: 6/30/2025

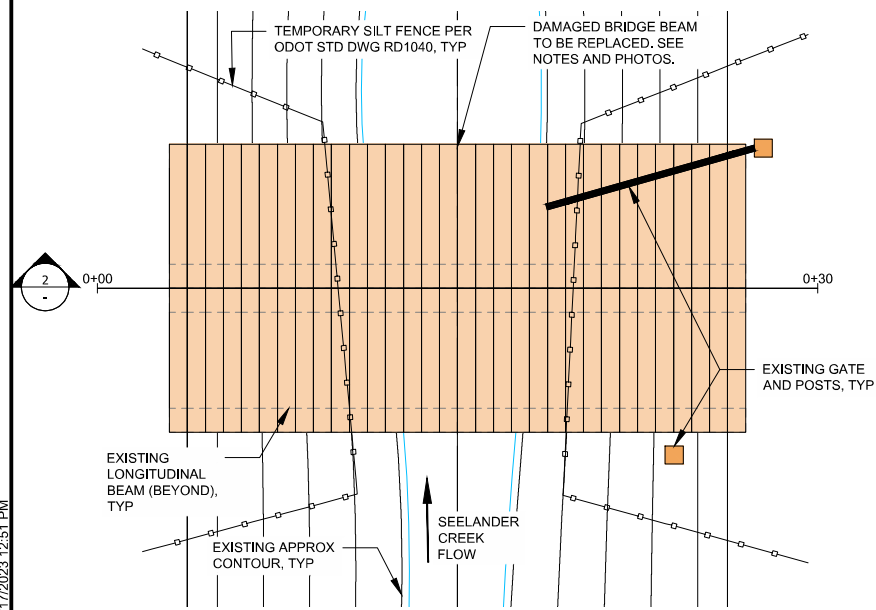
PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER CREEK DESIGN SUPPORT, PHASE I
CULVERT TYPICAL DETAILS AND NOTES

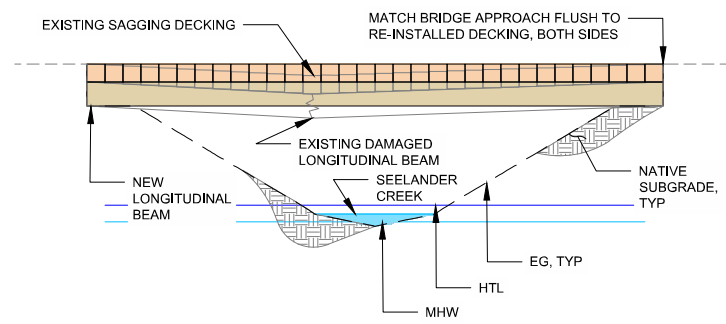
DRAWING NO.
C08
SHEET NO.
10
OF
11



FILE: c:\Users\rvankilgren\Documents\CAD\Sheets\C09 BRIDGE BEAM REPAIR TYPICAL DETAILS AND NOTES.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:51 PM



1 BRIDGE BEAM REPAIR - PLAN
Scale: 1:4



2 BRIDGE BEAM REPAIR - SECTION
Scale: 1:4

GENERAL NOTES

1. THE EXISTING WOOD AG CROSSING BRIDGE IS AN APPROXIMATELY 24-FOOT-LONG X 12-FOOT-WIDE WOODEN BRIDGE. DECKING IS COMPRISED OF 6-FOOT-LONG 8X8 ON EACH SIDE. EACH SIDE OF THE 8X8 DECKING IS SUPPORTED BY TWO 24-FOOT-LONG 12X12 LONGITUDINAL BEAMS. A GEOTEXTILE IS ON TOP OF THE DECKING.
2. THE DOWNSTREAM-MOST LONGITUDINAL BEAM IS DAMAGED, CAUSING THE BRIDGE TO SAG, AND NEEDS TO BE REPLACED. THE 8X8 DECKING IS ASSUMED TO BE INTACT AND CAPABLE OF SALVAGE FOR REUSE.
3. CONTOURS AND SEELANDER CREEK ARE GRAPHICAL DEPICTIONS PROVIDED FOR CONTRACTOR REFERENCE ONLY, AND ARE APPROXIMATED FROM ENGINEER'S OBSERVATIONS AND NOT BASED ON ACTUAL GROUND SURVEY.
4. FLOWS AND WATER LEVELS WITHIN SEELANDER CREEK ARE EFFECTED BY TIDAL INFLUENCES FROM CATCHING SLOUGH AND UPSTREAM FLUVIAL INPUTS, AS WELL AS DIRECT PRECIPITATION AND LOCALIZED RUNOFF/SEEPAGE FLOWS. THE BRIDGE BEAM REPAIR EFFORT IS ASSUMED TO OCCUR FROM MACHINE AND OPERATOR ACCESS ABOVE ORDINARY HIGH WATER, HOWEVER TEMPORARY AND CONTRACTOR PROPOSED ESCP MEASURES SHALL PROVIDE PROTECTION OF SEELANDER CREEK AND OFFSITE AREAS FROM INADVERTENT TURBIDITY.

CONSTRUCTION NOTES

1. INSTALL SEDIMENT AND EROSION BMPS TO PREVENT SEDIMENT DISTURBED FROM LONGITUDINAL BEAM ABUTMENTS AND ON TOP OF BRIDGE FROM BEING INTRODUCED TO SEELANDER CREEK.
2. CONTRACTOR TO COORDINATE WITH CAR REGARDING METHOD OF GEOTEXTILE REMOVAL TO PREVENT SEDIMENT AND TURBIDITY WITHIN SEELANDER CREEK. THIS METHOD MAY INVOLVE FIRST CLEANING THE SEDIMENT FROM THE SURFACE OF THE GEOTEXTILE.
3. REMOVE AND SALVAGE THE EXISTING GATE FOR REUSE AND LATER INSTALLATION BY THE LANDOWNER.
4. REMOVE THE GEOTEXTILE AND DISPOSE AT A CAR APPROVED OFFSITE FACILITY.
5. REMOVE THE 8X8 DECKING ON THE DOWNSTREAM SIDE OF THE BRIDGE AND SALVAGE FOR REUSE.
6. REMOVE THE DAMAGED 24-FOOT-LONG 12X12 LONGITUDINAL BEAM AND REPLACE WITH A NEW BEAM. NEW LONGITUDINAL BEAM SHALL BE TREATED WITH KLEARGARD 25 OR EQUIVALENT ANTIFUNGAL TREATMENT.
7. MINOR GRADING AND COMPACTING USING SHOVEL AND HAND TAMPING OF NATIVE SUBGRADE MAY BE NECESSARY TO PREPARE A LEVEL PLATFORM FOR THE NEW BEAM AND ALLOW THE SALVAGED DECKING TO BE REINSTALLED FLUSH TO THE EXISTING UPSTREAM SIDE DECKING.
8. REINSTALL 8X8 DECKING ON DOWNSTREAM SIDE OF BRIDGE USING 5/8-INCH GALVANIZED LAG BOLTS WITH 2-INCH MALLEABLE WASHERS ON EACH EACH 8X8 END TO CONNECT TO THE SUPPORTING LONGITUDINAL BEAMS.
9. BORE HOLES FOR LAG SCREWS IN TWO PARTS AS FOLLOWS:
 - 9.1. BORE THE LEAD HOLE FOR THE SHANK THE SAME DIAMETER AS THE SHANK AND SAME DEPTH AS THE LENGTH OF THE UNTHREADED SHANK.
 - 9.2. BORE THE LEAD HOLE FOR THE THREADED PORTION A DIAMETER EQUAL TO APPROXIMATELY TWO-THIRDS THE SHANK DIAMETER.
 - 9.3. BORE HOLES TO ALLOW FOR LAG SCREWS TO BE COUNTERSUNK AND PROVIDE FOR A SMOOTH DECK SURFACE.
10. FIELD-TREAT ALL CUTS, ABRASIONS, DAMAGED WOOD SURFACES, AND ALL BORED FACES WITH CU-89-RTU II OR OTHER CAR APPROVED FIELD PRESERVATIVE.



3 EXISTING BRIDGE - LOOKING SOUTH ACROSS BRIDGE
Scale: NTS



4 UNDERSIDE OF EXISTING BRIDGE - LOOKING DOWNSTREAM
Scale: NTS



5 EXISTING BRIDGE - LOOKING UPSTREAM AT DAMAGED LONGITUDINAL BEAM
Scale: NTS

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023

COOS Watershed Association
Improving the Health of Our Watershed
COOS WATERSHED ASSOCIATION
P.O. BOX 388
COOS BAY, OR 97420
PHONE: 541-888-5922

Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document.
Date: 2023.10.11 13:02:07 -7'00'

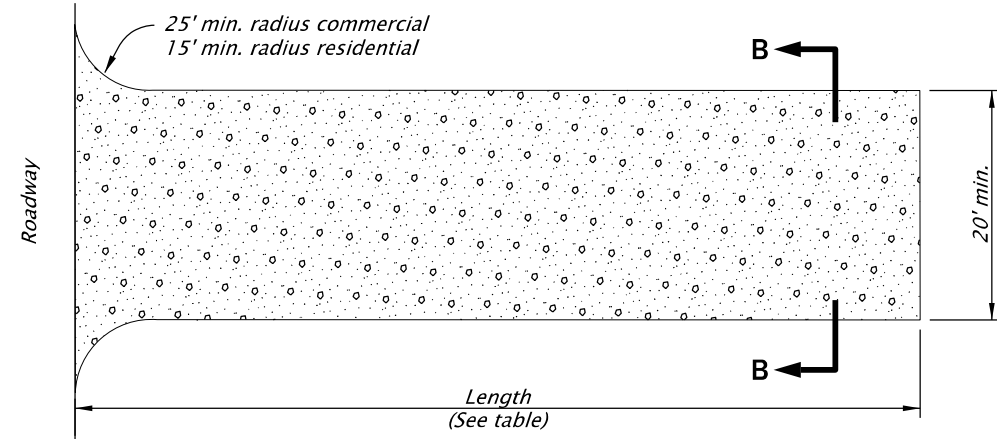


PROJECT NO.
1.2022.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

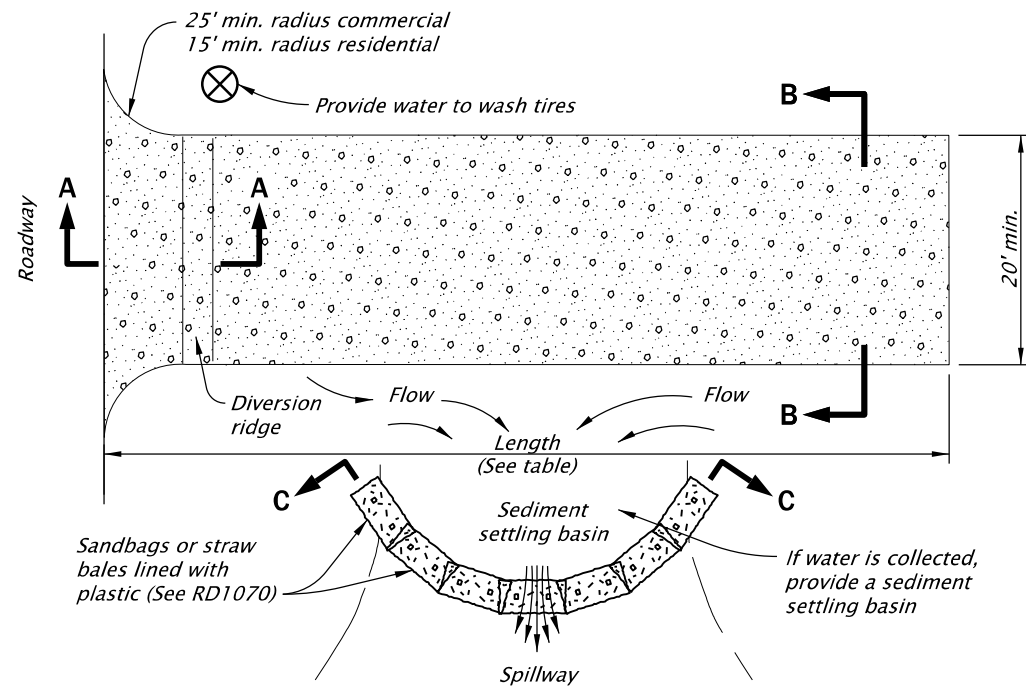
SEELANDER CREEK DESIGN SUPPORT, PHASE I
BRIDGE BEAM REPAIR TYPICAL DETAILS AND NOTES

DRAWING NO.
C09
SHEET NO.
11
OF
11

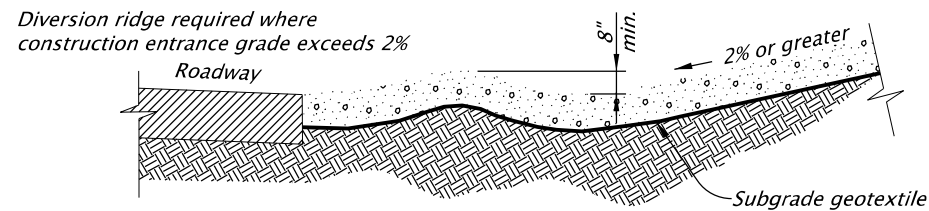




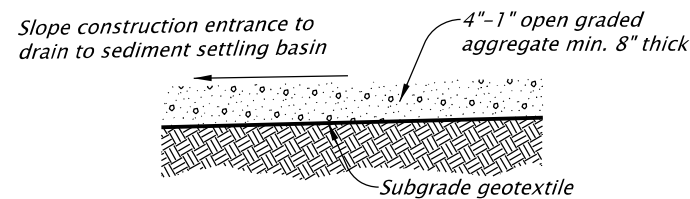
CONSTRUCTION ENTRANCE - TYPE 1
NOT TO SCALE



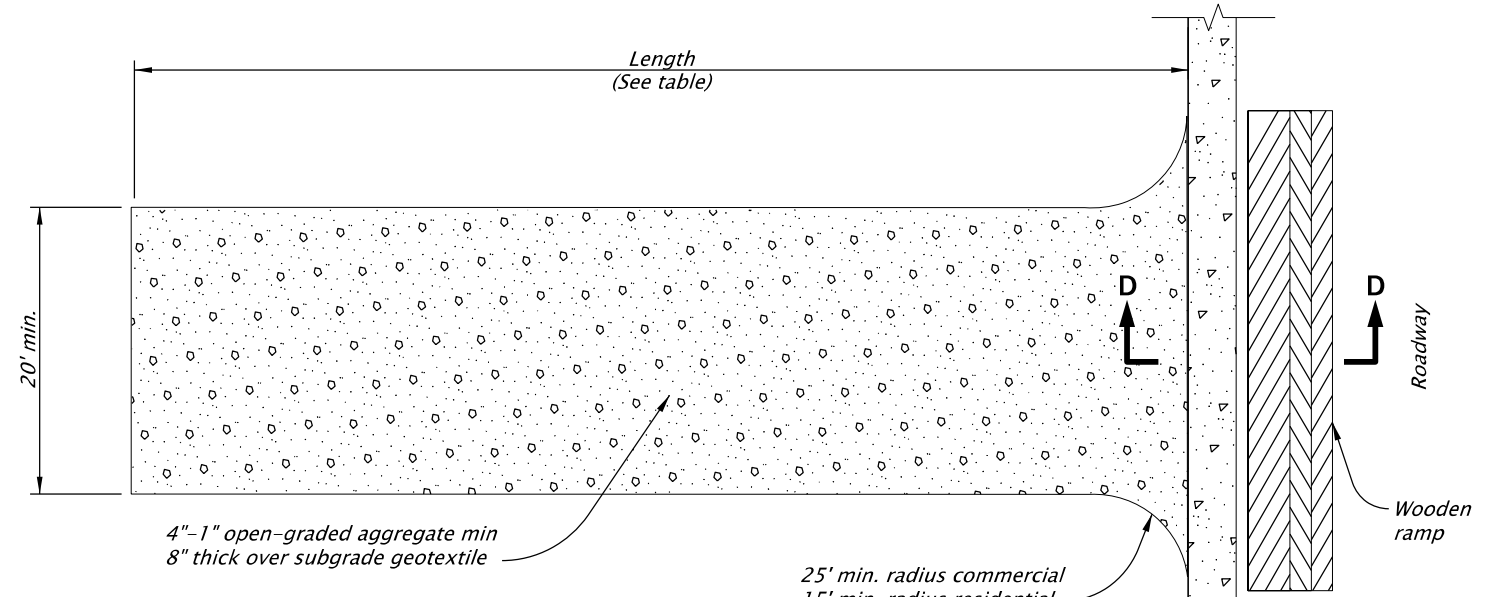
CONSTRUCTION ENTRANCE - TYPE 2
NOT TO SCALE



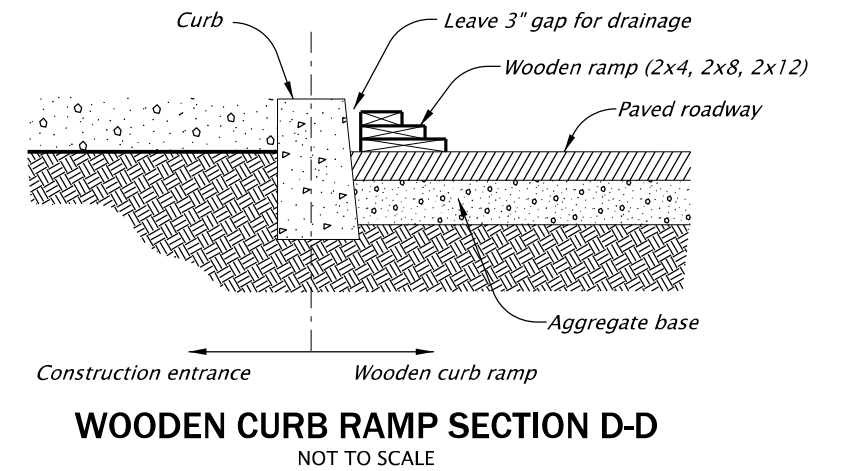
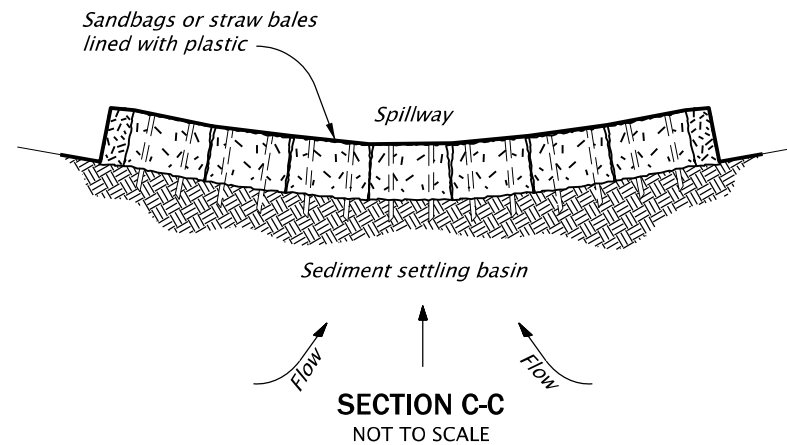
SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE



CONSTRUCTION ENTRANCE - TYPE 3
(TYPE 1 OR 2 WITH EXISTING CURB)
NOT TO SCALE



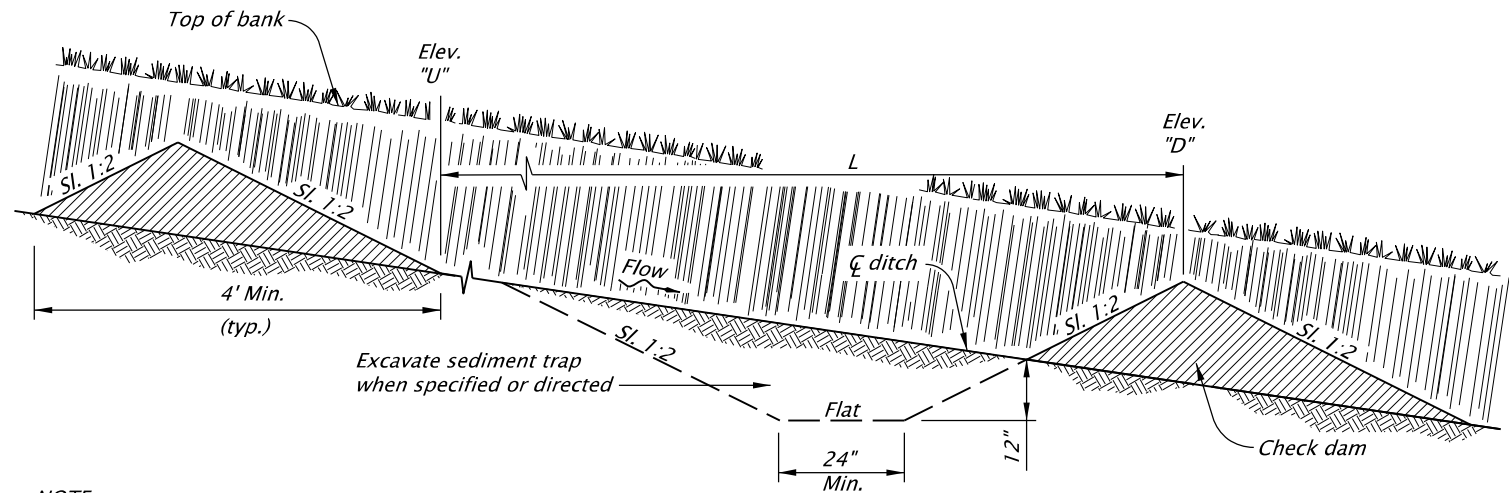
NOTES:

1. The Type 1 entrance is a simple entrance without a diversion ridge or settling basin.
2. The wooden ramp may be used on either Type 1 or Type 2 entrances in situations where there is curb and the curb is not removed for the construction entrance.

CONSTRUCTION ENTRANCE TABLE MINIMUM LENGTH	
Length (FT)	Area Of Exposed Soil (Acre)
20	0.25
50	0.25 < A < 1.0
100	A > 1.0

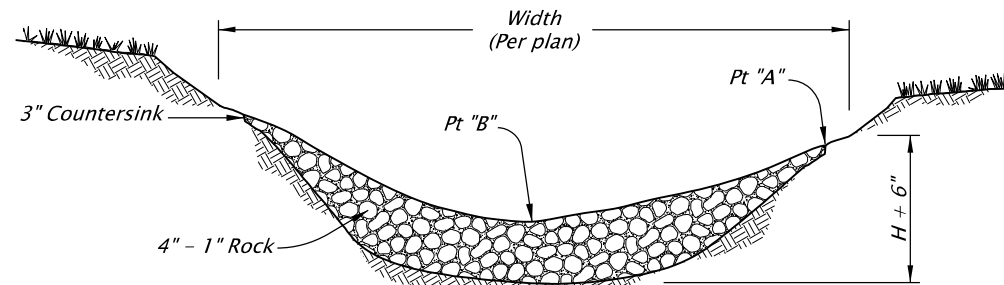
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.		
OREGON STANDARD DRAWINGS		
CONSTRUCTION ENTRANCES		
2021		
DATE	REVISION DESCRIPTION	
01-2021	REMOVED CALC BOOK NUMBERS	
CALC. BOOK NO.	N/A	SDR DATE: 20-JAN-2021
		RD1000



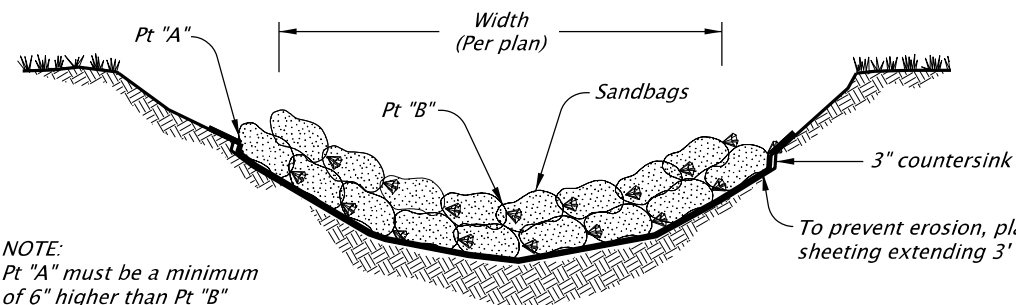
NOTE:
L = Spacing along swale or ditch so that Elevation "U" equals Elevation "D".

TYPICAL PROFILE SECTION CHECK DAMS (SHOWN WITH AGGREGATE)
NOT TO SCALE



NOTE:
Pt "A" must be a minimum of 6" higher than Pt "B"

AGGREGATE CHECK DAM - TYPE 1
NOT TO SCALE



NOTE:
Pt "A" must be a minimum of 6" higher than Pt "B"

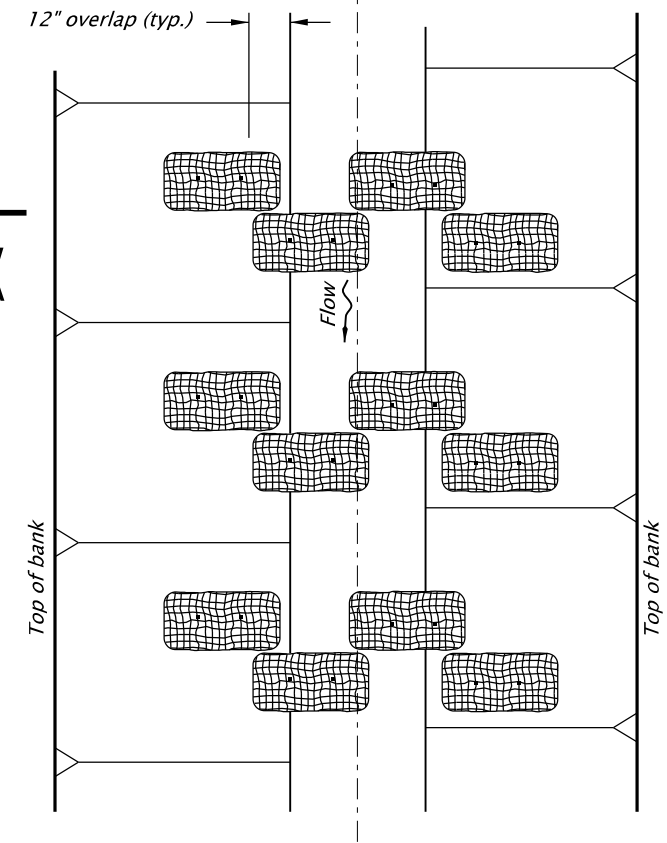
SANDBAG CHECK DAM - TYPE 4
NOT TO SCALE

NOTES:

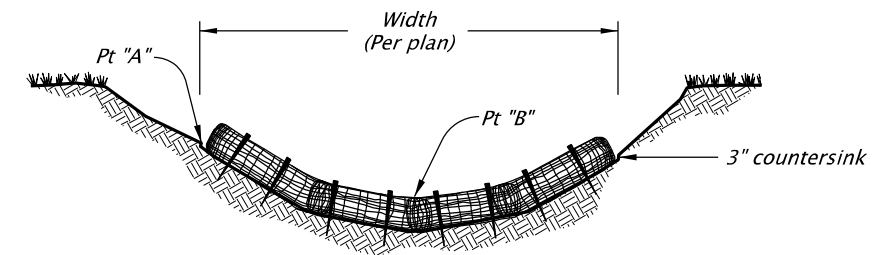
- Type 3 - stake biofilter bags with two 2"x2"x18" (minimum) wood stakes per bag. Drive stakes a minimum of 6" into the ground and flush with the top of the bags. Omit stakes if placed over paved surfaces. Overlap bags 12" minimum at each joint.
- Type 4 - Tightly abut or overlap ends of sandbags at each joint.
- Spacing between check dams for all check dam types shall comply with the typical profile section shown above.

MAXIMUM CHECK DAM SPACING "L"				
Ditch Grade	H=8"	H=12"	H=18"	H=24"
10%	**	**	15'	20'
9%	**	**	16'	22'
8%	**	**	18'	25'
7%	**	**	21'	28'
6%	**	16'	25'	33'
5%	**	20'	30'	40'
4%	16'	25'	37'	50'
3%	22'	33'	50'	66'
2%	33'	50'	75'	100'

** Not allowed H = Min. dam height



PLAN



SECTION A-A

BIOFILTER BAG CHECK DAM - TYPE 3
NOT TO SCALE

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.

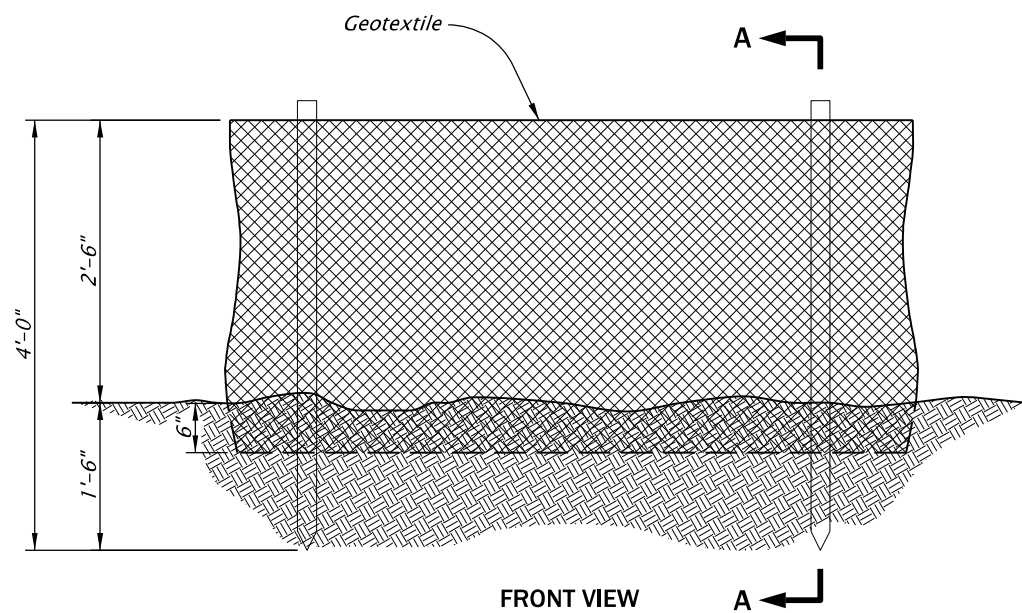
OREGON STANDARD DRAWINGS

CHECK DAMS TYPE 1, 3 AND 4

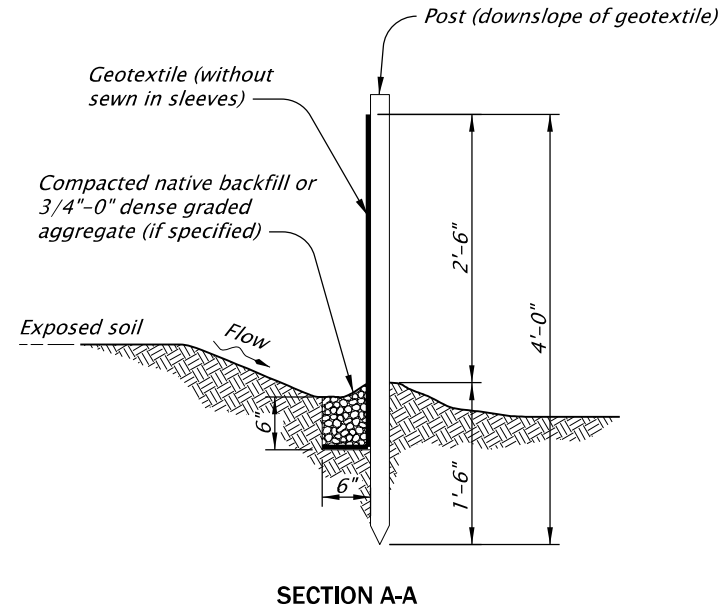
2021

DATE	REVISION	DESCRIPTION
01-2021	REMOVED CALC BOOK NUMBERS	
CALC. BOOK NO. ---	N/A ---	SDR DATE: 20-JAN-2021

RD1005

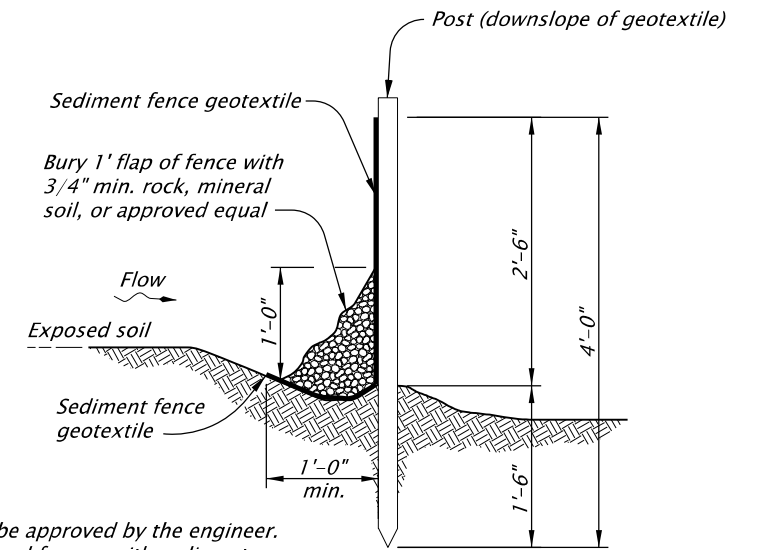


FRONT VIEW



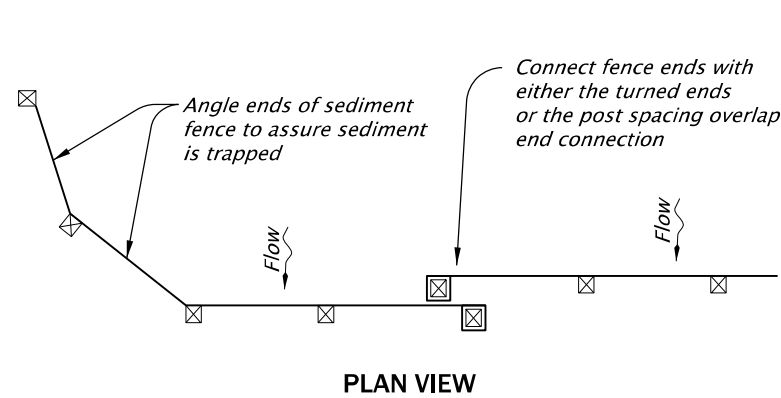
SECTION A-A

SEDIMENT FENCE AND GEOTEXTILE BURY DETAIL - TYPE 1
NOT TO SCALE

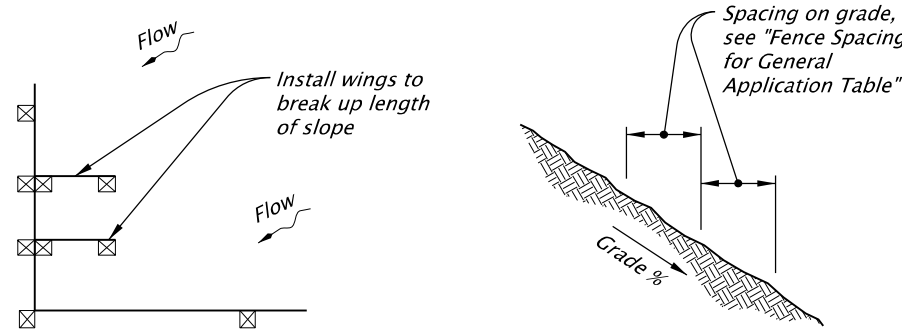


- NOTES:
 1. Use must be approved by the engineer.
 2. Not approved for use with sediment fencing with sewn-in post sleeves.

ALTERNATE SEDIMENT FENCE WITHOUT TRENCHING - TYPE 2
NOT TO SCALE



PLAN VIEW

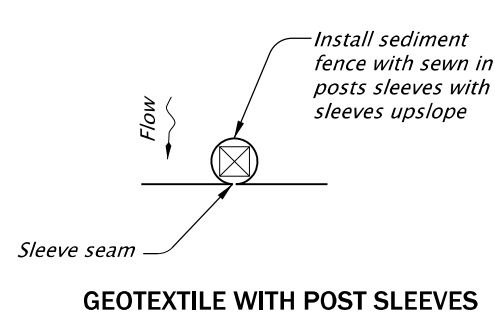


TERMINATION AT CORNER OR PROPERTY LINE

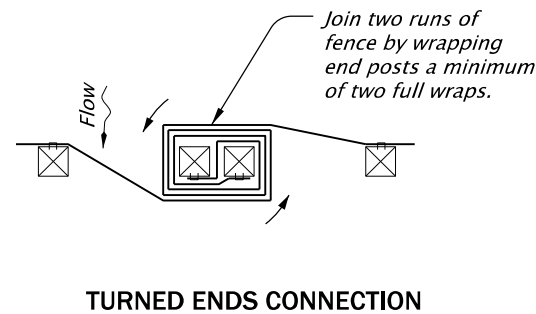
GENERAL NOTES:

- Use 2"x2" wood fence posts.
- Posts to be installed on downhill side of sediment fence geotextile. Position posts to prevent separation from geotextile.
- Compact filter fabric trench backfill and soil on uphill side of fence.
- Locate fence no closer than three feet to the toe of a slope.
- Wing spacing shall comply with "Fence Spacing for General Application Table".

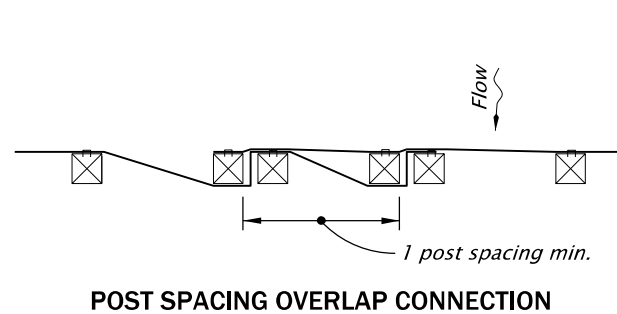
FENCE SPACING FOR GENERAL APPLICATION TABLE	
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
Grade < 10%	300'
10% ≤ Grade < 15%	150'
15% ≤ Grade < 20%	100'
20% ≤ Grade < 30%	50'
30% ≤ Grade	25'



GEOTEXTILE WITH POST SLEEVES



TURNED ENDS CONNECTION



POST SPACING OVERLAP CONNECTION

GEOTEXTILE END CONNECTIONS
NOT TO SCALE

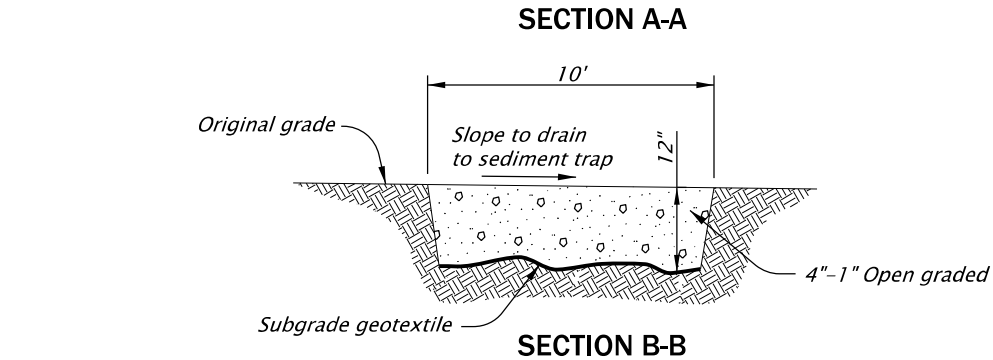
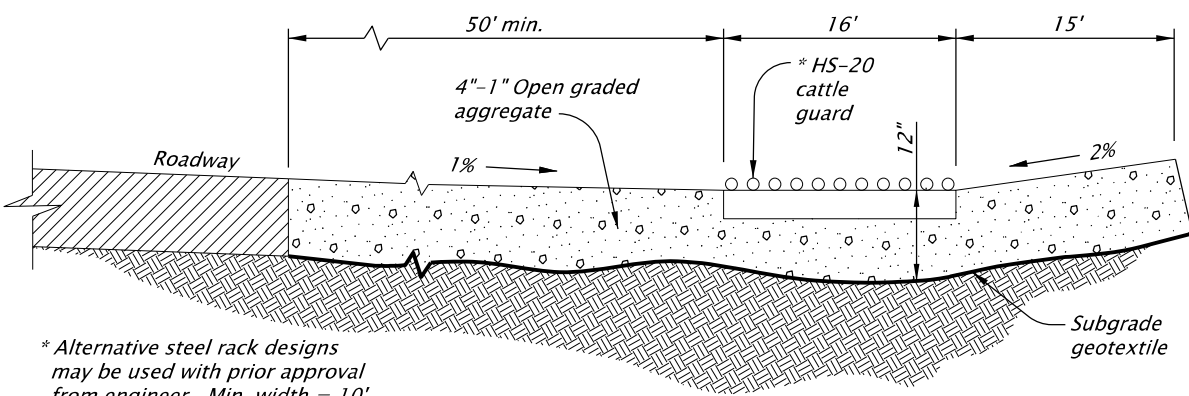
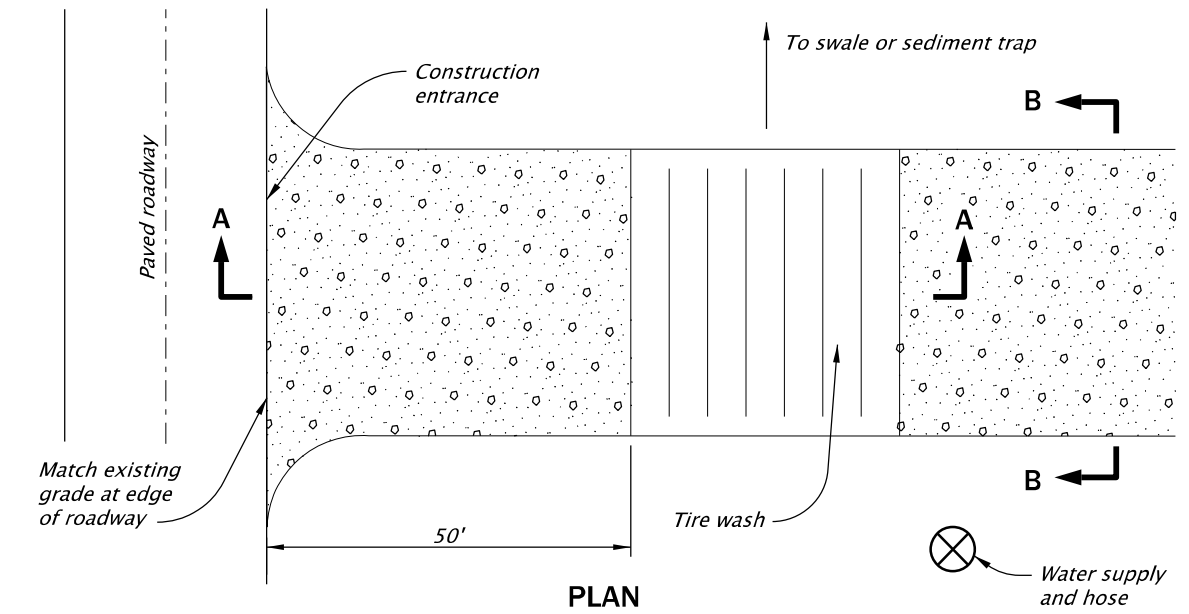
POST SPACING TABLE	
6'	Sediment Fence with Geotextile elongation less than 50%
4'	Sediment Fence with Geotextile elongation 50% or more

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

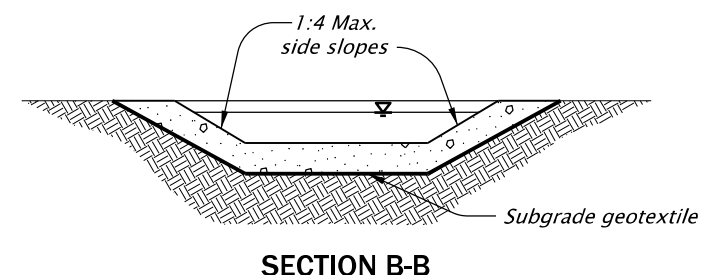
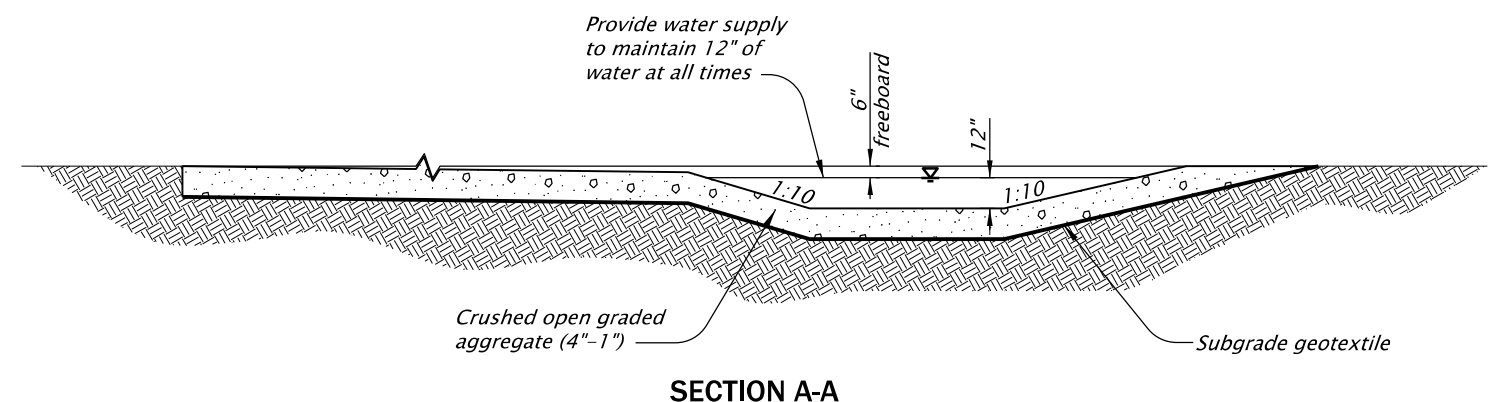
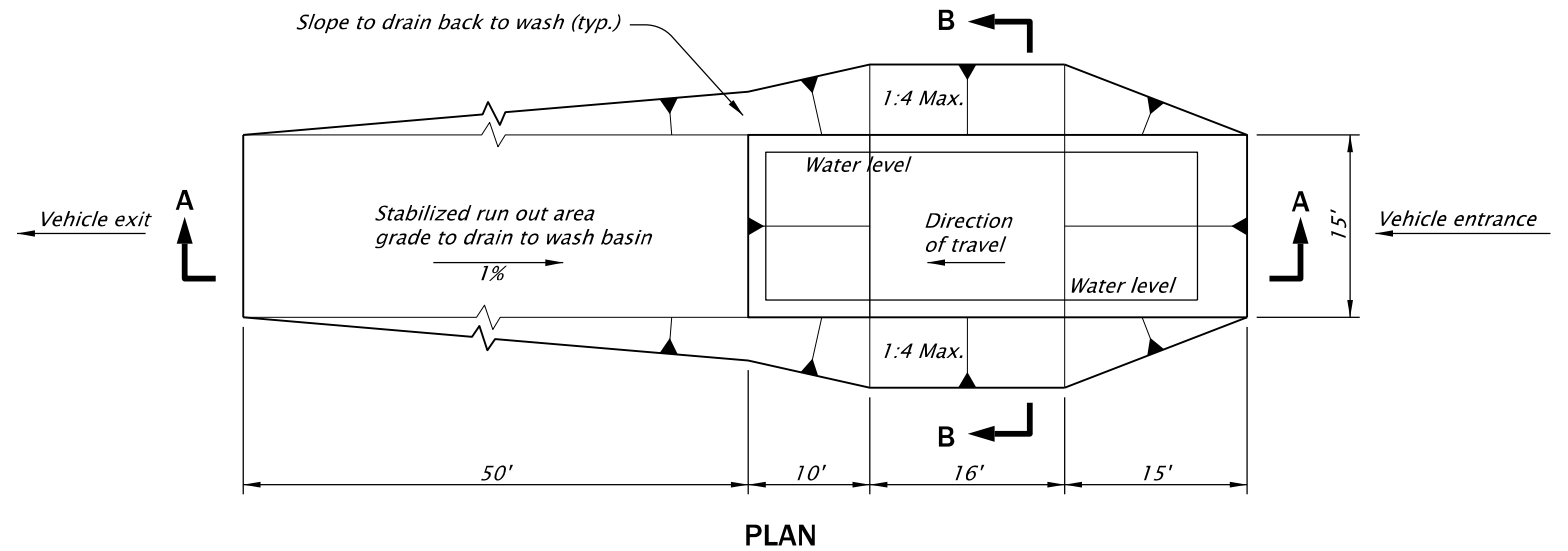
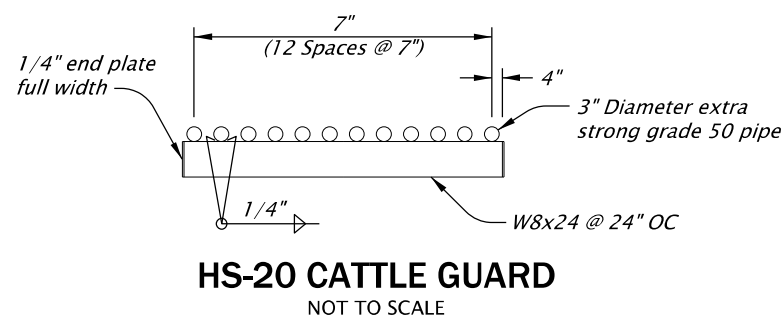
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
SEDIMENT FENCE			
2021			
DATE	REVISION DESCRIPTION		
01-2021	REMOVED CALC BOOK NUMBERS		
CALC. BOOK NO.	N/A	SDR DATE	20-JAN-2021
			RD1040

20-JAN-2021

RD1060.dgn



TIRE WASH - TYPE 1 (MANUAL HOSE WASH)
NOT TO SCALE

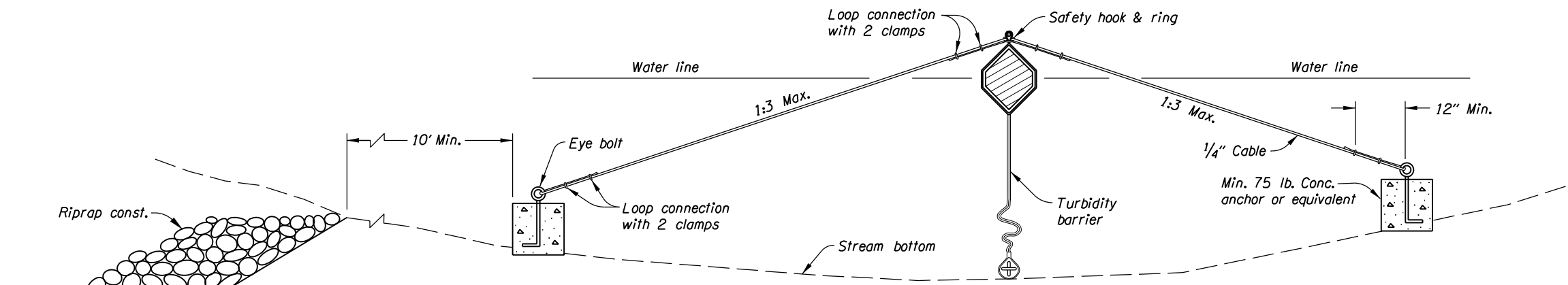


TIRE WASH - TYPE 2
NOT TO SCALE

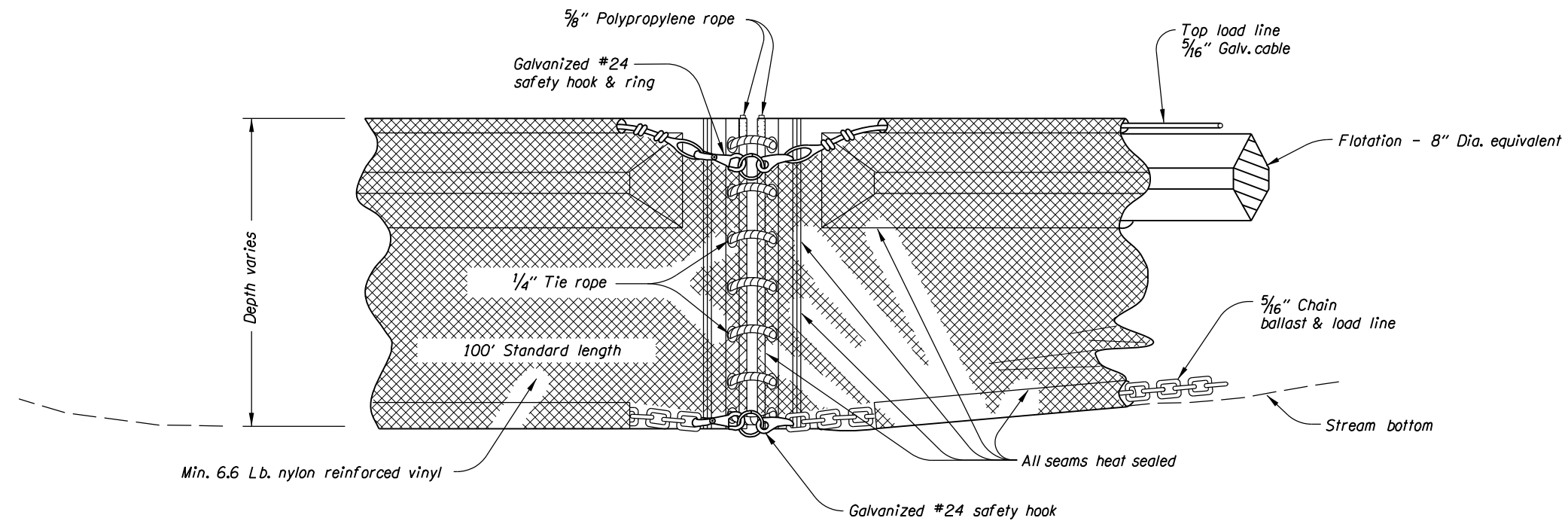
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
TIRE WASH FACILITY TYPE 1 AND 2			
2021			
DATE	REVISION DESCRIPTION		
01-2021	REMOVED CALC BOOK NUMBERS		
CALC. BOOK NO.	N/A	SDR DATE	20-JAN-2021
			RD1060

SEDIMENT BARRIER FLOATING



SIDE VIEW



ANCHOR ASSEMBLY

TURBIDITY BARRIER

NOTE:

Components of this barrier may be similar or identical to proprietary designs. Any infringement on the proprietary rights of the designer shall be the sole responsibility of the contractor. Substitutions shall be as approved by the engineer.

The selection and use of this detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON DEPARTMENT OF TRANSPORTATION
TECHNICAL SERVICES
DETAILS

TURBIDITY BARRIER

DETAIL NO.

DET6006

Appendix C

PHASE 2 DESIGN PLANS

Page Intentionally Left Blank

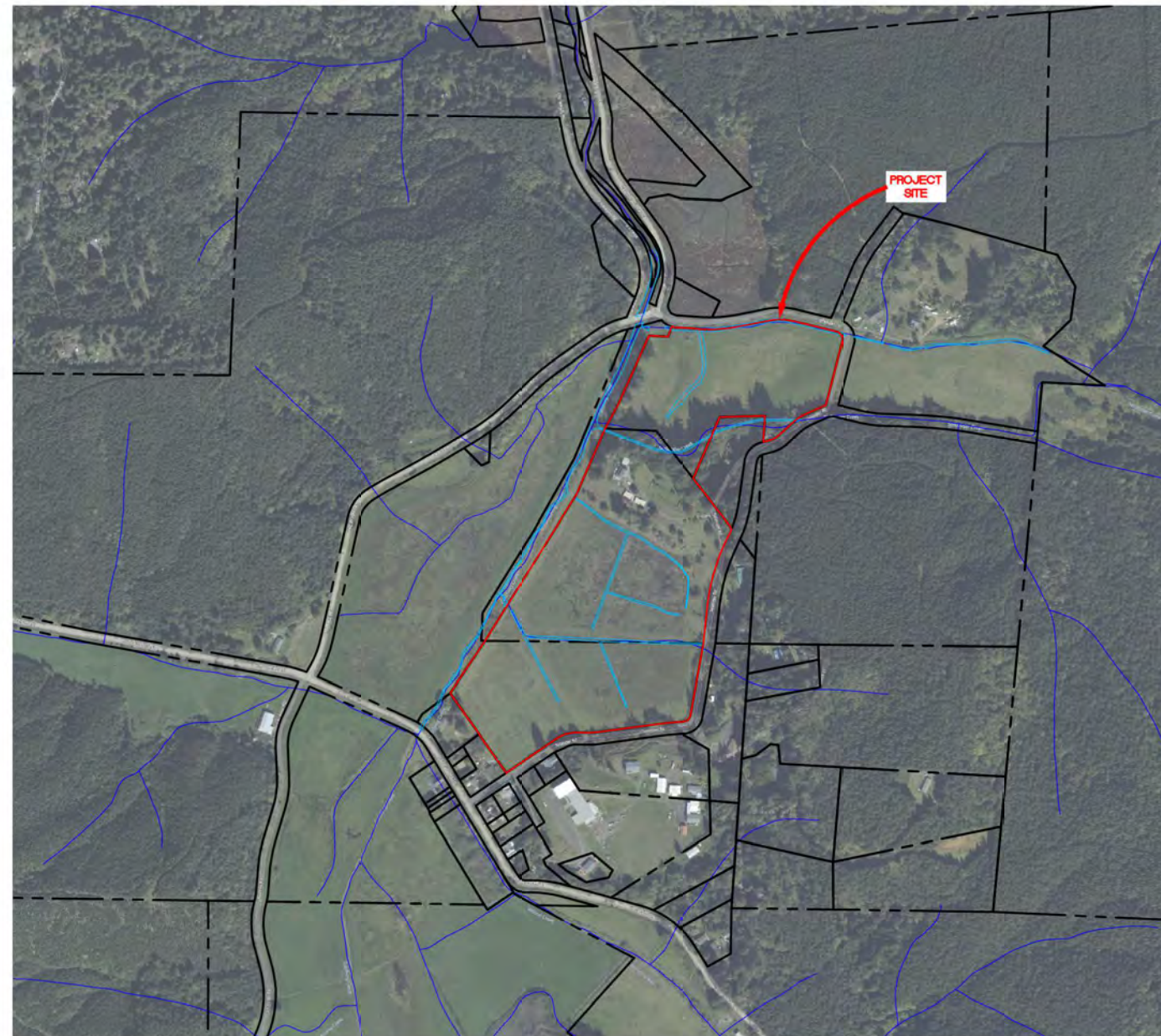
SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II COOS BAY, OR



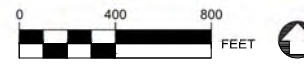
1 LOCATION MAP
SCALE: NOT TO SCALE



2 VICINITY MAP
SCALE: NOT TO SCALE



3 PROJECT AREA
SCALE: 1:400



PROJECT PARTNERS



SHEET INDEX		
SHT NO	DWG NO	SHT TITLE
1	G01	COVER SHEET AND DRAWING INDEX
2	G02	GENERAL NOTES ABBREVIATIONS AND SYMBOLS
3	C01	EROSION AND SEDIMENT CONTROL PLAN
4	C02	EXISTING CONDITIONS PLAN
5	C03	CHANNEL PLAN, PROFILE, AND SECTION
6	C04	AG CROSSING 1 PLAN
7	C05	AG CROSSING 2 PLAN
8	C06	DITCH PLUG PLAN, PROFILE, AND SECTION
9	C07	TRIBUTARY BANK PULL BANK
10	C08	TYPICAL AG CROSSING ABUTMENT DETAILS

ADDITIONAL ODOT STD BMP DWGS AND DETS ATTACHED FOR CONTRACTOR REFERENCE ONLY. SEE SHTS G02 AND C01 FOR INFORMATION ON CONTRACTOR PREPARED ESCP AND BMP RESPONSIBILITIES.

PROJECT DESCRIPTION

THE SEELANDER CREEK PROJECT SEEKS TO RESTORE WATERSHED FUNCTION THROUGH RIPARIAN PLANTING/FENCING, IMPROVING FISH PASSAGE, AND ENHANCING ACCESS TO OFF-CHANNEL HABITAT BY ADDRESSING 10 UNDERSIZED AND FAILING WATERWAY CROSSINGS. THE PROJECT PROPOSES TO INSTALL 13,250 FEET OF LIVESTOCK EXCLUSION FENCING ALONG 1.9 MILES OF STREAM AND WETLAND HABITAT TO PROVIDE RIPARIAN SETBACKS RANGING BETWEEN 20 FEET AND 40 FEET WIDE. THESE SETBACKS WILL SUPPORT DEVELOPMENT OF 10.3 ACRES OF RIPARIAN BUFFER PLANTED WITH NATIVE TREE, SHRUB, AND WETLAND PLANT SPECIES. PLANT ESTABLISHMENT ACTIVITIES WILL OCCUR INCREMENTALLY OVER 5 YEARS TO ACHIEVE A GOAL OF 80% PLANT SURVIVAL.

TO ADDRESS THE 10 FAILING AND UNDERSIZED (24-72 INCH DIA) WATERWAY CROSSINGS, COOSWA HAS PARTNERED WITH THE COOS COUNTY ROAD DEPT TO REPLACE 2 CROSSINGS, WORK WITH PRIVATE LOWLAND LANDOWNERS TO UPGRADE AN AG BRIDGE AND 2 AG CULVERTS, FULLY DECOMMISSION 2 AG CROSSINGS, AND REPLACE 3 OUTDATED AND FAILING CULVERT/TIDEGATE STRUCTURES WITH 2 MODERN FISH FRIENDLY MITIGATOR STYLE TIDEGATES. ALL CROSSINGS HAVE BEEN SIZED TO MEET NOAA FISH PASSAGE CRITERIA (1.5XACW AND >20% EMBEDDEDNESS). THESE STRUCTURES WILL IMPROVE ACCESS TO KEY COHO HABITATS AND PROVIDE ACCESS TO NEARLY 7 MILES OF CRITICAL SPAWNING AND REARING HABITAT (KEY LIMITING FACTORS). UPPER CATCHING SLOUGH AND SEELANDER CREEK RANKED VERY HIGH IN THE RECENT COOS WATERSHED COHO STRATEGIC ACTION PLAN.

IMPLEMENTATION OF THE PROJECT IS IN TWO PHASES. PHASE I FOCUSES ON REPLACEMENT OF UNDERSIZED AND FAILING TIDE GATED CULVERTS WITH MODERN FISH FRIENDLY MITIGATOR STYLE TIDE GATES, DECOMMISSIONING OF AN UNNECESSARY AGRICULTURAL TIDE GATED CULVERT CROSSING, AND REPAIR OF A DAMAGED WOODEN BEAM ON AN AGRICULTURAL CROSSING. PHASE II FOCUSES ON INTERIOR DRAINAGE IMPROVEMENTS AND HABITAT ENHANCEMENTS THROUGH DITCH REALIGNMENT AND PLUGGING, BANK PULL BACK, AND INSTALLATION OF TWO AGRICULTURAL CROSSINGS.



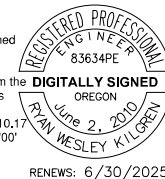
ODFW IN-WATER WORK WINDOW FOR THE MILLICOMA RIVER, SOUTH FORK COOS RIVER, AND TRIBUTARIES: JULY 1 TO SEPTEMBER 15 AND PER GENERAL ESCP NOTE 13 ON SHT G02

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.17 13:04:39-0700



PROJECT NO.
1.2023.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II

COVER SHEET AND DRAWING INDEX

DRAWING NO.
G01
SHEET NO.
1
OF
10

FILE: c:\Users\vanhikaren\Documents\CAD\Sheets\G02_GENERAL NOTES ABBREVIATIONS AND SYMBOLS.dwg USER: vanhikaren DATE/TIME: 10/17/2023 12:52 PM

GENERAL NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING REQUIREMENTS SET FORTH IN THE PERMITS OBTAINED BY CAR FOR THIS PROJECT. THE CONTRACTOR SHALL MAINTAIN A CAR PROVIDED COPY OF ALL PERMITS ONSITE DURING CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE CONDITIONS AND THE SAFETY OF HUMAN LIFE DURING THE COURSE OF CONSTRUCTION. SAFETY PRACTICES SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS (E.G., OSHA). THIS REQUIREMENT SHALL APPLY CONTINUOUSLY DURING THE PERIOD OF CONSTRUCTION AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. THE CONTRACTOR SHALL KEEP THE JOB SITE AREA CLEAN AND HAZARD-FREE, AND SHALL DISPOSE OF ALL DEBRIS, RUBBISH, AND CONSTRUCTION WASTE. UNLESS OTHERWISE DIRECTED BY THE CAR, ALL DISTURBED AREAS SHALL BE REHABILITATED TO A SMOOTH GRADE MATCHED TO UNDISTURBED ADJACENT GRADES SO AS TO FACILITATE POST-CONSTRUCTION SHEET FLOW RUNOFF AND PREVENT CONCENTRATED OR IMPEDED RUNOFF FLOWS.
4. THE CONTRACTOR SHALL PROTECT THE STAGING AREA SO THAT EQUIPMENT AND MATERIALS DO NOT DAMAGE ADJACENT VEGETATED AREAS OR WATERWAYS.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE WITH THE CAR AND CONFIRM THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE.
7. IT IS ASSUMED THAT RIDGWAY LANE MAY BE CLOSED FROM PRIVATE PROPERTY ACCESS BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WITH CAR ON TRAFFIC CONTROL NEEDS FOR WAYMIRE LANE. CONTRACTOR TO COORDINATE WITH CAR ON CONSTRUCTION SCHEDULING, LANDOWNER NOTIFICATION, AND ANY NECESSARY SIGNAGE. CAR TO ACT AS DIRECT POINT OF CONTACT WITH LANDOWNERS.

SURVEY CONTROL AND CONSTRUCTION LIMITS NOTES:

1. EXISTING GROUND ELEVATION AND SURVEY CONTROL POINT DATA IS FROM DOGAMI 2009 SOUTH COAST DIGITAL TERRAIN MODEL AND COOSWA SURVEYS IN 2021 AND 2022.
2. PROJECTED COORDINATE SYSTEM
HORIZONTAL: NAD83 OREGON STATE PLANE (POLYCONIC), SOUTH ZONE, WITH UNITS OF INTERNATIONAL FEET
VERTICAL: NAVD88 WITH UNITS OF FEET
3. ALL STATIONING REFERS TO THE CENTERLINE OF CONSTRUCTION, OR AS SHOWN, AND IS THE MEASURED HORIZONTAL DISTANCE.
4. CONSTRUCTION LIMITS, CENTERLINE, AND OFFSET STAKING TO BE PERFORMED BY THE CONTRACTOR, UNLESS OTHERWISE DIRECTED BY CAR.
5. ALL CONSTRUCTION ACTIVITY, INCLUDING STAGING AND STOCKPILING OF IMPORTED AND SITE EXCAVATED OR REMOVED MATERIALS, SHALL BE CONFINED TO THE LIMITS OF THE GRADING, TEMPORARY CONSTRUCTION STAGING AREAS SHOWN AND DESCRIBED IN THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING REQUIRED DATUM, BENCHMARKS, CONTROL LINES AND LEVELS. DO NOT DISTURB, EXCAVATE, OR WORK BEYOND THE CONSTRUCTION LIMITS WITHOUT APPROVAL FROM CAR.
6. UTILITIES HAVE NOT BEEN FULLY SURVEYED. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING OREGON UTILITY NOTIFICATION CENTER AT 800.332.2344 72-HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING MARKINGS.

ENVIRONMENTAL PROTECTION NOTES:

1. IF THE CONTRACTOR ENCOUNTERS POTENTIALLY HAZARDOUS MATERIALS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CAR. ALL CONSTRUCTION SPOILS AND WASTE MATERIALS THAT CONTACT OR CONTAIN HAZARDOUS MATERIALS SHALL BE DISPOSED OF AT AN APPROVED LANDFILL FACILITY.
2. EXISTING ON-SITE MATERIALS SHALL BE CAREFULLY REMOVED AND STORED OR DISPOSED OF. COMPLETELY REMOVE STUMPS, ROOTS, WILLOWS, SHRUBS, WEEDS, AND OTHER DEBRIS PROTRUDING FROM THE GROUND WITHIN THE LIMITS OF GRADING AND AS DIRECTED BY THE CAR.
3. TREES AND LAND AREAS OUTSIDE THE CONSTRUCTION LIMITS SHALL BE PROTECTED FROM DAMAGE. EXERCISE CARE TO AVOID DAMAGE TO NATURAL VEGETATION. ANY TREE TRIMMING OR REMOVAL, INCLUDING WITHIN THE GRADING LIMITS, SHALL BE PRE-APPROVED BY CAR.

TEMPORARY CONSTRUCTION FACILITIES NOTES:

1. ALL TEMPORARY UTILITIES AND FACILITIES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. A CONSTRUCTION TRAILER IS NOT REQUIRED. NO EXISTING CONNECTIONS FOR POTABLE WATER OR ELECTRICITY ARE PRESENT AT THE SITE. A CHEMICAL TOILET OF SUITABLE TYPE SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR AT ALL TIMES.

LEGEND	
EXISTING	PROPOSED
MAJOR CONTOUR ---5---	MAJOR CONTOUR —5—
MINOR CONTOUR ---1---	MINOR CONTOUR —1—
ORDINARY HIGH WATER	TEMPORARY SEDIMENT FENCE
FENCE	TEMPORARY BLOCK NET
ROAD DITCH CL	TEMPORARY PUMP
WETLAND AREA FROM USFWS	TEMPORARY CONSTRUCTION ACCESS
	TEMPORARY TURBIDITY BARRIER
	LAYOUT COORDINATE

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document
 Date: 2023.10.17 13:04:43-0700'



PROJECT NO.
1.2023.0001.1

DESIGNED BY
RWK

DRAWN BY
RWK

SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

DRAWING NO.
G02

SHEET NO.
2
OF 10

EROSION AND SEDIMENT CONTROL PLAN (ESCP) NOTES:

1. EROSION AND SEDIMENT CONTROL PLAN (ESCP) ELEMENTS AND SEQUENCED WORK AREAS SHOWN IN THESE PLANS ARE A SCHEMATIC REPRESENTATION OF ONE POSSIBLE OPTION ONLY. CONTRACTOR MAY PROPOSE AN ALTERNATIVE APPROACH.
2. FOURTEEN (14) CALENDAR DAYS BEFORE BEGINNING WORK THE CONTRACTOR SHALL SUBMIT AN ESCP FOR APPROVAL BY CAR PRIOR TO COMMENCING WORK. CONTRACTOR SUBMITTED ESCP SHALL INCORPORATE ALL BMP MEASURES PER PROJECT PERMIT REQUIREMENTS. CONTRACTOR TO COORDINATE WITH CAR REGARDING PERMIT REQUIREMENTS.
3. CONTRACTOR TO VERIFY SITE CONDITIONS PRIOR TO DEVELOPMENT OF ESCP.
4. CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR PREVENTING SILT-LADEN RUNOFF FROM DISCHARGING FROM THE PROJECT SITE. FAILURE BY THE CONTRACTOR CAN RESULT IN A FINE. THE CONTRACTOR DEVELOPED ESCP SHALL IDENTIFY THE CONTRACTOR'S DESIGNATED CONTACT PERSON. ALTHOUGH THE DESIGNATED CONTACT PERSON DOES NOT NEED TO BE ON-SITE CONTINUOUSLY THROUGHOUT CONSTRUCTION, THE DESIGNATED CONTACT PERSON MUST BE AVAILABLE FOR CONTACT BY TELEPHONE ON A 24 HOUR BASIS THROUGHOUT CONSTRUCTION AND UNTIL THE PROJECT HAS BEEN COMPLETED AND ACCEPTED BY THE CAR.
5. ADJACENT PROPERTIES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION BY APPROPRIATE USE OF SEDIMENT BARRIERS OR FILTERS, CHECK DAMS, STRAW BALES, OR BY A COMBINATION OF THESE MEASURES AND OTHER APPROPRIATE BMPs.
6. TEMPORARY ESCP BMP'S TO REMAIN IN PLACE UNTIL THE SITE IS STABILIZED AFTER CONSTRUCTION.
7. EMERGENCY EROSION CONTROL MATERIALS SHALL BE AVAILABLE AT THE SITE, INCLUDING A SUPPLY OF SEDIMENT CONTROL MATERIALS AND AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER OR WETLAND AREAS ARE WITHIN 150 FEET OF ACTIVE AND IDLE MACHINERY.
8. CONTRACTOR TO COORDINATE WITH CAR REGARDING PRESENCE OF AQUATIC ORGANISM EXCLUSION AND SALVAGE WITHIN WATERWAYS ADJACENT TO THE WORK AREAS AND FISH EXCLUSION REQUIREMENTS PER CAR AND ODFW FISH BIOLOGIST. CONTRACTOR SHALL NOTIFY CAR 5 DAYS PRIOR TO IMPLEMENTING WORK AREA ISOLATION, INCLUDING WHEN WORKING IN THE WET IF CONTRACTOR PREPARED ESCP ELECTS, AND FISH EXCLUSION MEASURES.
9. CONSTRUCTION ACCESS AND STAGING IS ASSUMED TO OCCUR ALONG RIDGWAY LANE.
10. CONTRACTOR TO FLAG CONTRACTOR PROPOSED CONSTRUCTION ACCESS ROUTES FOR CAR INSPECTION PRIOR TO CONSTRUCTION. TEMPORARY CONSTRUCTION ACCESS ROUTES SHALL BE ALIGNED SO AS TO MINIMIZE DISTURBANCE.
11. THE CONSTRUCTION STAGING AREA IS ASSUMED TO BE ON RIDGWAY LANE. THE STAGING AREA SHALL BE KEPT TO THE MINIMAL PRACTICAL EXTENT TO MINIMIZE DISTURBANCE.
12. TEMPORARY CONSTRUCTION ACCESS ROUTE AND STAGING AREA SHALL BE RESTORED PER THESE PLANS AND DIRECTION OF CAR.
13. ALL WORK BELOW OHW MUST BE CONDUCTED DURING THE IN-WATER WORK PERIOD SHOWN ON G01 UNLESS A WRITTEN EXTENSION IS RECEIVED BY THE CAR FROM PERMITTING AGENCIES AS RECOMMENDED BY ODFW AND NMFS.
14. EXCAVATED MATERIAL IN EXCESS OF THAT NEEDED TO OR DEEMED BY PROJECT ENGINEER TO BE UNSUITABLE FOR REUSE AS FILL TO FINAL GRADES SHALL BE HAULED AND DISPOSED OF IN A CAR APPROVED UPLAND AREA OR OFFSITE DISPOSAL FACILITY.

TEMPORARY WATER BYPASS NOTES:

1. THE TEMPORARY WATER BYPASS SHOWN ON THESE PLANS REPRESENT A SINGLE OPTION MEETING THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. FULL ISOLATION OF THE WORK AREA IS ASSUMED NECESSARY TO ESTABLISH RELATIVELY DRY CONDITIONS DURING THE IN-WATER WORK PERIOD COINCIDING WITH TYPICAL LOW-FLOW CONDITIONS. BYPASS FLOW ESTIMATES PROVIDED FOR CONTRACTOR CONVENIENCE.
2. FOURTEEN (14) CALENDAR DAYS BEFORE BEGINNING WORK THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS OF A CONTRACTOR DEVELOPED TEMPORARY WATER MANAGEMENT PLAN (TWMP) FOR CAR REVIEW AND APPROVAL. THE CONTRACTOR PREPARED TWMP SHALL BE BASED ON THE CONCEPT PLANS SHOWN OR AN INDEPENDENT PLAN THAT MEETS WATER QUALITY AND ENVIRONMENTAL GUIDELINE REQUIREMENTS. IMPLEMENTATION OF THE TWMP, INCLUDING CONSTRUCTION, MAINTENANCE, REPLACEMENT, UPGRADING, AND REMOVAL OF THE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE PRIMARY ELEMENTS OF THE CONCEPTUAL TWMP SHOWN ON C01 INCLUDE:
 - FISH REMOVAL WITHIN THE WORK AREA,
 - INSTALLATION OF ISOLATION BARRIER AND BYPASS PUMPING OF ALL UPSTREAM FLOW AROUND THE WORK AREA TO MAINTAIN DOWNSTREAM AQUATIC ORGANISM HABITAT,
 - SEDIMENT CONTROL THROUGHOUT THE CONSTRUCTION PROCESS, AND
 - REMOVAL OF THE ISOLATION BARRIER AND RE-WATERING OF THE WORK AREA.
3. DEWATERING OF THE ISOLATED WORK AREA IS ASSUMED TO BE NECESSARY TO ACHIEVE COMPACTION OF ALL FILLS.
4. PUMPING IS ASSUMED TO BE NECESSARY, SEE FISH SCREEN CRITERIA ON C01 .
5. FISH REMOVAL ACTIVITIES SHALL BE COORDINATED WITH THE CAR AND ODFW PRIOR TO ISOLATION TO ENSURE SALVAGE OF AQUATIC ORGANISMS.
6. MAINTAIN 1.5 FEET MINIMUM FREEBOARD BETWEEN THE TOP OF THE INSTALLED ISOLATION BARRIER AND STREAM WATER SURFACE.
7. ACTUAL LOCATIONS FOR ISOLATION AND BYPASS FACILITIES SHALL BE BASED ON SITE TOPOGRAPHY, AND ADJUSTED BASED ON BYPASS NEEDS DURING CONSTRUCTION.

POINT #	NORTHING	EASTING	ELEV	DESCRIPTION
634	610247.8310	3950402.9330	14.138	CP2
635	612233.1500	3950313.4320	13.442	CP1

ABBREVIATIONS AND NOTATIONS:

ACW	ACTIVE CHANNEL WIDTH	NMFS	NATIONAL MARINE FISHERIES SERVICE, NOAA FISHERIES NUMBER
ALIGN	ALIGNMENT	NO	NUMBER
APPROX	APPROXIMATELY	NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
BMP	BEST MANAGEMENT PRACTICE(S)	NOM	NOMINAL
BOT	BOTTOM	NTS	NOT TO SCALE
CAR	CONTRACTING AGENCY REPRESENTATIVE, COOS WATERSHED ASSOCIATION (COOSWA)	OAR	OREGON ADMINISTRATIVE RULE
CL	CENTERLINE	ODOT	OREGON DEPARTMENT OF TRANSPORTATION
CMP	CORRUGATED METAL PIPE	ODFW	OREGON DEPARTMENT OF FISH AND WILDLIFE
COOSWA	COOS WATERSHED ASSOCIATION	OHW	ORDINARY HIGH WATER
CUYD, CY	CUBIC YARD	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
DBH	DIAMETER AT BREST HEIGHT	PC	POINT OF CURVATURE
DEPT	DEPARTMENT	PT	POINT, POINT OF TANGENCY
DEQ	OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY	SHT	SHEET
DET	DETAIL	SHT	SHEET
DIA, Ø	DIAMETER	SPEC	SPECIFICATION(S)
DS	DOWNSTREAM	SQ	SQUARE
DWG	DRAWING	STD	STANDARD
E	EASTING	STA	STATION
EA	EACH	SY, SQYD	SQUARE YARD
EG	EXISTING GROUND	TB	TURBIDITY BARRIER
EL, ELEV	ELEVATION	TBD	TO BE DEVELOPED, TO BE DETERMINED
ESC	EROSION AND SEDIMENT CONTROL	TEMP	TEMPORARY
ESCP	EROSION AND SEDIMENT CONTROL PLAN	TWMP	TEMPORARY WATER MANAGEMENT PLAN
EX, EXIST	EXISTING	TYP	TYPICAL
FG	FINISHED GROUND	US	UNITED STATES, UPSTREAM
FIBC	FLEXIBLE INTERMEDIATE BULK CONTAINER	USFWS	UNITED STATES FISH AND WILDLIFE SERVICE
FT, '	FOOT OR FEET	VERT	VERTICAL
HORZ	HORIZONTAL	W	WITH
IN, "	INCH	W/O	WITHOUT
IE	INVERT ELEVATION	°	DEGREE
LTR	LETTER	@	AT
MAX	MAXIMUM	#	NUMBER
MIN	MINIMUM	%	PERCENT
N	NORTH, NORTHING		
NAD83	NORTH AMERICAN DATUM OF 1983		
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988		
NIC	NOT IN CONTRACT		

SYMBOLS:



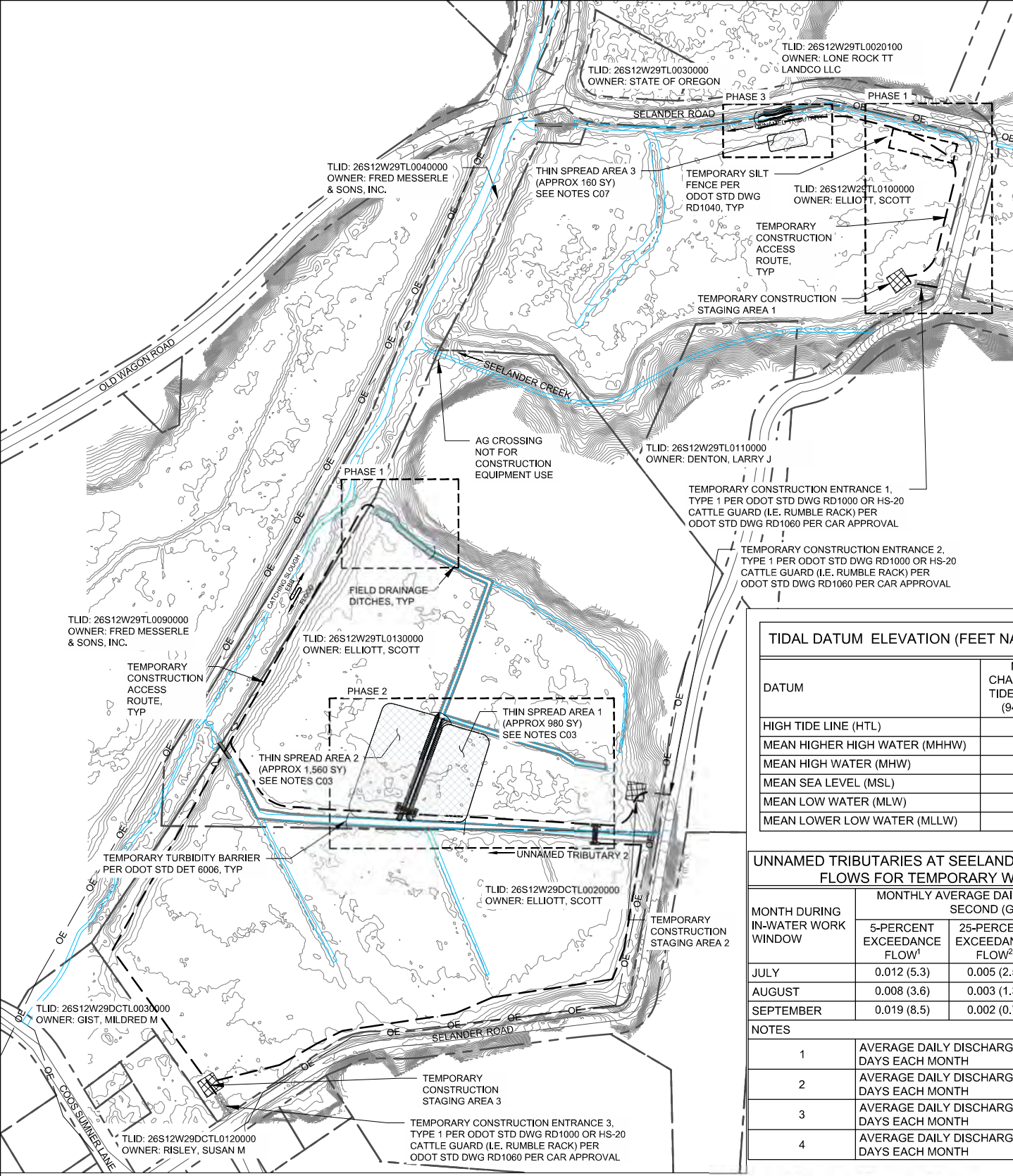
FILE: c:\Users\rvankilgren\Documents\2023\0001-2-cooswa-seelander - documents\CAD\Sheets\C01 EROSION AND SEDIMENT CONTROL PLAN.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:53 PM

GENERAL NOTES:

- AS PER ESCP NOTE 1 ON G02, THE ELEMENTS AND SEQUENCED WORK AREAS SHOWN IN THESE PLANS ARE A SCHEMATIC REPRESENTATION OF ONE POSSIBLE OPTION ONLY, USING WORKING IN THE WET METHODS AND ASSUMING CONTRACTOR WORK AT LOW TIDES. CONTRACTOR MAY PROPOSE AN ALTERNATIVE APPROACH, INCLUDING PARTIAL OR FULL ISOLATION, PER THESE PLANS AND DIRECTION OF THE CAR.
- CATCHING SLOUGH IS INFLUENCED BY TIDAL FLUCTUATIONS AND UPSTREAM FLOWS.
- SITE SPECIFIC TIDAL DATUM ARE PROVIDED FOR CONTRACTOR REFERENCE ONLY. SITE SPECIFIC TIDAL DATUM ARE DERIVED USING NOAA MONTHLY MEANS SIMULTANEOUS COMPARISON METHOD BETWEEN NOAA'S CHARLESTON TIDE STATION (9432780) AND COOSWA'S INSTALLED WATER LEVEL LOGGER NEAR THE CATCHING SLOUGH SIDE OF CULVERT 1 (CATCHING SLOUGH) AND THE INTERIOR DITCH SIDE OF CULVERT 1 (INTERIOR). THE WATER LEVEL TIMESERIES USED FOR ANALYSIS SPANS AUGUST 4, 2021 UNTIL DECEMBER 8, 2021. WATER LEVELS WITHIN THE WORK AREA ARE SUBJECT TO TIDAL AND LOCALIZED RUNOFF INFLOWS AND MAY VARY BEYOND THE ELEVATIONS SHOWN HERE. SITE SPECIFIC LOW WATER DATUM MAY BE INFLUENCED BY SEDIMENTATION WITHIN THE DRAINAGE CHANNEL. HIGH TIDE LINE (HTL) DATUM VALUES SHOWN FOR THE SITE ARE THE HIGHEST MEASURED COOSWA LOGGER VALUES ANALYZED WITH NOAA'S TIDAL ANALYSIS DATUM CALCULATOR, AND ARE ASSUMED TO ALIGN WITH ELEVATIONS ASSOCIATED WITH WRACKED DEBRIS OR SCUM LINES IF FIELD DELINEATED. THUS, THESE HTL VALUES ARE ASSUMED TO MEET THE REQUIREMENTS OF 33 CODE OF FEDERAL REGULATIONS SECTION 328.3 AND THE USACE JURISDICTIONAL BOUNDARY EXTENT UNDER SECTION 404 PERMITTING.
- IF PUMPS ARE NECESSARY OR REQUIRED, ALL PUMP INTAKES SHALL BE EXCLUDED FROM FISH ACCESS PER CAR, ODFW, AND NMFS REQUIREMENTS.

FISH SCREEN CRITERIA FROM NMFS SLOPES V

 - SUBMIT TO NMFS FOR REVIEW AND APPROVAL FISH SCREEN DESIGNS FOR SURFACE WATER DIVERTED BY GRAVITY OR BY PUMPING AT A RATE THAT EXCEEDS 3 CFS.
 - ALL OTHER DIVERSIONS WILL HAVE A FISH SCREEN THAT MEETS THE FOLLOWING SPECIFICATIONS:
 - AN AUTOMATED CLEANING DEVICE WITH A MIN EFFECTIVE SURFACE AREA OF 2.5 SQUARE FEET PER CFS, AND A NOMINAL MAXIMUM APPROACH VELOCITY OF 0.4 FEET PER SECOND, OR NO AUTOMATED CLEANING DEVICE, A MIN EFFECTIVE SURFACE AREA OF 1 SQUARE FOOT PER CFS, AND A NOM MAX APPROACH RATE OF 0.2 FOOT PER SECOND; AND
 - A ROUND OR SQUARE SCREEN MESH THAT IS NO LARGER THAN 2.38 MM (0.094") IN THE NARROW DIMENSION, OR ANY OTHER SHAPE THAT IS NO LARGER THAN 1.75 MM (0.069") IN THE NARROW DIMENSION.
 - EACH FISH SCREEN WILL BE INSTALLED, OPERATED, AND MAINTAINED ACCORDING TO NMFS'S FISH SCREEN CRITERIA.
- PUMPED WATER MAYBE DISCHARGED WITHIN UPSLOPE FIELDS OR UNNAMED TRIBUTARY CHANNELS PROVIDED THAT SUFFICIENT ENERGY DISSIPATION IS ACHIEVED SO AS TO PREVENT EROSION AND SCOUR. ENERGY DISSIPATION MAY BE POSSIBLE USING EXISTING VEGETATION FOR FLOW DISPERSION OR ANOTHER CONTRACTOR PROPOSED AND CAR APPROVED BMP.
- THE ESTIMATED UNNAMED TRIBUTARY DISCHARGES ARE PROVIDED FOR CONTRACTOR CONVENIENCE. THESE ARE ESTIMATED VALUES ONLY AND ARE BASED ON USGS REGIONAL REGRESSIONS EXTRAPOLATED WITH UNKNOWN ERRORS DUE TO PARAMETERS OUTSIDE OF THE SUGGESTED REGRESSION GOODNESS OF FIT RANGE. SIZING OF THE TEMPORARY WATER MANAGEMENT PUMPS, PIPES, HOSES, SEDIMENT CONTROL FACILITIES, ENERGY DISSIPATORS, AND OTHER APPURTENANCES IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE BASED ON SITE AND FLOW CONDITIONS DURING THE CONSTRUCTION PERIOD.
- MINIMIZE EXCAVATION OF SHALLOW SUMPS FOR PUMP PLACEMENT TO THE EXTENT PRACTICAL.
- IF PARTIAL OR FULL ISOLATION METHODS ARE USED BY THE CONTRACTOR, MAINTAIN 2 FEET MIN FREEBOARD BETWEEN THE CATCHING SLOUGH WATER SURFACE AND THE TOP OF THE INSTALLED ISOLATION BARRIER.
- ACTUAL LOCATIONS FOR TURBIDITY BARRIER, ISOLATION, PUMP, AND OTHER ESCP BMPS SHALL BE BASED ON SITE TOPOGRAPHY, EASEMENTS, AND ADJUSTED BASED ON SITE AND FLOW CONDITIONS DURING CONSTRUCTION.



TIDAL DATUM ELEVATION (FEET NAVD88), SEE GENERAL NOTE 3

DATUM	NOAA CHARLESTON TIDE STATION (9432780)	CATCHING SLOUGH (COOSWA LOGGER)	INTERIOR (COOSWA LOGGER)
HIGH TIDE LINE (HTL)	10.68	8.77	5.87
MEAN HIGHER HIGH WATER (MHHW)	7.12	6.76	5.42
MEAN HIGH WATER (MHW)	6.46	6.13	5.18
MEAN SEA LEVEL (MSL)	3.58	3.92	3.60
MEAN LOW WATER (MLW)	0.77	2.02	2.08
MEAN LOWER LOW WATER (MLLW)	-0.50	1.86	1.94

UNNAMED TRIBUTARIES AT SEELANDER PROJECT SITE ESTIMATED FLOWS FOR TEMPORARY WATER MANAGEMENT

MONTH DURING IN-WATER WORK WINDOW	MONTHLY AVERAGE DAILY DISCHARGE IN CUBIC FEET PER SECOND (GALLONS PER MINUTE)			
	5-PERCENT EXCEEDANCE FLOW ¹	25-PERCENT EXCEEDANCE FLOW ²	50-PERCENT EXCEEDANCE FLOW ³	95-PERCENT EXCEEDANCE FLOW ⁴
JULY	0.012 (5.3)	0.005 (2.5)	0.003 (1.3)	0 (0)
AUGUST	0.008 (3.6)	0.003 (1.3)	0.001 (0.6)	0 (0)
SEPTEMBER	0.019 (8.5)	0.002 (0.7)	0.0005 (0.2)	0 (0)

NOTES

1	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 2 DAYS EACH MONTH
2	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 8 DAYS EACH MONTH
3	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 16 DAYS EACH MONTH
4	AVERAGE DAILY DISCHARGE EXPECTED TO BE EXCEEDED 29 DAYS EACH MONTH

PHASED WORK SEQUENCE:

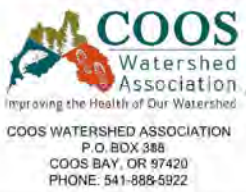
- PHASES 1 - DITCH PLUG**
- FISH SALVAGE IS REQUIRED, COORDINATE WITH CAR AND ODFW PRIOR TO ESTABLISHING WORKING IN THE WET OR ISOLATION ACTIVITIES TO ENSURE SALVAGE OF AQUATIC ORGANISMS.
 - INSTALL AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL BMPS TO PREVENT OFFSITE CONVEYANCE OF SEDIMENT LADEN WATER AND MINIMIZE EROSION.
 - EXCAVATE AND HAUL EXCESS MATERIAL FROM BORROW AREA FOR FILL AS DITCH PLUG PER PLANS.
 - REMOVE EROSION AND SEDIMENT CONTROL BMPS.
 - CONSTRUCTION COMPLETION AND STABILIZATION WILL INCLUDE REMOVAL OF ALL EROSION AND SEDIMENT CONTROL BMPS.
- PHASE 2 - CHANNEL AND AG CROSSING CONSTRUCTION**
- FISH SALVAGE IS REQUIRED, COORDINATE WITH CAR AND ODFW PRIOR TO ESTABLISHING WORKING IN THE WET OR ISOLATION ACTIVITIES TO ENSURE SALVAGE OF AQUATIC ORGANISMS.
 - INSTALL AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL BMPS TO PREVENT OFFSITE CONVEYANCE OF SEDIMENT LADEN WATER AND MINIMIZE EROSION.
 - EXCAVATE CHANNEL AND PLACE THIN SPREAD FILL PER PLANS.
 - CONSTRUCT AG CROSSINGS.
 - REMOVE EROSION AND SEDIMENT CONTROL BMPS.
 - CONSTRUCTION COMPLETION AND STABILIZATION WILL INCLUDE REMOVAL OF ALL EROSION AND SEDIMENT CONTROL BMPS, AND ALLOWING WATER TO FLOW IN THE NEW CULVERT AND RESTORED CHANNELS/DITCHES.
- PHASES 3 - BANK PULL BACK**
- FISH SALVAGE IS REQUIRED, COORDINATE WITH CAR AND ODFW PRIOR TO ESTABLISHING WORKING IN THE WET OR ISOLATION ACTIVITIES TO ENSURE SALVAGE OF AQUATIC ORGANISMS.
 - INSTALL AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL BMPS TO PREVENT OFFSITE CONVEYANCE OF SEDIMENT LADEN WATER AND MINIMIZE EROSION.
 - EXCAVATE FOR BANK PULL BACK AND THIN SPREAD FILL PER PLANS.
 - REMOVE EROSION AND SEDIMENT CONTROL BMPS.
 - CONSTRUCTION COMPLETION AND STABILIZATION WILL INCLUDE REMOVAL OF ALL EROSION AND SEDIMENT CONTROL BMPS.

1 EROSION AND SEDIMENT CONTROL PLAN
SCALE: 1:150



NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.17 13:04:47-0700
REGISTERED PROFESSIONAL ENGINEER
83634PE
OREGON
June 2, 2010
RYAN WESLEY KILGREN
RENEWS: 6/30/2025

PROJECT NO.
1.2023.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II
EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO.
C01
SHEET NO.
3
OF
10

FILE: c:\Users\wankilgren\kiltren water resources\1.2023.0001.2-cooswa-seelander - documents\CAD\Sheets\EXISTING CONDITIONS PLAN.dwg USER: wankilgren DATE/TIME: 10/17/2023 12:53 PM



1 EXISTING CONDITIONS PLAN
SCALE: 1:150



WETLAND AREA TABLE							
NO	USFWS NATIONAL WETLAND INVENTORY CLASSIFICATION						AREA (ACRES)
	SYSTEM	CLASS	SUBCLASS	WATER REGIME	SPECIAL MODIFIERS	CODE	
1	PALUSTRINE	EMERGENT	PERSISTENT	TEMPORARILY FLOODED	PARTLY DRAINED/DITCHED	PEM1Ad	5.43
2	PALUSTRINE	EMERGENT	PERSISTENT	SEASONALLY FLOODED	PARTLY DRAINED/DITCHED	PEM1Cd	5.52
3	PALUSTRINE	FORESTED	-	TEMPORARILY FLOODED	DIKED/IMPOUNDED	PFOAh	0.61
4	PALUSTRINE	EMERGENT	PERSISTENT	SEASONALLY FLOODED-FRESH TIDAL	-	PEM1R	1.65
5	PALUSTRINE	EMERGENT	PERSISTENT	SEASONALLY FLOODED	PARTLY DRAINED/DITCHED	PEM1Cd	21.81
Total							35.02

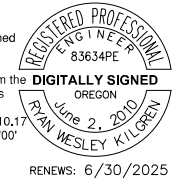
* WETLAND TYPES AND AREAS FROM USFWS NATIONAL WETLAND INVENTORY, AVAILABLE ONLINE AT [HTTP://WWW.FWS.GOV/PROGRAM/NATIONAL-WETLANDS-INVENTORY](http://www.fws.gov/program/national-wetlands-inventory)

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document
 Date: 2023.10.17 13:04:51-0700'



PROJECT NO.
1.2023.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

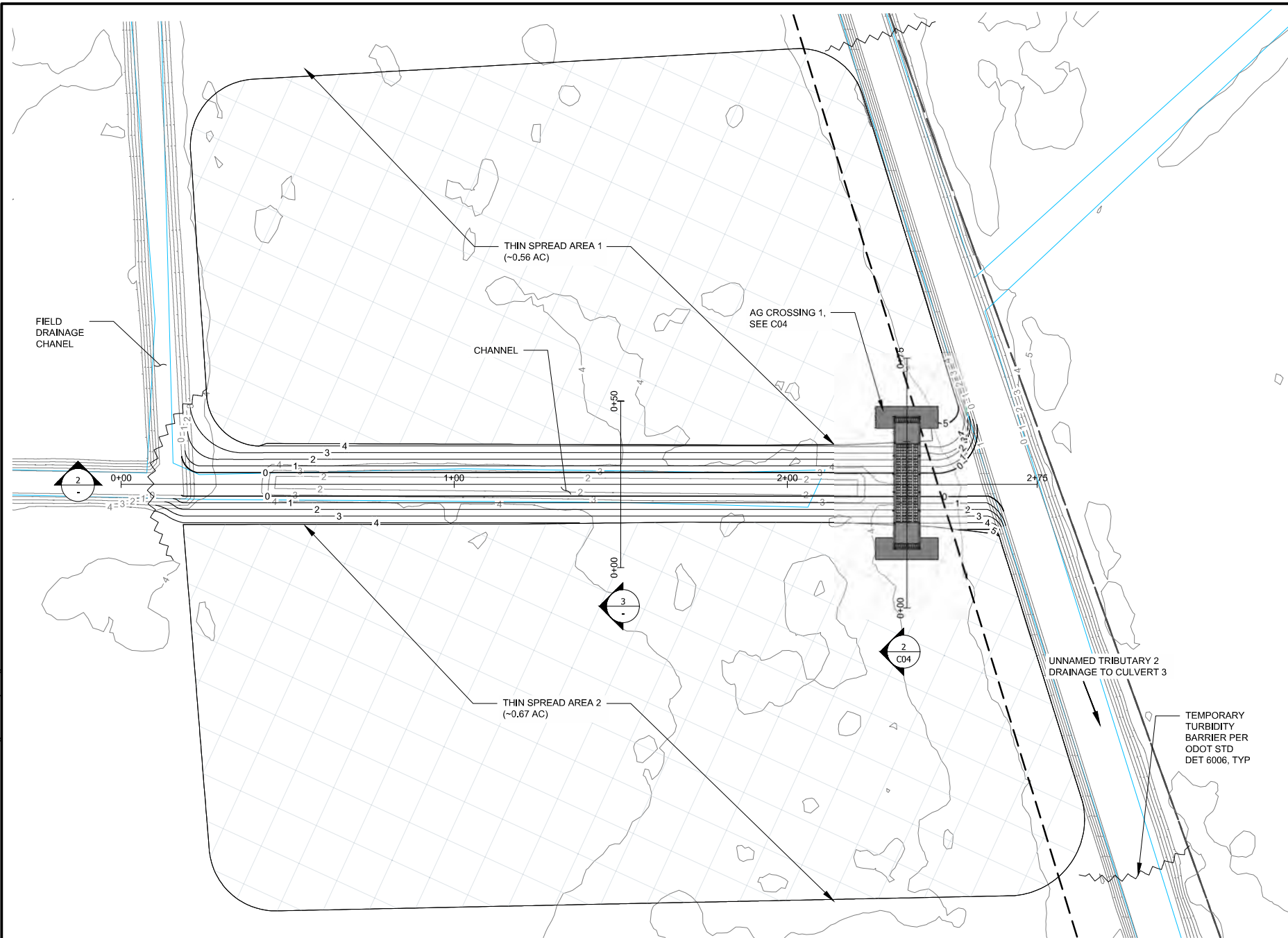
SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II

EXISTING CONDITIONS PLAN

DRAWING NO.
C02
SHEET NO.
4
OF
10



FILE: c:\Users\mankilgren\kiltren water resources\1.1.2023.0001.2-cooswa-seelander - documents\CAD\Sheets\C03 CHANNEL PLAN & PROFILE.dwg USER: mankilgren DATE/TIME: 10/17/2023 12:54 PM

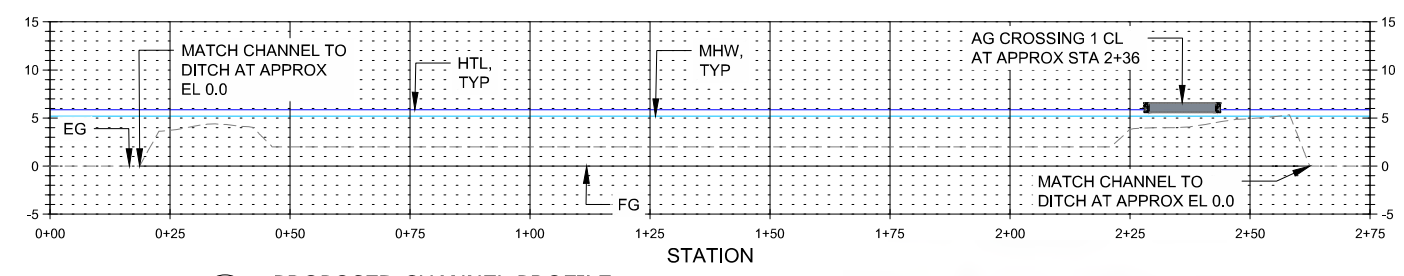


GENERAL NOTES

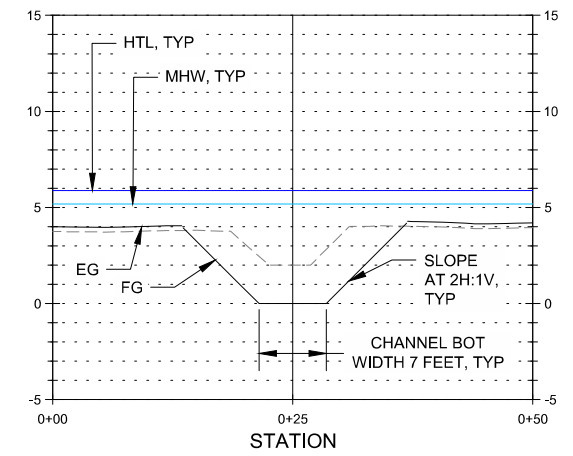
1. CONTRACTOR TO PLACE THIN SPREAD AREA FILL IN A UNIFORM LAYER IN A SINGLE LIFT TO ENHANCE HABITAT AND AG LAND USES PER DIRECTION OF CAR AND WITHIN EXTENTS SHOWN.
2. THIN SPREAD AREA FILL DEPTH NOT TO EXCEED 3-INCHES-THICK.
3. THIN SPREAD AREA ESTIMATED VOLUMES ASSUME A 3-INCH-THICK LAYER FOR THE ENTIRE EXTENT SHOWN. ACTUAL APPLICATION MAY COVER A SMALLER EXTENT AND/OR SMALLER UNIFORM LAYER HEIGHT.
4. CONTRACTOR SHALL LIMIT EARTHWORK TO PERMANENT AND TEMPORARY FEATURES SHOWN ON THE PLANS AND PER DIRECTION OF CAR.
5. DISTURBANCE OUTSIDE THE WORK SHOWN SHALL BE MINIMIZED.
6. SALVAGE AND STOCKPILE WOODY VEGETATION AND TOPSOIL REMOVED DURING CLEARING PER DIRECTION OF CAR.
7. ESTABLISH PLANTING ZONES FOLLOWING APPROVAL OF CAR AND ENGINEER OF FG.

CUT AND FILL SUMMARY			
SITE	CUT (CY)	FILL (CY)	AREA (AC)
CHANNEL	495	0	0.14
THIN SPREAD AREA 1	0	225	0.56
THIN SPREAD AREA 2	0	270	0.67
TOTAL	495	495	1.37

1 PROPOSED CHANNEL PLAN
Scale: 1:20



2 PROPOSED CHANNEL PROFILE
Scale: HOZ: 1:20 VERT: 1:5



3 PROPOSED CHANNEL SECTION
Scale: HOZ: 1:10 VERT: 1:5

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023



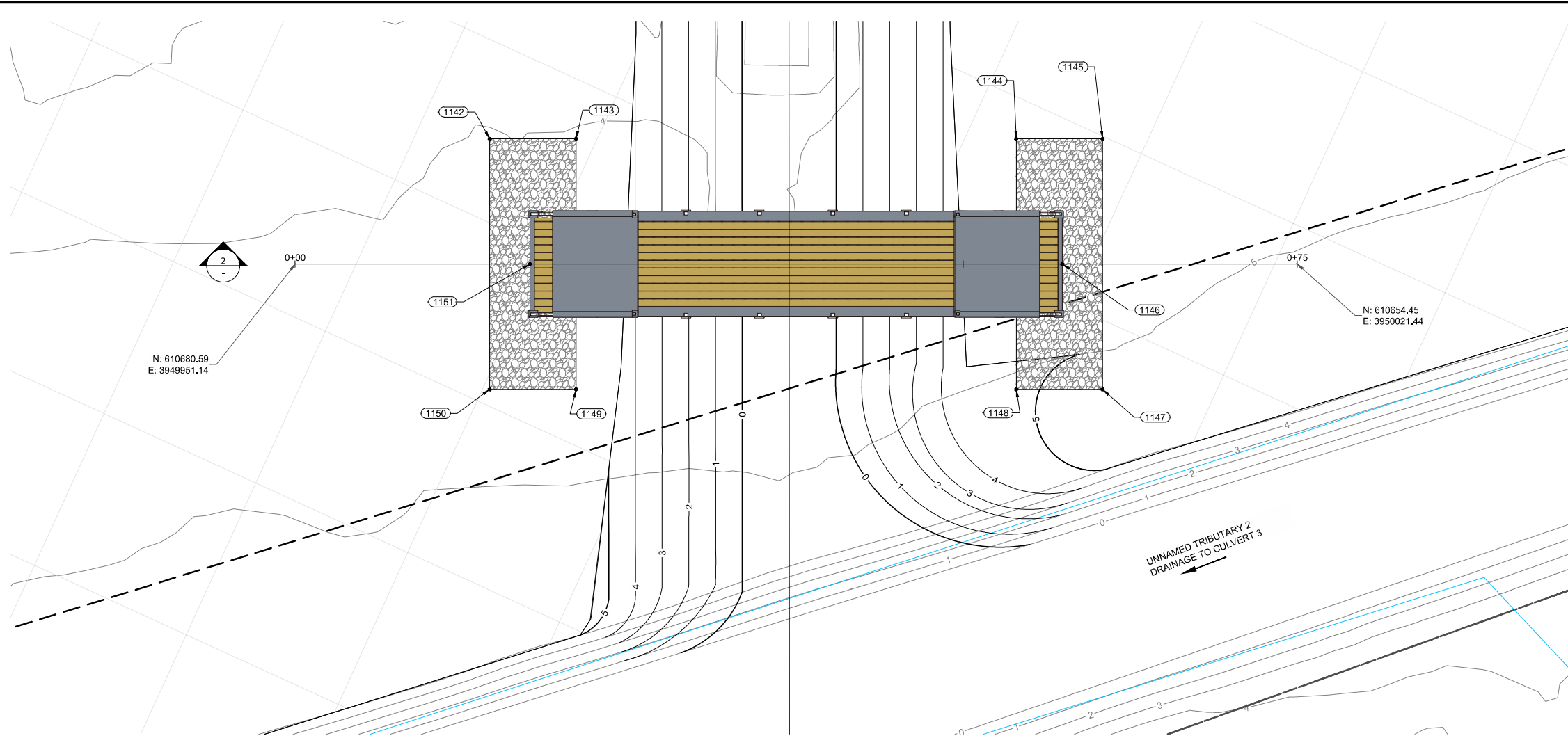
Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document
 Date: 2023.10.17 13:04:56-0700
REGISTERED PROFESSIONAL ENGINEER
 83634PE
 OREGON
 June 2, 2010
 RYAN WESLEY KILGREN
 RENEWS: 6/30/2025

PROJECT NO.
 1.2023.0001.1
DESIGNED BY
 RWK
DRAWN BY
 RWK

SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II
CHANNEL PLAN, PROFILE, AND SECTION

DRAWING NO.
 C03
SHEET NO.
 5
OF
 10

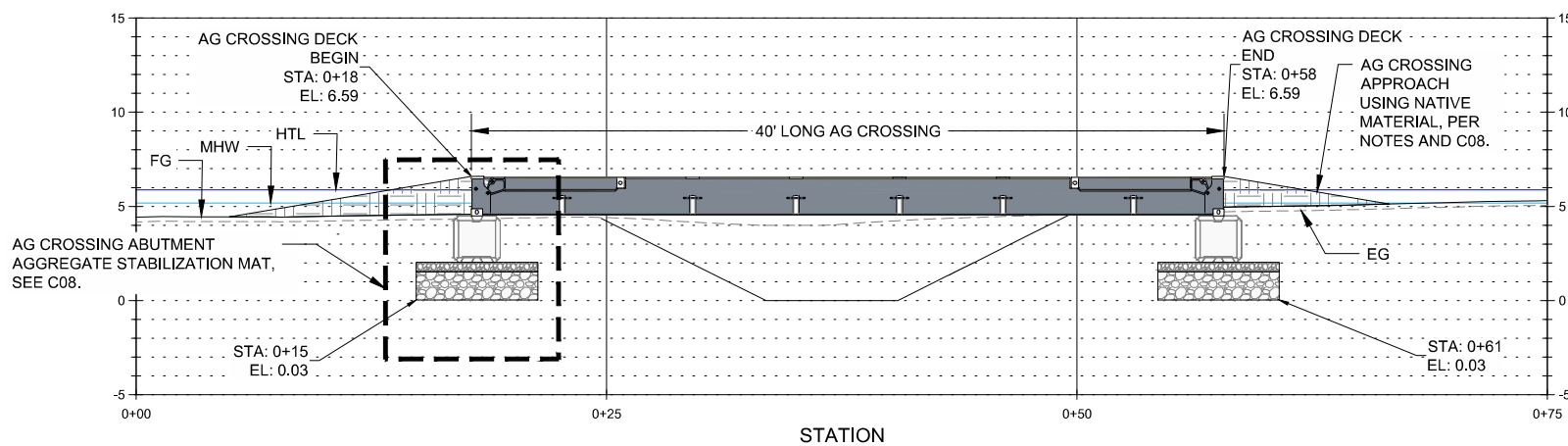
FILE: c:\Users\rvankilgren\kiltren water resources\1.1.2023.0001.2-cooswa-seelander - documents\CAD\Sheets\COOS AG CROSSING 2 PLAN.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:54 PM



1 AG CROSSING 1 PLAN Scale: 1:5

- GENERAL NOTES**
- CAR TO SUPPLY AG CROSSING AND CONTRACTOR TO CONSTRUCT AG CROSSING ABUTMENTS, PLACE AG CROSSING, AND CONSTRUCT GRADED AG CROSSING APPROACHES.
 - AG CROSSING APPROACHES SHALL BE CONSTRUCTED USING NATIVE MATERIAL EXCAVATED FOR PLACEMENT OF AG CROSSING ABUTMENT STABILIZATION MAT AND PRE-CAST CONCRETE ABUTMENT BLOCK. LONGITUDINAL SLOPING AT 6:1 (MAX) AND OUTSLOPES AT 3:1 (MAX). MATCH TRAVEL LANE WIDTH IN APPROACH TO AG CROSSING WIDTH.
 - NO ROCK TO BE PLACED IN AG CROSSING APPROACHES.
 - SEE C08 FOR ADDITIONAL DETAILS AND CONSTRUCTION NOTES.

AG CROSSING 1 LAYOUT COORDINATES TABLE		
POINT #	NORTHING	EASTING
1142	610684.3	3949968
1143	610682.1	3949974
1144	610670.6	3950005
1145	610668.3	3950011
1146	610660.6	3950005
1147	610650.7	3950005
1148	610653	3949998
1149	610664.5	3949968
1150	610666.7	3949962
1151	610674.5	3949968



2 AG CROSSING 1 PROFILE Scale: HOZ: 1:5 VERT: 1:5

AG CROSSING 1 MATERIAL SCHEDULE	
MATERIAL	QUANTITY PER FEATURE
40' AG CROSSING	1
SUBGRADE GEOTEXTILE, TYPE 2 (NONWOVEN), FOR AGGREGATE STABILIZATION MAT	160 SY
1 1/2" MINUS, FOR AGGREGATE STABILIZATION MAT	6.3 TN
6-8" MINUS, FOR AGGREGATE STABILIZATION MAT	19 TN
PRE-CAST CONCRETE ABUTMENT BLOCKS	6 EA (MIN)
NATIVE MATERIAL OVEREXCAVATION FOR AGGREGATE STABILIZATION MAT MATERIAL AND PRE-CAST CONCRETE ABUTMENT BLOCK PLACEMENT. BACKFILL NATIVE MATERIAL FOR BRIDGE APPROACHES PER NOTES	25 CY

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023

Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document
 Date: 2023.10.17 13:05:00-0700

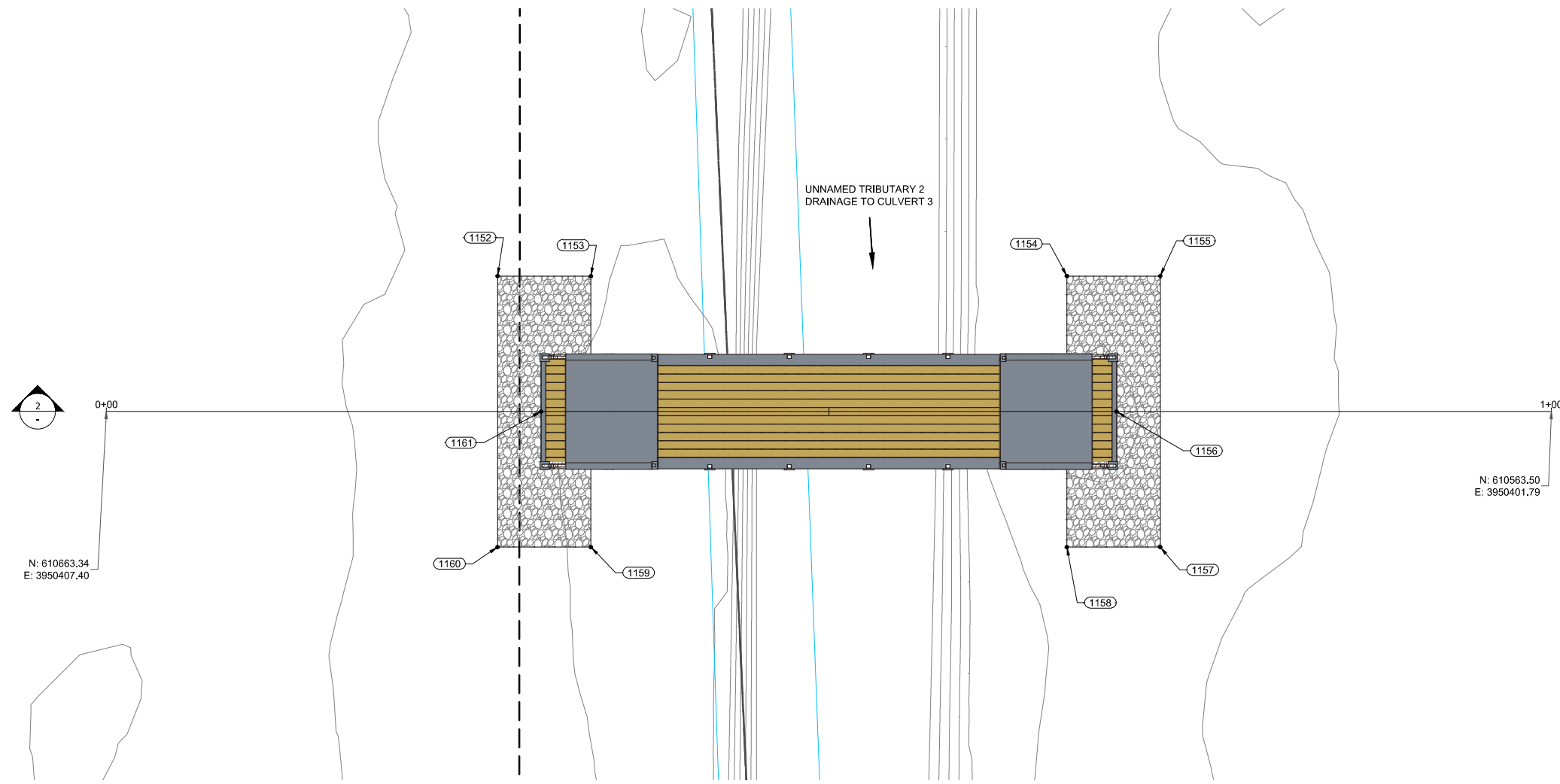
 RENEWS: 6/30/2025

PROJECT NO.
1.2023.0001.1
 DESIGNED BY
RWK
 DRAWN BY
RWK

SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II
AG CROSSING 1 PLAN

DRAWING NO.
C04
 SHEET NO.
6
 OF
10

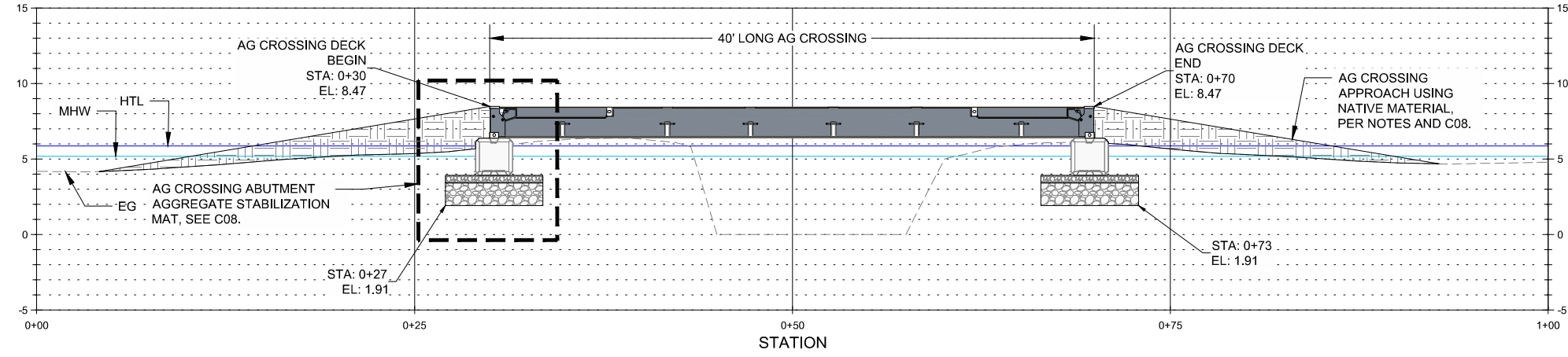
FILE: c:\Users\rvankilgren\Documents\CAD\Sheets\C05 AG CROSSING 2 PLAN.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:54 PM



1 AG CROSSING 2 PLAN
Scale: 1:5

- GENERAL NOTES**
- CAR TO SUPPLY AG CROSSING AND CONTRACTOR TO CONSTRUCT AG CROSSING ABUTMENTS, PLACE AG CROSSING, AND CONSTRUCT GRADED AG CROSSING APPROACHES.
 - AG CROSSING APPROACHES SHALL BE CONSTRUCTED USING NATIVE MATERIAL EXCAVATED FOR PLACEMENT OF AG CROSSING ABUTMENT STABILIZATION MAT AND PRE-CAST CONCRETE ABUTMENT BLOCK. LONGITUDINAL SLOPING AT 6:1 (MAX) AND OUTSLOPES AT 3:1 (MAX). MATCH TRAVEL LANE WIDTH IN APPROACH TO AG CROSSING WIDTH.
 - NO ROCK TO BE PLACED IN AG CROSSING APPROACHES.
 - SEE C08 FOR ADDITIONAL DETAILS AND CONSTRUCTION NOTES.

AG CROSSING 2 LAYOUT COORDINATES TABLE		
POINT #	NORTHING	EASTING
1152	610635.8	3950415
1153	610629.3	3950415
1154	610596.5	3950413
1155	610590	3950413
1156	610593.5	3950403
1157	610591.1	3950394
1158	610597.5	3950394
1159	610630.4	3950396
1160	610636.8	3950397
1161	610633.3	3950406



2 AG CROSSING 2 PROFILE
Scale: HOZ: 1:5 VERT: 1:5

AG CROSSING 2 MATERIAL SCHEDULE	
MATERIAL	QUANTITY PER FEATURE
40' AG CROSSING	1
SUBGRADE GEOTEXTILE, TYPE 2 (NONWOVEN), FOR AGGREGATE STABILIZATION MAT	160 SY
1 1/2" MINUS, FOR AGGREGATE STABILIZATION MAT	6.3 TN
6-8" MINUS, FOR AGGREGATE STABILIZATION MAT	19 TN
PRE-CAST CONCRETE ABUTMENT BLOCKS	6 EA (MIN)
NATIVE MATERIAL OVEREXCAVATION FOR AGGREGATE STABILIZATION MAT MATERIAL AND PRE-CAST CONCRETE ABUTMENT BLOCK PLACEMENT. BACKFILL NATIVE MATERIAL FOR BRIDGE APPROACHES PER NOTES	25 CY

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023

COOS Watershed Association
Improving the Health of Our Watershed
COOS WATERSHED ASSOCIATION
P.O. BOX 388
COOS BAY, OR 97420
PHONE: 541-888-5922

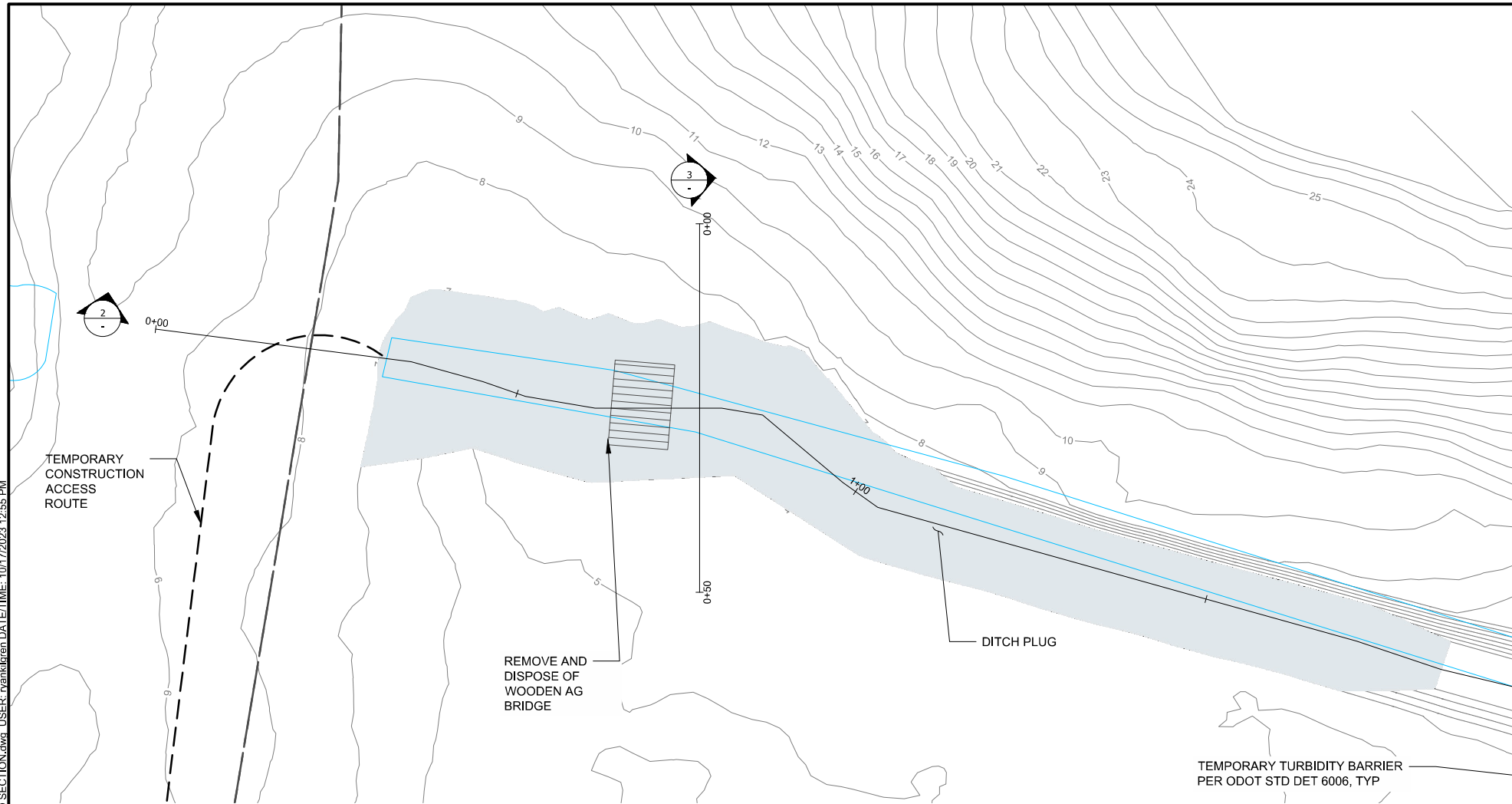
Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.17 13:05:04 -0700
REGISTERED PROFESSIONAL ENGINEER
83634PE
OREGON
June 2, 2010
RYAN WESLEY KILGREN
RENEWS: 6/30/2025

PROJECT NO.
1.2023.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II
AG CROSSING 2 PLAN

DRAWING NO.
C05
SHEET NO.
7
OF
10

FILE: c:\Users\jankilgren\kiltren water resources\1.2023.0001.2-cooswa-seelander - documents\CAD\Sheets\C06 DITCH PLUG PLAN, PROFILE, AND SECTION.dwg USER: jankilgren DATE/TIME: 10/17/2023 12:55 PM

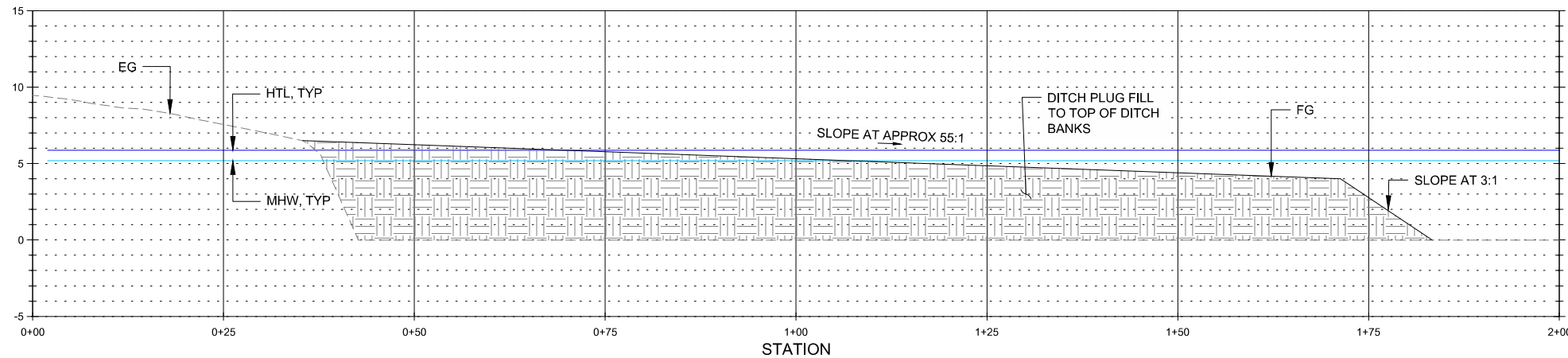


GENERAL NOTES

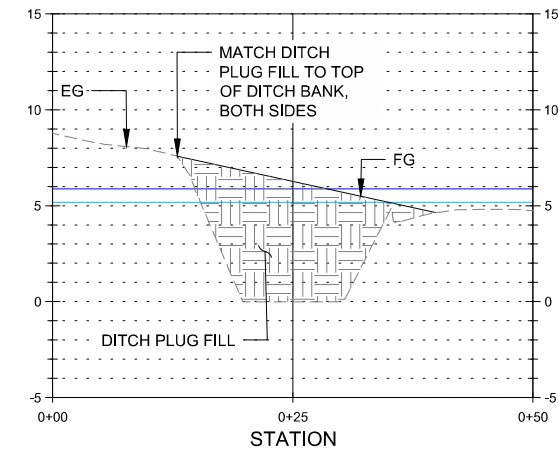
- BORROW AREA FOR DITCH FILL MATERIAL SOURCING IS SHOWN ON C02. ONE-WAY HAUL DISTANCE FROM BORROW AREA TO DITCH FILL IS APPROX 0.7 MILES.
- CONTRACTOR TO REMOVE, HAUL, AND DISPOSE OF WOODEN AG BRIDGE APPROPRIATE OFF-SITE DISPOSAL FACILITY APPROVED BY CAR.
- CONTRACTOR SHALL LIMIT EARTHWORK TO PERMANENT AND TEMPORARY FEATURES SHOWN ON THE PLANS AND PER DIRECTION OF CAR.
- DISTURBANCE OUTSIDE THE WORK SHOWN SHALL BE MINIMIZED.
- SALVAGE AND STOCKPILE WOODY VEGETATION AND TOPSOIL REMOVED DURING CLEARING PER DIRECTION OF CAR.
- ESTABLISH PLANTING ZONES FOLLOWING APPROVAL OF CAR AND ENGINEER OF FG.

CUT AND FILL SUMMARY			
SITE	CUT (CY)	FILL (CY)	AREA (AC)
BORROW AREA (SEE C02)	290	0	0.09
DITCH PLUG	0	290	0.06
TOTAL	290	290	0.15

1 DITCH PLUG PLAN
Scale: 1:10



2 DITCH PLUG PROFILE
Scale: HOZ: 1:10 VERT: 1:5



3 DITCH PLUG PROFILE
Scale: HOZ: 1:10 VERT: 1:5

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
21 EAST 28TH AVENUE, SUITE 4
EUGENE, OR 97405
PHONE: 971-409-4023

COOS Watershed Association
Improving the Health of Our Watershed
COOS WATERSHED ASSOCIATION
P.O. BOX 388
COOS BAY, OR 97420
PHONE: 541-888-5922

Digitally signed by Ryan W. Kilgren
Reason: I am the author of this document
Date: 2023.10.17 13:05:08-0700
REGISTERED PROFESSIONAL ENGINEER
83634PE
OREGON
June 2, 2010
RYAN WESLEY KILGREN
RENEWS: 6/30/2025

PROJECT NO.
1.2023.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

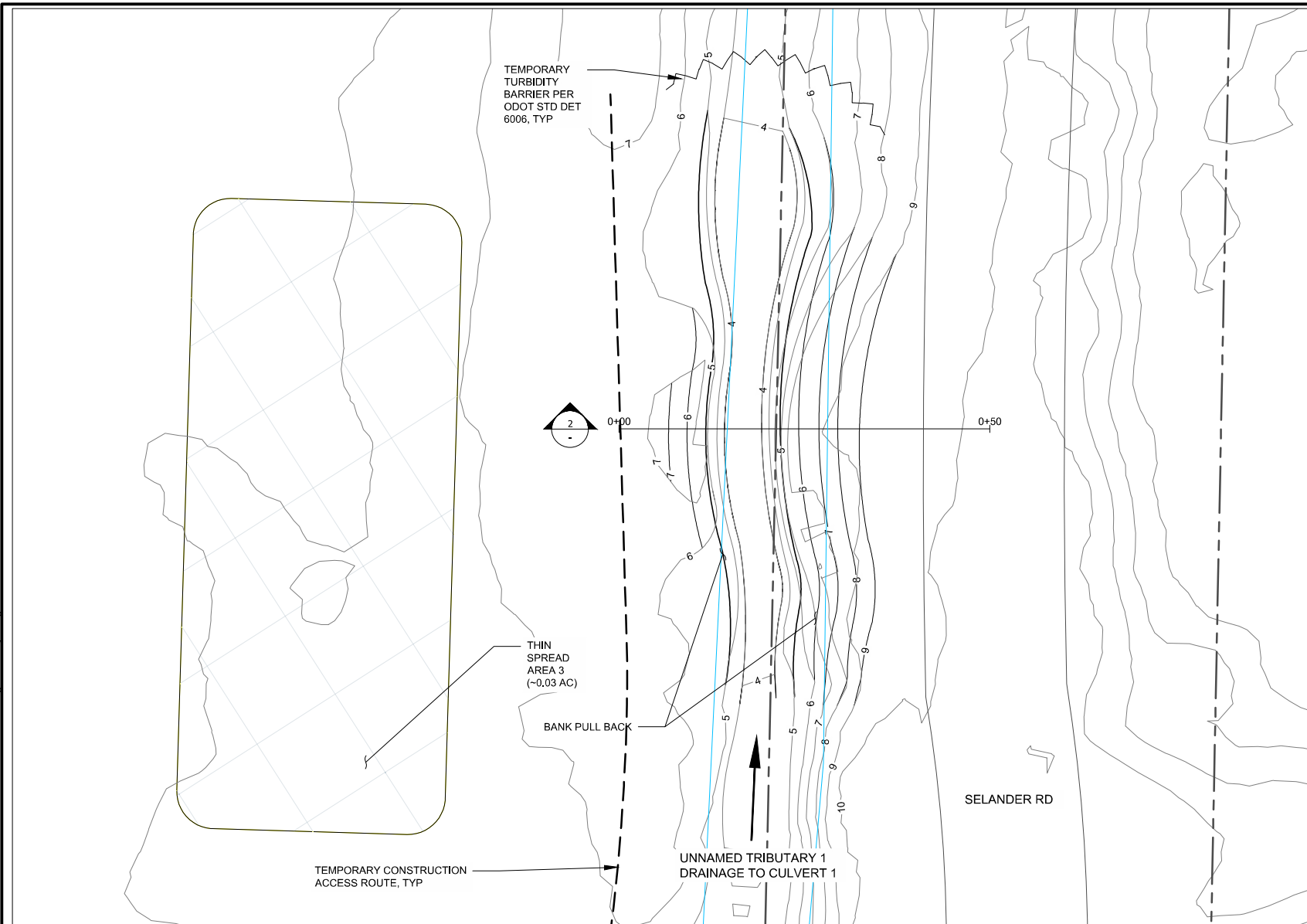
SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II

DITCH PLUG PLAN, PROFILE, AND SECTION

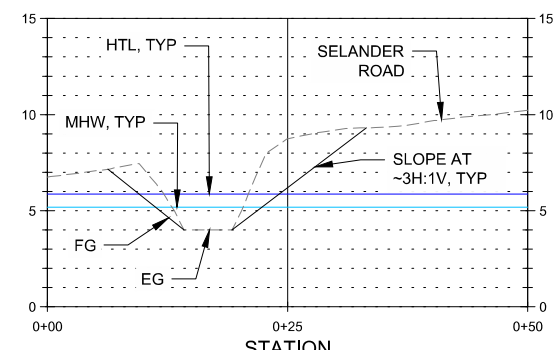
DRAWING NO.
C06
SHEET NO.
8
OF
10



FILE: c:\Users\rvankilgren\krgren water resources\161.2023.0001.2-cooswa-selander - documents\CAD\Sheets\C07-C08 BANK PULL BACK AND TYPICAL BRIDGE DETAIL.dwg USER: rvankilgren DATE/TIME: 10/17/2023 12:55 PM



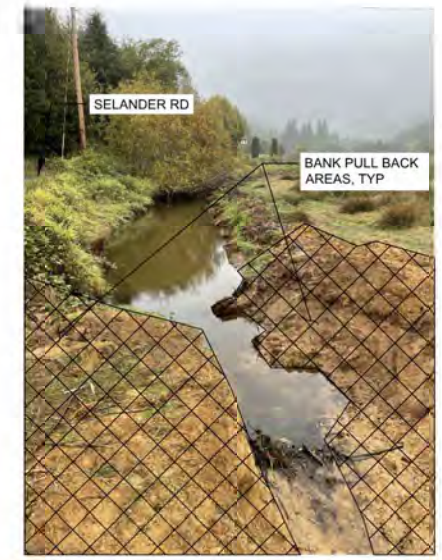
1 TRIBUTARY BANK PULL BACK PLAN Scale: 1:10



2 TRIBUTARY BANK PULL BACK SECTION Scale: HOZ: 1:10 VERT: 1:5



3 LOOKING DOWNSTREAM ALONG UNNAMED TRIBUTARY TOWARDS CATCHING SLOUGH AT BANK PULL BACK AREAS Scale: NTS



4 LOOKING UPSTREAM ALONG UNNAMED TRIBUTARY 1 TOWARDS CULVERT 1 AND CATCHING SLOUGH AT BANK PULL BACK AREAS Scale: NTS

CUT AND FILL SUMMARY			
SITE	CUT (CY)	FILL (CY)	AREA (AC)
BANK PULL BACK	40	0	0.07
THIN SPREAD AREA 3	0	40	0.03
TOTAL	40	40	0.10

GENERAL NOTES

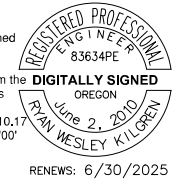
- CONTRACTOR TO PLACE THIN SPREAD AREA FILL IN A UNIFORM LAYER IN A SINGLE LIFT TO ENHANCE HABITAT AND AG LAND USES PER DIRECTION OF CAR AND WITHIN EXTENTS SHOWN.
- THIN SPREAD AREA FILL DEPTH NOT TO EXCEED 3-INCHES-THICK.
- THIN SPREAD AREA ESTIMATED VOLUMES ASSUME A 3-INCH-THICK LAYER FOR THE ENTIRE EXTENT SHOWN. ACTUAL APPLICATION MAY COVER A SMALLER EXTENT AND/OR SMALLER UNIFORM LAYER HEIGHT.
- CONTRACTOR SHALL LIMIT EARTHWORK TO PERMANENT AND TEMPORARY FEATURES SHOWN ON THE PLANS AND PER DIRECTION OF CAR.
- DISTURBANCE OUTSIDE THE WORK SHOWN SHALL BE MINIMIZED.
- SALVAGE AND STOCKPILE WOODY VEGETATION AND TOPSOIL REMOVED DURING CLEARING PER DIRECTION OF CAR.
- ESTABLISH PLANTING ZONES FOLLOWING APPROVAL OF CAR AND ENGINEER OF FG.

NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023



Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document
 Date: 2023.10.17 13:05:12-0700'

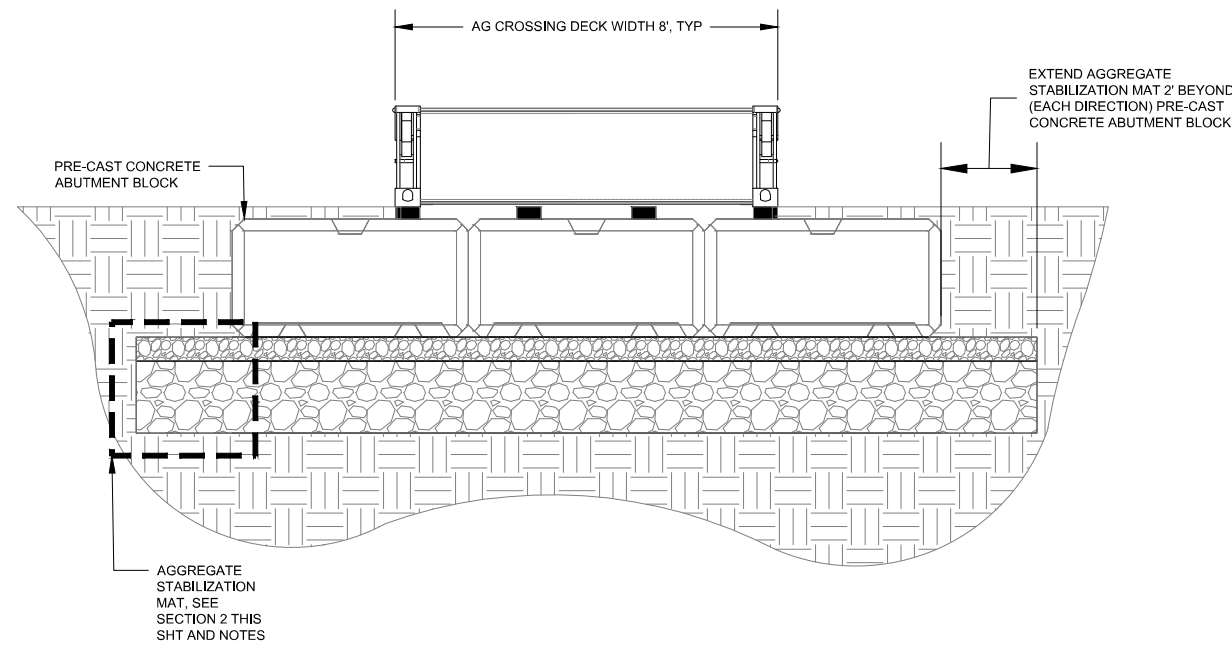


PROJECT NO.
1.2023.0001.1
 DESIGNED BY
RWK
 DRAWN BY
RWK

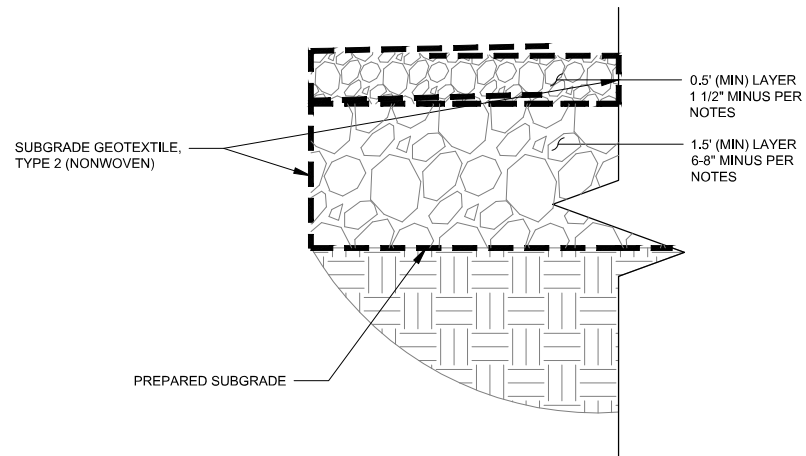
SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II

TRIBUTARY BANK PULL BANK

DRAWING NO.
C07
 SHEET NO.
9
 OF
10



1 TYPICAL AG CROSSING ABUTMENT SECTION Scale: 1:2



2 TYPICAL AG CROSSING ABUTMENT AGGREGATE STABILIZATION MAT SECTION Scale: 1:1

AG CROSSING CONSTRUCTION NOTES

1. PREPARE NATIVE SUBGRADE SURFACES BY GRADING TO ACCOMMODATE AG CROSSING ABUTMENT MATERIAL PLACEMENT TO THE LINES AND GRADES SHOWN. COMPACT SUBGRADE SMOOTH. PREPARED SUBGRADE SURFACES SHALL BE FREE OF MOUNDS, DIPS, CUTS, AND DEBRIS.
2. PRE-CAST CONCRETE ABUTMENT BLOCKS BEAR ON AGGREGATE STABILIZATION MATS COMPRISED OF TWO AGGREGATE MATERIAL LAYERS CONFINED WITHIN NATIVE SOILS AND WRAPPED IN SUBGRADE GEOTEXTILE FOR SEPARATION FROM NATIVE FINES.
3. SUBGRADE GEOTEXTILE, TYPE 2 (NONWOVEN) MEETING ODOT STD SPEC 02320.20, TO BE PLACED FOR SEPARATION OF ABUTMENT AGGREGATE MATERIALS FROM NATIVE FINER MATERIALS. FULLY WRAP, INCLUDING BOTTOM, SIDES, AND TOP, EACH AGGREGATE LAYER WITH GEOTEXTILE AND SEAL WITH A MIN 24" OVERLAP. TAPE OR PIN OVERLAPPING GEOTEXTILE TO RETAIN OVERLAP DURING PLACEMENT OF SUBSEQUENT AGGREGATE LAYERS, NATIVE BACKFILL, OR PRE-CAST CONCRETE ABUTMENT BLOCKS.
4. PLACE AND COMPACT 6-8" MINUS IN MINIMUM 2 LIFTS, WITH LIFT HEIGHTS 9" MAX.
5. PLACE AND COMPACT 1 1/2" MINUS, MEETING ODOT STD SPEC 02630.10, IN MINIMUM 2 LIFTS, WITH LIFT HEIGHTS 3" MAX. LEVEL AND SMOOTH UPPER LIFT FINISHED SURFACE TO ENSURE LEVEL PLACEMENT OF ABUTMENT BLOCKS.
6. MAKE 3 PASSES WITH A VIBRATORY COMPACTOR OVER EACH PLACED AGGREGATE LIFT. IF FINES ARE ABSENT OR VOIDS ARE OBSERVED IN THE COMPACTED LIFT, WASH NATIVE FINES INTO LIFT TO FILL VOID SPACE AND MAKE AN ADDITIONAL 3 PASSES WITH A VIBRATORY COMPACTOR.
7. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR PRE-CAST CONCRETE ABUTMENT BLOCKS TO CAR MIN 5 DAYS PRIOR TO SITE DELIVERY.
8. PLACE PRE-CAST ABUTMENT BLOCKS END-TO-END, ENSURING CONTACT BETWEEN BLOCKS.
9. PLACE AG CROSSING ON ABUTMENT BLOCKS PER AG CROSSING VENDOR RECOMMENDATIONS.
10. PLACE AND COMPACT NATIVE BACKFILL IN 6" LIFTS (MAX) TO ESTABLISH GRADED AG CROSSING APPROACHES.
11. SEED AND STABILIZE DISTURBED AREAS AND AG CROSSING APPROACH PER CAR.



NO.	DATE	DESCRIPTION	BY

KILGREN WATER RESOURCES
 21 EAST 28TH AVENUE, SUITE 4
 EUGENE, OR 97405
 PHONE: 971-409-4023



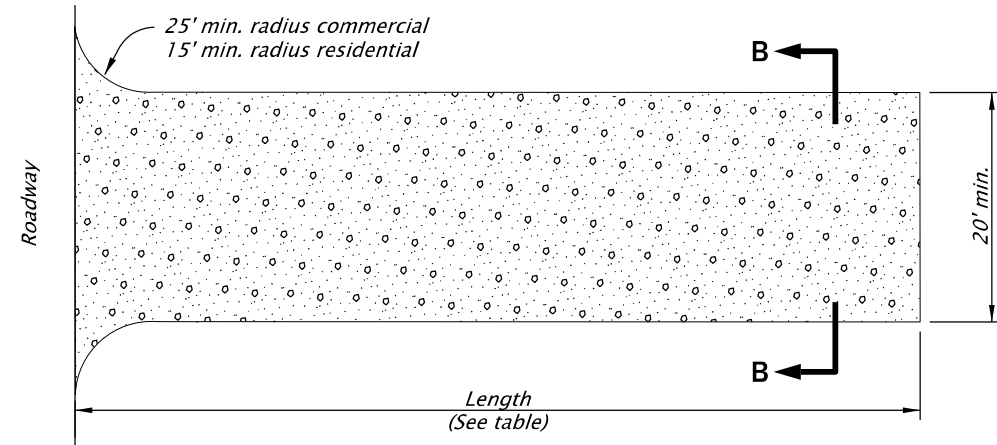
Digitally signed by Ryan W. Kilgren
 Reason: I am the author of this document
 Date: 2023.10.17 13:05:16 -0700
REGISTERED PROFESSIONAL ENGINEER
 83634PE
DIGITALLY SIGNED
 OREGON
 June 2, 2010
 RYAN WESLEY KILGREN
 RENEWS: 6/30/2025

PROJECT NO.
1.2023.0001.1
DESIGNED BY
RWK
DRAWN BY
RWK

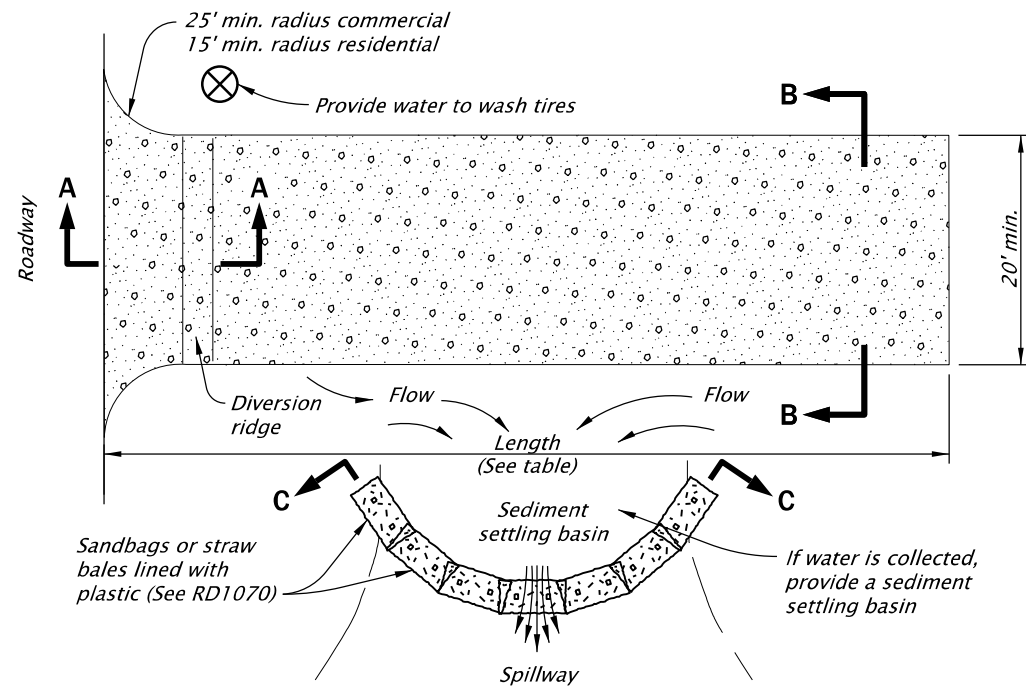
SEELANDER INTERIOR DRAINAGE FINAL DESIGN SUPPORT, PHASE II

TYPICAL AG CROSSING ABUTMENT DETAILS

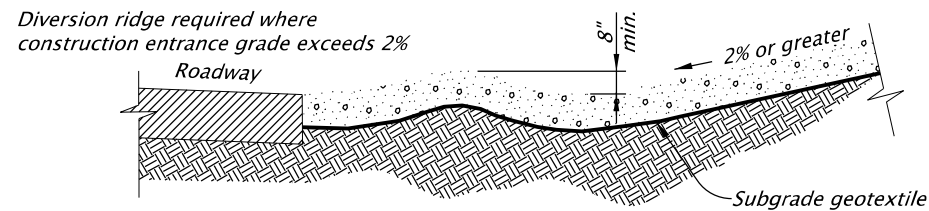
DRAWING NO.
C08
SHEET NO.
10
OF
10



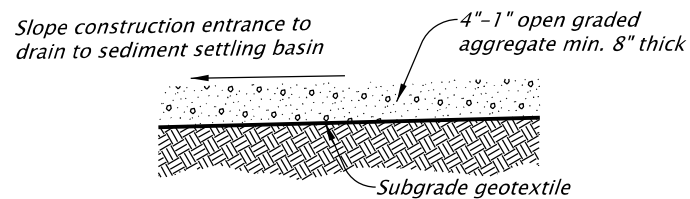
CONSTRUCTION ENTRANCE - TYPE 1
NOT TO SCALE



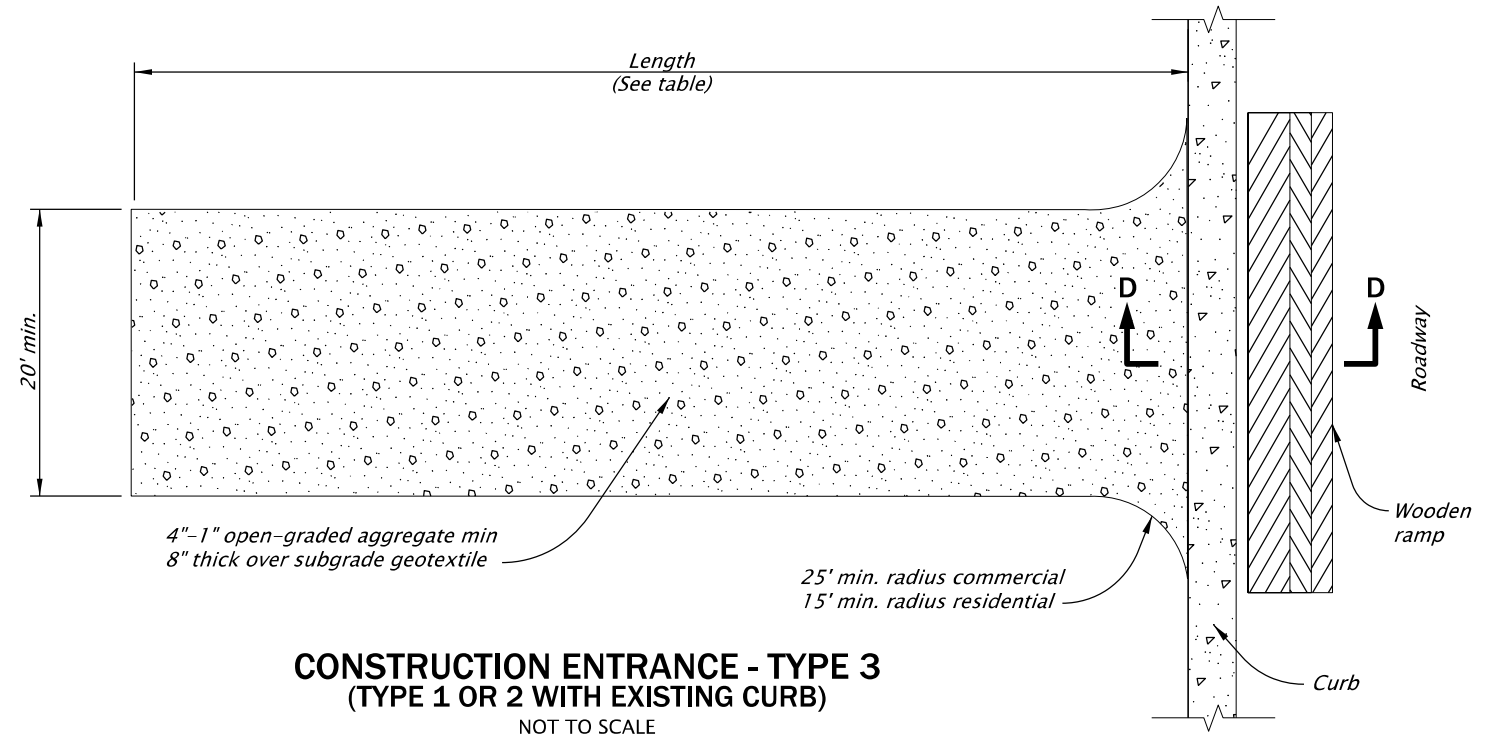
CONSTRUCTION ENTRANCE - TYPE 2
NOT TO SCALE



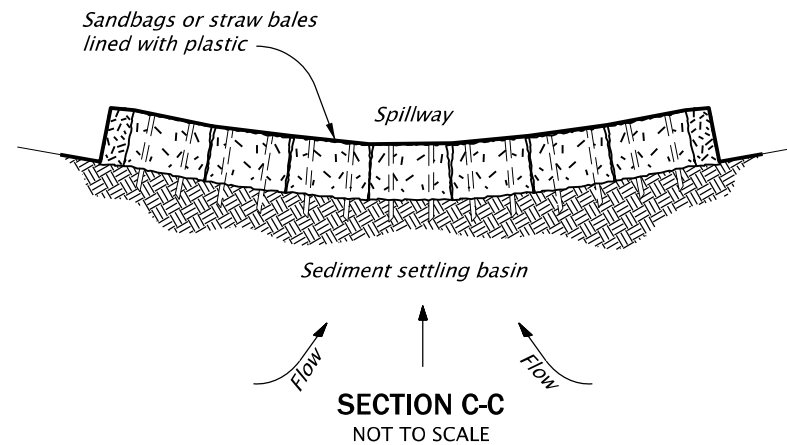
SECTION A-A
NOT TO SCALE



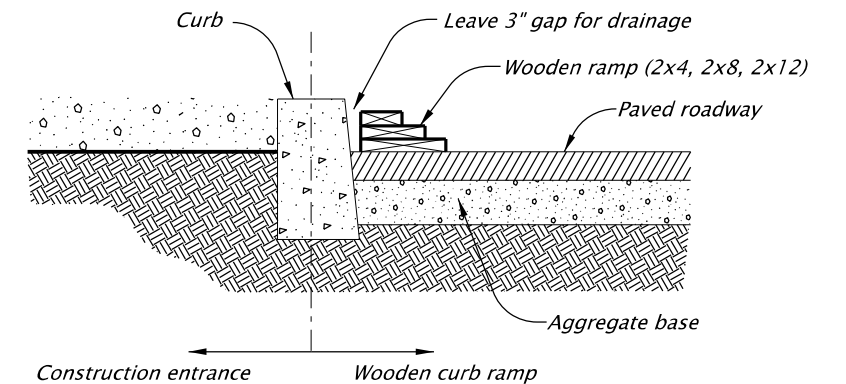
SECTION B-B
NOT TO SCALE



CONSTRUCTION ENTRANCE - TYPE 3
(TYPE 1 OR 2 WITH EXISTING CURB)
NOT TO SCALE



SECTION C-C
NOT TO SCALE



WOODEN CURB RAMP SECTION D-D
NOT TO SCALE

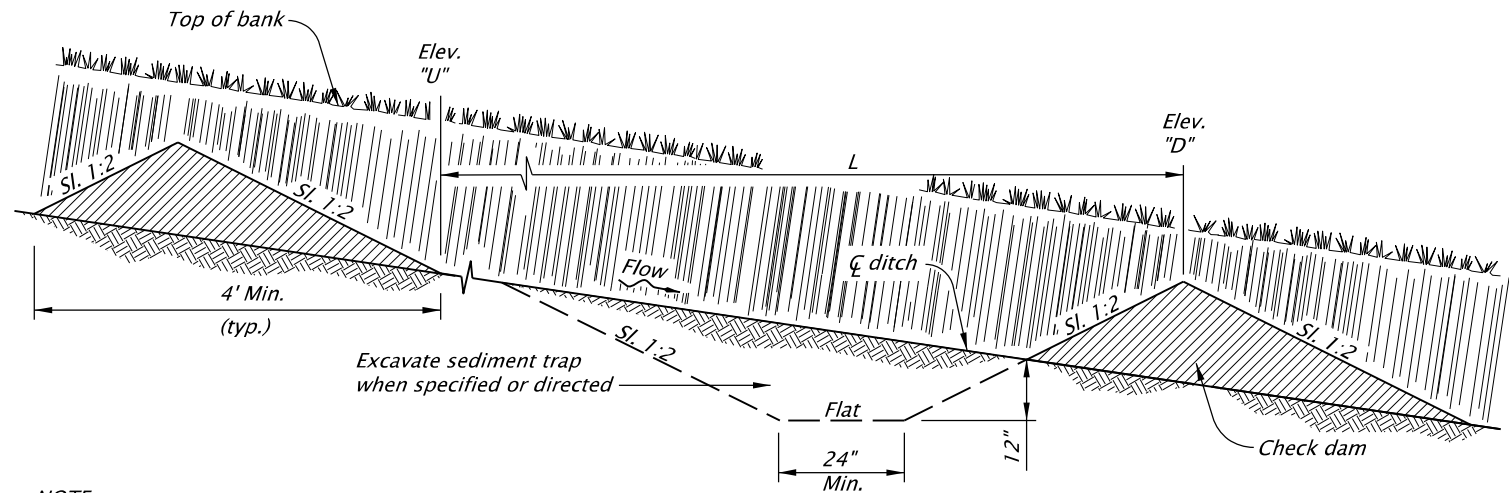
NOTES:

1. The Type 1 entrance is a simple entrance without a diversion ridge or settling basin.
2. The wooden ramp may be used on either Type 1 or Type 2 entrances in situations where there is curb and the curb is not removed for the construction entrance.

CONSTRUCTION ENTRANCE TABLE MINIMUM LENGTH	
Length (FT)	Area Of Exposed Soil (Acre)
20	0.25
50	0.25 < A < 1.0
100	A > 1.0

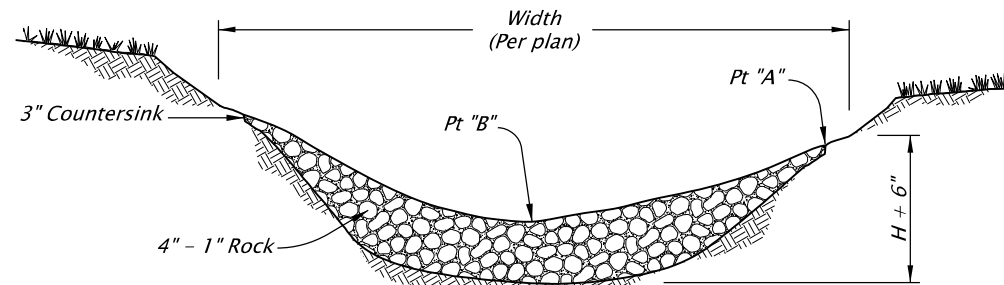
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
CONSTRUCTION ENTRANCES			
2021			
DATE	REVISION DESCRIPTION		
01-2021	REMOVED CALC BOOK NUMBERS		
CALC. BOOK NO.	N/A	SDR DATE	20-JAN-2021
			RD1000



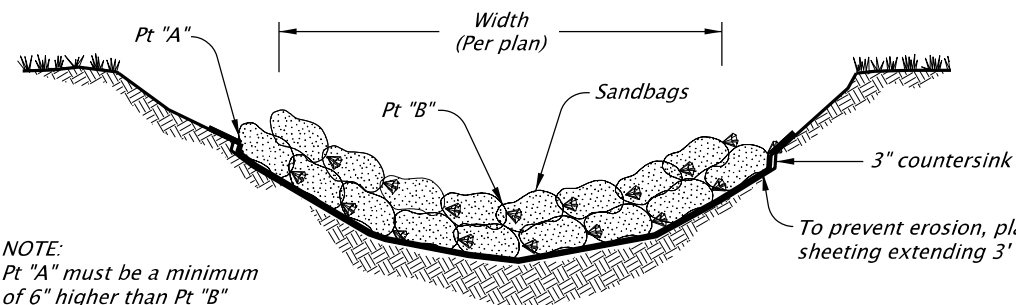
NOTE:
L = Spacing along swale or ditch so that Elevation "U" equals Elevation "D".

TYPICAL PROFILE SECTION CHECK DAMS (SHOWN WITH AGGREGATE)
NOT TO SCALE



NOTE:
Pt "A" must be a minimum of 6" higher than Pt "B"

AGGREGATE CHECK DAM - TYPE 1
NOT TO SCALE



NOTE:
Pt "A" must be a minimum of 6" higher than Pt "B"

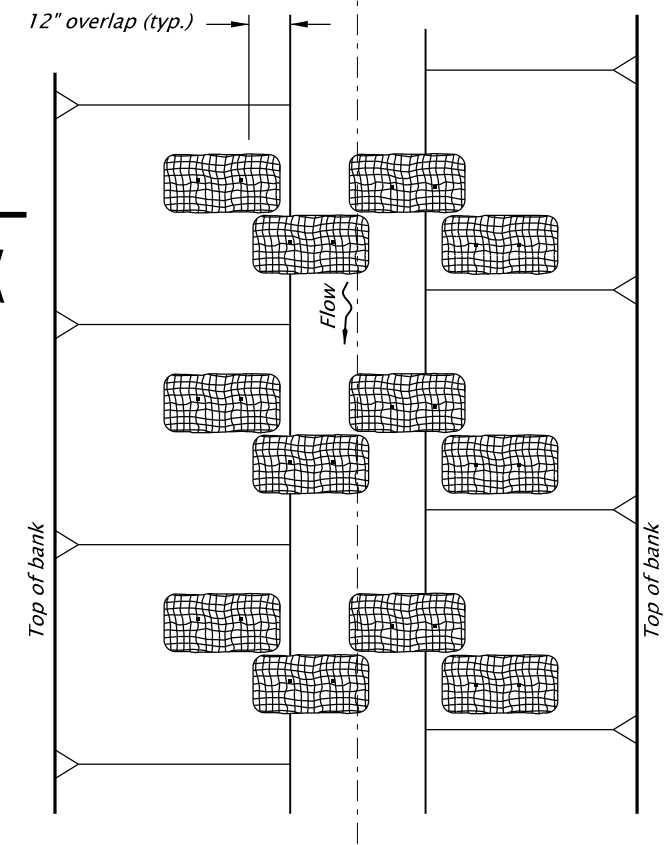
SANDBAG CHECK DAM - TYPE 4
NOT TO SCALE

MAXIMUM CHECK DAM SPACING "L"				
Ditch Grade	H=8"	H=12"	H=18"	H=24"
10%	**	**	15'	20'
9%	**	**	16'	22'
8%	**	**	18'	25'
7%	**	**	21'	28'
6%	**	16'	25'	33'
5%	**	20'	30'	40'
4%	16'	25'	37'	50'
3%	22'	33'	50'	66'
2%	33'	50'	75'	100'

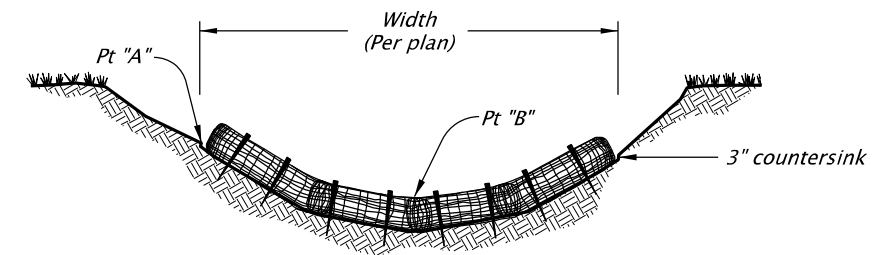
** Not allowed H = Min. dam height

NOTES:

- Type 3 - stake biofilter bags with two 2"x2"x18" (minimum) wood stakes per bag. Drive stakes a minimum of 6" into the ground and flush with the top of the bags. Omit stakes if placed over paved surfaces. Overlap bags 12" minimum at each joint.
- Type 4 - Tightly abut or overlap ends of sandbags at each joint.
- Spacing between check dams for all check dam types shall comply with the typical profile section shown above.



PLAN



SECTION A-A

BIOFILTER BAG CHECK DAM - TYPE 3
NOT TO SCALE

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.

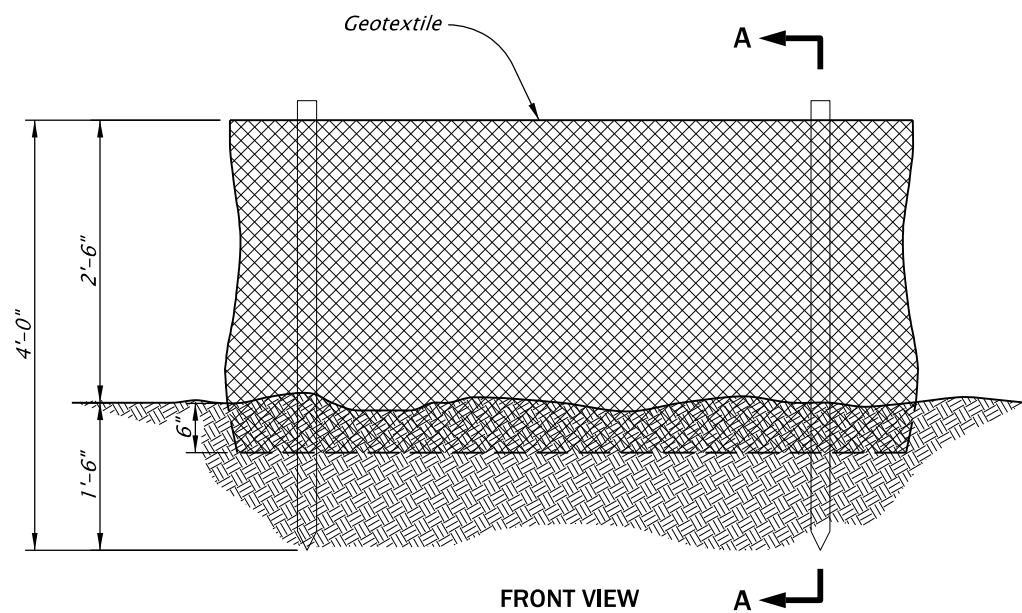
OREGON STANDARD DRAWINGS

CHECK DAMS TYPE 1, 3 AND 4

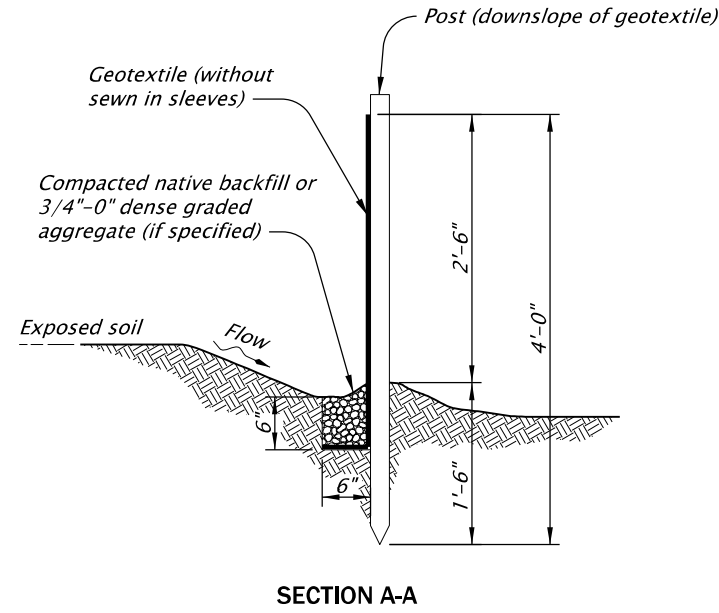
2021

DATE	REVISION	DESCRIPTION
01-2021	REMOVED CALC BOOK NUMBERS	
CALC. BOOK NO. ---	N/A ---	SDR DATE: 20-JAN-2021

RD1005

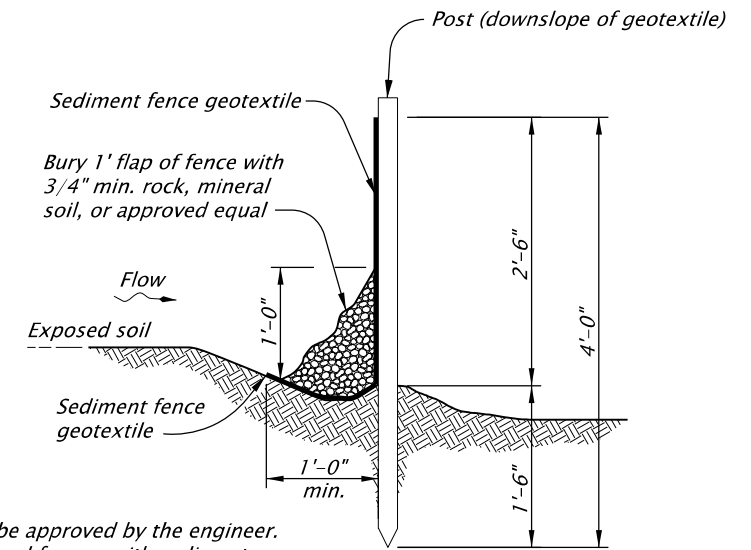


FRONT VIEW



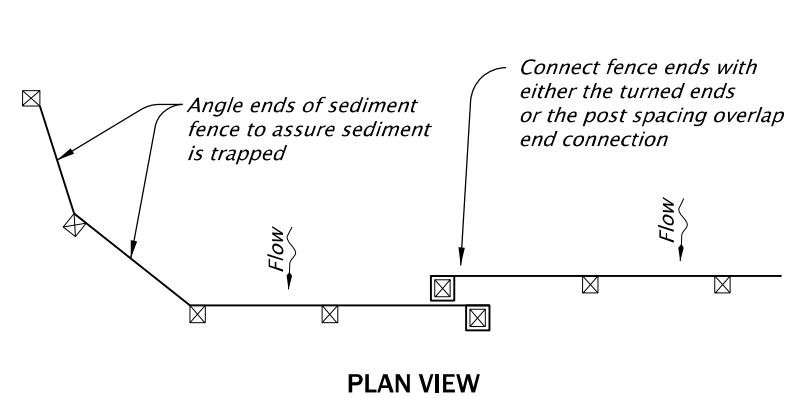
SECTION A-A

SEDIMENT FENCE AND GEOTEXTILE BURY DETAIL - TYPE 1
NOT TO SCALE

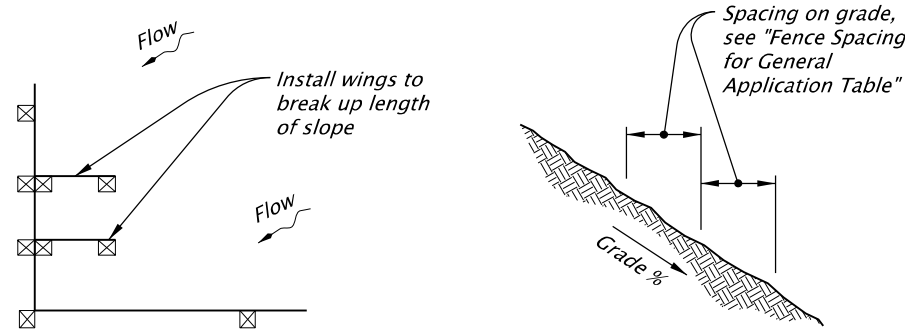


- NOTES:
 1. Use must be approved by the engineer.
 2. Not approved for use with sediment fencing with sewn-in post sleeves.

ALTERNATE SEDIMENT FENCE WITHOUT TRENCHING - TYPE 2
NOT TO SCALE



PLAN VIEW



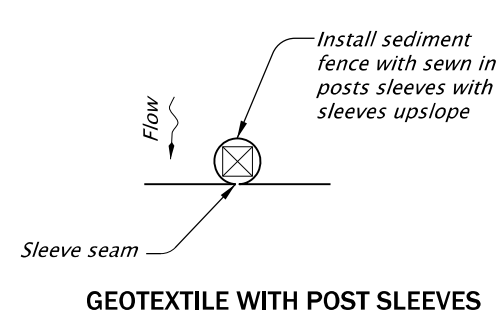
TERMINATION AT CORNER OR PROPERTY LINE

GENERAL NOTES:

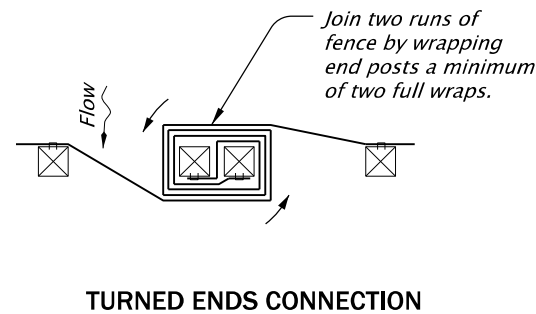
1. Use 2"x2" wood fence posts.
2. Posts to be installed on downhill side of sediment fence geotextile. Position posts to prevent separation from geotextile.
3. Compact filter fabric trench backfill and soil on uphill side of fence.
4. Locate fence no closer than three feet to the toe of a slope.
5. Wing spacing shall comply with "Fence Spacing for General Application Table".

FENCE SPACING FOR GENERAL APPLICATION TABLE	
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
Grade < 10%	300'
10% ≤ Grade < 15%	150'
15% ≤ Grade < 20%	100'
20% ≤ Grade < 30%	50'
30% ≤ Grade	25'

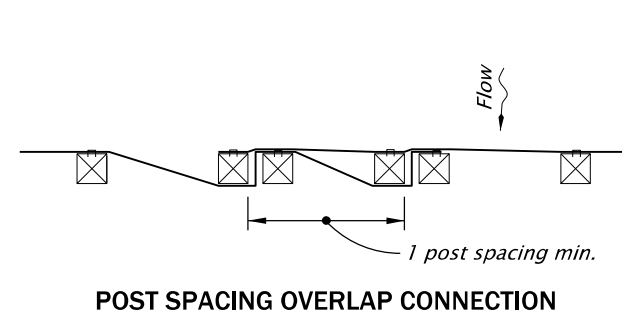
POST SPACING TABLE	
6'	Sediment Fence with Geotextile elongation less than 50%
4'	Sediment Fence with Geotextile elongation 50% or more



GEOTEXTILE WITH POST SLEEVES



TURNED ENDS CONNECTION



POST SPACING OVERLAP CONNECTION

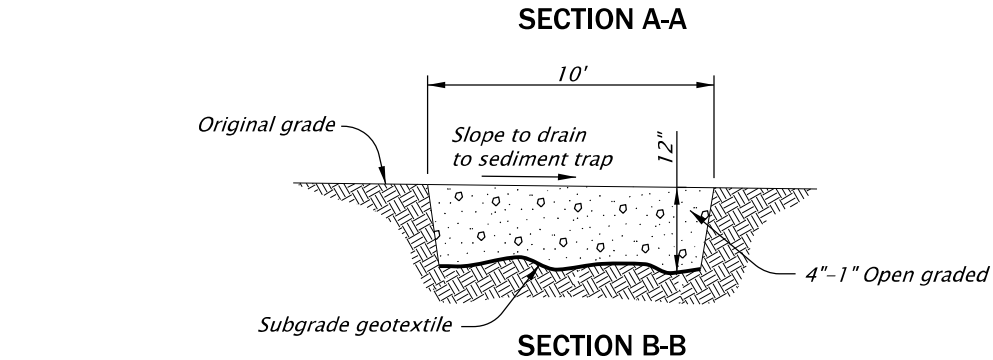
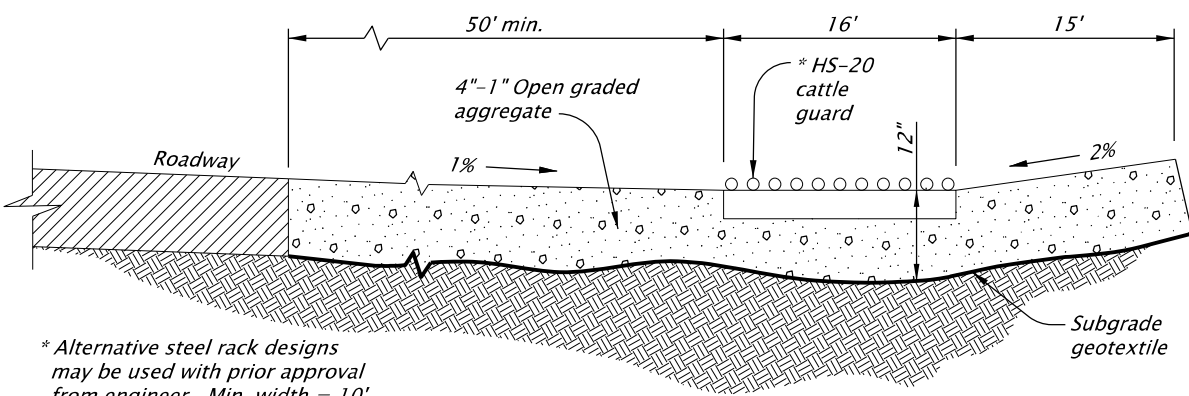
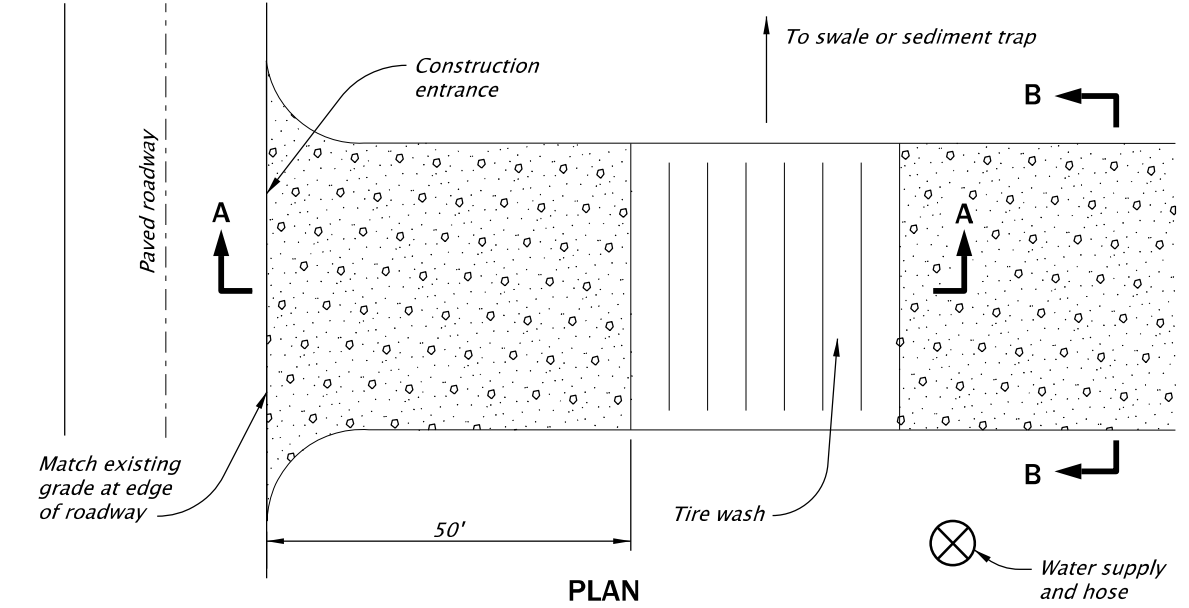
GEOTEXTILE END CONNECTIONS
NOT TO SCALE

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

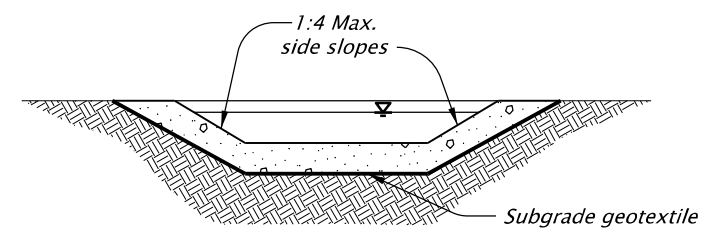
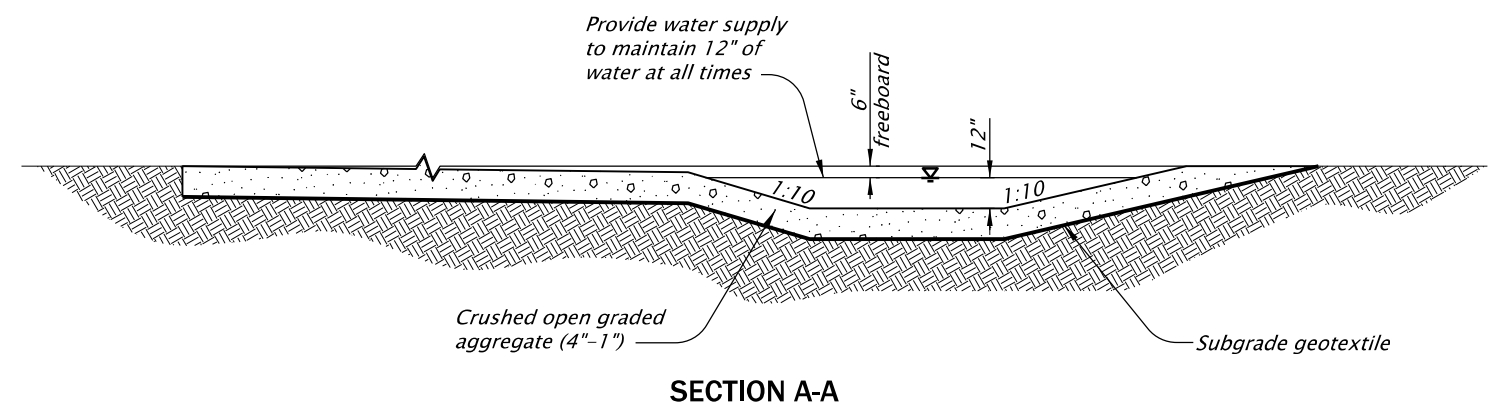
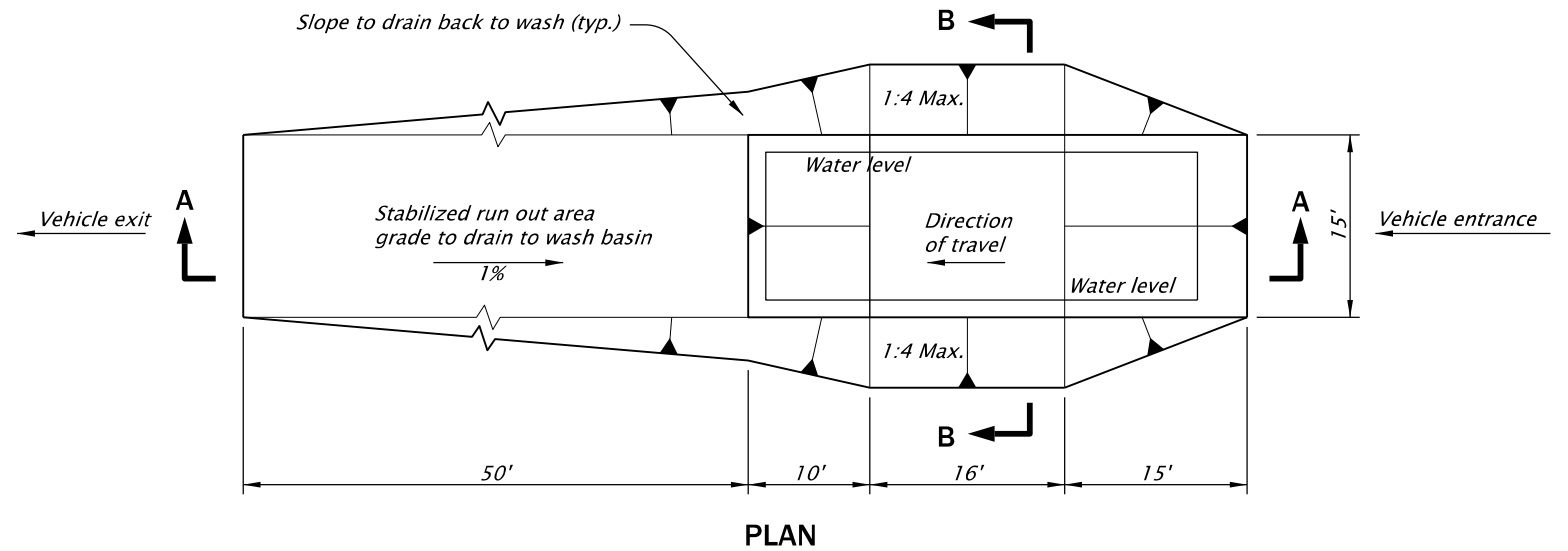
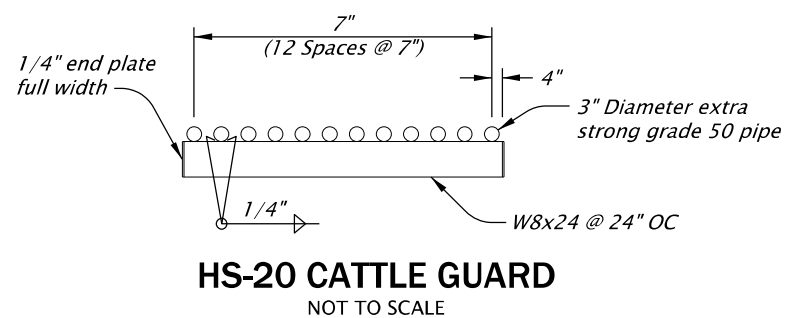
All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
SEDIMENT FENCE			
2021			
DATE	REVISION DESCRIPTION		
01-2021	REMOVED CALC BOOK NUMBERS		
CALC. BOOK NO.	N/A	SDR DATE	20-JAN-2021
			RD1040

20-JAN-2021

RD1060.dgn



TIRE WASH - TYPE 1 (MANUAL HOSE WASH)
NOT TO SCALE

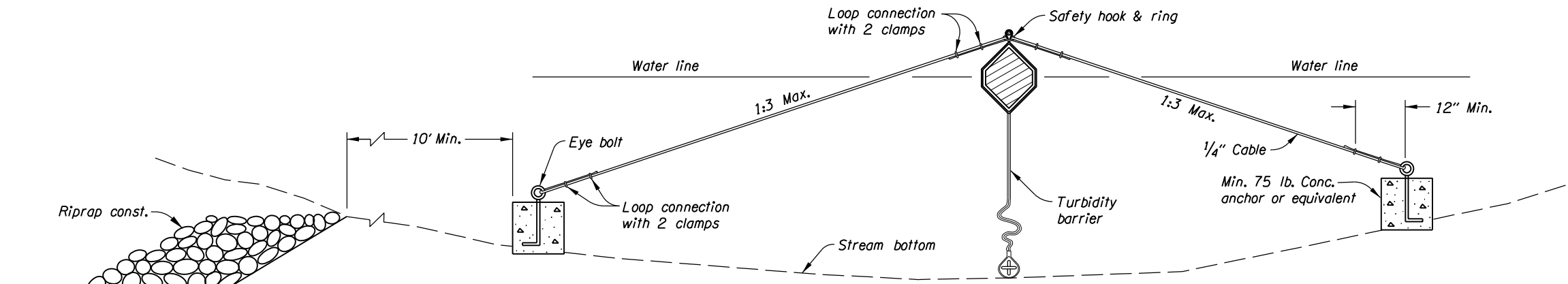


TIRE WASH - TYPE 2
NOT TO SCALE

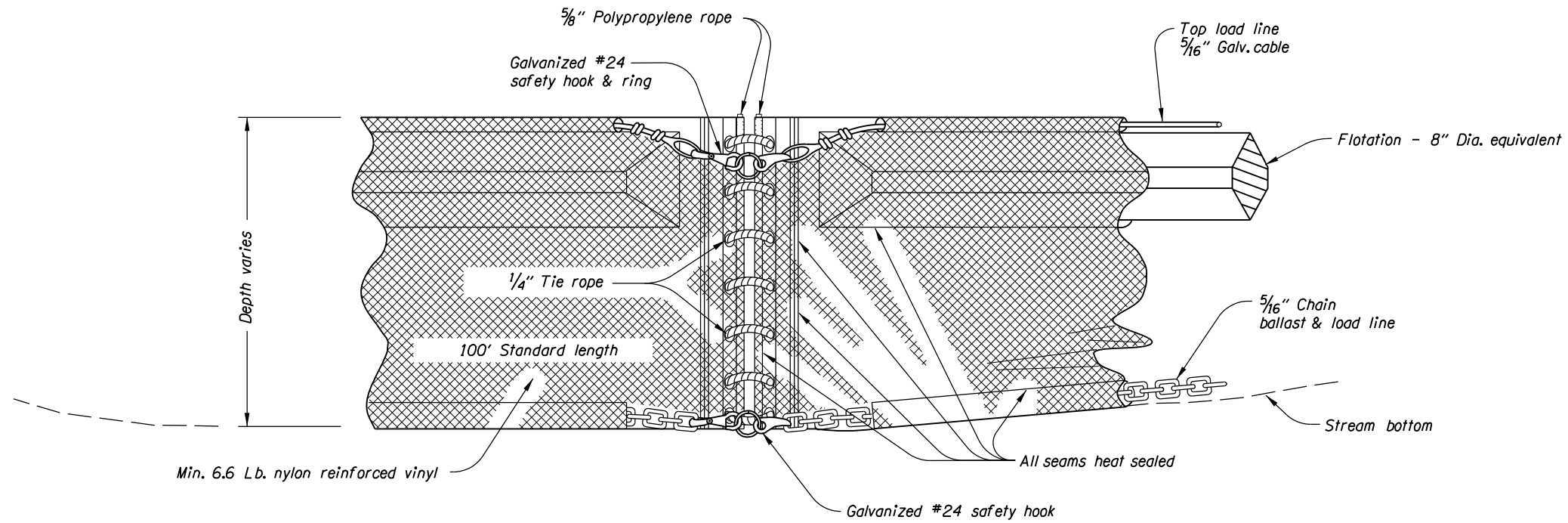
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without first consulting a Registered Professional Engineer.

All materials shall be in accordance with the current Oregon Standard Specifications.			
OREGON STANDARD DRAWINGS			
TIRE WASH FACILITY			
TYPE 1 AND 2			
2021			
DATE	REVISION	DESCRIPTION	
01-2021	REMOVED	CALC BOOK NUMBERS	
CALC. BOOK NO.	N/A	SDR DATE	20-JAN-2021
			RD1060

SEDIMENT BARRIER FLOATING



SIDE VIEW



ANCHOR ASSEMBLY

TURBIDITY BARRIER

NOTE:

Components of this barrier may be similar or identical to proprietary designs. Any infringement on the proprietary rights of the designer shall be the sole responsibility of the contractor. Substitutions shall be as approved by the engineer.

The selection and use of this detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

OREGON DEPARTMENT OF TRANSPORTATION
TECHNICAL SERVICES
DETAILS

TURBIDITY BARRIER

DETAIL NO.

DET6006



RYAN KILGREN, P.E.

Civil & Water Resources Engineer

KILGREN WATER RESOURCES, LLC.

PROFILE

Ryan Kilgren, P.E. is a civil and water resources engineer and principal owner of Kilgren Water Resources, Inc. He has over 18 years of experience applying hydrologic, hydraulic, and ecosystem sciences towards planning and design projects aimed at enhancing environmental and human landscape uses. He has specialized knowledge related to stream and wetland restoration analysis and design considerations. He is knowledgeable on a range of analysis and design software packages and field techniques, including AutoCAD Civil 3D, HEC-RAS, and topographic surveying.

CONTACT

PHONE: 971-409-4023

EMAIL:

Ryan.Kilgren@KilgrenWaterResources.com

PROFESSIONAL ENGINEER:

- Oregon #83634PE
- Washington #48091

RELEVANT EXPERTISE

- Floodplain Permitting
- Hydraulic Modeling
- Habitat Restoration Design
- Topographic Surveying

EDUCATION & SPECIAL TRAININGS

River Restoration Northwest, OR
River Sediment Dynamics Short Course, 2020

University of California Berkeley, Sagehen Field Station, CA
Geomorphic & Ecological Fundamentals of Stream Restoration, 2014

Oregon Health & Science University
MS Environmental Science & Engineering, 2006

Michigan Technological University
BS Environmental Engineering, 2003

EMPLOYMENT HISTORY

Kilgren Water Resources, LLC, Eugene, OR
Civil & Water Resources Engineer, 2021-Present

Stillwater Sciences, Eugene, OR
Restoration Engineer, 2020-2021

Tetra Tech, Portland and Eugene, OR
Water Resources Engineer, 2012-2020

DHI, Portland, OR
Water Resources Engineer, 2008-2012

AMEC, Portland, OR
Engineer in Training, 2006-2008

SELECTED EXPERIENCE

Bronson Creek Greenway & Floodplain Enhancement, Cascade Environmental Group on behalf of Tualatin Hills Parks & Recreation District (THPRD). Bethany, OR. 2022-2023.
Role: Engineering design and hydraulic analysis

Tualatin Hills Parks & Recreation Department are proceeding with engineering designs to enhance and restore multi-species ecological functions and physical processes to the Bronson Creek Greenway at Laidlaw property. Kilgren Water Resources is supporting Cascade Environmental Group with design services. As part of this effort, Ryan led a site topographic and bathymetric field survey and developed site basemapping for use in design analysis, development of site grading plans, and permitting figures. Additionally, Ryan is responsible for floodplain hydraulic modeling using HEC-RAS for design assessment and permitting, as well as design alternative and planset support. The restoration efforts are in part focused on uplift for native turtles. Ryan prepared floodplain compliance (i.e., "no-rise") documentation and coordinated with Washington County planning staff to support project permitting.

BPA, Prosser Hatchery Acclimation, Tetra Tech Project No. 200-019968-22001. Prosser, WA. 2022-2023.

Role: Engineering design and hydraulic analysis

Bonneville Power Administration (BPA) has contracted Tetra Tech to develop proposed renovation designs for the Prosser Hatchery, located in Prosser,

RYAN KILGREN, P.E.

Civil & Water Resources Engineer

KILGREN WATER RESOURCES, LLC

Washington on the Yakima River. Kilgren WaterResources is supporting Tetra Tech with permitting services related to floodplain compliance (i.e., "no-rise"). As part of this effort, Ryan is responsible for floodplain hydraulic modeling using HEC-RAS for design assessment and permitting, as well as providing input on design development related to floodplain mitigation.

Government Island Restoration Project, Columbia River Estuary Study Taskforce (CREST)*. Astoria, OR. 2016-2020.

Role: Engineering design and hydraulic modeling

Government Island is owned and managed by the Port of Portland and the State of Oregon Parks & Recreation Department. Habitats on the island include upland forest, riparian forest, grasslands, and freshwater wetlands. A significant portion of the wetlands on the island are held as mitigation lands for the Port of Portland. This project is focused on examining the feasibility, alternatives development, and initial designs for restoration actions that could enhance wetland functionality and juvenile salmonid access at the site, while not jeopardizing the mitigation needs of the Port of Portland. Prior to establishing Kilgren Water Resources, Ryan Kilgren worked for an engineering consulting company that assisted the Columbia River Estuary Study Taskforce (CREST) with the planning and design. Ryan led the design and floodplain compliance (i.e., "no-rise") permitting process, among other tasks. Upland hibernaculum features targeting herptiles and pollinator species uplift were integral to the designs which focused on restoring hydrologic connectivity to off-channel areas and improving the coverage of native plantings. In addition to the fish focused design aspects, the designs incorporated beaver dam analogs (BDAs) identified for adaptive management implementation if post-construction conditions proved adverse to the Port's mitigation needs.

Winter Lake Estuary Restoration Project, The Nature Conservancy (TNC)*. Coquille, OR. 2014-2019.

Role: Engineering design and hydraulic modeling

Winter Lake provides combined working landscape benefits for pasture grazing and slow-water refugia off-channel habitat for coho salmonids. The site is inundated from daily tidal cycles and more significantly during seasonal high flows. The Nature Conservancy led the engineering and construction contracting to develop and implement restoration designs that targeted over winter coho habitat by hydrologically isolating the project area from other properties within BSDD, installation of muted tidal regulated culverts (during project previous a phase), and reconnection/enhancement of remnant channels and tidal wetland. Prior to establishing Kilgren Water Resources, Ryan Kilgren worked for an engineering consulting company that assisted the TNC with the planning and design. Ryan led the design and floodplain compliance (i.e., "no-rise") permitting process, among other tasks.

Willamette Confluence Preserve Restoration Project, The Nature Conservancy (TNC)*. Eugene, OR. 20014-2019.

Role: Lead habitat restoration design and construction implementation support engineer

The Willamette Confluence Preserve (WCP) is located at the confluence of the Coast Fork Willamette River and Middle Fork Willamette River, and is comprised of approximately 1,200 acres of floodplain area owned by The Nature Conservancy, Friends of Buford Park, and Oregon State Parks and Recreation Department. The properties were historically mined for gravel and as such are comprised of numerous remnant features including haul truck roads, antiquated culverts, and large previously mined gravel pits that are now ponded areas within the WCP. The site represents a unique and large-scale opportunity to create numerous off channel refugia, remove invasive and restore native plant communities, and encourage natural geomorphic and biological functions. The Nature Conservancy in partnership with the Friends of Buford Park procured engineering consulting services to prepare and evaluate restoration alternatives for the site, and following selection of the preferred restoration alternative, prepare construction ready design plans, specifications, and estimates. Ryan supported multiple project phases, including leading survey efforts to support design and modeling. He conducted two-dimensional hydraulic model analyses of the restoration alternatives using the SRH-2D model to assess the potential to improve multiple species habitat conditions with emphasis on salmonids. He also performed one-dimensional hydraulic modeling using the HEC-RAS model and prepared documentation for Lane County's "no-rise" permitting process. The modeling work was further used to support design analyses, including sediment and grade control stability criteria calculations. During the final design phase, Ryan served as the lead engineer for delivery of design plans, specifications, and cost/quantity estimates. Ryan supported three phases of construction during the summers of 2016, 2017, and 2018.

* Denotes project completed prior to establishing Kilgren Water Resources.