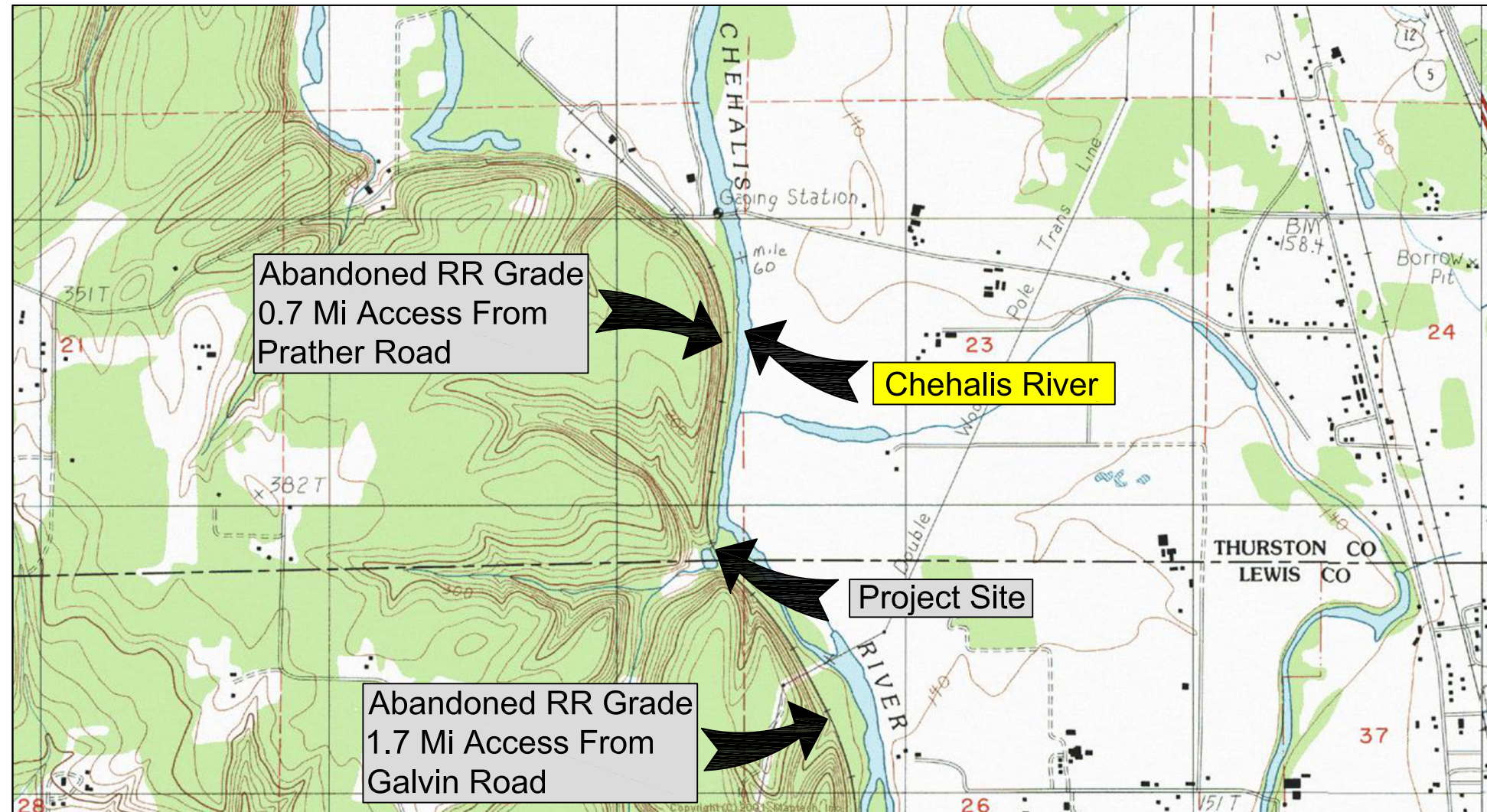


Construction Documents

Banick - Chehalis River Trib

Project Number 19-1692



VICINITY MAP
NOT TO SCALE



DRAWING INDEX:

1. Cover Sheet
2. Legend and Notes
3. Existing Site Plan
4. Proposed Site Plan 1" = 10'
5. Proposed Site Plan 1" = 20'
6. Channel Connection
7. Road Profile
8. Stream Profile
9. Sections
10. Precast Concrete Backwall
11. Details
12. Staging and Spoils Area



Banick - Chehalis River Trib

Landowner: Jesse Banick
 Section Township Range: Section 22, T15N, R3W
 Lat and Long: 47° 38' 0.3"N, 120° 37' 42.8"W



2/14/25

REV	DATE	BY	APPD	DESCRIPTION

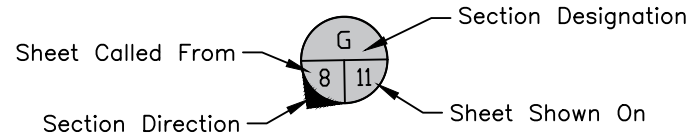
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGN BY:
Waterfall Engineering
 DRAWN BY:
 DATE:
3/4/25

Cover Sheet

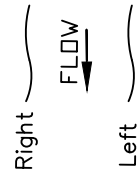
1 SHEET OF 12

SHEET SYMBOLS



SECTION CALLOUT

References to Right and Left as viewed downstream



ABBREVIATIONS

- USIE Upstream Culvert Invert Elev.
- DSIE Downstream Culvert Invert Elev.

LEGEND

- BM1 Project Bench Mark
- ATP-01 Geotech Boring Locations
- Design Elevation
- Structures or Buildings
- Centerline
- Property/Easement Lines
- 2550— Contour Elevation
- Denotes Survey/LiDAR Transition
- Denotes Excavation Extent/Clearing Limits/Staging Areas
- Fish Screen
- Silt Fence
- Sandbag Cofferdam
- Concrete
- Existing Gravel Road
- Crushed Rock Fill
- Rock or Gravel Fill
- Undisturbed Grade
- Existing Trees > 12" Diam.
- Trees to be Removed
- Habitat Boulders

Text Denotes Existing

Text Denotes Proposed

Text Denotes Proposed

Survey Completed by M2COAST, LLC Based on State Plane Coordinates South. Survey combined with 2017 LiDAR for a Base Map.

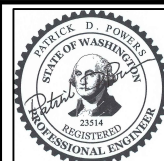
PT	N	E	Elev	Desc
1	532543.33	1004897.11	151.70	WF1
2	532577.05	1004900.76	152.30	WF2
10	532214.03	1004989.98	148.85	MNCC
11	532089.52	1004843.41	141.68	MNHT
12	532365.42	1004946.12	150.58	MNCC
13	532540.31	1004904.80	150.50	MNCC
14	532613.09	1004927.10	149.67	MNHT

WF1 and WF2 = Rebar with Red Cap
 MNCC = M2COAST Rebar with Yellow Cap
 MNHT = M2COAST Hub and Tack



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2/14/25

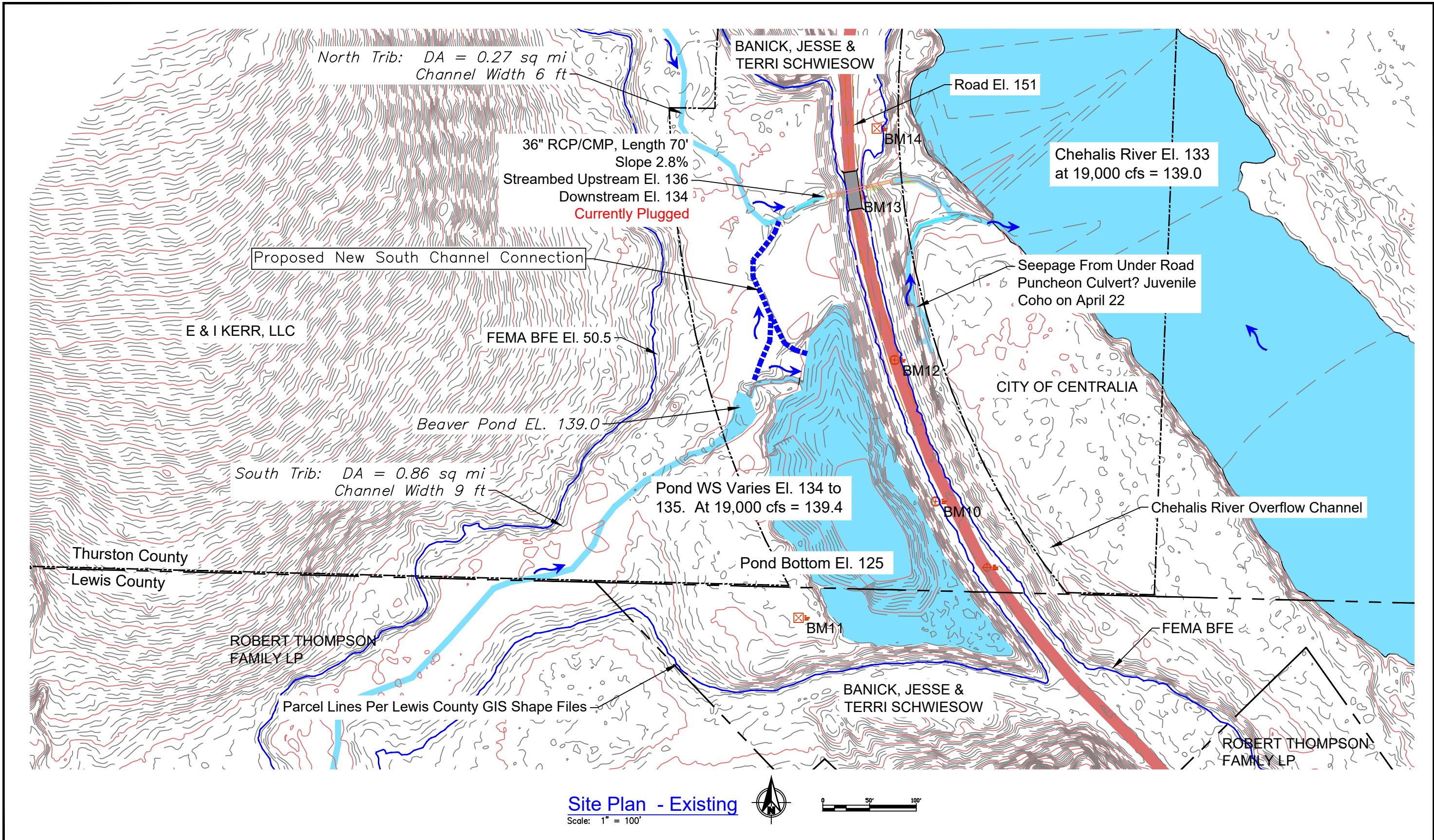
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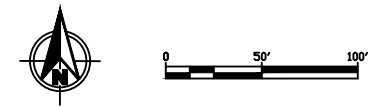
DESIGN BY:
Waterfall Engineering
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 DATE:
3/4/25

Legend

2 **12**
 SHEET OF

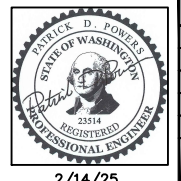


Site Plan - Existing
Scale: 1" = 100'



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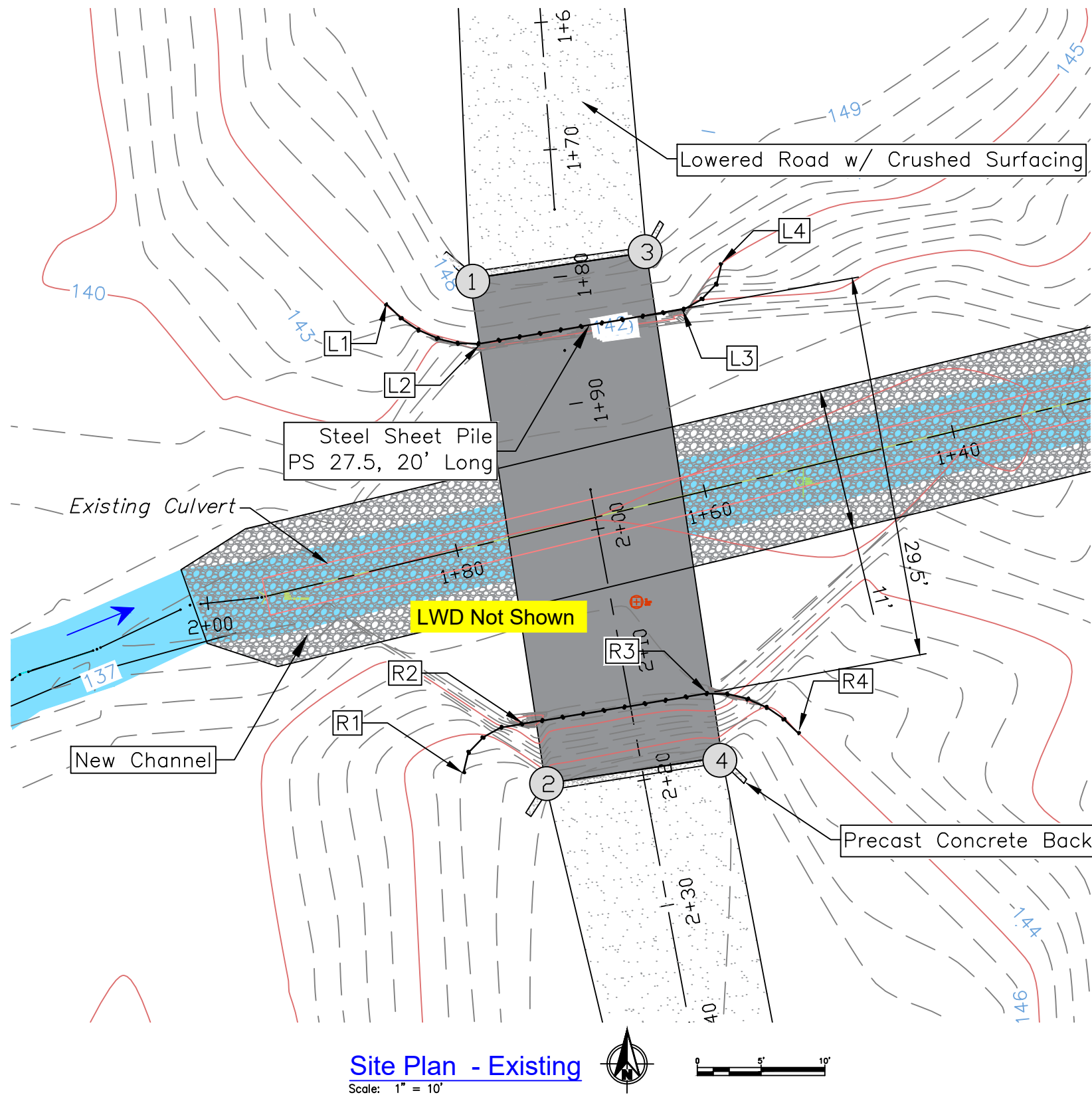
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Site Plan

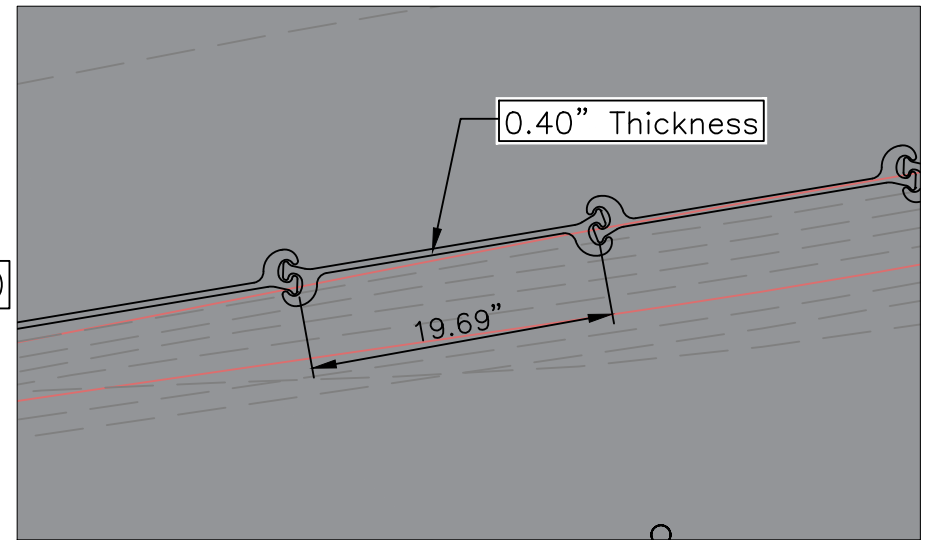
3 OF 12 SHEETS



Bridge Coordinates – For Layout		
Number	Northing	Easting
①	532565.64	1004891.72
②	532526.08	1004897.65
③	532567.71	1004905.57
④	532528.15	1004911.49

Sheet Pile Corner Coordinates					
Location	Northing	Easting	Location	Northing	Easting
L1	532563.61	1004885.16	R1	532526.96	1004891.22
L2	532560.45	1004892.34	R2	532530.71	1004895.64
L3	532563.20	1004908.43	R3	532533.02	1004910.14
L4	532566.79	1004911.39	R4	532530.03	1004917.52

Note: Coordinates and Dimenions are Approximate Until Review of Bridge Final Design.



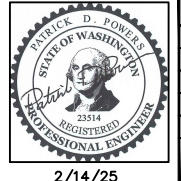
PS 27.5 Sheet pile
Scale: 1" = 1'

Site Plan - Existing
Scale: 1" = 10'



Banick - Chehalis River Trib

Landowner: Jesse Banick
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 Lat and Long: 47° 38' 0.3"N, 120° 37' 42.8"W



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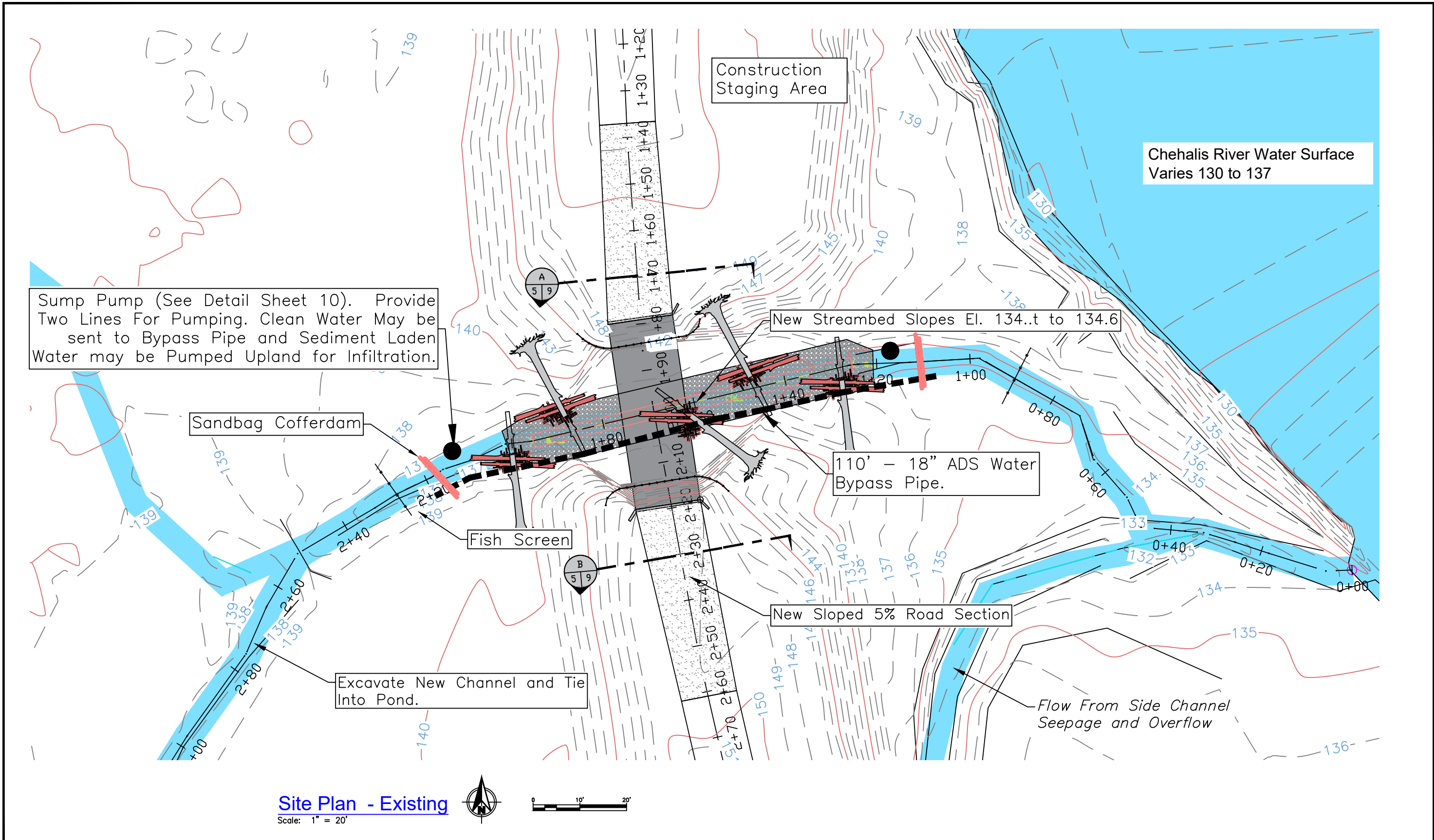
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Waterfall Engineering

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DATE:
3/4/25

Proposed Plan
Scale 1" = 10'



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2/14/25

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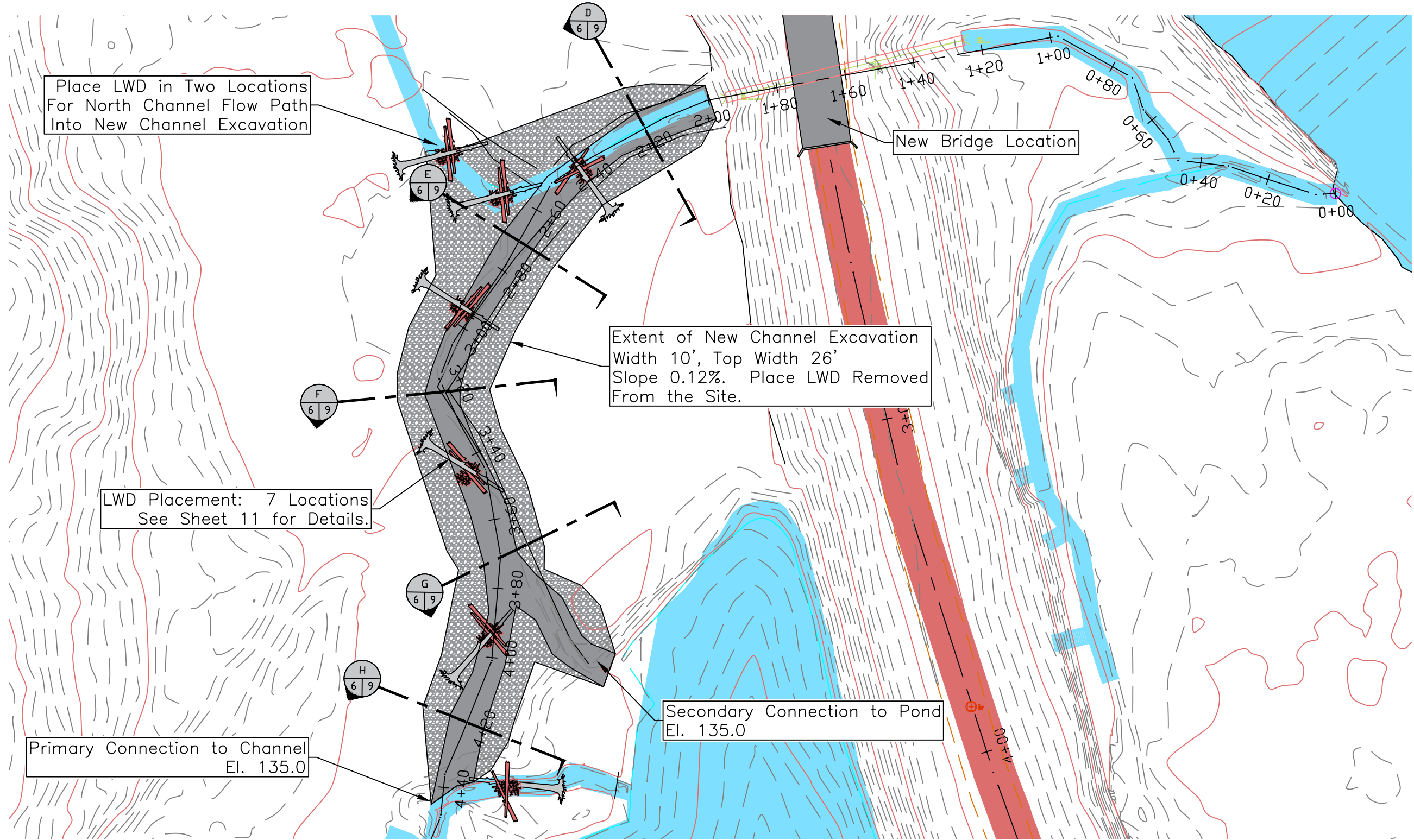
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Waterfall Engineering

DRAWN BY:

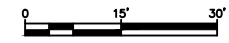
DATE:
3/4/25

Proposed Plan
 Scale 1" = 20'

5 **12**
 SHEET OF

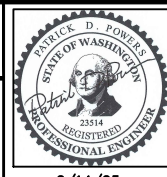


Site Plan - Channel Connection
 Scale: 1" = 30'



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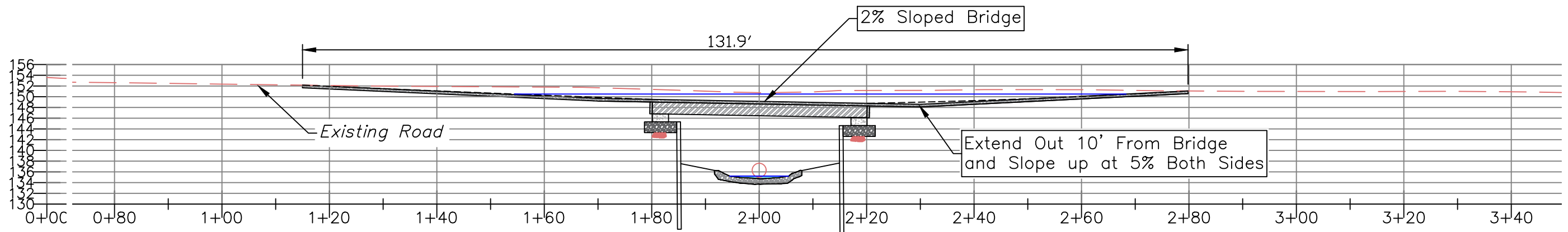
DESIGN BY:
Waterfall Engineering

DRAWN BY:

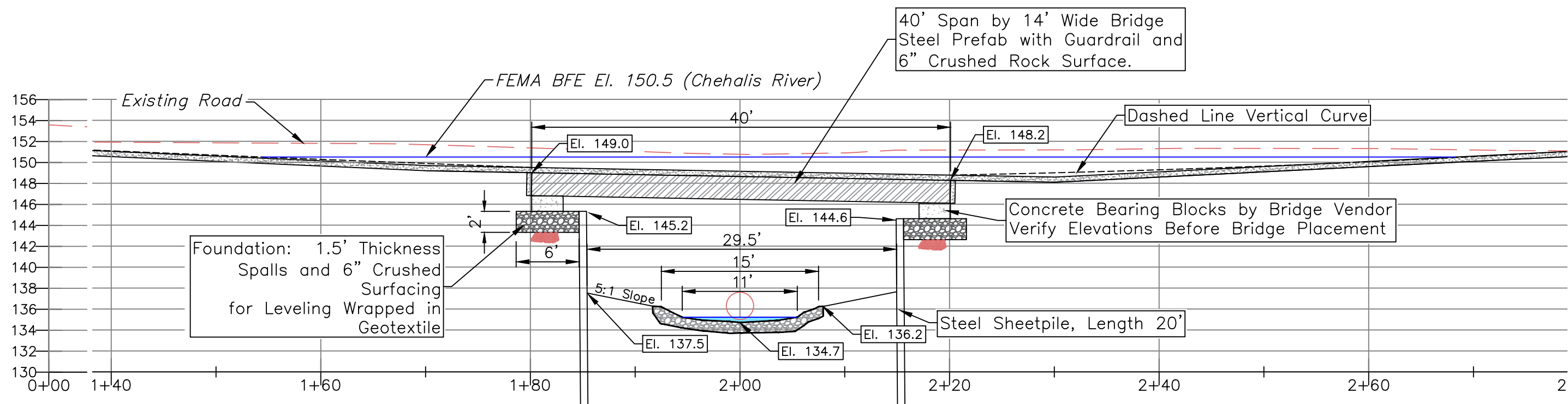
DATE:
3/4/25

Channel Connection

6 **12**
 SHEET OF



Road Profile
Scale: 1" = 20'

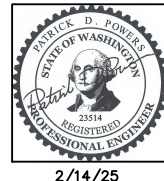


Road Profile
Scale: 1" = 10'



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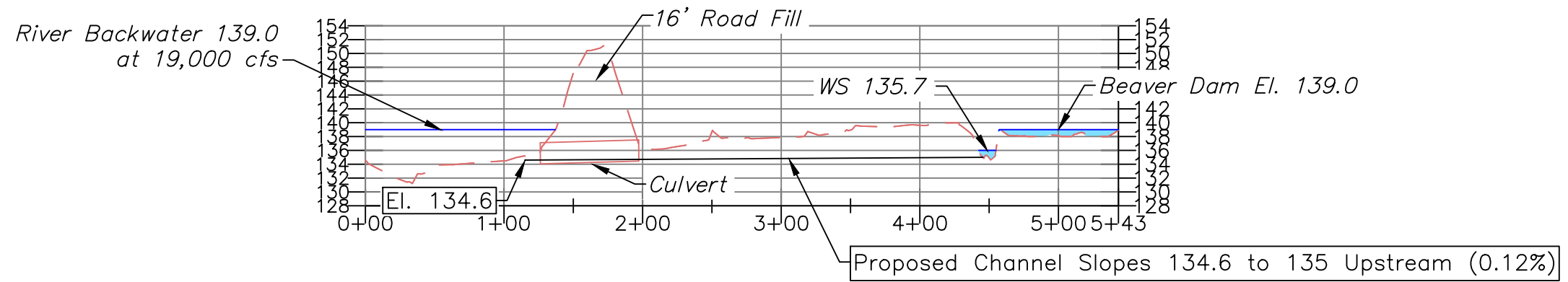


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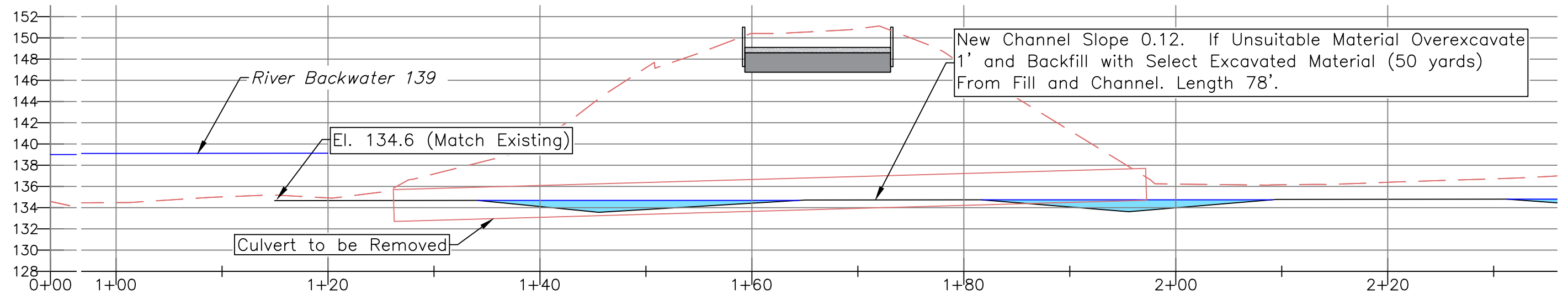
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DESIGN BY: Waterfall Engineering
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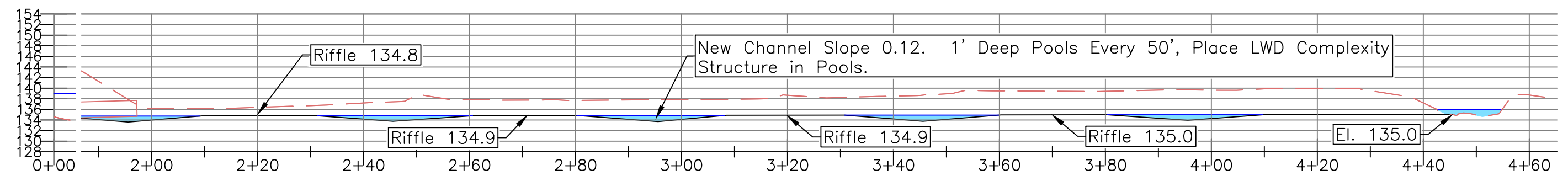
Road Profile



Long Stream Profile
 Scale: Vertical 1" = 20', Horizontal 1" = 100'



Stream Profile Under Bridge
 Scale: 1" = 10'

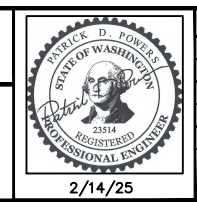


Stream Profile Under Bridge
 Scale: 1" = 10'



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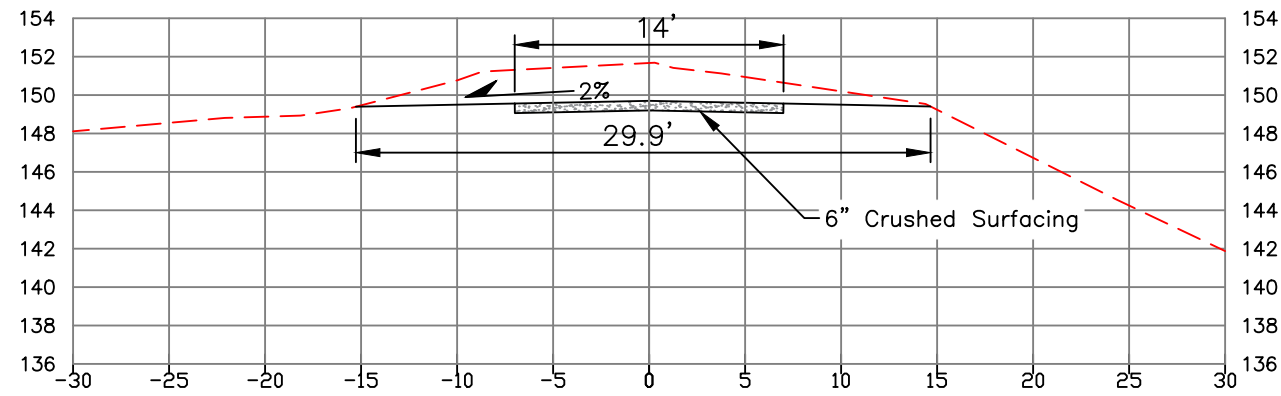


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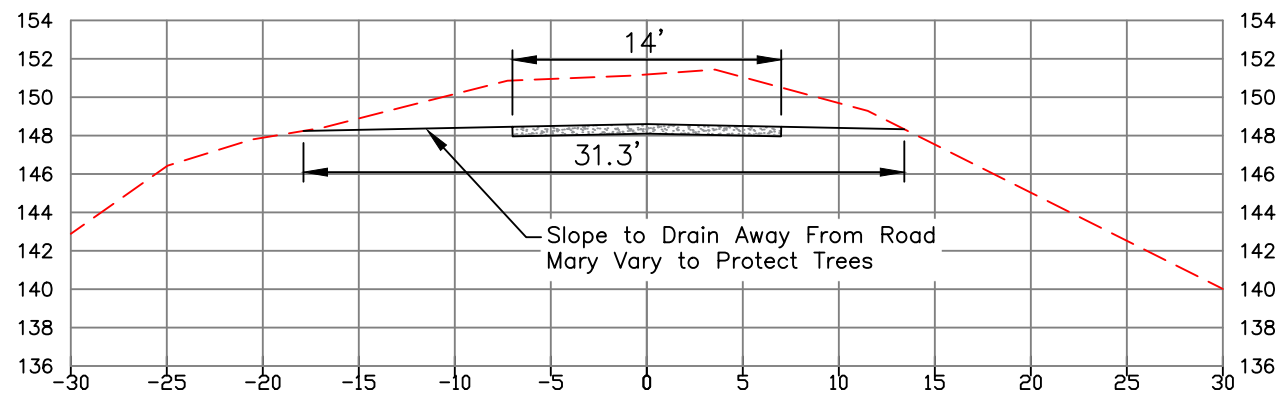
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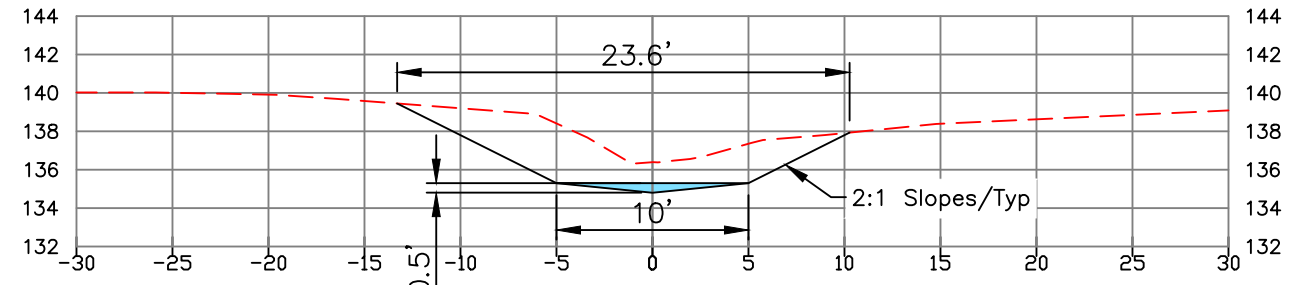
Stream Profile



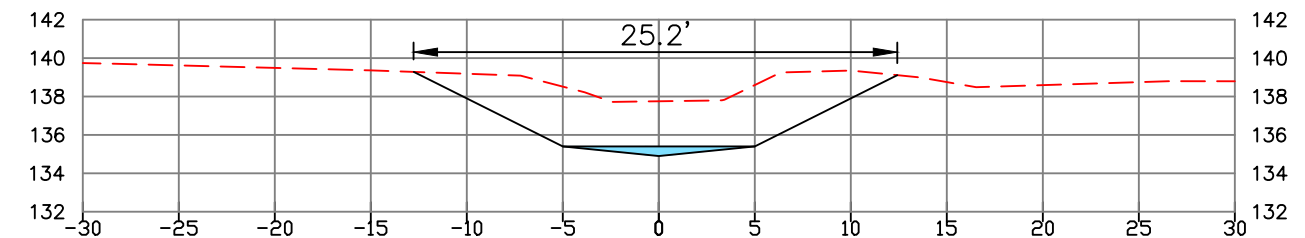
A Road Section STA 1+70 - View South
Scale: 1" = 10'



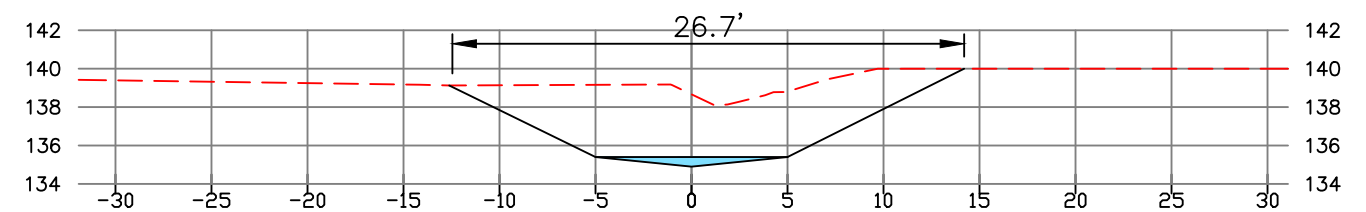
B Road Section STA 2+30 - View South
Scale: 1" = 10'



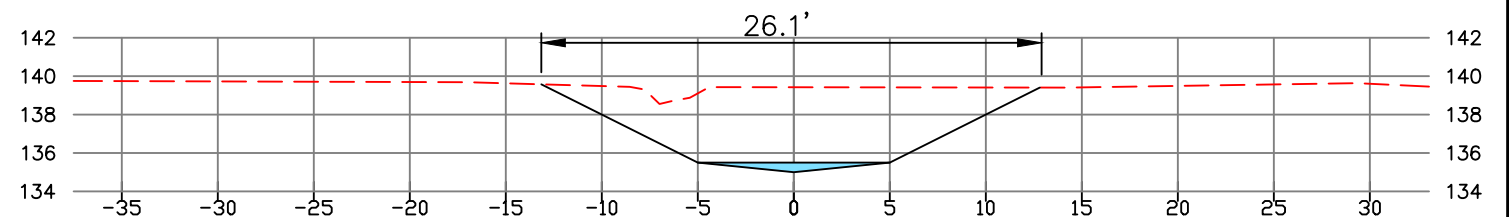
D Stream Section STA 2+20 - View Upstream
Scale: 1" = 10'



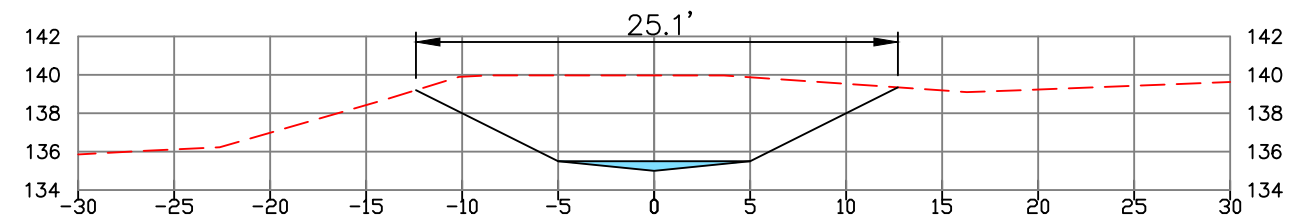
E Stream Section STA 2+70 - View Upstream
Scale: 1" = 10'



F Stream Section STA 3+20 - View Upstream
Scale: 1" = 10'



G Stream Section STA 3+70 - View Upstream
Scale: 1" = 10'



H Stream Section STA 4+20 - View Upstream
Scale: 1" = 10'



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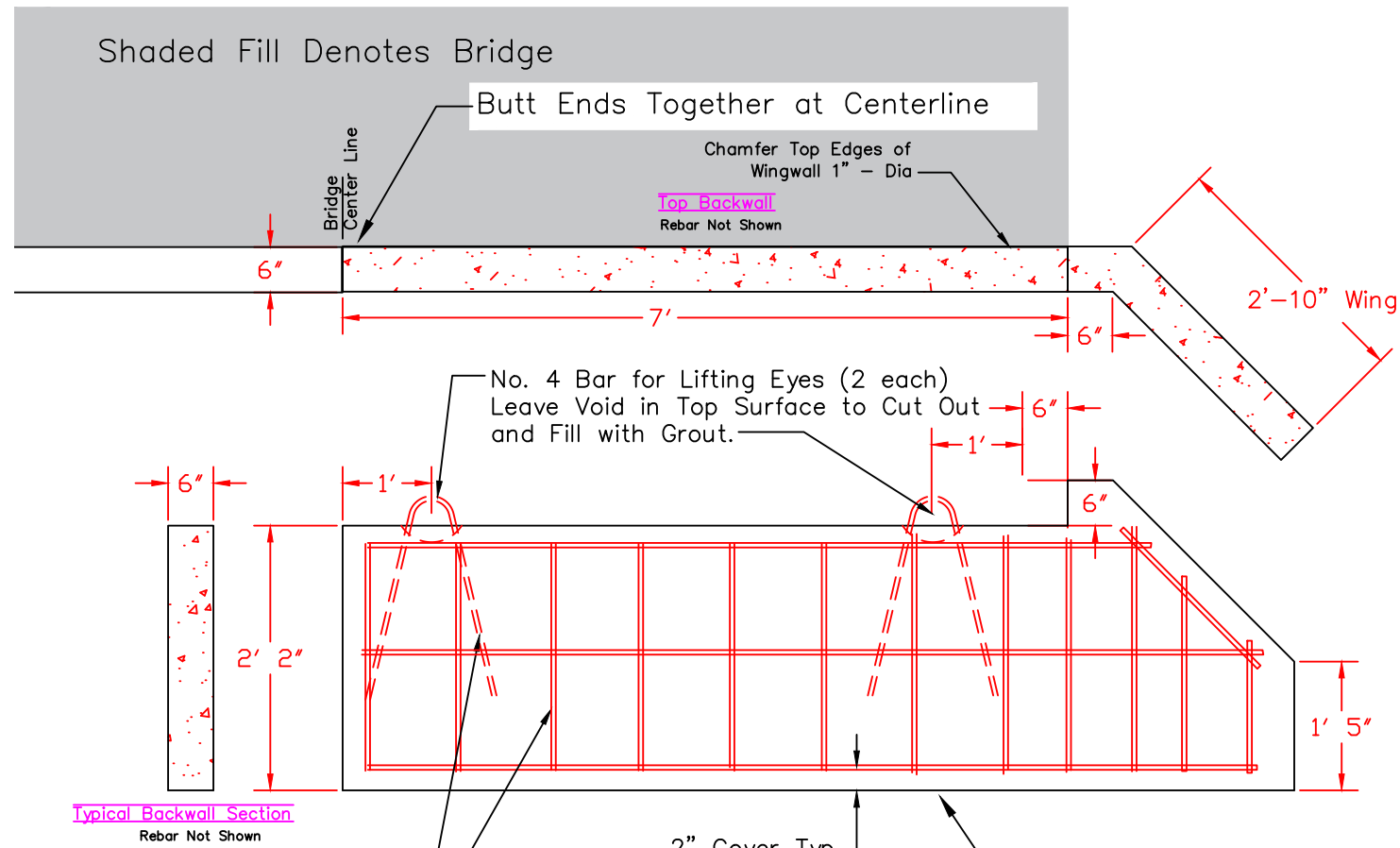
DESIGN BY:
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DATE:
3/4/25

Sections

9 **12**
SHEET OF



Bridge Specifications:

- Span 40'
- Width 14'
- TL1 Guard Rail
- Slope 2%
- Vehicle Live Load: HL93
- Gravel Surface (6" Minimum Thickness)
- Materials: Structural Steel (Weathering)
- Bearing Plates to Match Footing Design and Bridge Slope

No. 4 Bar @ 12" O.C. Horiz. and Vert. plus 2- No. 4 Bars Angled W/Wing

PRE-CAST CONCRETE BACKWALL NOTES:

1. Two Sections Req'd as shown, plus two sections "opposite".
2. 2' - 2" Dimension to be Verified by Project Engineer before forming.

Bearing Pressure 3000 psf. Place on Concrete Sill or Compacted Structural Backfill

Precast Concrete Backwall/Wingwalls

Scale 1" = 2'

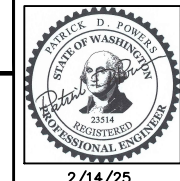
Concrete:

1. Reinforced Concrete, Air Entrained Class A(AE) with a 28 day Compressive Strength of 4500 psi.
2. Reinforcing Steel: Conform to AASHTO M31 Grade 60. Two Inch Cover.
3. Light Broom Finish on Surface



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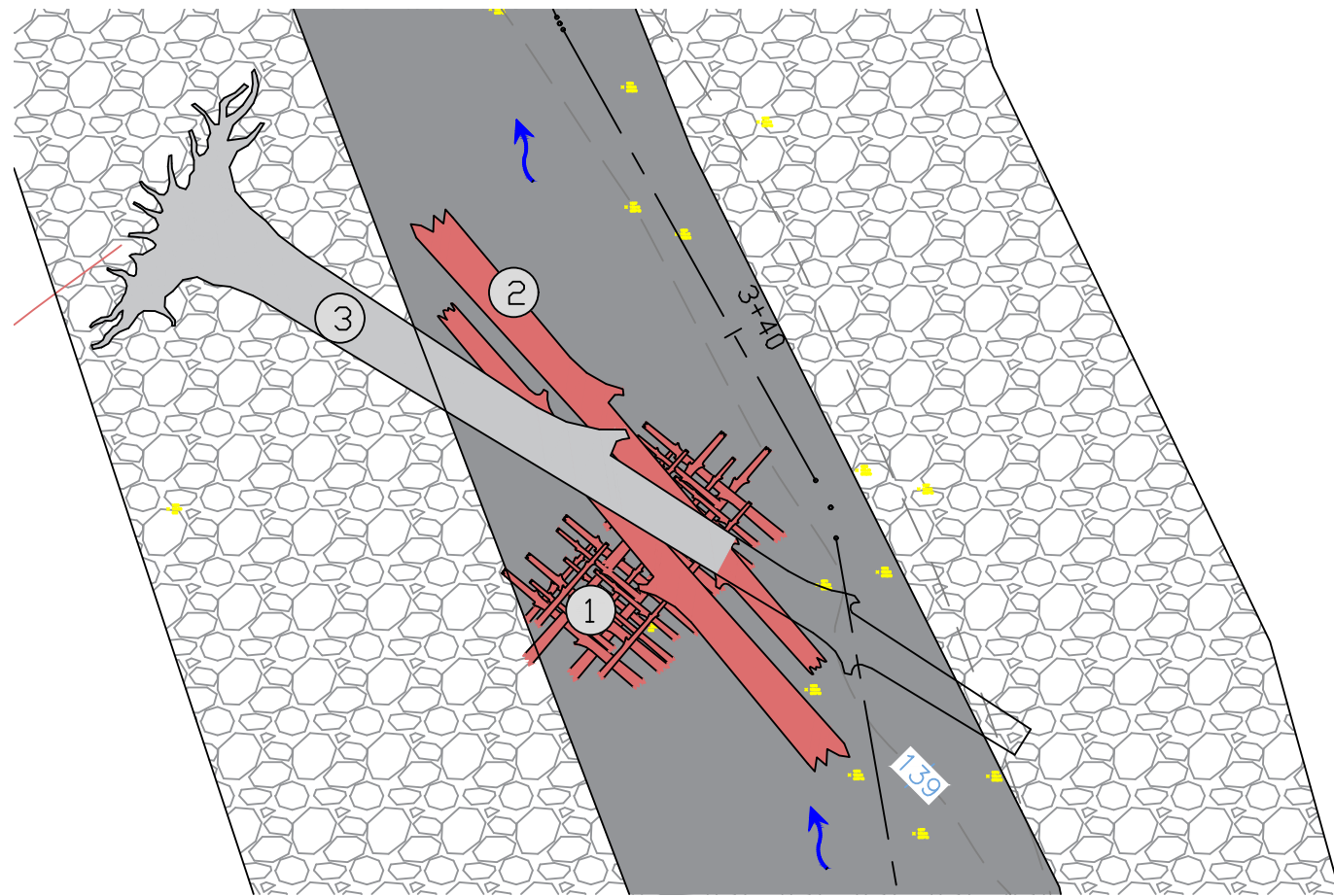
DESIGN BY:
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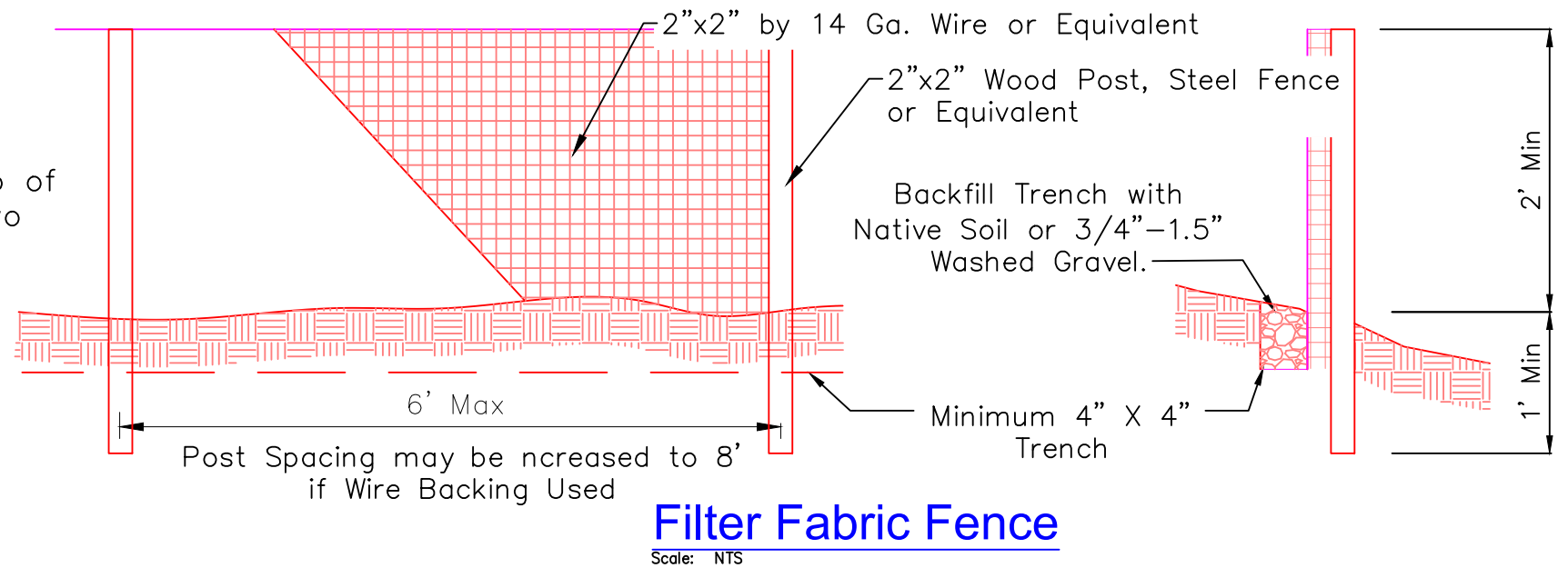
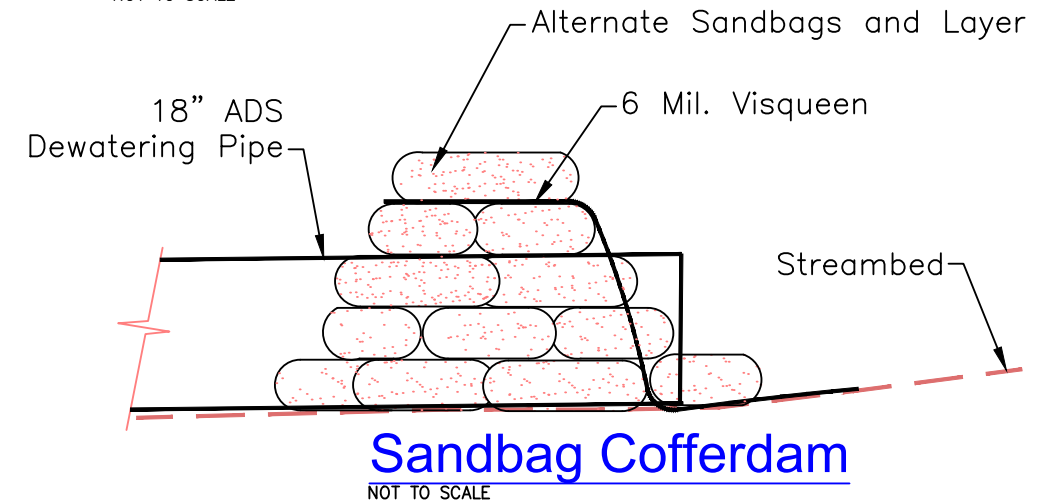
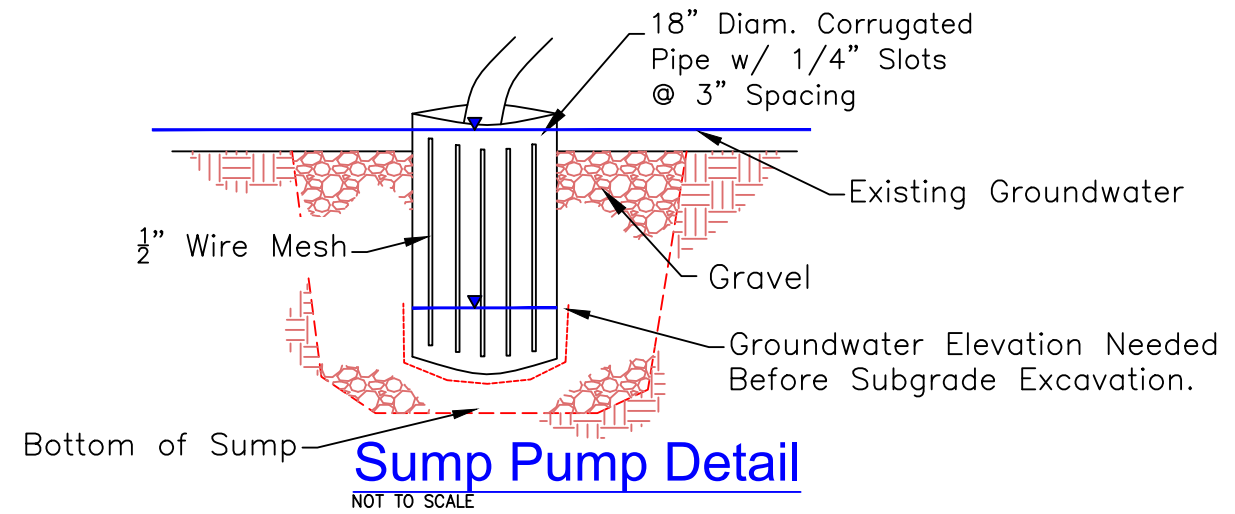
Precast Concrete Backwall

10 **12**
SHEET OF



Typical LWD Installation (12 Required)
Scale 1" = 5'

- ① Place Slash (6" Minus LWD, Tree Limbs), on Bed at Toe. Amount 0.5 Cu Yds per Structure, 5 Yards Total.
- ② Single Logs (20' Long – 10 to 12" Dia.) Place Logs on Top of Slash Across and Down Streambed and Push into Slash. Two per structure 18 Total.
- ③ Key Logs with Rootwads (30' Long – 18" DBH) – Total 9: Place Stem Down Into Bed at $\frac{1}{3}$ Width with Exposed Portion on Top of Single Logs and Slash with Rootwad Along Toe or on Top Bank.



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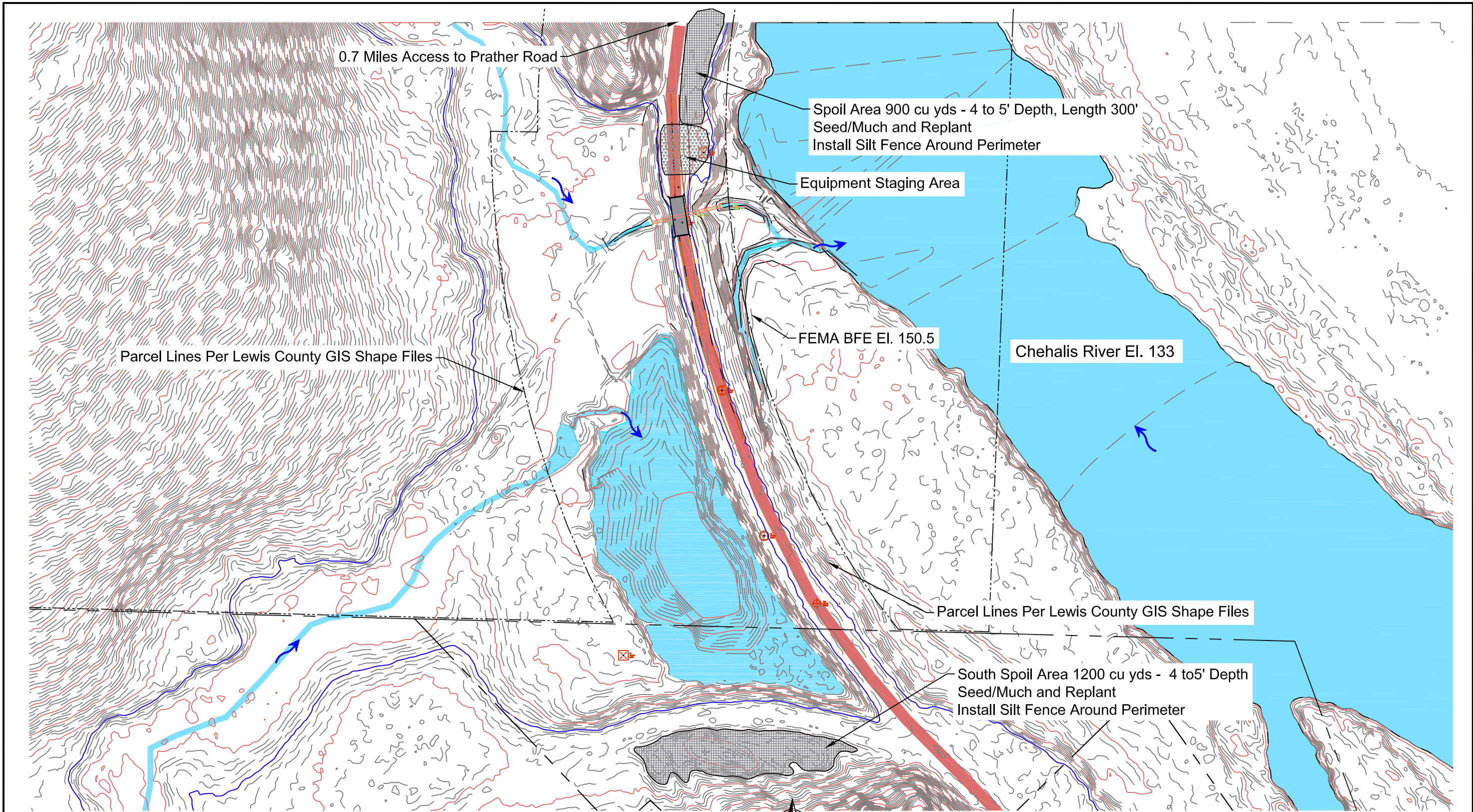
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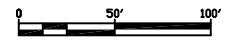
DESIGN BY:
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DRAWN BY:
DATE:
3/4/25

Details

11 12
SHEET OF

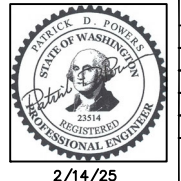


Site Plan - Existing
 Scale: 1" = 100'



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Spoils/Staging Plan

12 **12**
 SHEET OF