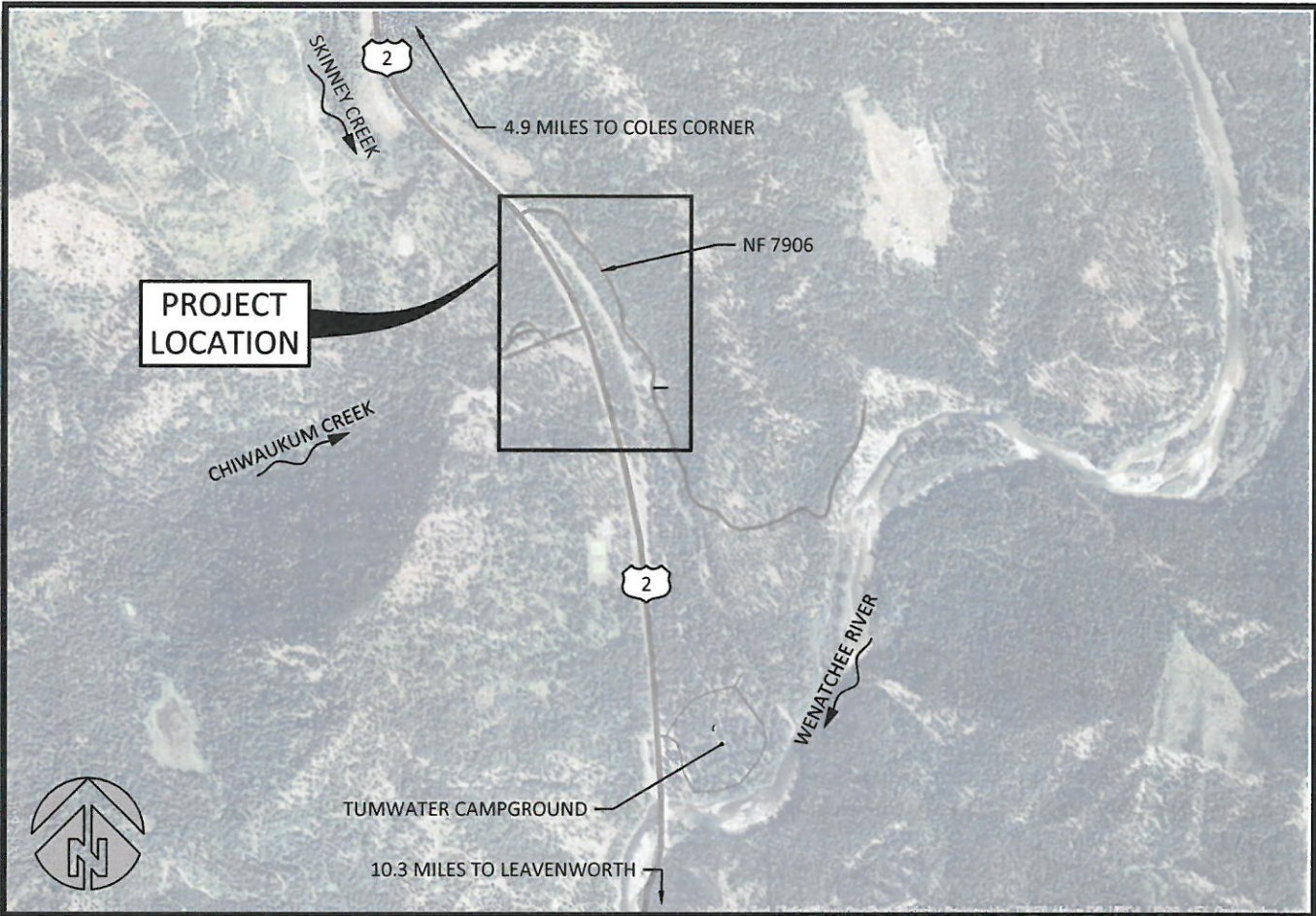
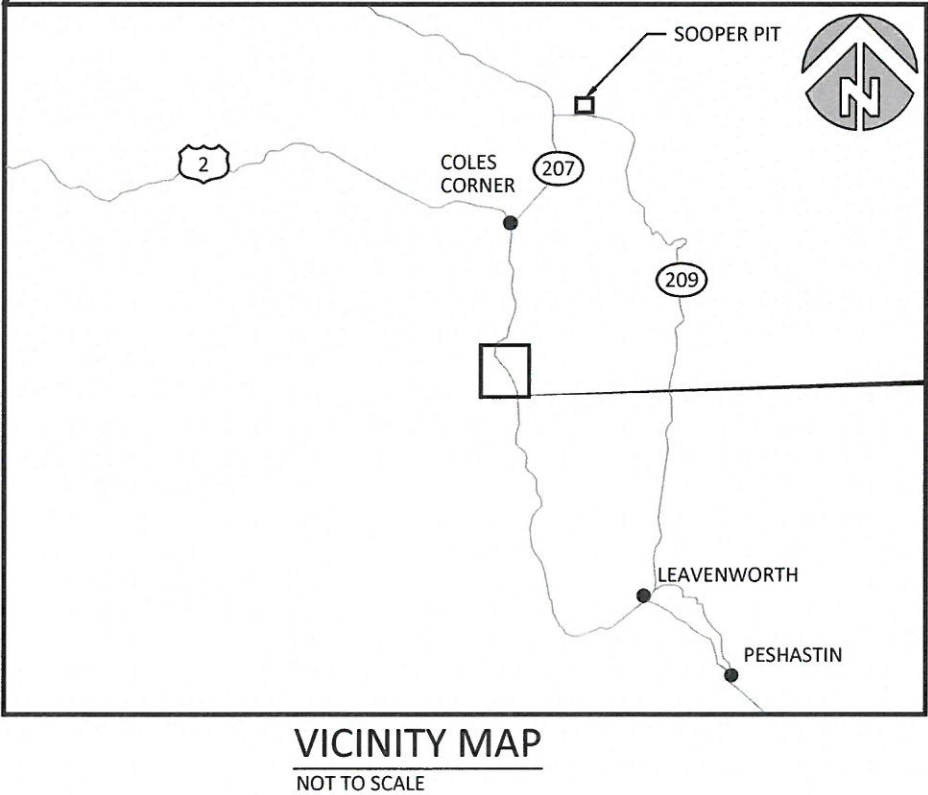


SKINNEY CREEK - FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN
CHELAN COUNTY, WA



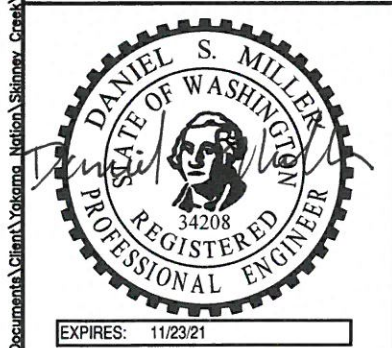
Sheet List Table

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| | | 22 | DETAILS - VERTICAL LOG PULLOUT TEST |

COORDINATES:
LATITUDE: 47°41'23.58" N
LONGITUDE 120°44'11.71 W

TOWNSHIP 25N,
RANGE 17E, SECTION 4 & 5

WATERBODY: SKINNEY CREEK
TRIBUTARY OF: CHIWAUKUM CREEK



NO.	BY	DATE	REVISION DESCRIPTION

NS, DM	MB, JP, DM	JP
DRAWN	DESIGNED	CHECKED
DM	12/16/2019	170232
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



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Hood River, OR 97031
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COVER, SHEET INDEX AND
VICINITY MAP

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ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

IN WATER WORK SHALL OCCUR DURING THE PERMITTED IN-WATER WORK PERIOD STATED IN THE HYDRAULIC PROJECT APPROVAL.

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK GPS AND TOTAL STATION EQUIPMENT ON APRIL 18-20, 2016, JUNE 2, 2016, SEPTEMBER 28, 2017 AND NOVEMBER 8, 2017. DATA ARE REFERENCED TO NAD 83, STATE PLANE, WASHINGTON NORTH, NAVD88, US SURVEY FEET.

LANDOWNERSHIP DATA OBTAINED FROM CHELAN COUNTY GIS.

SOILS WITHIN THE PROJECT AREA CONSIST PRIMARILY OF NARD SANDY LOAM, 3 TO 30 PERCENT SLOPES; NATAPOC STONY SANDY LOAM, 3 TO 30 PERCENT SLOPES IS ALSO PRESENT, AS MAPPED BY NRCS.

SOILS EXPOSED AT FINISHED GRADE ELEVATION WILL BE EVALUATED BY ENGINEER. IF FINE SOILS ARE PRESENT, ENGINEER MAY RECOMMEND OWNER AUTHORIZE OPTIONAL ADDITIVE ITEM TO OVER-EXCAVATE AND PLACE SUBSTRATE. NO MATERIALS SHALL BE PROCURED, NOR WORK COMMENCED, UNTIL APPROVAL IN WRITING IS OBTAINED FROM OWNER.

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

				NS, DM DRAWN			MB, JP, DM DESIGNED			JP CHECKED			YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN			 501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 www.interfluve.com			GENERAL NOTES			SHEET		
				DM APPROVED			12/16/2019 DATE			170232 PROJECT												2 OF 22		
NO. BY DATE REVISION DESCRIPTION																								

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, HYDROSEED COVERING, OR OTHER APPROVED MEASURES WITHIN 3 DAYS OF GRADING. FROM OCTOBER 1 THROUGH APRIL 30, ALL EXPOSED SOILS MUST BE PROTECTED WITHIN 2 DAYS OF GRADING. SOILS SHALL BE STABILIZED BEFORE A WORK SHUTDOWN, HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. SOIL STOCKPILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES. HYDROSEED ALL DISTURBED AREAS NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION MEASURES AS SOON AS PRACTICAL.

AFTER FINAL SITE STABILIZATION

RIVER DIVERSION

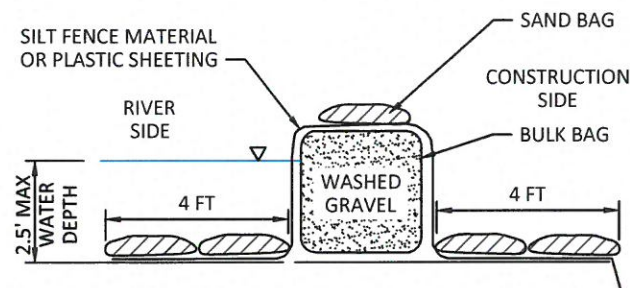
DEWATERING OF IN-CHANNEL WORK AREA(S) SHALL OCCUR CONCURRENT WITH FISH RESCUE. CONTRACTOR SHALL COORDINATE WITH THE YAKAMA NATION FISHERIES FOR FISH RESCUE. CONTRACTOR SHALL PROVIDE YAKAMA FISHERIES AMPLE TIME TO SCHEDULE FISH RESCUE. IF DIVERSION FAILS DUE TO CONTRACTOR NEGLIGENCE, FISH RESCUE SHALL BE REPEATED BY YAKAMA FISHERIES CREWS AT CONTRACTOR'S EXPENSE.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED DOWNSTREAM OF PROJECT AREA.

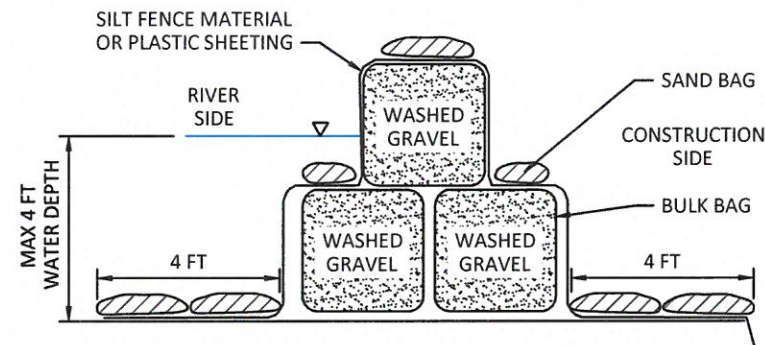


NOTE:
ESTIMATED MATERIAL VOLUMES ARE IN-PLACE QUANTITIES AND NOT FACTORED FOR EXPANSION OF
EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL. MEASUREMENT AND PAYMENT SHALL
NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

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				DM APPROVED			12/16/2019 DATE			170232 PROJECT																
NO.	BY	DATE	REVISION DESCRIPTION																							



TEMPORARY COFFERDAM
DEPTHS LESS THAN 2.5'

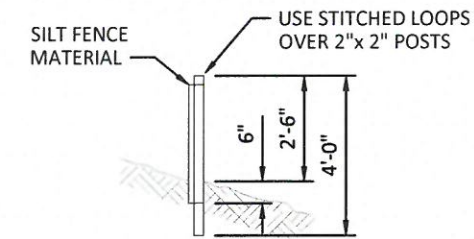


COFFERDAM SECTION IN WATER
DEPTHS GREATER THAN 2.5'

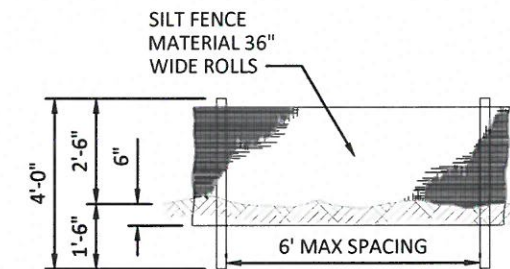
BULK BAG NOTES:

1. FOR LOW FLOW CONDITIONS, SAND BAGS MAY BE USED IN PLACE OF BULK BAGS TO FORM COFFERDAM.
2. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WDFW APPROVED 3" MINUS WASHED GRAVEL, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.
3. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM.
4. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING A MINIMUM OF 4-Feet FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY A MINIMUM OF TWO ROWS OF STANDARD SANDBAGS.
5. THE CONSTRUCTION SIDE EDGE OF PLASTIC SHEETING SHALL BE TOED INTO THE CHANNEL BED A MINIMUM OF 1 FOOT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
6. IF POSSIBLE, THE COFFERDAM SHALL BE EXTENDED ONTO A GRAVEL BAR AND OUT OF THE WATER. IF THE END MUST BE TERMINATED AT THE RIVERBANK, THE COFFERDAM SHALL BE TIGHTLY SEALED TO THE GROUND BY PLASTIC SHEETING AND STANDARD SANDBAGS. MULTIPLE LAYERS OF SHEETING AND SANDBAGS MAY BE REQUIRED TO FORM A WATERTIGHT SEAL.
7. BULK BAGS SHALL BE CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
8. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL COVER THE ENTIRE COFFERDAM WITHOUT SEAMS. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. MINIMUM 16-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULK BAG COFFERDAM.
9. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BAGS, SHEETING AND GRAVEL WILL BE HAULED OFFSITE.
10. MEASUREMENT AND PAYMENT FOR BULK BAG COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED GRAVEL PLACEMENT, MAINTENANCE AND REMOVAL OF ALL MATERIALS SHALL BE INCIDENTAL TO THE LUMP SUM ALL INCLUSIVE COST FOR DIVERSION AND DEWATERING.
11. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.

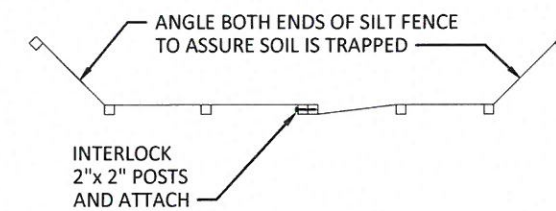
1
4
TYPICAL DETAIL - TEMPORARY COFFERDAM
NOT TO SCALE



SIDE VIEW



FRONT VIEW

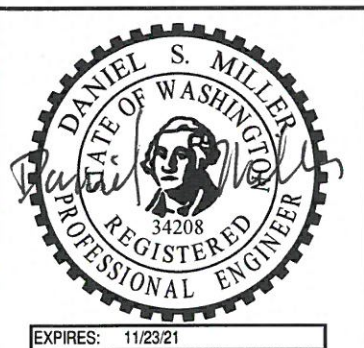


TOP VIEW

SILT FENCES:

1. THE SILT FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, SILT FENCE SHALL BE SPICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST. ALTERNATIVELY, OVERLAP AND INTERLOCK TWO POSTS WITH ATTACHED FABRIC AS REQUIRED TO MEET APPLICABLE REGULATIONS.
2. THE SILT FENCE IS TO BE INSTALLED ALONG THE DOWNHILL PERIMETER OF CONSTRUCTION AREAS AS REQUIRED TO MEET REGULATIONS AND PERMIT REQUIREMENTS. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
3. THE SILT FENCE SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM SILT FENCE INSTALLATION SHALL BE BACK-FILLED AND COMPACTED ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY SILT FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCHES X 2 INCHES POST INSTALLATION.
5. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.

2
4
TYPICAL DETAIL - SILT FENCE
NOT TO SCALE



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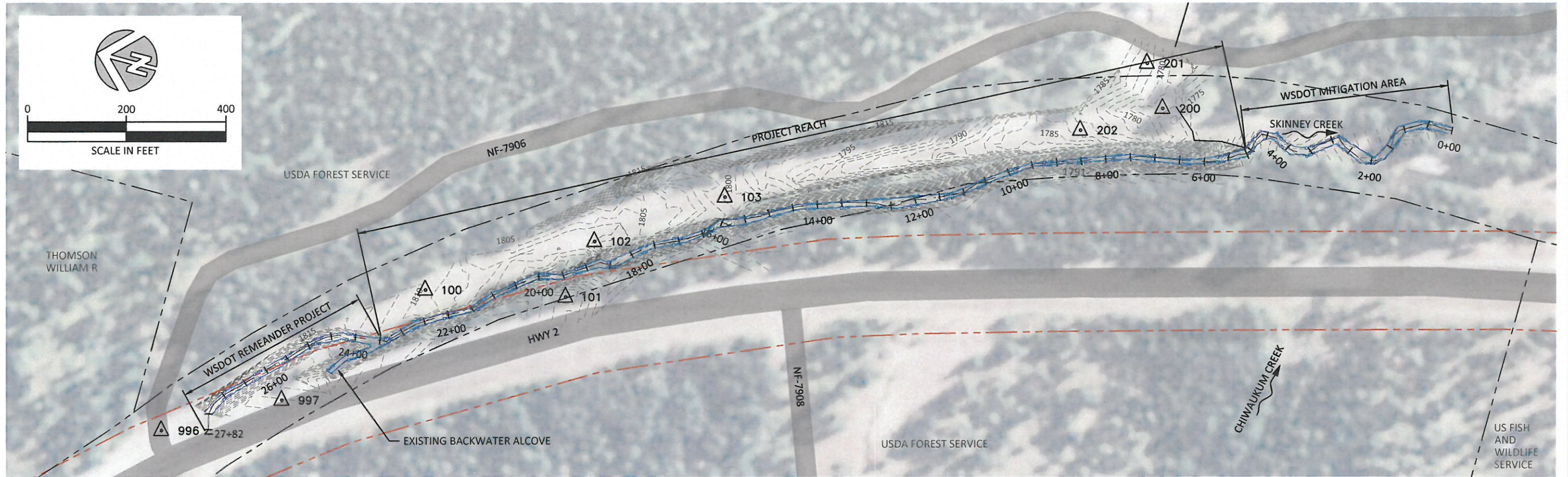
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DM	12/16/2019	170232
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SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN

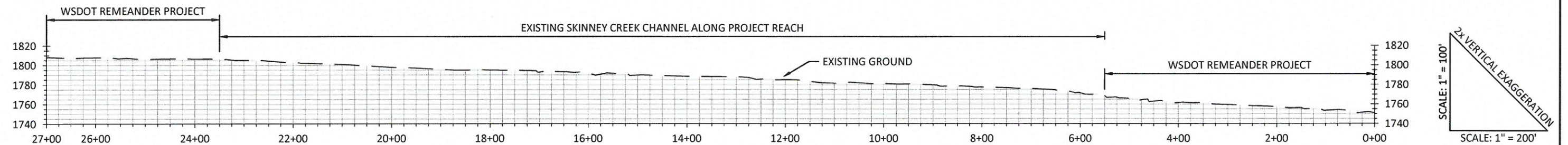
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TYPICAL DETAILS - EROSION CONTROL	SHEET 4 OF 22
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PLAN



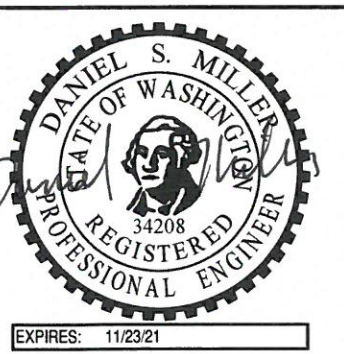
EXISTING SKINNEY CREEK PROFILE

LEGEND

- EXISTING CONTOURS (1FT)
- 5+00 --- EXISTING CHANNEL ALIGNMENT AND STATIONING
- ORDINARY HIGH WATER
- TAXLOTS (CHELAN COUNTY GIS)
- APPROX WSDOT RIGHT OF WAY, FOR REFERENCE ONLY
- △ 100 SURVEY CONTROL POINT

SURVEY CONTROL

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	252276.02	1663869.94	1810.03	TBM
101	251999.32	1663930.29	1811.22	TBM
102	251972.58	1664054.64	1806.87	TBM
103	251743.16	1664210.58	1800.32	TBM
200	250936.52	1664617.76	1779.09	TBM
201	250991.05	1664697.82	1781.71	TBM
202	251085.75	1664531.14	1784.01	TBM
996	252715.37	1663454.38	1824.57	NAIL
997	252497.01	1663577.75	1817.49	TBM



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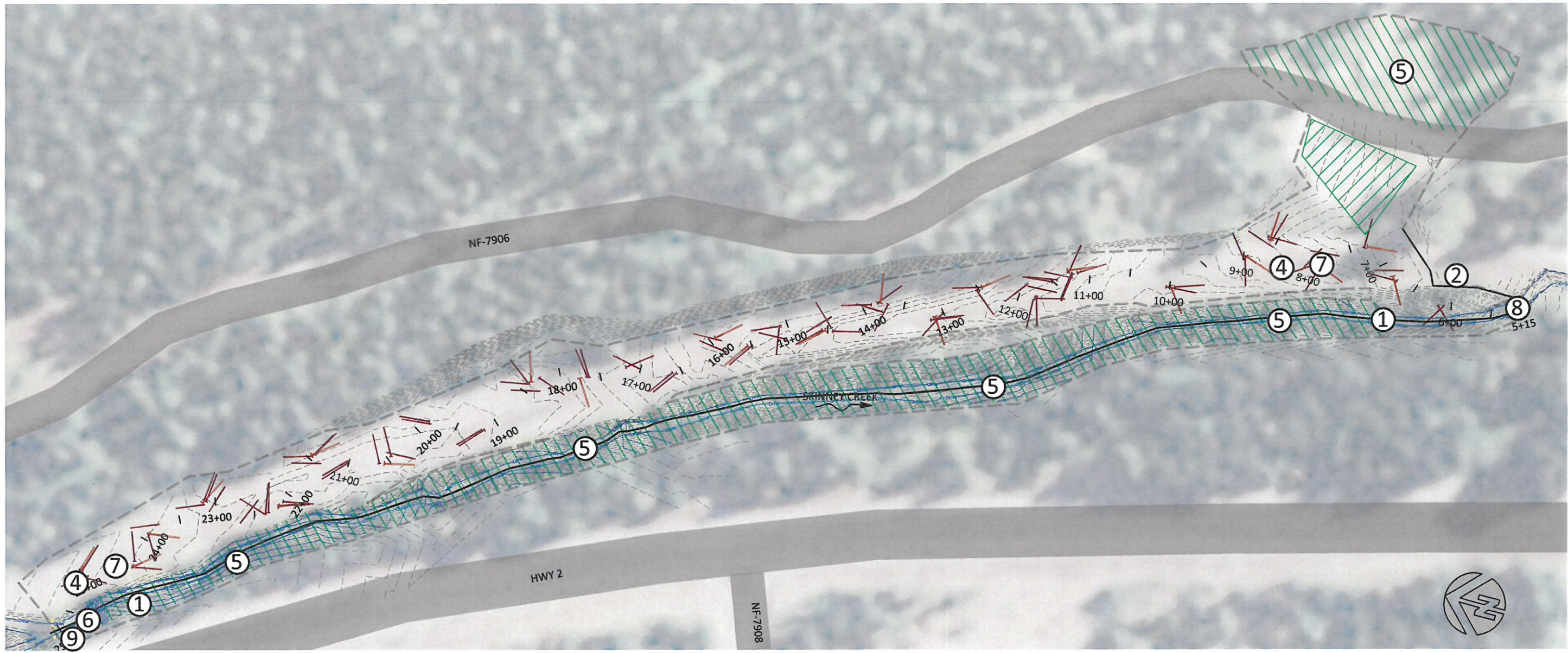
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EXISTING CONDITIONS
PLAN AND PROFILE

SHEET

5 OF 22

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LEGEND

- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- EXISTING ROAD
- PROPOSED LARGE WOODY MATERIAL
- TEMPORARY COFFERDAM, SEE DETAIL 1, SHEET 4
- TEMPORARY STAGING AREA
- SPOILS DISPOSAL AREA
- STREAM DIVERSION PIPE

PLAN

CONSTRUCTION SEQUENCING NOTES:


1. PLACE COFFERDAMS AT UPSTREAM AND DOWNSTREAM ENDS. DEFISH ISOLATED REACH. PLACE STREAM DIVERSION PIPE IN EXISTING SKINNEY CREEK THROUGH SPOILS DISPOSAL AREA.
2. SEQUENCE ACCESS AND CONSTRUCTION TO NOT INTERFERE WITH WORK IN DOWNSTREAM WSDOT REACH.
3. MASS EXCAVATION (STEP 4) AND CHANNEL CONSTRUCTION (STEP 6) CAN BE COMPLETED IN SEGMENTS WITH ENGINEER'S PRIOR APPROVAL.
4. BEGIN EXCAVATION AT DOWNSTREAM END OF SITE. MOVE UPSTREAM PERFORMING MASS EXCAVATION, LEAVING A SOIL BERM IN PLACE AT THE UPSTREAM AND DOWNSTREAM ENDS TO ISOLATE THE PROPOSED CHANNEL FROM THE EXISTING CHANNEL.
5. PLACE EXCAVATED MATERIAL IN SPOILS DISPOSAL AREAS.
6. ONCE MASS EXCAVATION IS COMPLETED, LEAVE SMALL BERM OR SAND BAG COFFERDAM AT NEW CHANNEL INLET. PLACE INLET JAM (SEE DETAIL 1 ON SHEET 19). MAINTAINING ALL SKINNEY CREEK FLOW THROUGH FLOW DIVERSION PIPE.
7. WORK FROM UPSTREAM TO DOWNSTREAM PERFORMING FINISH GRADING, CHANNEL CONSTRUCTION AND LWM PLACEMENT. CONTRACTOR SHALL COORDINATE WITH ENGINEER FOR EVALUATION OF SOILS AT FINISHED GRADE FOR ENGINEER'S DETERMINATION IF OPTIONAL STREAMBED SUBSTRATE IS REQUIRED. IF REQUIRED, INSTALL STREAMBED SUBSTRATE PER SHEET 18. INSTALL LARGE WOOD IN CHANNEL AND ON FLOODPLAIN.
8. WHEN CHANNEL EXCAVATION IS COMPLETED, REMOVE DOWNSTREAM BERM.
9. USING HAND CREWS, AND MINI EQUIPMENT IF NECESSARY, REMOVE INLET BERM/SAND BAG COFFERDAM. ABANDON STREAM DIVERSION PIPE IN PLACE BY PLUGGING WITH BENTONITE AND GRAVEL TO PASS NO FLOW.
10. COMPLETE SITE CLEANUP, SEED AND MULCH ENTIRE SITE.



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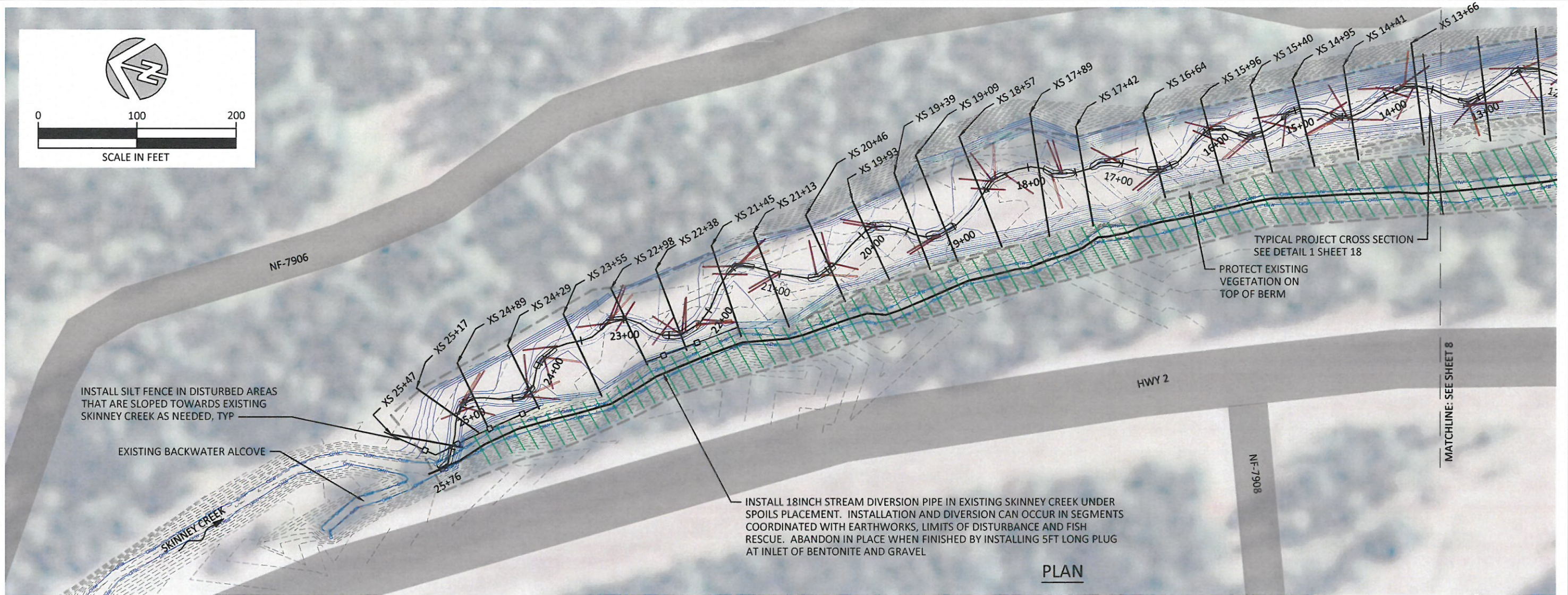
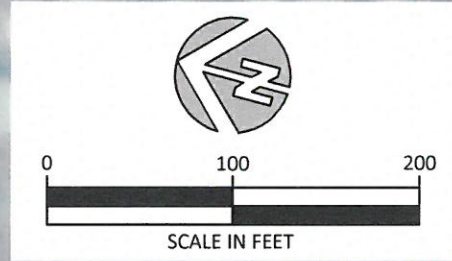
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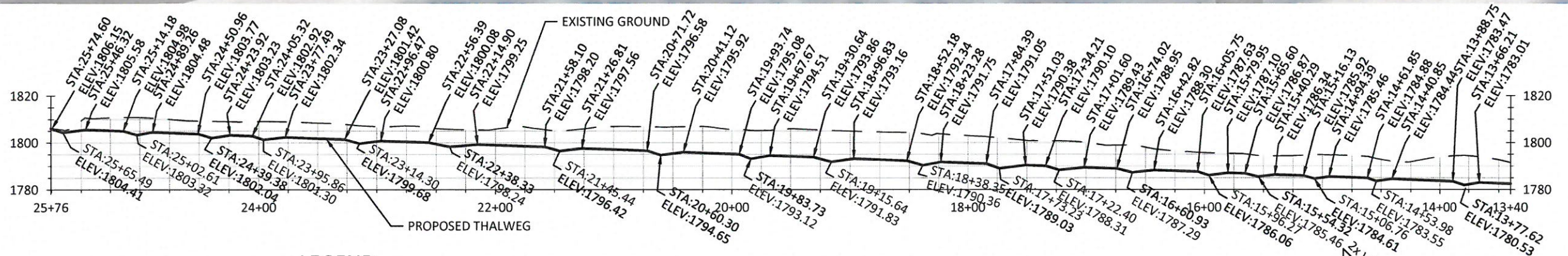
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CONSTRUCTION SEQUENCING
PLAN

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PLAN



PROFILE

LEGEND

- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- PROPOSED CHANNEL ALIGNMENT AND STATIONING (SEE SHEET 9)
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- TEMPORARY SILT FENCE, SEE DETAIL 2, SHEET 4
- TEMPORARY ACCESS
- PROPOSED LARGE WOOD PLACEMENT, SEE SHEETS 15-17 AND 19
- GRADING CROSS-SECTION, SEE SHEETS 9 THROUGH 14
- SPOILS DISPOSAL AREA

SCALE: 1" = 50'
SCALE: 1" = 100'
2x VERTICAL EXAGGERATION

NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE



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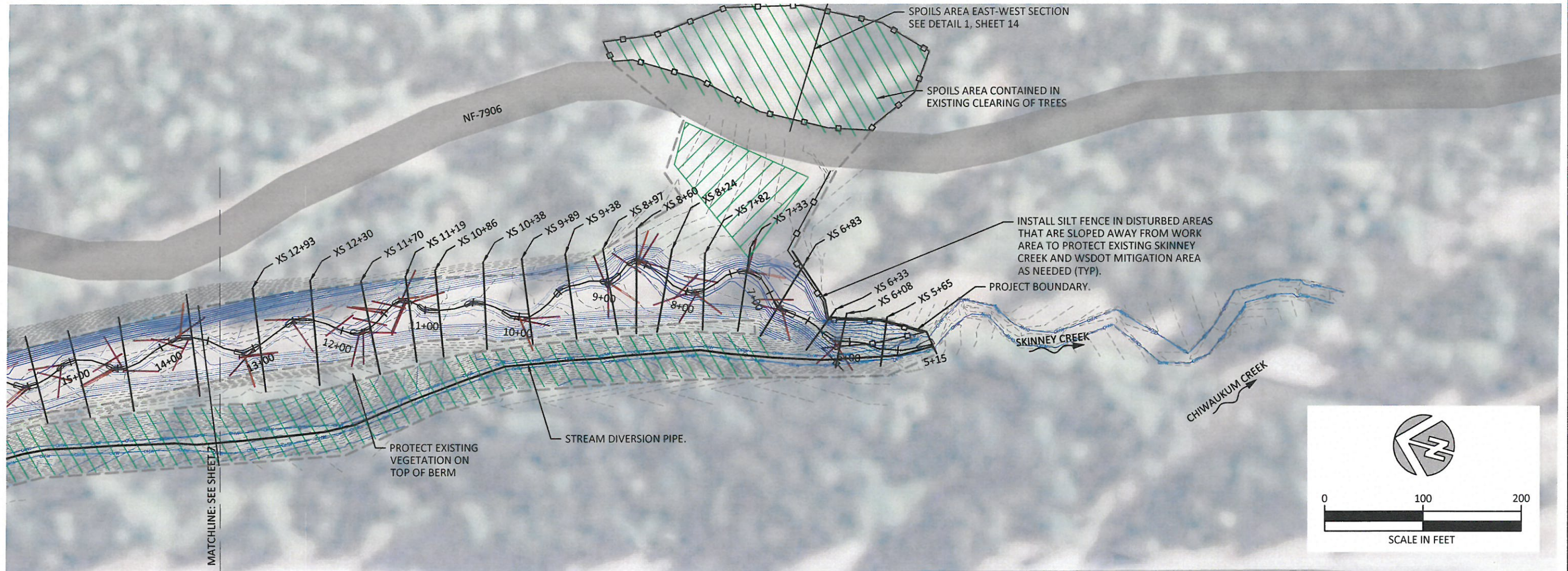


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PROPOSED CONDITIONS
PLAN AND PROFILE (1 OF 2)

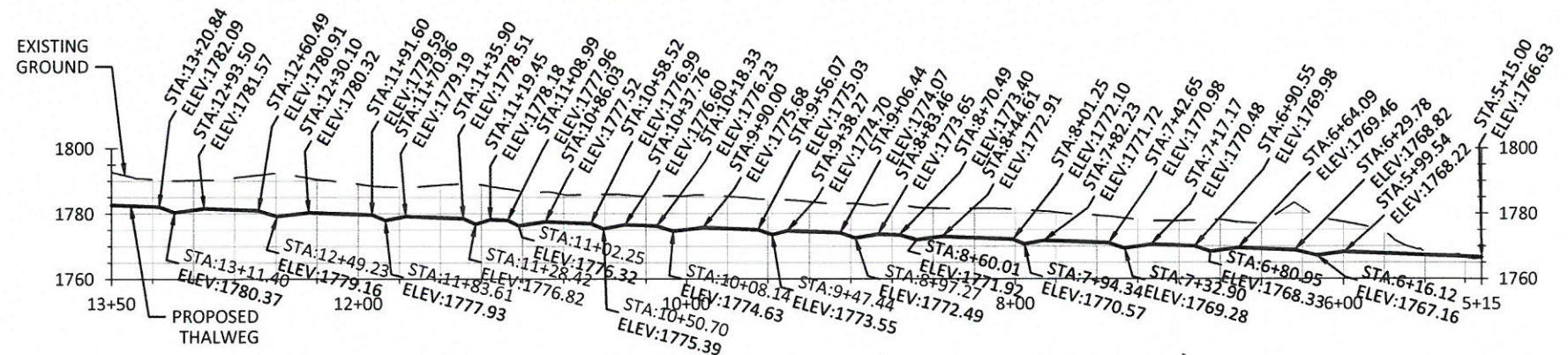
SHEET
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NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE

PLAN



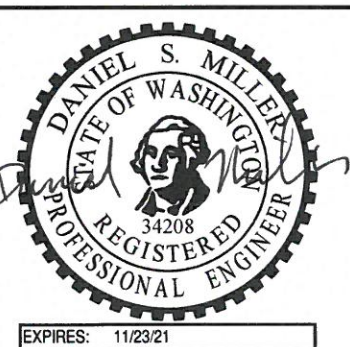
PROFILE

LEGEND

- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- PROPOSED CHANNEL ALIGNMENT AND STATIONING (SEE SHEET 9)
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE

- TEMPORARY SILT FENCE, SEE DETAIL 2, SHEET 4
- PROPOSED LARGE WOOD PLACEMENT, SEE SHEETS 15-17 AND 19
- GRADING CROSS-SECTION, SEE SHEETS 9 THROUGH 14
- TEMPORARY STAGING AREA
- SPOILS DISPOSAL AREA

SCALE: 1" = 50'
2x VERTICAL EXAGGERATION
SCALE: 1" = 100'



YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN



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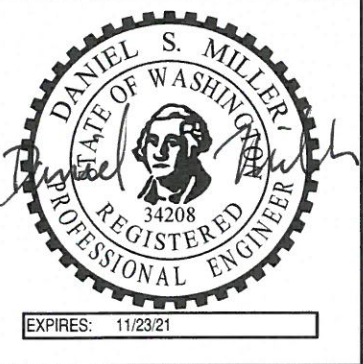
PROPOSED CONDITIONS
PLAN AND PROFILE (2 OF 2)

SHEET
8 OF 22

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GRADING CROSS SECTION END POINT COORDINATE TABLE

Grading Cross Section	End Point	Northing	Easting
5+65	Left	250,800.52	1,664,588.26
	Right	250,793.93	1,664,538.48
6+08	Left	250,840.98	1,664,581.19
	Right	250,837.57	1,664,524.70
6+33	Left	250,852.67	1,664,582.44
	Right	250,870.88	1,664,534.26
6+83	Left	250,895.99	1,664,618.24
	Right	250,919.55	1,664,535.70
7+33	Left	250,952.86	1,664,619.97
	Right	250,942.83	1,664,534.90
7+82	Left	250,995.59	1,664,602.40
	Right	250,977.52	1,664,526.66
8+24	Left	251,028.85	1,664,597.81
	Right	251,021.62	1,664,512.36
8+60	Left	251,069.27	1,664,608.85
	Right	251,041.44	1,664,505.48
8+97	Left	251,096.69	1,664,579.48
	Right	251,059.09	1,664,499.96
9+38	Left	251,132.05	1,664,564.39
	Right	251,098.12	1,664,484.41
9+89	Left	251,172.97	1,664,548.61
	Right	251,139.13	1,664,467.68
10+38	Left	251,209.84	1,664,534.91
	Right	251,182.79	1,664,450.44
10+88	Left	251,254.95	1,664,514.20
	Right	251,223.51	1,664,431.39
11+19	Left	251,282.25	1,664,499.96
	Right	251,248.42	1,664,419.03
11+70	Left	251,324.59	1,664,483.39
	Right	251,280.96	1,664,397.22
12+30	Left	251,374.11	1,664,470.86
	Right	251,336.90	1,664,370.49
12+93	Left	251,428.33	1,664,448.13
	Right	251,387.75	1,664,350.04
13+66	Left	251,491.33	1,664,424.08
	Right	251,451.04	1,664,327.94
14+41	Left	251,551.59	1,664,383.80
	Right	251,511.38	1,664,295.77
14+95	Left	251,597.63	1,664,357.13
	Right	251,552.69	1,664,278.07



NOTES:
STATION REFERENCES PROPOSED CHANNEL ALIGNMENT

LEFT TO RIGHT ORIENTATION IS LOOKING DOWNSTREAM

GRADING SECTION LOCATIONS SHOWN ON SHEETS 7 & 8

GRADING SECTIONS ARE SHOWN ON SHEETS 10 THROUGH 14

PROPOSED ALIGNMENT N,E COORDINATE TABLE

PI Station	Northing	Easting	Channel feature
5+15	250,749.63	1,664,573.36	
5+26	250,759.97	1,664,567.97	
5+33	250,766.06	1,664,564.87	
5+45	250,776.95	1,664,559.58	
5+68	250,799.58	1,664,554.99	
5+85	250,816.51	1,664,556.65	
5+99	250,830.14	1,664,554.33	Riffle Top
6+16	250,846.34	1,664,550.78	Pool
6+29	250,859.14	1,664,555.56	Riffle bottom
6+40	250,868.26	1,664,560.64	
6+52	250,880.13	1,664,564.40	
6+64	250,891.46	1,664,565.89	Riffle Top
6+80	250,908.19	1,664,567.98	Pool
6+90	250,915.69	1,664,573.95	Riffle bottom
7+04	250,924.74	1,664,584.24	
7+17	250,934.47	1,664,592.75	Riffle Top
7+32	250,949.82	1,664,596.17	Pool
7+42	250,958.98	1,664,592.83	Riffle bottom
7+54	250,968.96	1,664,586.59	
7+67	250,976.84	1,664,575.86	
7+82	250,986.97	1,664,565.50	Riffle Top
7+94	250,997.79	1,664,560.05	Pool
8+01	251,004.71	1,664,560.03	Riffle bottom
8+14	251,018.24	1,664,562.38	
8+27	251,029.46	1,664,568.62	
8+44	251,045.28	1,664,574.23	Riffle Top
8+60	251,060.33	1,664,577.50	Pool
8+70	251,068.89	1,664,571.46	Riffle bottom
8+83	251,073.67	1,664,559.41	Riffle Top
8+97	251,082.05	1,664,548.43	Pool
9+06	251,091.13	1,664,547.16	Riffle bottom
9+17	251,101.33	1,664,544.34	
9+28	251,110.70	1,664,538.22	
9+38	251,119.75	1,664,533.82	Riffle Top
9+47	251,126.89	1,664,528.07	Pool
9+56	251,130.84	1,664,520.40	Riffle bottom
9+64	251,134.28	1,664,512.91	
9+77	251,141.50	1,664,502.34	
9+90	251,150.17	1,664,492.81	Riffle Top
10+08	251,167.97	1,664,489.29	Pool
10+18	251,177.76	1,664,492.12	Riffle bottom
10+27	251,186.52	1,664,493.82	
10+37	251,197.01	1,664,494.33	Riffle Top
10+50	251,209.84	1,664,492.63	Pool
10+58	251,215.75	1,664,487.51	Riffle bottom
10+70	251,225.46	1,664,481.34	
10+86	251,240.38	1,664,475.55	Riffle Top
11+02	251,256.22	1,664,472.07	Pool
11+08	251,262.13	1,664,475.33	Riffle bottom
11+19	251,272.46	1,664,476.96	Riffle Top
11+28	251,281.22	1,664,475.07	Pool
11+35	251,286.60	1,664,469.86	Riffle bottom

PI Station	Northing	Easting	Channel feature
11+46	251,291.70	1,664,461.05	
11+59	251,297.27	1,664,448.83	
11+70	251,303.74	1,664,439.38	Riffle Top
11+83	251,313.64	1,664,431.53	Pool
11+91	251,321.46	1,664,429.85	Riffle bottom
12+02	251,332.77	1,664,430.24	
12+17	251,347.10	1,664,432.67	
12+30	251,359.74	1,664,432.61	Riffle Top
12+49	251,378.30	1,664,427.92	Pool
12+60	251,385.88	1,664,419.60	Riffle bottom
12+93	251,406.37	1,664,393.71	Riffle Top
13+11	251,419.78	1,664,381.86	Pool
13+20	251,429.21	1,664,381.66	Riffle bottom
13+32	251,440.39	1,664,381.44	
13+49	251,457.86	1,664,384.70	
13+66	251,474.23	1,664,383.41	Riffle Top
13+78	251,486.10	1,664,379.66	Pool
13+88	251,494.12	1,664,373.53	Riffle bottom
14+06	251,506.49	1,664,361.47	
14+26	251,518.97	1,664,345.11	
14+40	251,529.96	1,664,336.05	Riffle Top
14+53	251,542.49	1,664,332.13	Pool
14+61	251,550.25	1,664,333.45	Riffle bottom
14+78	251,566.47	1,664,334.26	
14+94	251,582.28	1,664,330.26	Riffle Top
15+06	251,592.48	1,664,323.27	Pool
15+16	251,597.12	1,664,315.13	Riffle bottom
15+27	251,603.86	1,664,305.78	
15+40	251,612.80	1,664,296.84	Riffle Top
15+54	251,624.81	1,664,289.59	Pool
15+65	251,636.09	1,664,289.41	Riffle bottom
15+79	251,650.38	1,664,290.72	top
15+96	251,665.86	1,664,285.57	Pool
16+05	251,671.40	1,664,277.88	toe
16+18	251,677.37	1,664,266.64	
16+29	251,681.13	1,664,255.91	
16+42	251,687.64	1,664,244.69	Riffle Top
16+60	251,701.76	1,664,233.34	Pool
16+74	251,714.38	1,664,229.87	Riffle bottom
17+01	251,741.96	1,664,229.52	top
17+22	251,762.21	1,664,224.78	Pool
17+34	251,770.15	1,664,216.03	toe
17+51	251,784.68	1,664,207.55	top
17+73	251,805.79	1,664,200.71	Pool
17+84	251,816.63	1,664,203.39	toe
17+97	251,829.17	1,664,201.72	
18+11	251,841.84	1,664,195.59	
18+23	251,851.86	1,664,188.69	Riffle Top
18+38	251,863.09	1,664,178.65	Pool
18+52	251,867.74	1,664,165.62	Riffle bottom

PI Station	Northing	Easting	Channel feature
18+72	251,874.58	1,664,146.83	
18+96	251,886.37	1,664,125.18	Riffle Top
19+15	251,899.52	1,664,111.74	Pool
19+30	251,913.03	1,664,105.22	Riffle bottom
19+41	251,924.15	1,664,104.64	
19+54	251,937.00	1,664,106.75	
19+67	251,949.87	1,664,106.19	Riffle Top
19+83	251,965.35	1,664,101.93	Pool
19+93	251,972.70	1,664,095.14	Riffle bottom
20+13	251,982.83	1,664,078.07	
20+41	251,994.64	1,664,053.20	Riffle Top
20+60	252,006.56	1,664,038.17	Pool
20+71	252,016.85	1,664,033.24	Riffle bottom
20+99	252,044.08	1,664,030.24	
21+26	252,071.78	1,664,030.18	Riffle Top
21+45	252,090.19	1,664,027.30	Pool
21+58	252,096.10	1,664,016.10	Riffle bottom
21+74	252,100.79	1,664,000.04	
21+96	252,103.37	1,663,978.11	
22+14	252,109.46	1,663,961.19	Riffle Top
22+38	252,125.21	1,663,943.84	Pool
22+56	252,142.65	1,663,939.13	Riffle bottom
22+68	252,155.09	1,663,939.87	
22+82	252,167.78	1,663,944.62	
22+96	252,181.81	1,663,945.61	Riffle Top
23+14	252,198.53	1,663,939.43	Pool
23+27	252,204.22	1,663,927.98	Riffle bottom
23+38	252,210.63	1,663,918.77	
23+48	252,218.52	1,663,913.14	
23+64	252,233.33	1,663,905.69	
23+77	252,243.88	1,663,898.25	Riffle Top
23+95	252,253.97	1,663,882.90	Pool
24+05	252,256.21	1,663,873.70	Riffle bottom
24+23	252,254.72	1,663,855.17	top
24+39	252,261.59	1,663,841.31	Pool
24+50	252,272.42	1,663,837.23	toe
24+63	252,284.54	1,663,833.17	
24+78	252,299.17	1,663,830.55	
24+89	252,309.43	1,663,827.66	Riffle Top
25+02	252,319.49	1,663,818.88	Pool
25+14	252,321.13	1,663,807.43	Riffle bottom
25+24	252,320.43	1,663,797.41	
25+35	252,318.14	1,663,786.71	
25+46	252,317.62	1,663,775.57	Riffle Top
25+65	252,317.48	1,663,756.39	Pool
25+75	252,324.46	1,663,748.95	Riffle bottom

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



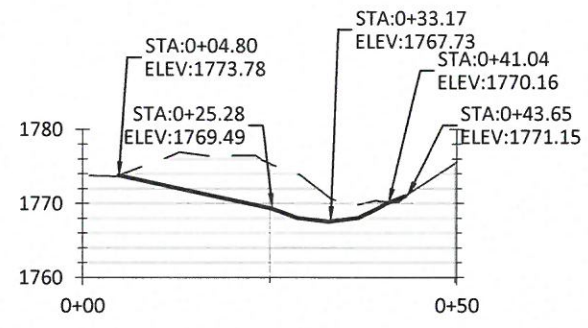
501 Portway Avenue, Suite 101
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541.386.9003
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ALIGNMENT AND
GRADING SECTION
COORDINATE TABLES

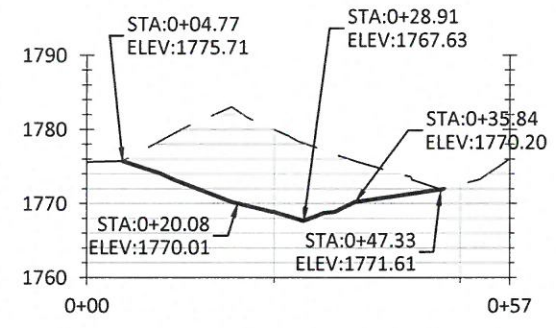
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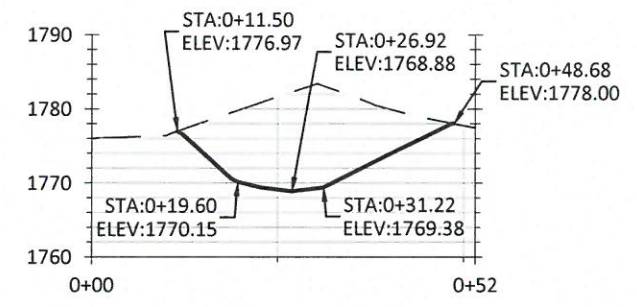
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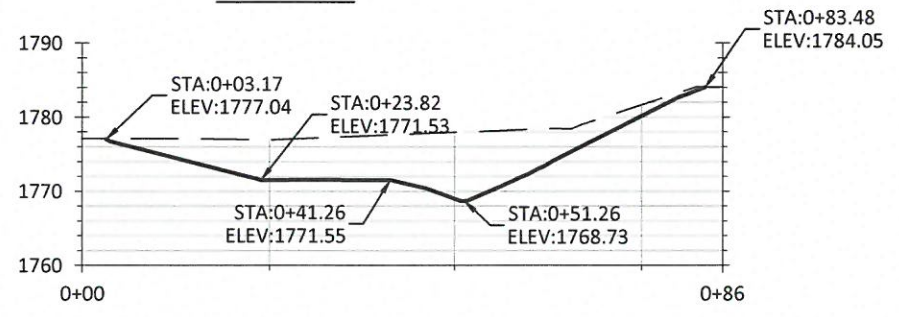
STA 5+65



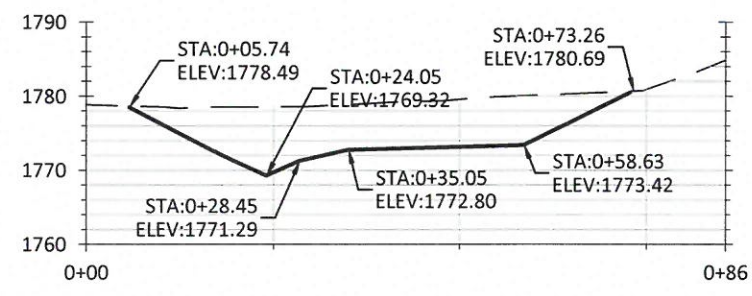
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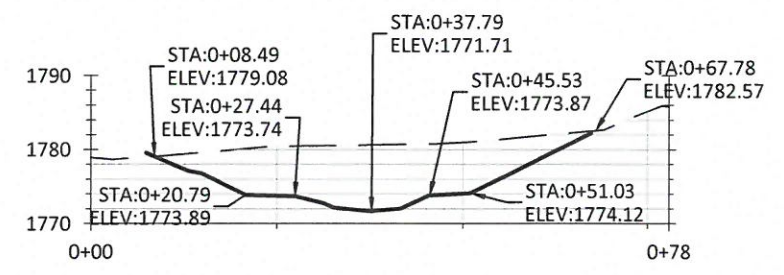
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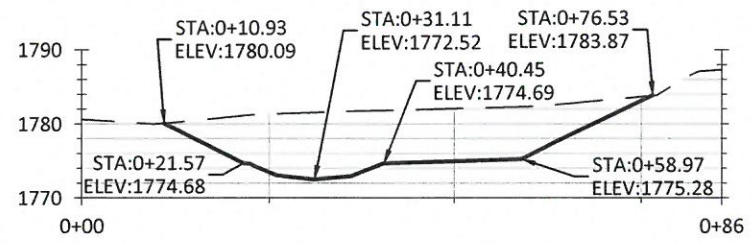
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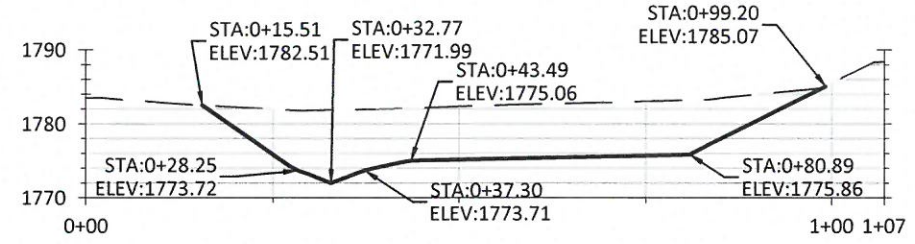
STA 7+33



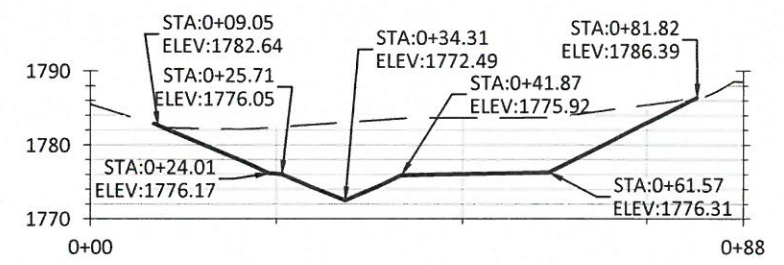
STA 7+82



STA 8+24



STA 8+60



STA 8+97

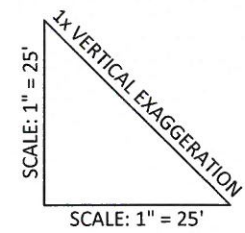


LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



NO.	BY	DATE	REVISION DESCRIPTION

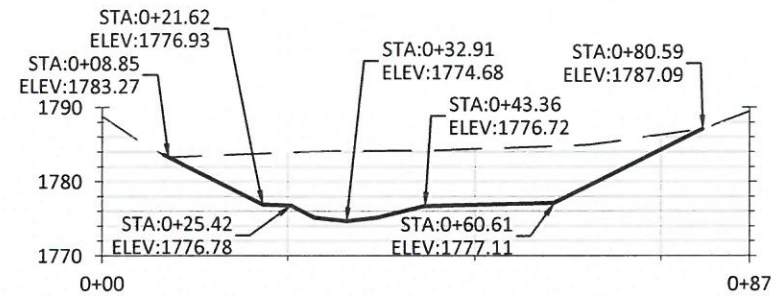
NS, DM	MB, JP, DM	JP
DRAWN	DESIGNED	CHECKED
DM	12/16/2019	170232
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN

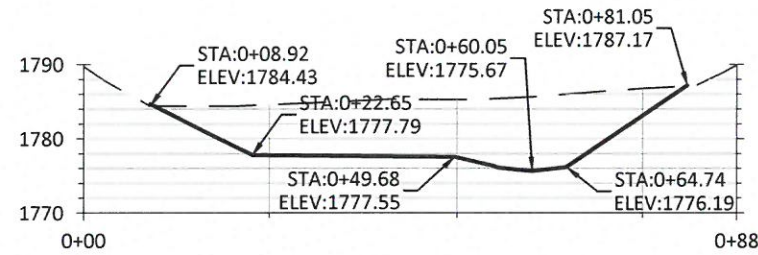
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GRADING
CROSS-SECTIONS (1 OF 5)

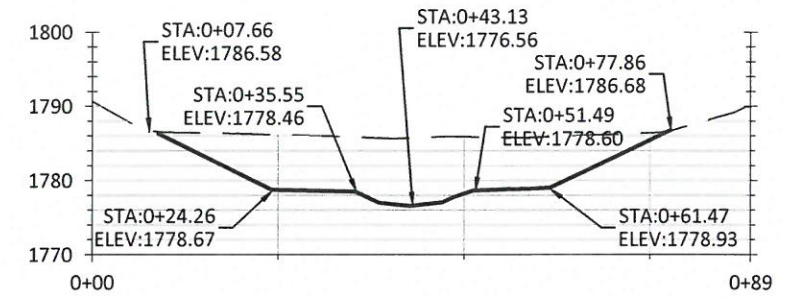
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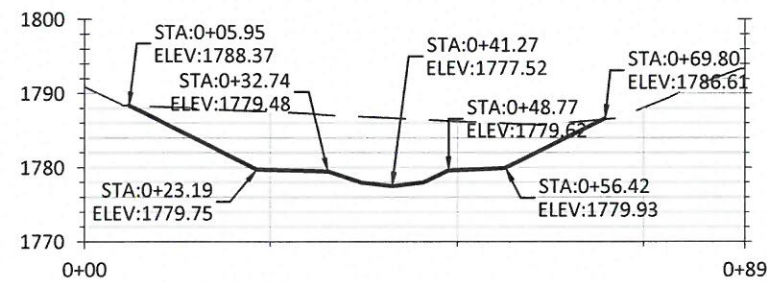
STA 9+38



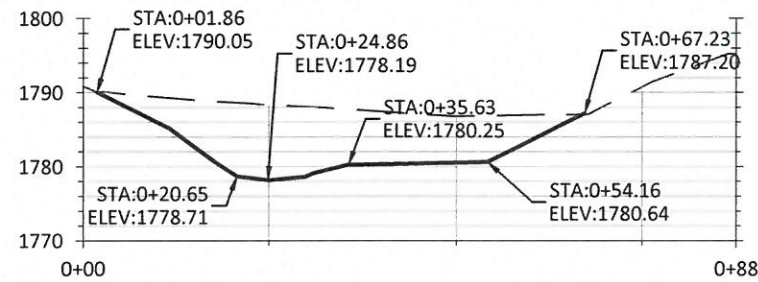
STA 9+89



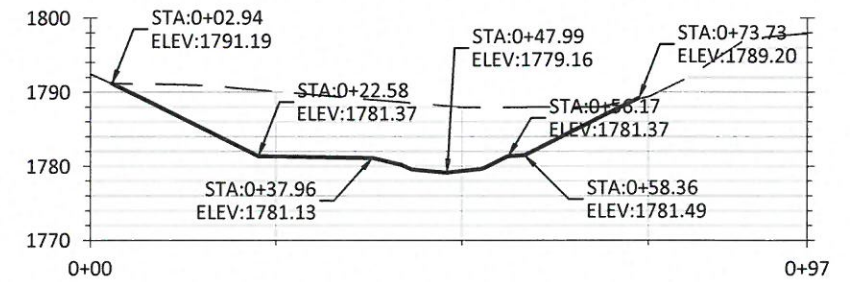
STA 10+38



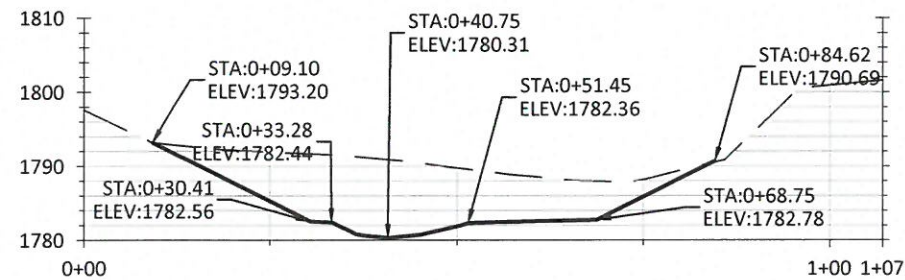
STA 10+86



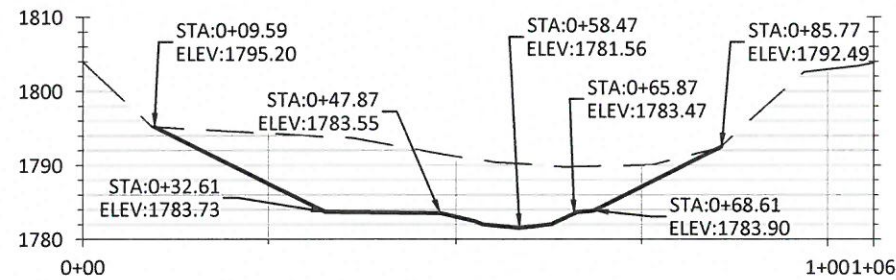
STA 11+19



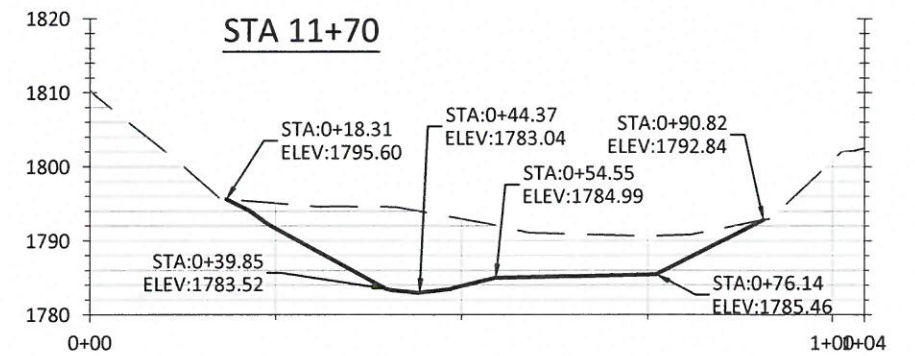
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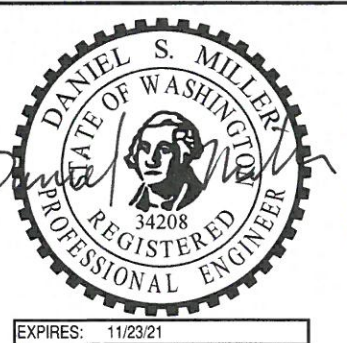
STA 12+30



STA 12+93



STA 13+66

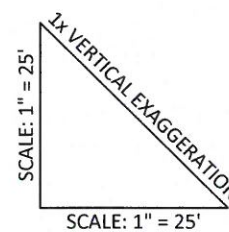


LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



NO.	BY	DATE	REVISION DESCRIPTION

NS, DM	MB, JP, DM	JP
DRAWN	DESIGNED	CHECKED
DM	12/16/2019	170232
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



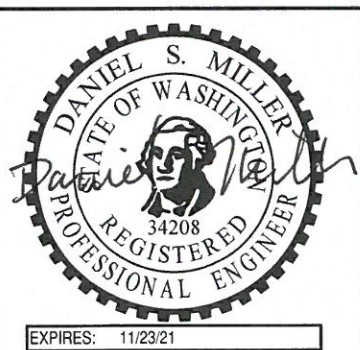
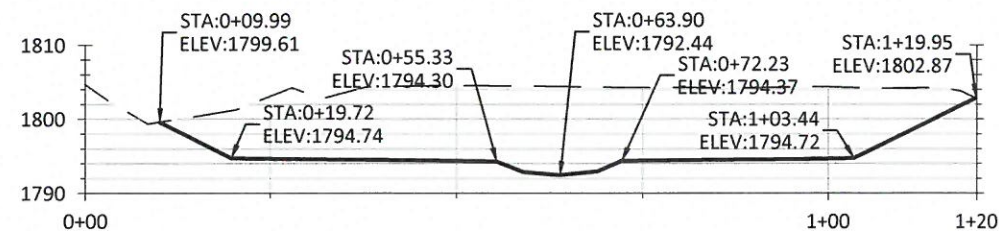
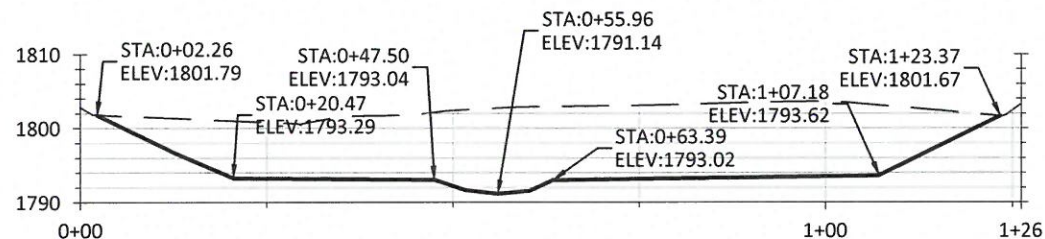
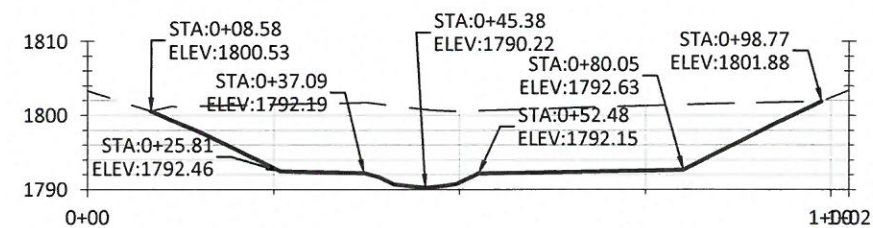
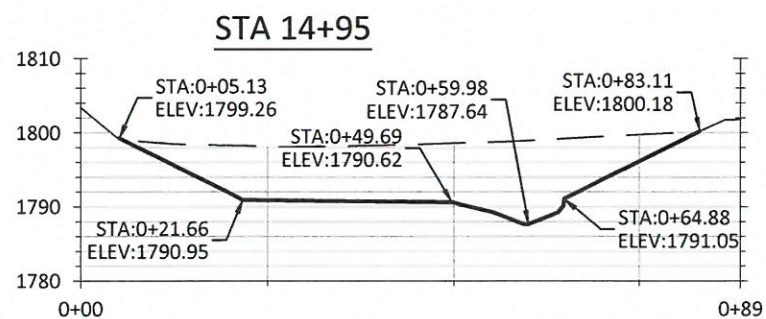
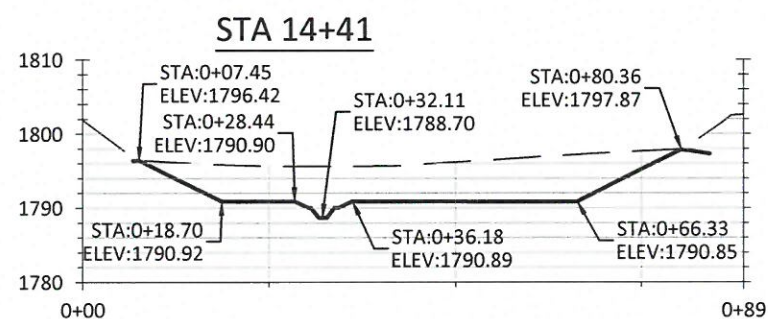
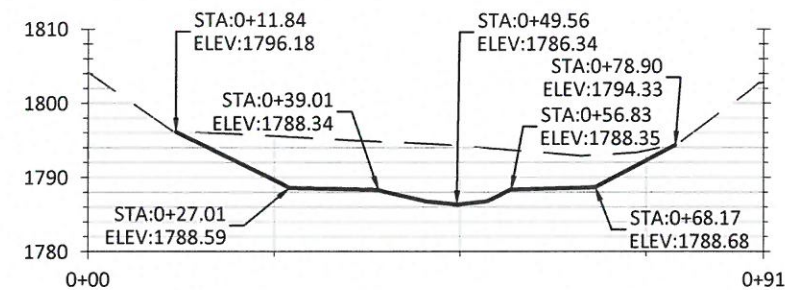
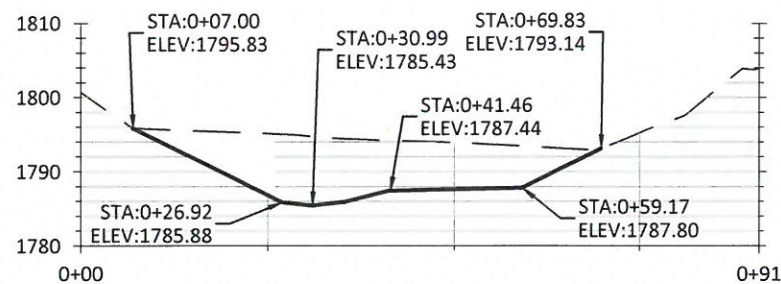
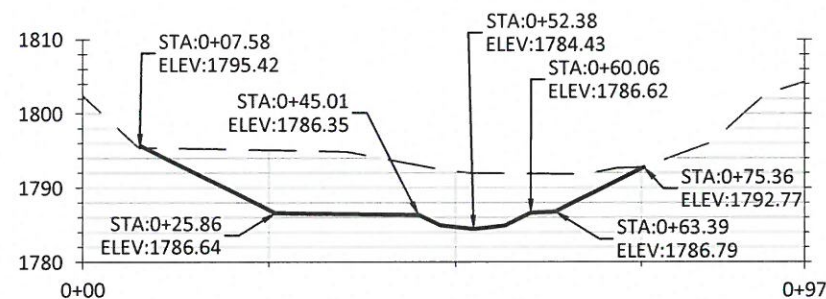
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GRADING CROSS-SECTIONS
(2 OF 5)

SHEET

11 OF 22

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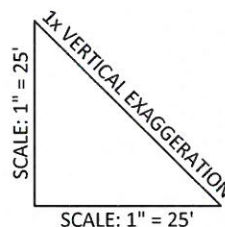


LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



NO.	BY	DATE	REVISION DESCRIPTION

NS, DM	MB, JP, DM	JP
DRAWN	DESIGNED	CHECKED
DM	12/16/2019	170232
APPROVED	DATE	PROJECT

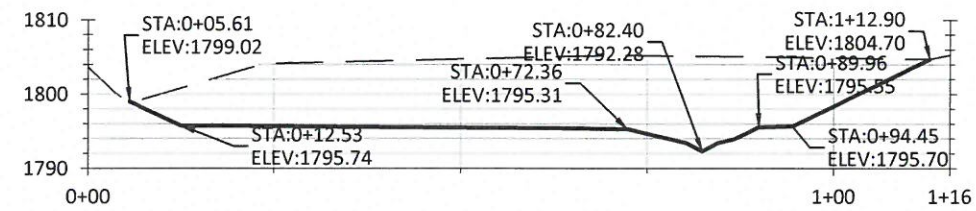
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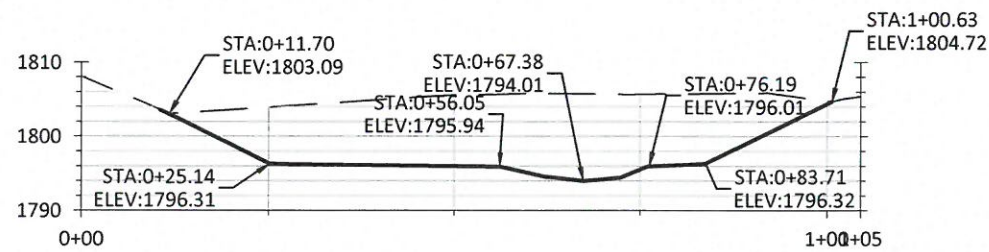
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GRADING CROSS-SECTIONS (3 OF 5)

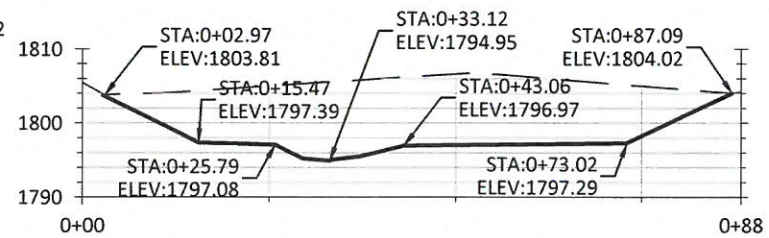
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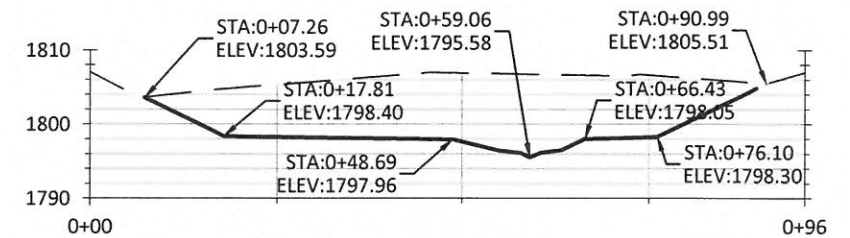
STA 19+09



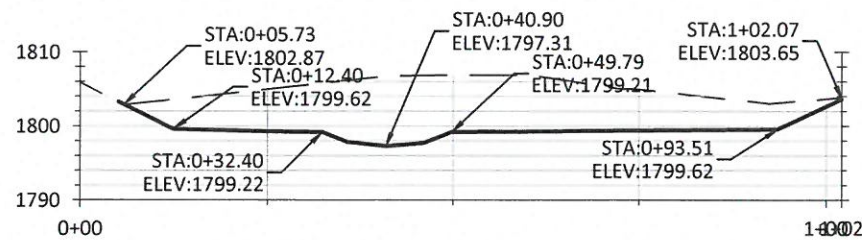
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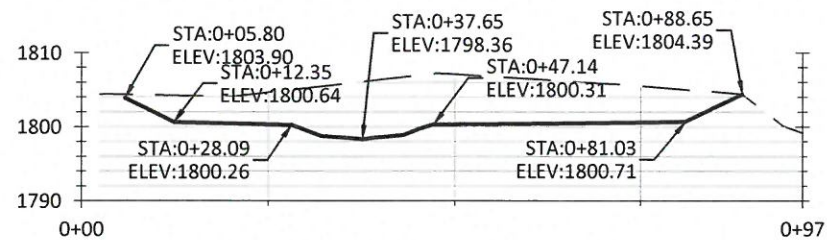
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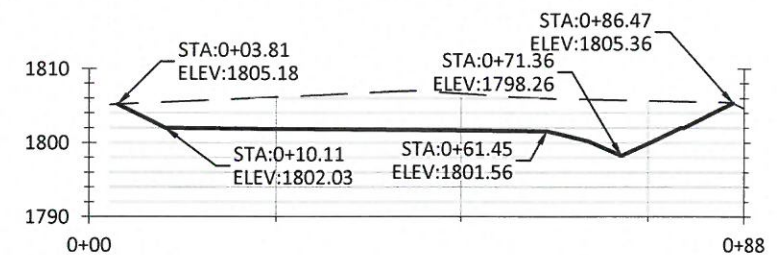
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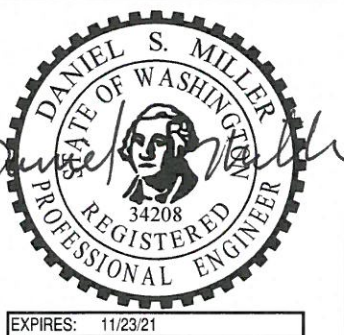
STA 21+13



STA 21+45



STA 22+38

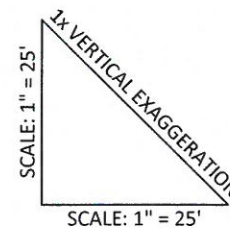


LEGEND

--- EXISTING GROUND
— PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



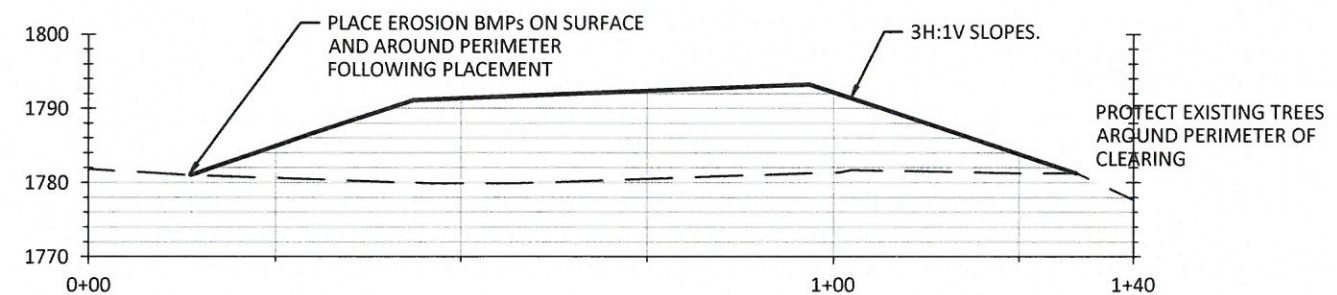
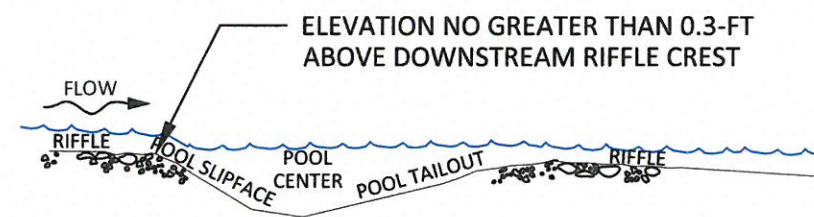
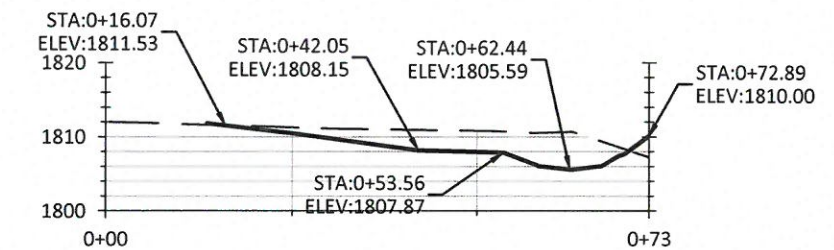
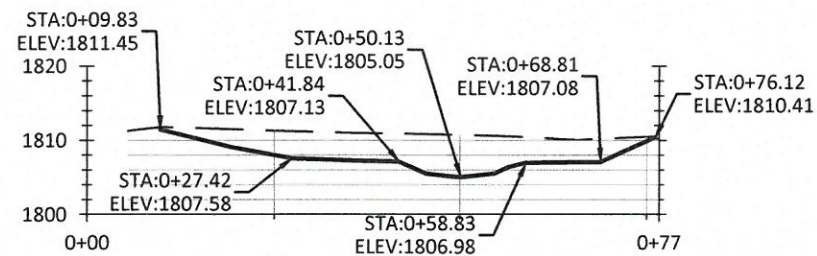
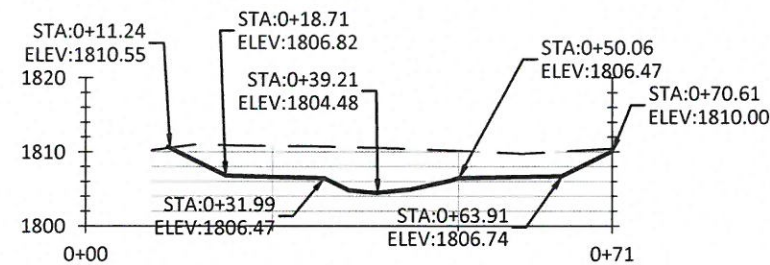
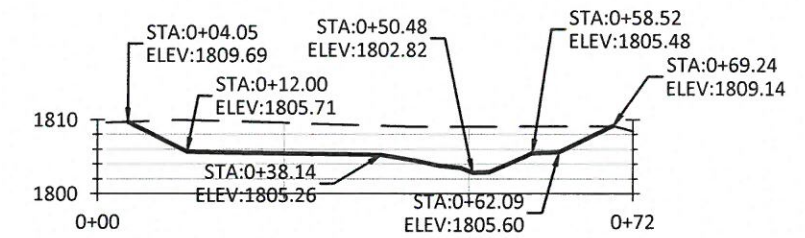
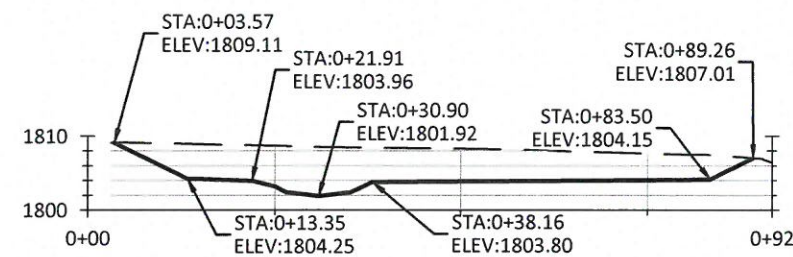
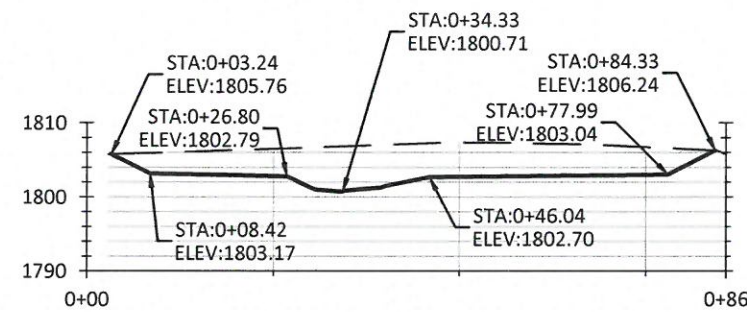
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APPROVED	DATE	PROJECT

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GRADING CROSS-SECTIONS (4 OF 5)	SHEET 13 OF 22
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1 EAST-WEST SECTION - EAST SPOILS AREA
14 1" = 5'

$$1'' = 5$$

LEGEND

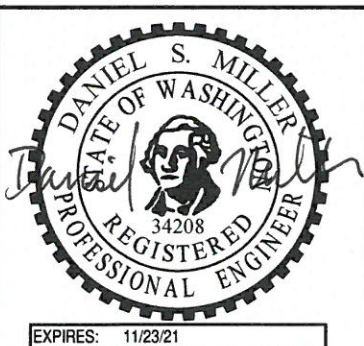
— — — EXISTING GROUND
———— PROPOSED GROUND

PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.

SCALE: 1" = 25'

[illegible]

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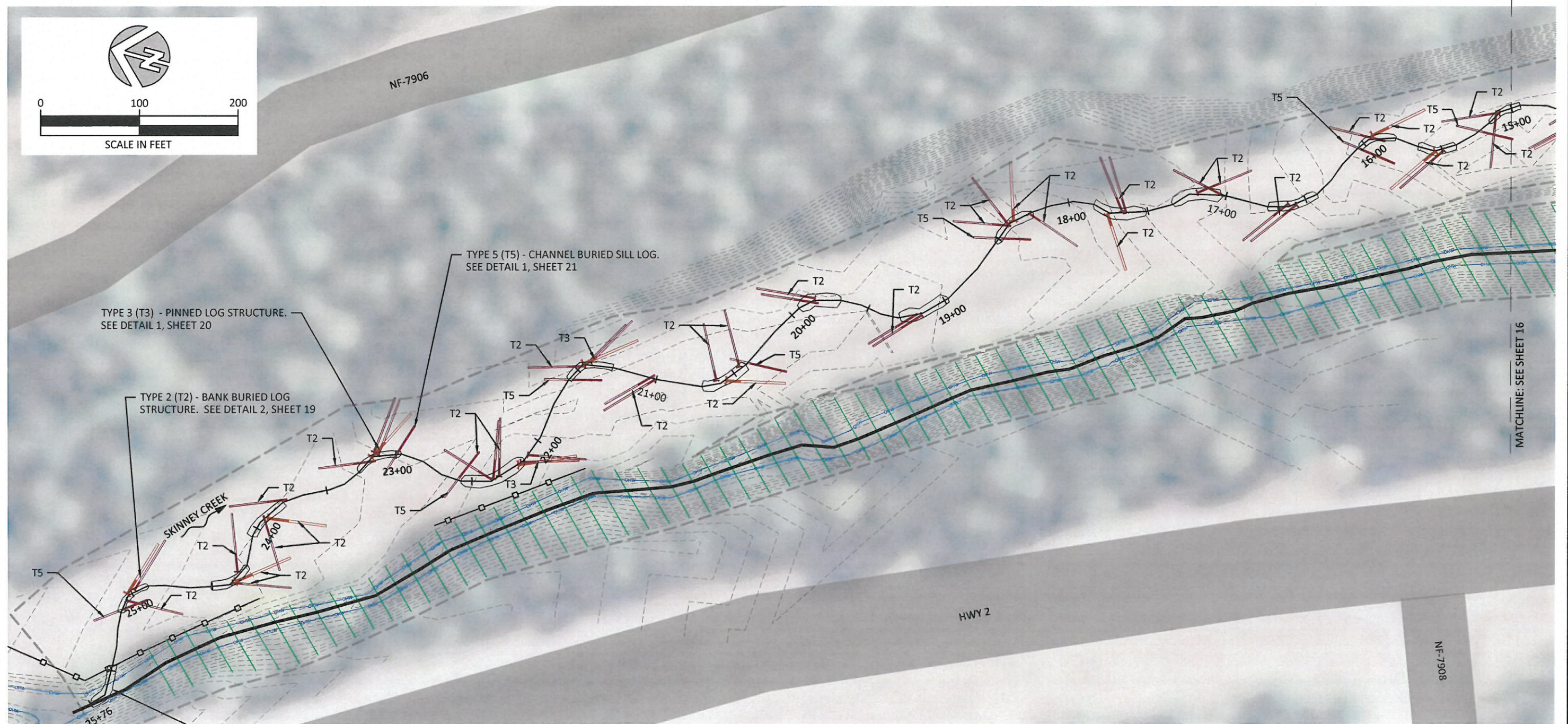
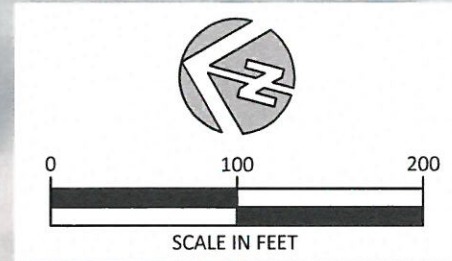
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GRADING CROSS-SECTIONS (5 OF 5)

SHEET

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PLAN



TYPE 1 - BANK BURIED LOG STRUCTURE .
SEE DETAIL 1, SHEET 19

- EXISTING CONTOURS (1FT)
PROPOSED CONTOURS (1FT)
5+00
PROPOSED CHANNEL ALIGNMENT AND STATIONING
ORDINARY HIGH WATER
LIMITS OF DISTURBANCE

LEGEND

- TEMPORARY SILT FENCE, SEE DETAIL 2, SHEET 4
TEMPORARY ACCESS
PROPOSED LARGE WOOD PLACEMENT, SEE SHEETS 17 & 19 THROUGH 21
SPOILS DISPOSAL AREA

NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE

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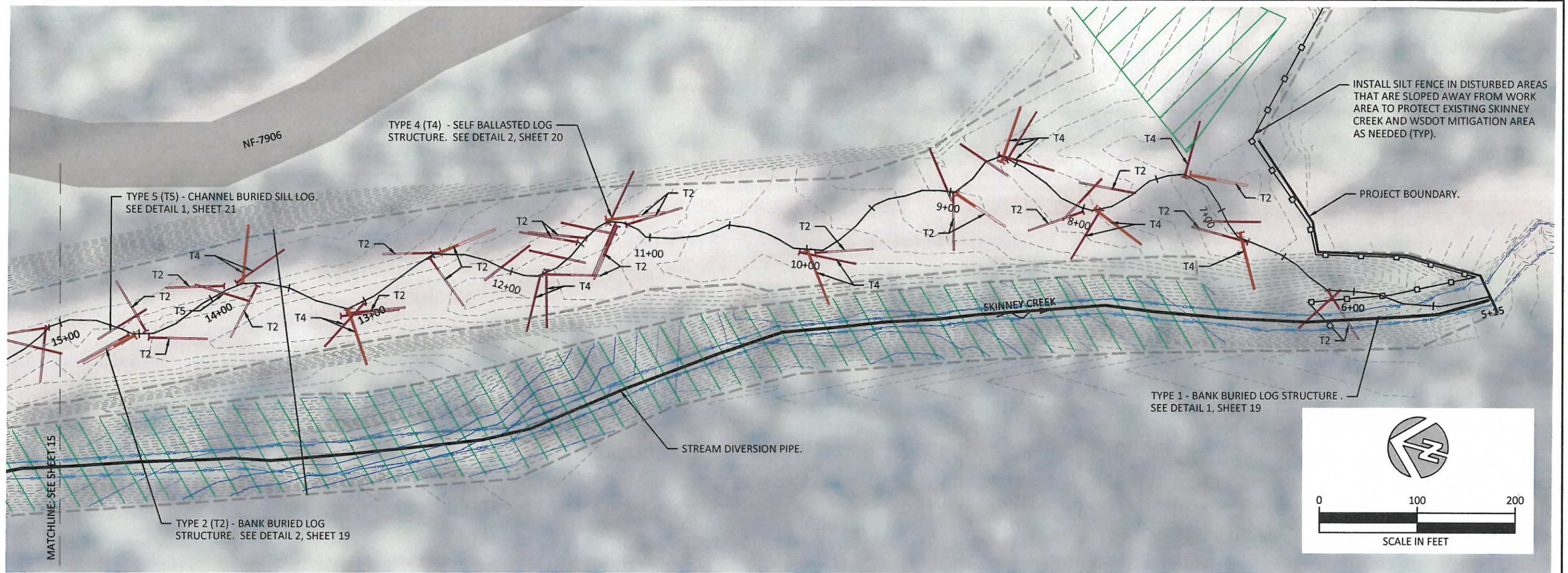
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SHEET
CHANNEL LWM PLACEMENTS (1 OF 2)
15 OF 22

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NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE

PLAN

LEGEND

- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- PROPOSED CHANNEL ALIGNMENT AND STATIONING
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- TEMPORARY SILT FENCE, SEE DETAIL 2, SHEET 4

- PROPOSED LARGE WOOD PLACEMENT, SEE SHEETS 17 & 19 THROUGH 21
- TEMPORARY STAGING AREA
- SPOILS DISPOSAL AREA

PROFILE

SCALE: 1" = 50'
2x VERTICAL EXAGGERATION
SCALE: 1" = 100'



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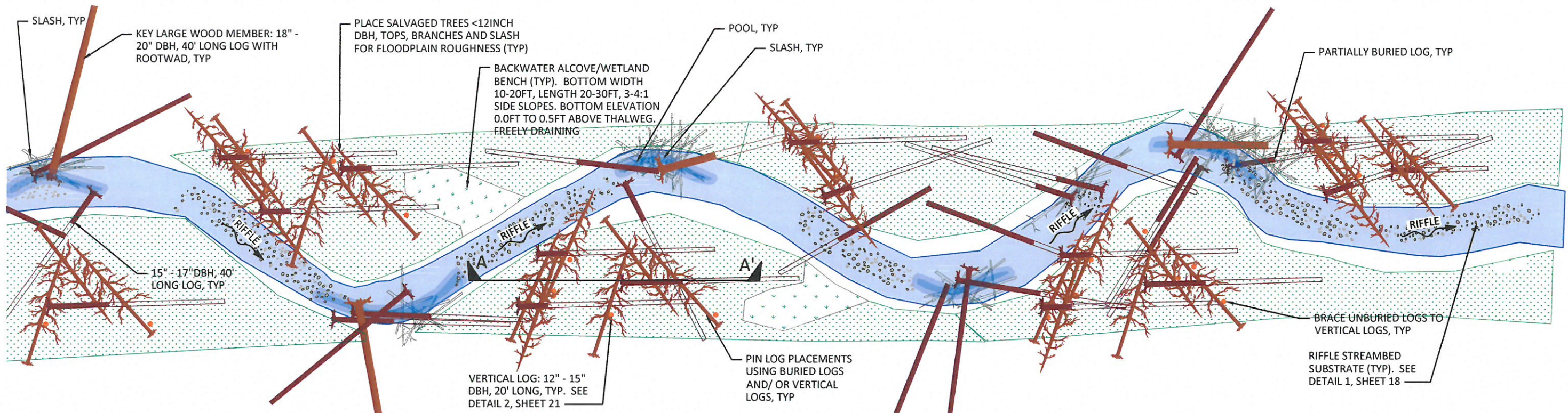


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CHANNEL LWM PLACEMENTS
(2 OF 2)

SHEET
16 OF 22

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LEGEND

- BACKWATER ALCOVE/WETLAND BENCH
- FLOODPLAIN TERRACE

PLAN VIEW - TYPICAL FLOODPLAIN ROUGHNESS WOOD PLACEMENT
1" = 20'

NOTES:
FLOODPLAIN ROUGHNESS WOOD SHALL BE PLACED ALONG ENTIRE LENGTH OF NEW SKINNEY CREEK CHANNEL AND FLOODPLAIN.

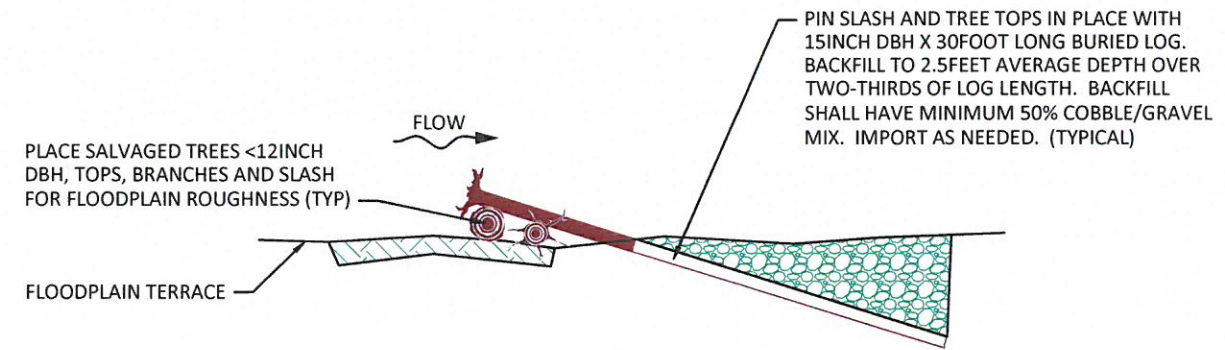
PLACE FLOODPLAIN ROUGHNESS WOOD PLACEMENT QUANTITIES AT 25 TREE TOPS AND 14 BURIED LOGS PER 300FT OF CHANNEL LENGTH.

TWO WETLAND ALCOVES PER 300FT OF CHANNEL LENGTH.

SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE.

TREES AND SHRUBS WITHIN CLEARING LIMITS SHALL BE SALVAGED AND REUSED AS LOGS, FLOODPLAIN ROUGHNESS AND SLASH IN HABITAT STRUCTURES. TO THE EXTENT PRACTICABLE, PRESERVE BRANCHES AND ROOTS ON TREES REMOVED DURING CLEARING AND GRUBBING.

WOOD STRUCTURES SHALL BE STABILIZED UNLESS OTHERWISE APPROVED BY THE OWNER OR OWNERS REPRESENTATIVE. STABILIZATION METHODS INCLUDE PARTIAL BURIAL, BRACING AGAINST STANDING TREES, OR USE OF VERTICAL LOGS. FULLY THREADED ROD SHALL BE USED AT LOG TO VERTICAL LOG CONNECTIONS (SEE DETAIL 2, SHEET 19).



SECTION VIEW A-A': FLOODPLAIN ROUGHNESS WOOD
NOT TO SCALE



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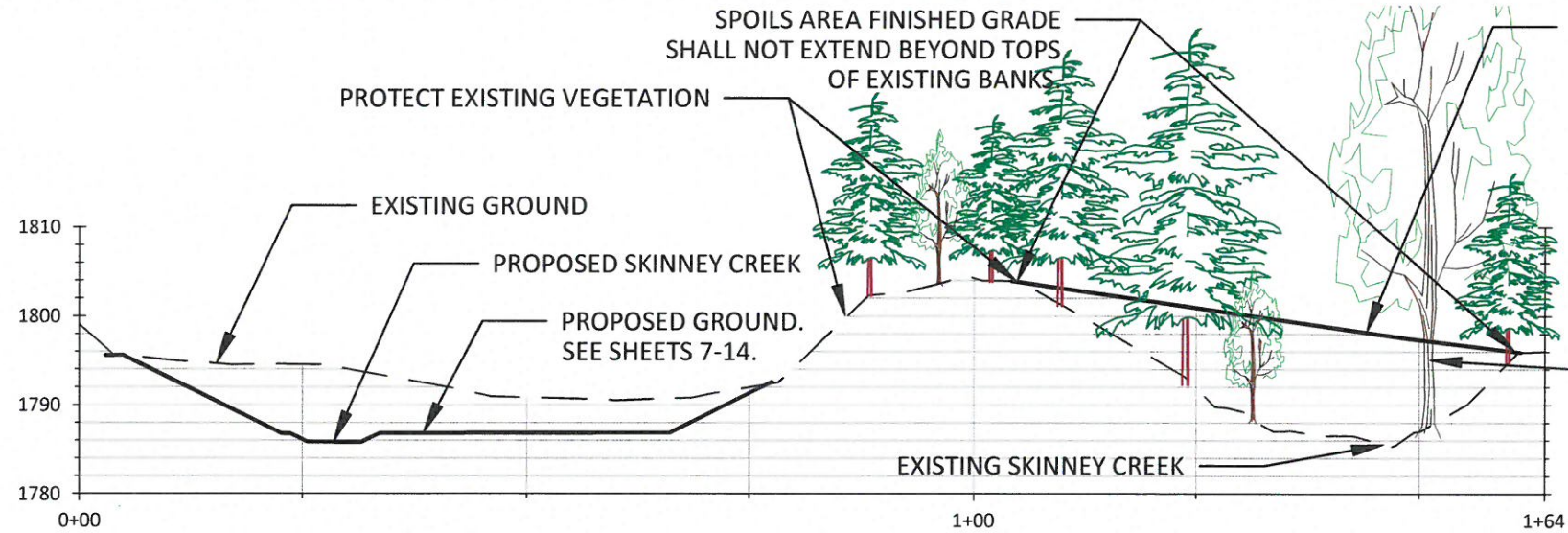


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**FLOODPLAIN LWM
PLACEMENT**

NOTE:

- ROUGHEN SLOPES STEEPER THAN 20% BY DRIVING DOZER UP AND DOWNSLOPE LEAVING TRACK CLEAT DEPRESSIONS ORIENTED PARALLEL TO CONTOUR.
- APPLY EROSION CONTROL BMP REQUIRED BY APPLICABLE PERMITS AND REGULATIONS.
- CONTRACTOR SHALL PLACE SEED AND FABRIC OR MULCH ON DISTURBED SURFACES. REPLANTING WILL BE COMPLETED BY OTHERS.



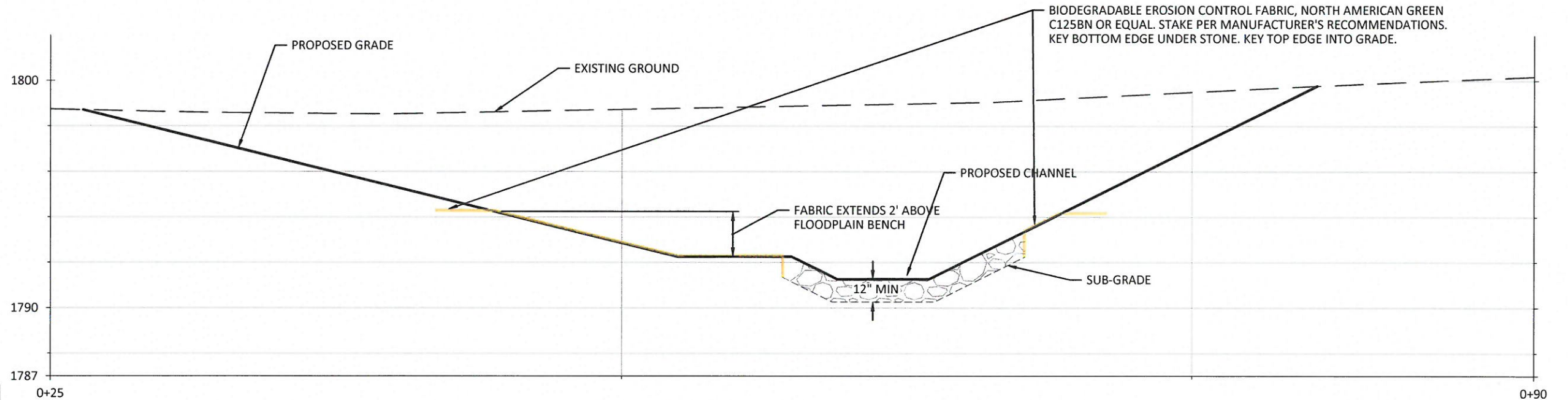
SPOILS AREA - PROPOSED GROUND:

- FINISHED GRADE SHALL MATCH TO TOPS OF EXISTING SKINNEY CREEK BANKS. FINISHED GRADE MAY BE MOUNDED AT MAX SLOPE OF 3H:1V BETWEEN TOPS OF BANKS.
- PLACE IN LIFTS NO GREATER THAN 18-INCH THICKNESS. COMPACT WITH CONSTRUCTION TRAFFIC

TREE SALVAGE IN SPOILS PLACEMENT AREA:

- EXISTING TREES LOCATED IN FILL DEPTHS LESS THAN 18INCHES BELOW FINISHED GRADE SHALL BE LEFT IN PLACE.
- EXISTING CONIFERS IN FILL DEPTHS 18INCHES OR GREATER SHALL BE REMOVED WHOLE WITH ROOTS INTACT, SALVAGED AND USED IN LOG STRUCTURES OR FLOODPLAIN ROUGHNESS WOOD.
- EXISTING DECIDUOUS TREES IN FILL DEPTHS 18INCHES OR GREATER SHALL BE REMOVED. TOPS SHALL BE USED FOR SLASH OR FLOODPLAIN ROUGHNESS WOOD.

1 PROJECT CROSS SECTION
1" = 20' (TREES NOT TO SCALE)



NOTES:

- 1) SUBSTRATE SHALL BE PLACED IN STREAMBED FROM DOWNSTREAM PROJECT LIMIT TO STATION 2+40.
- 2) FOR STATION 2+40 TO UPSTREAM PROJECT LIMIT, CONTRACTOR SHALL COORDINATE OPERATIONS AND SCHEDULE AS NECESSARY TO ALLOW ENGINEER SUFFICIENT TIME TO INSPECT SOILS EXPOSED AT FINISHED GRADE AND DETERMINE IF OPTIONAL ADDITIVE ITEM TO EXCAVATE AND PLACE SUBSTRATE IS REQUIRED. OWNER SHALL PROVIDE WRITTEN APPROVAL PRIOR TO ANY WORK OR IMPORT OF MATERIAL.

SUBSTRATE GRADATION

D₁₀₀: 9"
D₈₄: 6"
D₅₀: 5"
D₁₆: 1.5"
D₁₀: SILT AND SAND

STONE SHALL HAVE SPECIFIC GRAVITY GREATER THAN 2.65 AND BE ROUNDED, SOUND AND DURABLE.

GRADATION SHALL BE COMPRISED OF STONE MEETING WSDOT STANDARD SPECIFICATIONS:

- WSDOT 9-03.11(2) COBBLES
- WSDOT 9-03.11(1) STREAMBED SEDIMENT.

2 STREAMBED SUBSTRATE
1" = 5'



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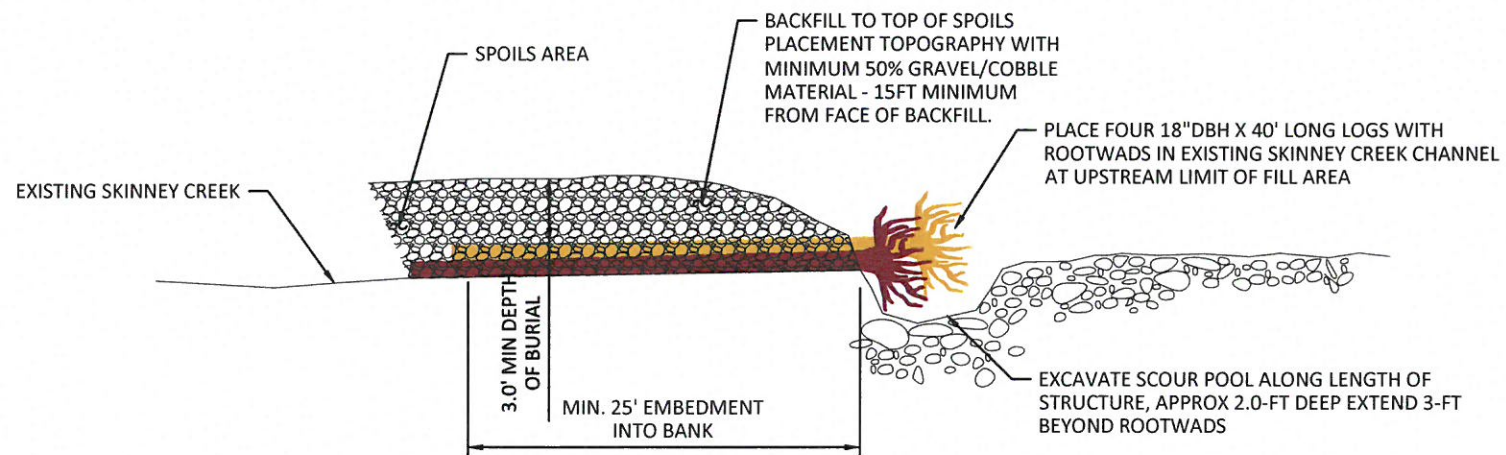
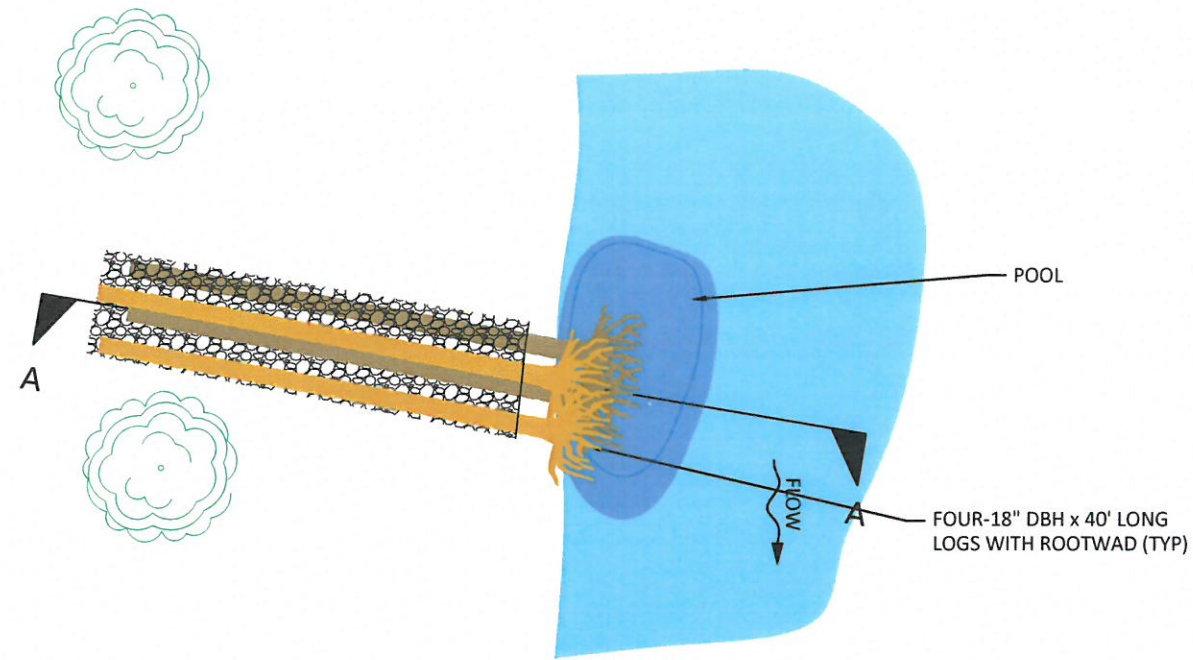
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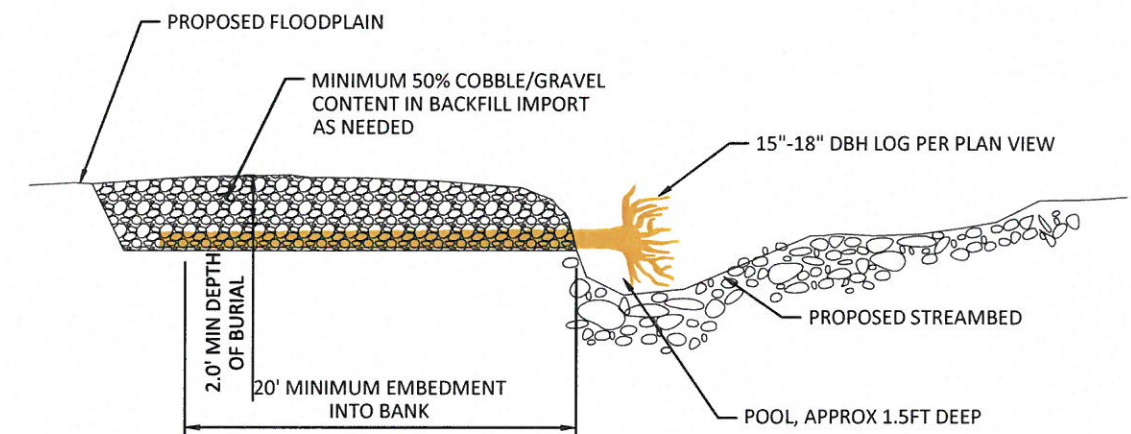
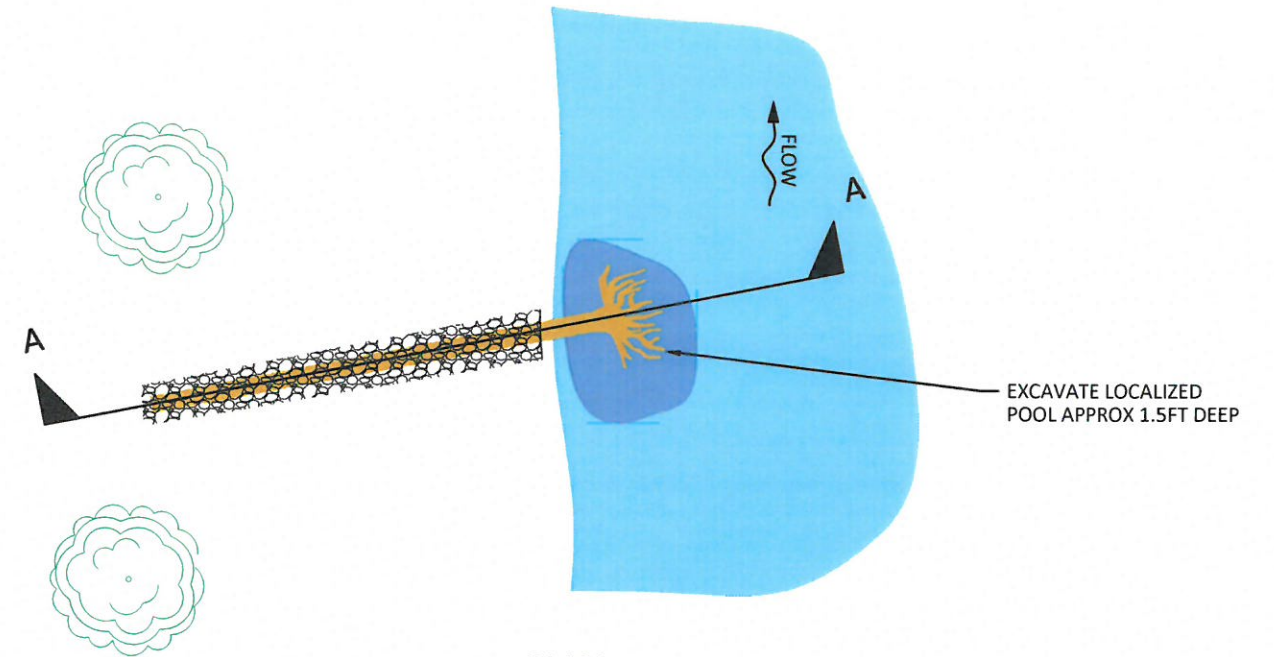
CROSS SECTIONS - CHANNEL AND SPOILS AREA	SHEET 18 OF 22
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SECTION A-A

1 TYPE 1 LWM STRUCTURE DETAIL
19 NOT TO SCALE

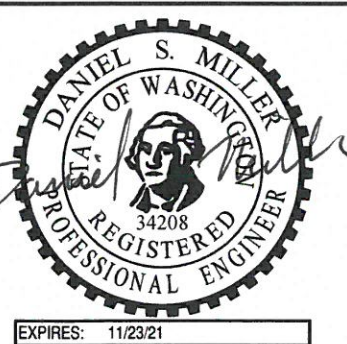


SECTION A-A

2 TYPE 2 LWM STRUCTURE DETAIL
19 NOT TO SCALE

NOTES:

SPECIFIC ORIENTATION OF LOGS AND BALLAST MATERIALS MAY VARY FROM TYPICAL DRAWINGS DEPENDING ON SIZE AND SHAPE OF MATERIAL DELIVERED OR SALVAGED.



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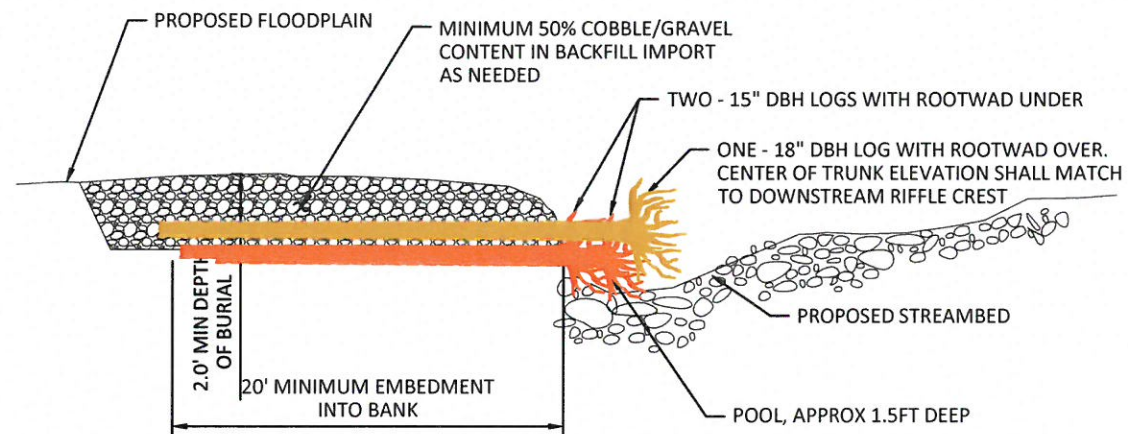
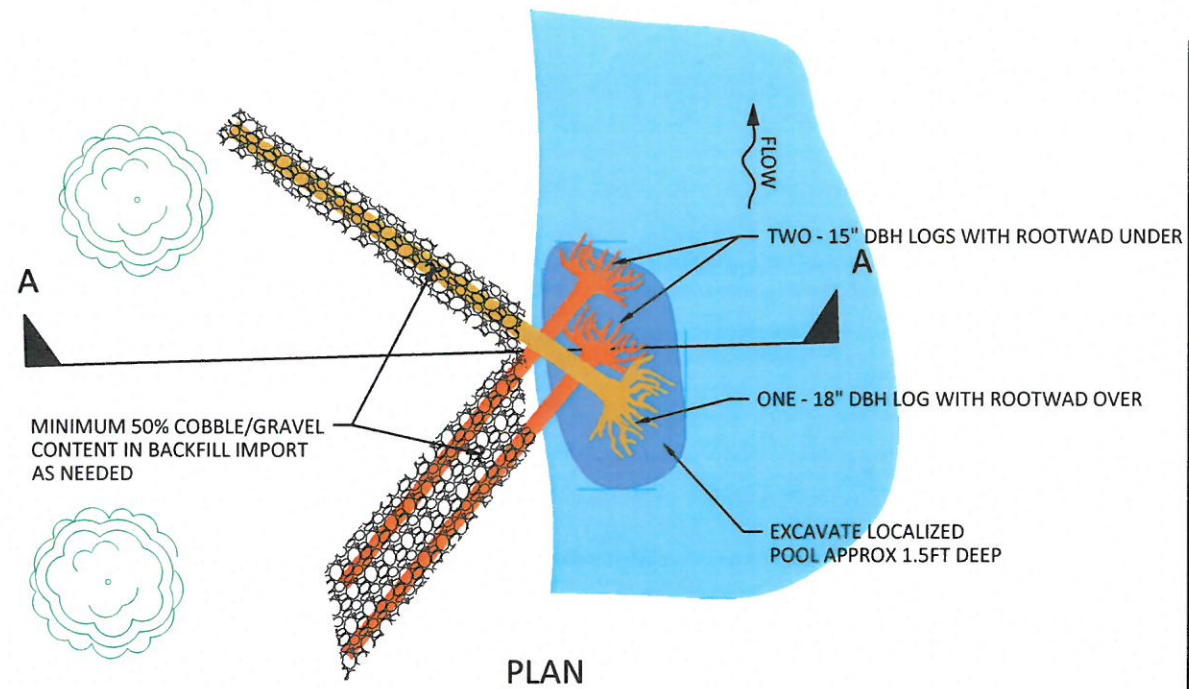
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DETAILS - LWM PLACEMENT

SHEET

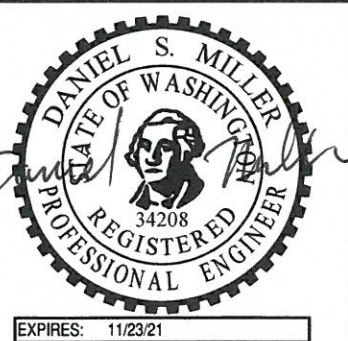
19 OF 22

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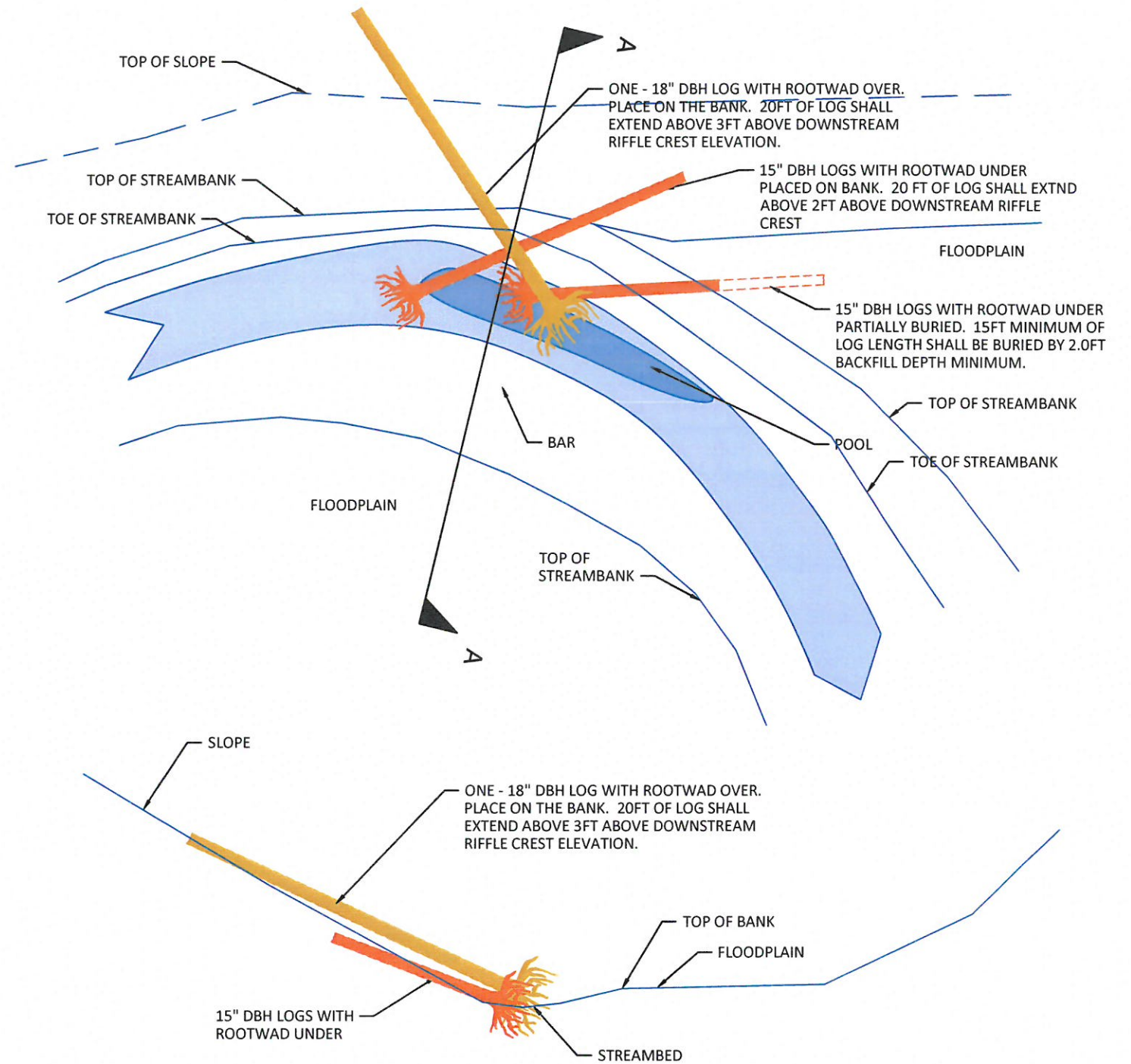
SECTION A-A

1
20 TYPE 3 LWM STRUCTURE DETAIL
NOT TO SCALE



NOTES:

SPECIFIC ORIENTATION OF LOGS AND BALLAST MATERIALS MAY VARY FROM TYPICAL DRAWINGS DEPENDING ON SIZE AND SHAPE OF MATERIAL DELIVERED OR SALVAGED.



2
20 TYPE 4 LWM STRUCTURE DETAIL
NOT TO SCALE

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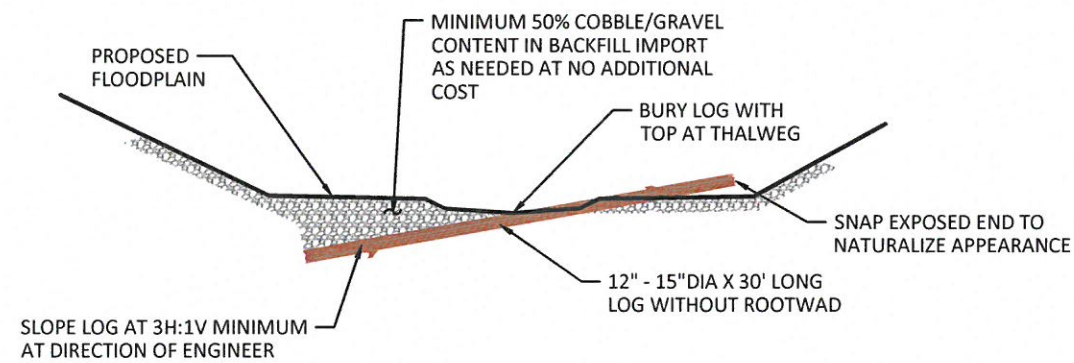
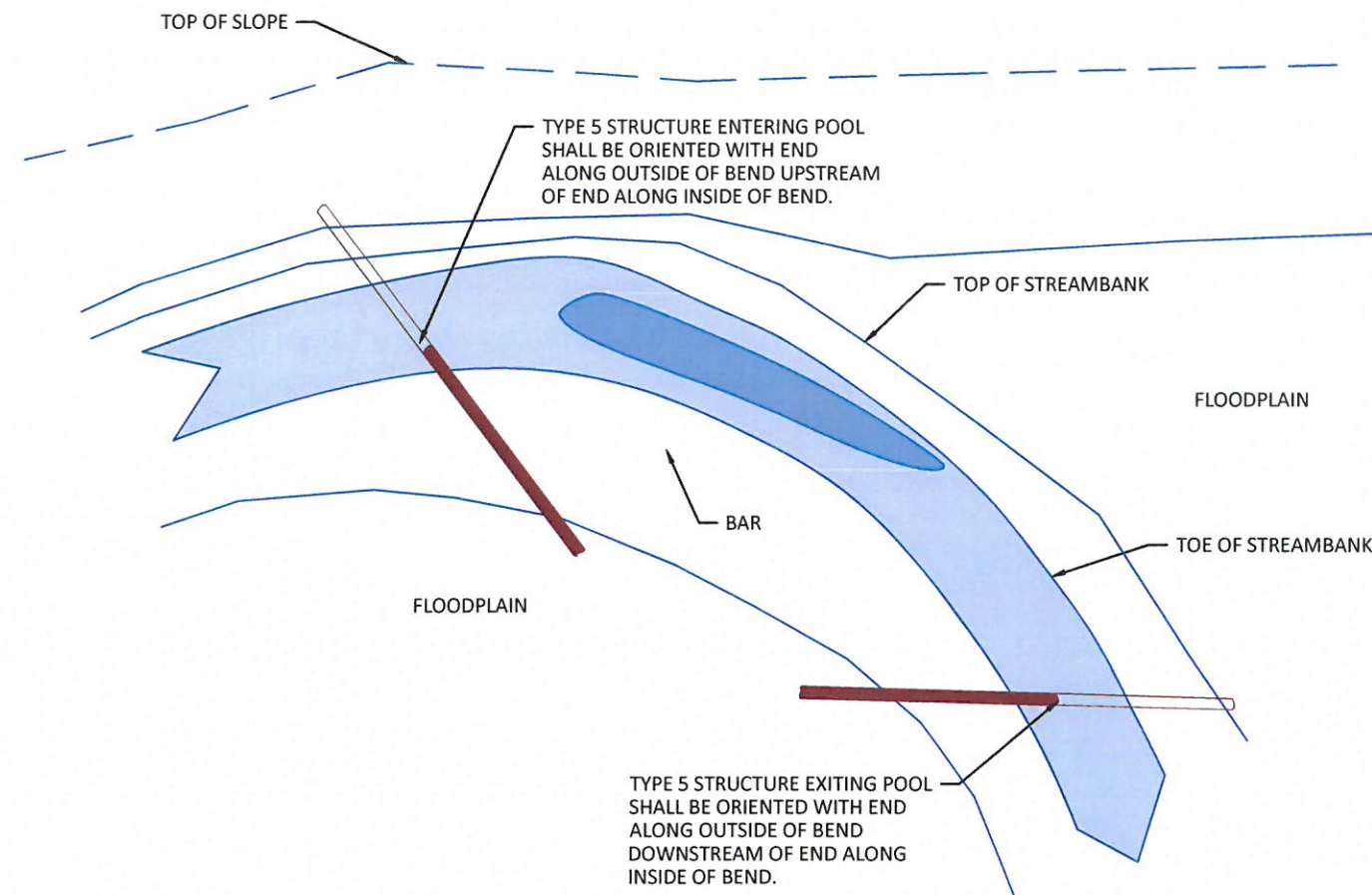
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DETAILS - LWM PLACEMENT

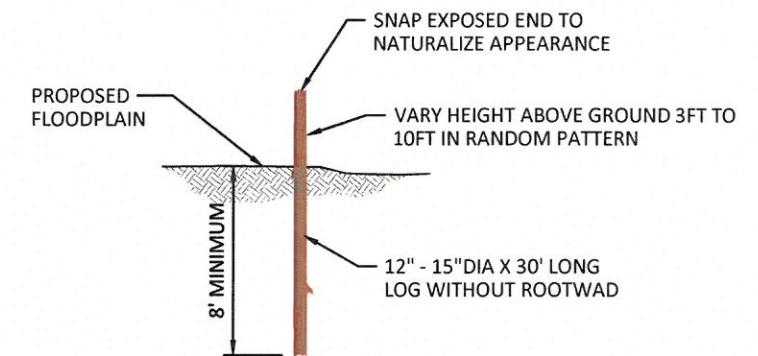
SHEET

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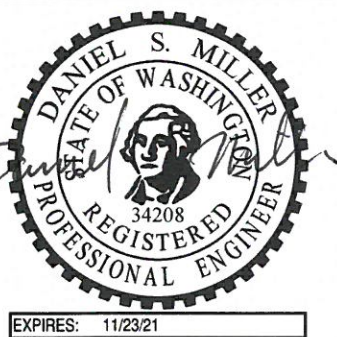
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1
21 TYPE 5 LWM STRUCTURE DETAIL
NOT TO SCALE




2
21 VERTICAL LOG EMBEDMENT DETAIL
NOT TO SCALE



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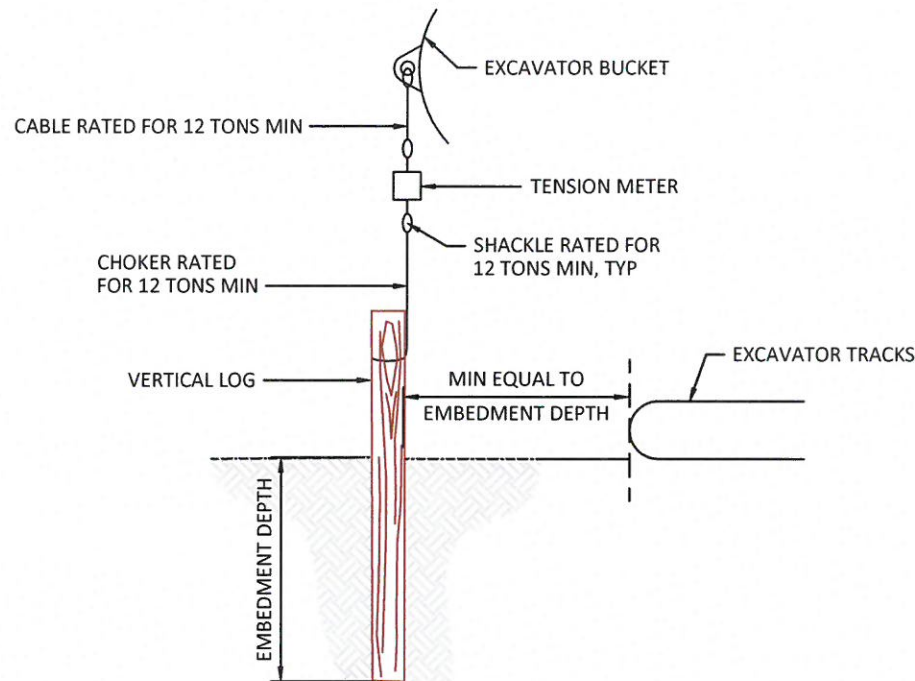
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DETAILS LWM PLACEMENT	SHEET 21 OF 22
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VERTICAL LOGS

ALL VERTICAL LOGS SHALL BE INSTALLED USING VIBRATORY PILE DRIVING EQUIPMENT. INSTALLATION BY EXCAVATION, HAMMERING OR VIBRATORY PLATE COMPACTOR SHALL NOT BE ALLOWED.

ACCEPTABLE MINIMUM VIBRATORY PILE DRIVING EQUIPMENT SHALL INCLUDE: 1) HMC MOVAX SONIC SIDE GRIP VIBRATORY PILE DRIVER - MODEL SP80, 2) GRIZZLY MG90, OR 3) EQUIVALENT AS APPROVED BY ENGINEER.

VERTICAL LOGS SHALL BE A MAXIMUM OF 16" DIAMETER AT BREAST HEIGHT, WITH NO BARK.

RIGGING

RIGGING FOR VERTICAL LOG TESTING SHALL CONFORM TO THE TENSION SCALE MANUFACTURER'S RECOMMENDATIONS.

CHOKERS, CABLES AND SHACKLES SHALL HAVE MINIMUM WORKING LOAD RATING OF 12 TONS. FITTINGS SHALL BE SIZED ACCORDINGLY

TESTING

TESTING OF VERTICAL LOGS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER. ENGINEER SHALL SELECT LOGS TO BE TESTED.

EACH VERTICAL LOG TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF VERTICAL LOG AS POSSIBLE. RECORD THE VERTICAL LOG DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE VERTICAL LOG. UP TO A TOTAL OF THREE LOADINGS MAY BE REQUIRED AT EACH EMBEDMENT DEPTH.

PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS TO BE DETERMINED IN THE FIELD. AS A GUIDELINE, TEST EMBEDMENT DEPTHS MAY INCLUDE 6', 8', 10', AND 12'.

EXCAVATOR CONDUCTING PULL OUT LOADING SHALL BE POSITIONED NO CLOSER THAN EMBEDMENT DEPTH OF VERTICAL LOG IF POSSIBLE. IF A CLOSER POSITIONING IS REQUIRED, EXCAVATOR SHALL BE NO CLOSER THAN THAT REQUIRED TO GENERATE DESIRED LOADING WITH DISTANCE FROM VERTICAL LOG NOTED IN THE TEST RECORD.

PULL OUT RESISTANCE READING SHALL BE COMPARED AGAINST EXCAVATOR MAX LIFT OFFSET TABLE.

10% OF VERTICAL LOGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THE ENGINEER MAY REQUIRE THAT UP TO 25% OF THE VERTICAL LOGS SHALL BE PROOF TESTED AT NO ADDITIONAL COST.

1
22

VERTICAL LOG PULLOUT TESTING

NOT TO SCALE



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DETAILS - VERTICAL LOG PULLOUT TEST	SHEET 22 OF 22
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