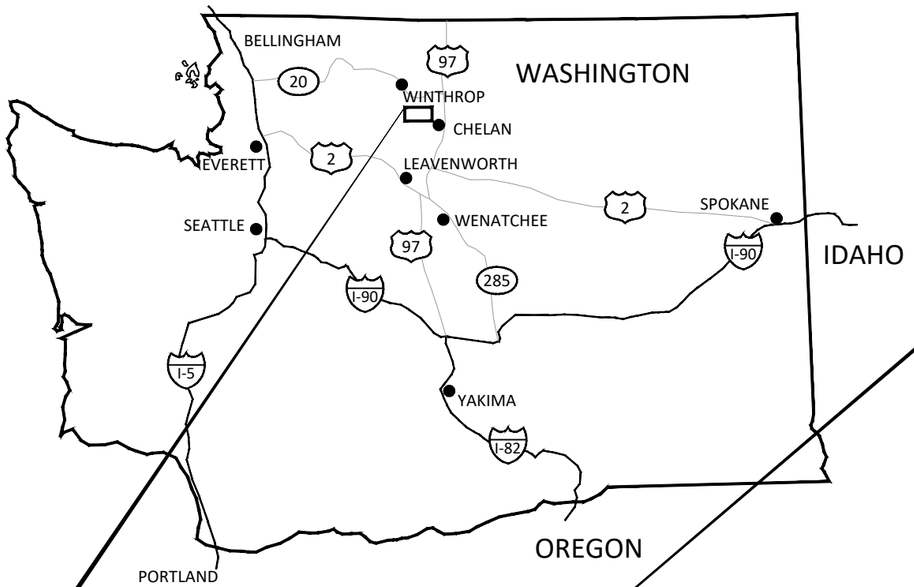
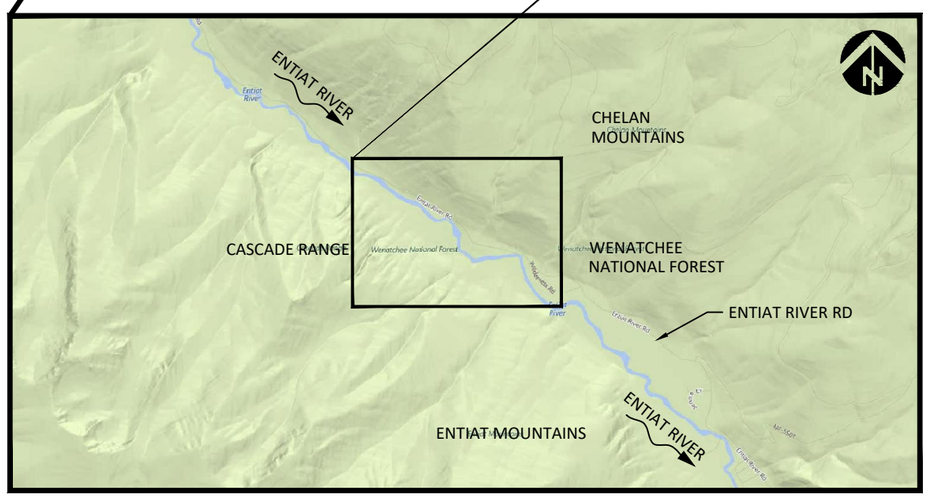
UPPER BURNS & ANGLE POINT HABITAT ENHANCEMENT PROJECT AREAS

CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION

Final Design, January 21, 2021



STATE MAP - WASHINGTON
NOT TO SCALE

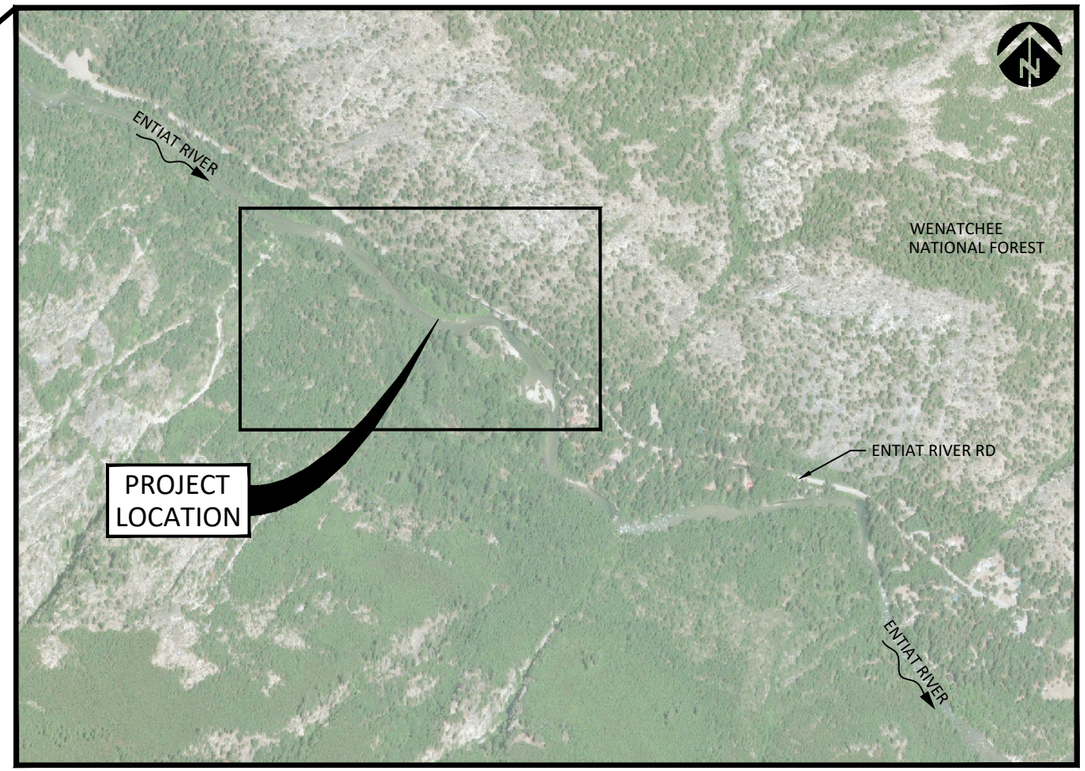


VICINITY MAP
NOT TO SCALE

SITE LOCATION

LATITUDE 47° 54' 16" N
LONGITUDE 120° 28' 27" W

CHELAN COUNTY, WA



LOCATION MAP
SCALE - 1" = 1000'

Yakama Nation Fisheries

YAKAMA NATION FISHERIES
1885 S. WENATCHEE AVE.
WENATCHEE, WA. 98801

SHEET INDEX

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED
PROFESSIONAL ENGINEER
1/21/21

NO.	DATE	REVISION DESCRIPTION

CP	MR	DM
DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
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Upper Burns & Angle Point Habitat Enhancement Project
Confederated Tribes and Bands of The Yakama Nation
Chelan County, WA

inter·fluve
501 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
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TITLE SHEET

SHEET
1 OF 25

IT IS STRONGLY SUGGESTED THAT THE CONTRACTOR ATTEND A PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE OWNER AND OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

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 SHALL PREVAIL.

IN CASE OF DISCREPANCY, BETWEEN NOTES, LOCAL REGULATIONS, OR OTHER CONTRACT DOCUMENTATION, CONTRACTOR SHALL OBTAIN CLARIFICATION/DIRECTION FROM OWNER.

EXISTING DATA

TOPOGRAPHIC SURVEY IS REFERENCED TO NAD83 WASHINGTON STATE PLANE, NORTH ZONE US FEET NAVD 88.

PROPERTY BOUNDARIES PROVIDED BY CHELAN COUNTY.

WETLAND AND ORDINARY HIGH WATER (OHW) BOUNDARIES DISPLAYED IN THIS SET ARE THE RESULT OF A WETLAND ASSESSMENTS PERFORMED BY HAMER ENVIRONMENTAL IN OCTOBER 2019 AND NOVEMBER 2020.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (5.0.7). MODEL CALIBRATED USING SURVEYED WATER SURFACE ELEVATIONS AND EXISTING HIGH WATER MARKS.

SOILS

ENTIAT RIVER ALLUVIUM (COBBLE/GRAVEL/SAND) AND FLOODPLAIN SOILS (SILT/SAND).

SIX SHALLOW TEST PITS WERE EXCAVATED BY HAND. LOCATIONS ARE SHOWN ON THE PLANS. A SUMMARY MEMO IS AVAILABLE UPON REQUEST FROM YAKAMA NATION

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. THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO COST TO THE OWNER.

WDFW IN-WATER WORK PERIODS

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

FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE SUPERVISED BY A QUALIFIED FISHERIES/AQUATIC BIOLOGIST EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONID FISHES FROM CONSTRUCTION SITES.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA SHALL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF WATER AND HELD WITHIN NO LONGER THAN 10 MINUTES.

CAPTURED FISHES SHALL BE IMMEDIATELY RELEASED INTO THE RIVER.

CULTURAL RESOURCES

IF ANY ARCHAEOLOGICAL RESOURCES AND/OR ARTIFACTS ARE ENCOUNTERED DURING CONSTRUCTION ALL CONSTRUCTION ACTIVITY SHALL IMMEDIATELY CEASE AND THE OWNER SHALL BE CONTACTED.

TREE SALVAGE

ALL SAPLING AND TREES TO BE REMOVED SHALL BE APPROVED AND CLEARLY MARKED BY THE OWNER'S REPRESENTATIVE.

ALL REMOVED VEGETATION SHALL BE INCORPORATED INTO HABITAT STRUCTURES AS DIRECTED BY THE OWNER'S REPRESENTATIVE. IF EXCESS MATERIAL NEEDS DISPOSAL OUTSIDE OF CHANNEL WORK, IT SHALL BE DISTRIBUTED ON THE FLOODPLAIN AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOTS INTACT AND UTILIZED IN THE SIDE CHANNEL CONSTRUCTION OR IN MAINSTEM WORK AS DIRECTED BY OWNER'S REPRESENTATIVE.

REMOVE SOIL FROM ROOTS OF SALVAGED TREES BEFORE PLACEMENT IN THE WATERWAY.

LIVE TREES

ALL TREES NOT MARKED FOR REMOVAL SHALL BE PRESERVED AND UNDISTURBED. CONSTRUCTION ACTIVITY SHALL NOT DEBARK OR DAMAGE LIVE TREES.

KEEP OUT OF DRIP LINE OF ALL PRESERVED EXISTING TREES.

IMPORTED LOGS

LOGS WILL BE PROVIDED BY THE OWNER. CARE SHALL BE EXERCISED TO PRESERVE ROOTS.

CONSTRUCTION ACCESS

THE CONTRACTOR IS ADVISED THAT ACCESS TO THE PROJECT SITE AND THE SOIL DISPOSAL AREA WILL BE BY RURAL ROADS OF LIMITED WIDTH.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS, AND PROVIDING REQUIRED TRAFFIC CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, SIGNAGE AND FLAGGERS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO THE CONSERVATION MEASURES DETAILED IN THE FOREST SERVICE ROAD USE PERMIT.

ALL EQUIPMENT, MATERIALS AND PERSONNEL SHALL REMAIN WITHIN THE LIMITS OF DISTURBANCE.

THE CONTRACTOR SHALL KEEP THE WORK AREAS IN A NEAT AND CLEAN CONDITION FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.

TEMPORARY ACCESS ROUTES IN AREAS PRONE TO INUNDATION DURING THE IN-WATER WORK WINDOW SHALL BE DECOMMISSIONED BEFORE THE END OF THE IN-WATER WORK WINDOW.

WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED FOR SITE ACCESS, VEGETATION SHALL BE CUT TO GROUND LEVEL (NOT GRUBBED).

CONSTRUCTION STAKING

THE OWNER OR DESIGNATED REPRESENTATIVE WILL INSTALL STAKES AND OR FLAGGING TO DELINEATE WETLANDS, EQUIPMENT ENTRY AND EXIT POINTS, STAGING AND STOCKPILE AREAS, AND PROJECT LIMITS. THE OWNER WILL INSTALL GRADE STAKES, AND ELEVATION CONTROL POINTS. THE CONTRACTOR SHALL BE RESPOSIBLE FOR REPLACING DAMAGED OR MISSING STAKES.

CONTRACTOR SHALL MEET WITH THE OWNER AND OWNER'S REPRESENTATIVE TO DEFINE AND MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED. LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOTWADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, AND MATERIAL SIZE.

STAGING, STORAGE, AND STOCKPILE AREAS

NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, SLASH, GRAVEL, AND TOPSOIL MAY BE STAGED WITHIN THE 100-YEAR FLOODPLAIN AT STOCKPILE AREAS SHOWN IN PLANS. CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE SHALL BE 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND, OR ON AN ADJACENT ESTABLISHED ROAD AREA. INSTALL, MONITOR, AND MAINTAIN BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT OR INTERCEPT CONTAMINANTS FROM ENTERING STREAM OR FLOODPLAIN.

EXCAVATED MATERIALS SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION WITHIN THE STOCKPILE AREA.

ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, SHALL BE REMOVED TO A LOCATION OUTSIDE OF THE 100-YEAR FLOODPLAIN FOR DISPOSAL.

EQUIPMENT

MECHANIZED EQUIPMENT AND VEHICLES SHALL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE EFFECTS ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES; MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES; TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS). ALL VEHICLES AND OTHER MECHANIZED EQUIPMENT SHALL BE:

- STORED, FUELED, AND MAINTAINED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND OR ON AN ADJACENT, ESTABLISHED ROAD AREA
- REFUELED IN A VEHICLE STAGING AREA PLACED 150 FEET OR MORE FROM A NATURAL WATERBODY OR WETLAND, OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT, ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS)
- BIODEGRADABLE LUBRICANTS AND FLUIDS SHALL BE USED IN EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.
- INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND
- THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN GREASE FREE.

ABBREVIATIONS

APPROX	APPROXIMATE
CY	CUBIC YARDS
°	DEGREES
DIA or Ø	DIAMETER
DBH	DIAMETER AT BREAST HEIGHT
EA	EACH
EL or ELEV	ELEVATION
ESC	EROSION AND SEDIMENT CONTROL
EXIST	EXISTING
FT or '	FEET
FTR	FULLY THREADED ROD
HORIZ	HORIZONTAL
IN or "	INCH
INV	INVERT
LWM	LARGE WOODY MATERIAL
MAX	MAXIMUM
MIN	MINIMUM
OHW	ORDINARY HIGH WATER
%	PERCENT
RMx	RIVER MILE x
STA	STATION
TBD	TO BE DETERMINED
TYP	TYPICAL
VERT	VERTICAL
WSE	WATER SURFACE ELEVATION
YR	YEAR

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GENERAL NOTES & ABBREVIATIONS

SHEET 2 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
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PROFESSIONAL ENGINEER
1/21/21

EARTHWORK QUANTITIES

Item	Units	Main Stem	Side Channel			Total
			Lower	Middle	Upper	
Channel Excavation Including Haul	CY	0	430	2,225	2,070	4,725
Salvage Cobble	CY	700	230	0	0	930
Contingency - Additional Side Channel Excavation	CY	0	170	710	870	1,750
Contingency - Place Coarse Substrate in Side Channels	CY	0	170	710	870	1,750

NOTE:

ALL EARTHWORK VOLUMES ARE MEASURED IN-PLACE, AND THE CONTRACTOR IS RESPONSIBLE FOR FACTORING THE EXPANSION OF EXCAVATED MATERIAL AND COMPRESSION OF PLACED MATERIALS

LARGE WOOD QUANTITIES

Item	Units	Main Stem	Side Channel			Total
			Lower	Middle	Upper	
Imported logs with roots (40' L, 18-24" DBH)	EA	96	46	49	60	251
Salvaged whole conifer trees (size varies)	EA	6	8	7	10	31
Imported logs without roots (40' L, 18-20" DBH)	EA	22	19	29	19	89
Imported vertical logs (30' to 40' L, 14-16" DBH)	EA	36	26	40	26	128

IMPACT QUANTITIES

Feature	Impact Area (ac)	Fill (cu-yd)				Removal (cu-yd)		
		Total	Rock	Wood	Soil	Total	Soil	Rock
Entiat River OHW	0.66	785	300	300	185	1,075	340	735
Wetland B	0.19	240	45	70	125	300	300	0
Wetland C	0.10	140	115	15	10	300	300	0
Total	-	1,165	460	385	320	1,675	940	735

NOTE:

IMPACT QUANTITIES TABLE IS ONLY PROVIDED TO ASSIST PERMITTING REVIEW AND SHOULD NOT BE RELIED UPON BY THE CONTRACTOR FOR CONSTRUCTION QUANTITIES (SEE OTHER TABLES, THIS SHEET)

SITE PREPARATION QUANTITIES

Item	Units	Qty
Cofferdams	LF	1,150
Clear and Grub	Acre	5.75

SOIL DISPOSAL QUANTITIES

Item	Acre	Volume (cy)
Onsite Soil Fill Area	0.50	3,540
Offsite Disposal	-	2,935

NOTE:

REPORTED VOLUMES FOR THE ON-SITE SOIL DISPOSAL AREA IS THE MAXIMUM POTENTIAL VOLUME FOR PLACEMENT OF EXCAVATED MATERIAL. EXCAVATED MATERIAL FOR THE LOWER AND UPPER SIDE CHANNELS SHALL BE PLACED IN THE ON-SITE SOIL DISPOSAL AREA. THE EXCAVATED MATERIAL MATERIAL FOR THE MIDDLE SIDE CHANNEL SHALL BE HAULED TO THE PRESTON PIT (2 MILES AWAY), UNLESS OTHERWISE APPROVED BY THE OWNER. TO THE EXTENT PRACTICAL, AVOID HAULING EXCAVATED MATERIAL ACROSS THE TEMPORARY BRIDGE.

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CONSTRUCTION QUANTITIES

SHEET 3 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21

EROSION CONTROL

CONTRACTOR SHALL BE SOLELY RESPONSIBLE AT OWN EXPENSE FOR PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES.

EROSION/SEDIMENTATION CONTROL (ESC) PLAN

THE EROSION AND SEDIMENT CONTROL (ESC) PLAN PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING EROSION CONTROL MEASURES TO COMPLY WITH APPLICABLE REGULATIONS.

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE GUIDELINES FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN. THE CONTRACTOR'S ESC PLAN SHALL BE SUBMITTED TO THE OWNER PRIOR TO MOBILIZATION.

A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION / LANDSCAPING IS ESTABLISHED.

B. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

ESC FACILITIES AS APPROXIMATELY SHOWN ON THIS PLAN ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM.

STABILIZE SOILS AND PROTECT SLOPES

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, PLASTIC SHEETING, HYDROSEED COVERING, OR OTHER APPROVED MEASURES WITHIN THREE 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. MULCH AS SOON AS PRACTICAL ALL DISTURBED AREAS NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION MEASURES. HAY, STRAW, AND MULCH USED ON SITE MUST BE 99.9% WEED-FREE.

DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. REDUCE SLOPE VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS. STORMWATER FROM OFF SITE SHOULD BE HANDLED SEPARATELY FROM STORMWATER GENERATED ON SITE.

AFTER FINAL SITE STABILIZATION

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BMPS ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR INCORPORATED INTO FINISHED GRADING. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED.

DUST CONTROL

THE CONTRACTOR SHALL CONTROL DUST FOR THE DURATION OF THE PROJECT. CONTROL MEASURES SHALL BE IN ACCORDANCE WITH APPLICABLE REGULATIONS.

INVASIVE SPECIES CONTROL

THE FOLLOWING MEASURES WILL BE FOLLOWED TO AVOID INTRODUCTION OF INVASIVE PLANTS AND NOXIOUS WEEDS INTO PROJECT AREAS:

PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER WASHED, ALLOWED TO FULLY DRY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.

WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES.

WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES.

CONSTRUCTION DEWATERING

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF TURBID OR SEDIMENT-LADEN WATER IN ORDER TO PREVENT CONTAMINATION OR INCREASE TURBIDITY OF SURFACE WATERS. EXCAVATION OF DEWATERING SUMPS BEYOND LIMITS SHOWN SHALL BE AT NO ADDITIONAL COST. SEDIMENT LADEN WATER MAY BE PUMPED TO AN UPLAND DISCHARGE LOCATION AND ALLOWED TO SHEET FLOW THROUGH EXISTING VEGETATION BEFORE INFILTRATING INTO THE GROUND. IF THIS METHOD IS NOT SUFFICIENT TO PREVENT RETURN OF TURBID WATER TO SURFACE WATERS OR SENSITIVE FLOODPLAIN AREAS, A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST.

CONTRACTOR SHALL PROVIDE, OPERATE, AND MAINTAIN NUMBER AND SIZE OF PUMPS AS NECESSARY TO ACHIEVE DEWATERING NEEDS. AT A MINIMUM, CONTRACTOR SHALL PROVIDE A 6" DRI-PRIME DIESEL POWERED PUMP AND A PORTABLE 2" PUMP. ADDITIONAL PUMPS AND OF DIFFERENT CAPACITIES MAY BE REQUIRED AT CONTRACTOR'S EXPENSE.

OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE DEWATERING DISCHARGE LOCATION PRIOR TO IMPLEMENTATION.

SPILL PREVENTION, CONTROL, AND COUNTER MEASURES

THE USE OF MECHANIZED MACHINERY INCREASES THE RISK FOR ACCIDENTAL SPILLS OF FUEL, LUBRICANTS, HYDRAULIC FLUID, OR OTHER CONTAMINANTS INTO THE RIPARIAN ZONE OR DIRECTLY INTO THE WATER. THE PROJECT SPONSOR WILL ADHERE TO THE FOLLOWING MEASURES:

A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES WILL BE AVAILABLE ON-SITE.

WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.

SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.

WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.

ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPAULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO AND DISPOSED OF AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.

VEGETABLE BASED HYDRAULIC FLUIDS (BIODEGRADABLE OIL) WILL BE USED IN ANY VEHICLE THAT WILL BE OPERATED NEAR THE WATER.

INSPECTION AND MAINTENANCE

ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION.

A. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.

B. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

C. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24-HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

D. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.

CONTRACTOR'S ESC RECORD

WEEKLY REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN, AND ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS SHALL BE PREPARED AND RETAINED ON SITE BY THE CONTRACTOR. IN ADDITION, A RECORD OF THE FOLLOWING DATES SHALL BE INCLUDED IN THE REPORTS:

1. WHEN MAJOR GRADING ACTIVITIES OCCUR,
2. DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS,
3. WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON SITE, OR ON A PORTION OF THE SITE,
4. WHEN STABILIZATION MEASURES ARE INITIATED FOR PORTIONS OF THE SITE.

ESC RECORDS SHALL BE MADE AVAILABLE TO THE OWNER AND OWNER'S REPRESENTATIVE ON REQUEST AND SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.

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EROSION CONTROL NOTES

SHEET 4 OF 25

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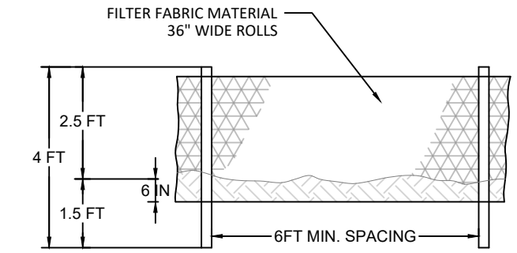
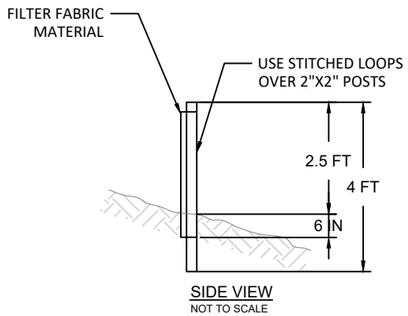


FRONT VIEW
NOT TO SCALE



SIDE VIEW
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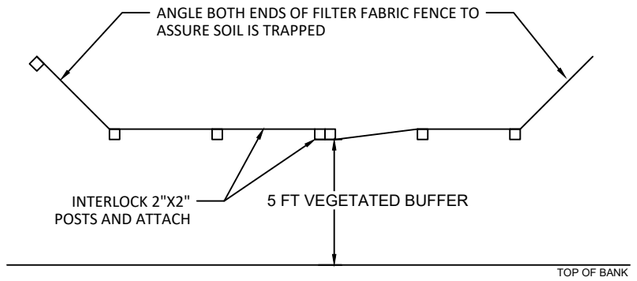


PLAN VIEW
NOT TO SCALE

1 TYP — TYPICAL DETAIL
SILT FENCE
NOT TO SCALE

SILT FENCE NOTES

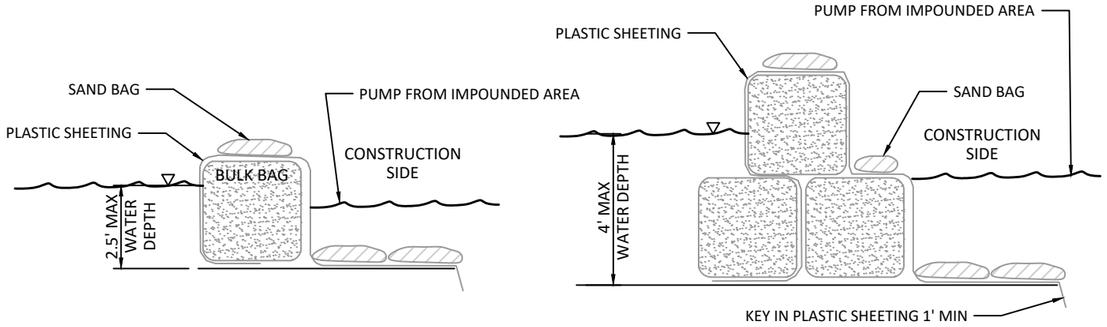
1.THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST. ALTERNATIVELY, OVERLAP AND INTERLOCK TWO POSTS WITH ATTACHED FABRIC AS APPROVED BY THE OWNER'S REPRESENTATIVE.

2.THE SILT FENCE IS TO BE INSTALLED AT LOCATIONS SHOWN ON THE PLAN ALONG THE DOWNHILL PERIMETER OF DISTURBED AREAS. THE FENCE POST SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES APART.

3. THE FILTER FABRIC 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 THE OWNER'S REPRESENTATIVE.



2 TYP — TYPICAL DETAIL
BULK BAG COFFER DAM
NOT TO SCALE

BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED GRAVEL, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.
2. 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.
3. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4-FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS.
4. THE CONSTRUCTION SIDE EDGE OF PLASTIC SHEETING SHALL BE TOED INTO THE CHANNEL BED MINIMUM 1-FT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
5. THE TERMINAL ENDS OF BULK BAG COFFERDAM, WHERE IT CONNECTS TO CHANNEL BANK OR HIGH GROUND, SHALL BE SEALED WITH PLASTIC SHEETING AND STANDARD SANDBAGS.
6. 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.
7. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. 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.
8. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.
9. 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.

NO.	DATE	REVISION DESCRIPTION

CP	MR	DM
DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
APPROVED	DATE	PROJECT

Upper Burns & Angle Point Habitat Enhancement Project
Confederated Tribes and Bands of The Yakama Nation
Chelan County, WA

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541.386.9003
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EROSION CONTROL DETAILS

SHEET 5 OF 25

1/21/21

USFS

26.1

ENTIAT RIVER

SIDE CHANNEL INLET LOG STRUCTURE (1/15)

UPPER SIDE CHANNEL

SHEET 11

SHEET 9

26.0

1/16 MAIN STEM LOG STRUCTURE - TYPE 1

1/15 SIDE CHANNEL INLET LOG STRUCTURE

MIDDLE SIDE CHANNEL

LIMITS OF DISTURBANCE

TEMPORARY STAGING AREA

1/20 TEMPORARY BRIDGE

TEMPORARY CONSTRUCTION ACCESS

SOIL FILL AREA MAX 3,540 CY, PREFERENCE IS TO PLACE FILL WITHIN THE DOWNSTREAM PORTION OF THE SOIL DISPOSAL AREA, AND ONLY EXTEND THE DISTURBANCE AS FAR UPSTREAM AS NECESSARY

FLOODPLAIN ROUGHNESS

WETLAND B

TEMPORARY STAGING AREA

25.9

1/15 SIDE CHANNEL INLET LOG STRUCTURE

WETLAND C

ENTIAT RIVER

25.8

LOWER SIDE CHANNEL

USFS

ENTIAT RIVER ROAD (SR-19)

CDLT

MAIN STEM LOG STRUCTURE - TYPE 1 (1/16)

MAIN STEM LOG STRUCTURE - TYPE 2 (1/17)

ENTIAT RIVER

CDLT

25.7

TEMPORARY STAGING AREA

WETLAND B

SHEET 7

USFS

PLAN LEGEND

- PROPOSED CHANNEL ALIGNMENT
- EXISTING 1 FT CONTOUR
- PROPOSED 1 FT CONTOUR
- PROPERTY BOUNDARIES
- LIMITS OF DISTURBANCE
- TEMPORARY STAGING AREA
- TEMPORARY CONSTRUCTION ACCESS
- SOIL FILL AREA
- EXISTING WETLAND
- WETLAND IMPACT

N

0 150 300

SCALE IN FEET

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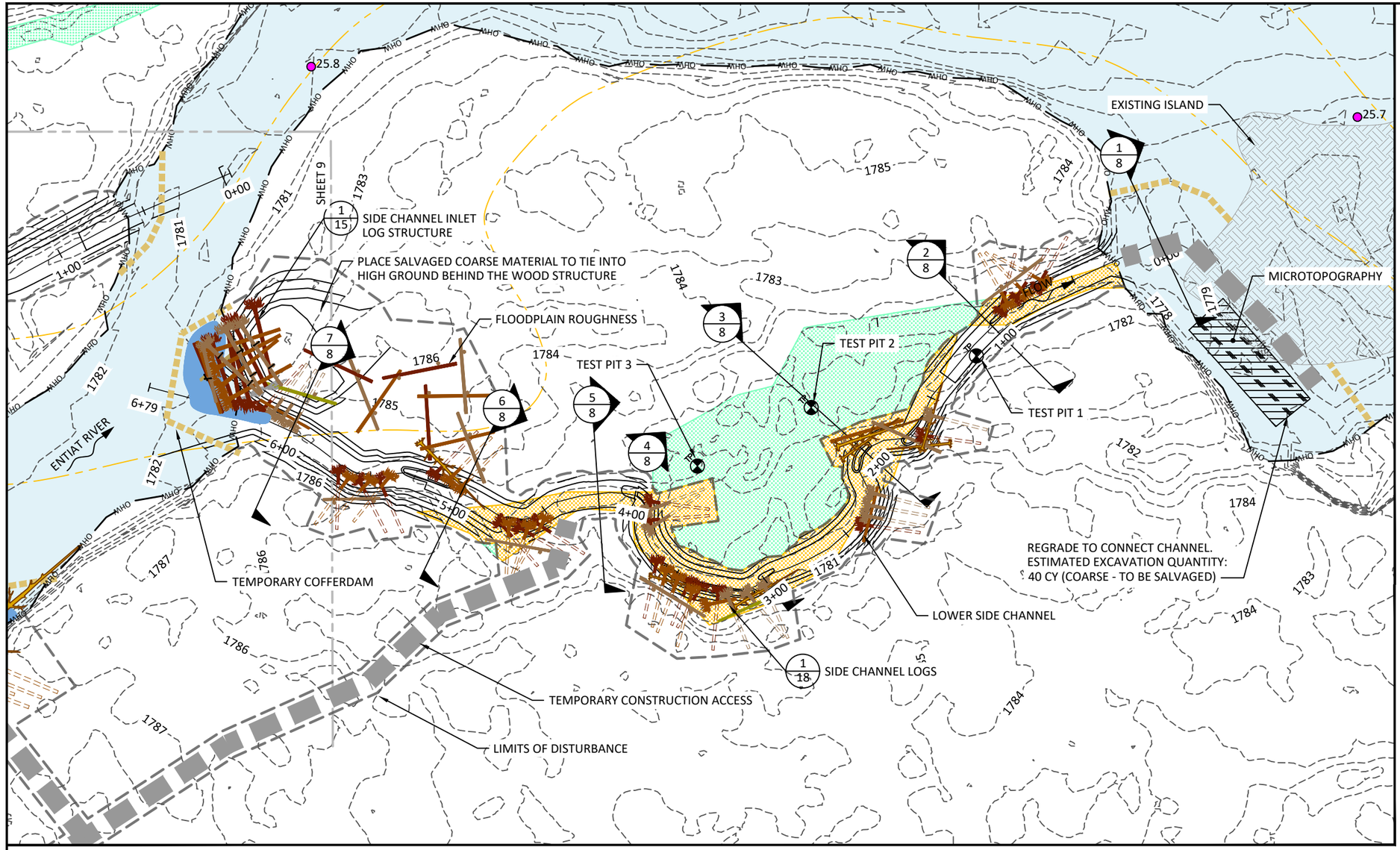
SITE OVERVIEW

SHEET 6 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21



PLAN LEGEND

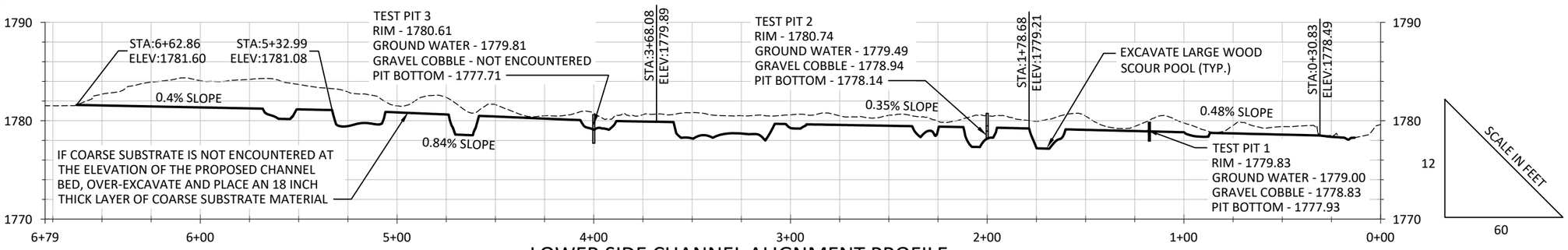
- PROPOSED CHANNEL ALIGNMENT
- EXISTING 1 FT CONTOUR
- PROPOSED 1 FT CONTOUR
- PROPERTY BOUNDARIES
- LIMITS OF DISTURBANCE
- TEMPORARY CONSTRUCTION ACCESS
- OHW — ESTIMATED ORDINARY HIGH WATER
- EXISTING WETLAND
- WETLAND IMPACT
- COFFERDAM
- EXISTING ISLAND

LOG NOTES

1. LOG LOCATIONS, SIZE, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS AND SITE CONDITIONS.
2. REMOVED SHRUBS AND SMALL WOODY DEBRIS GENERATED FROM SITE CLEARING SHALL BE INCORPORATED INTO LOG STRUCTURES AS SLASH. INSTALL SLASH BETWEEN LOGS.
3. SEE SIDE CHANNEL LOGS TYPICAL DETAILS (SHEET 18).

0 60 120

SCALE IN FEET



LOWER SIDE CHANNEL ALIGNMENT PROFILE

LEGEND

- EXISTING GRADE
- PROPOSED GRADE

12 / 60 SCALE IN FEET

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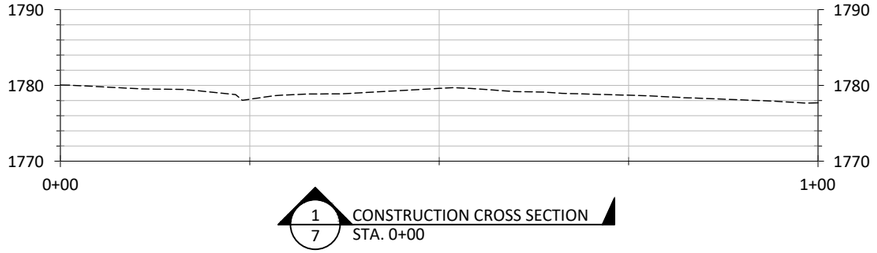
LOWER SIDE CHANNEL PLAN & PROFILE

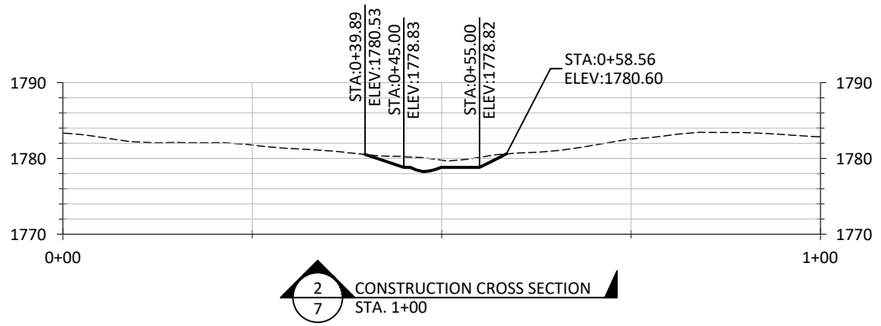
SHEET 7 OF 25

MICHAEL RAFFERTY — STATE OF WASHINGTON — 44449 — REGISTERED PROFESSIONAL ENGINEER

1/21/21



1 / 7 CONSTRUCTION CROSS SECTION
STA. 0+00



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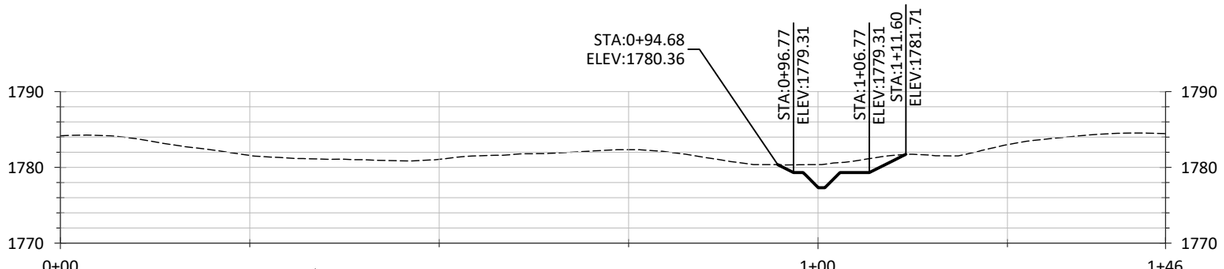

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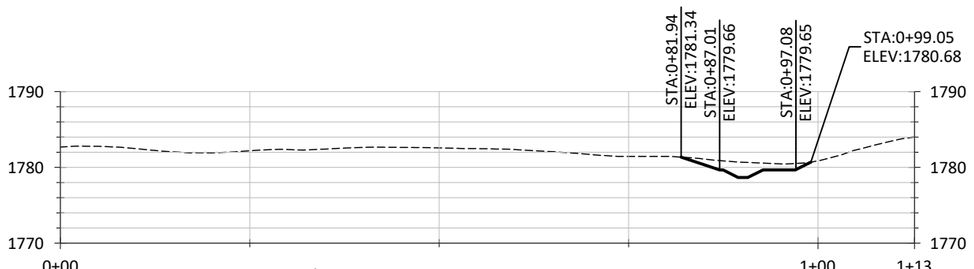
STA. 2+00



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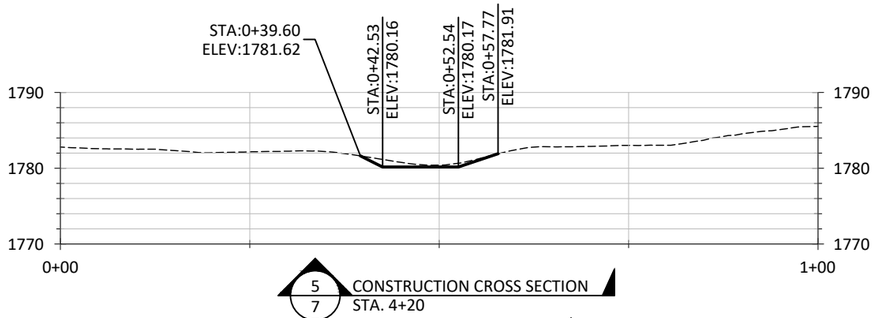
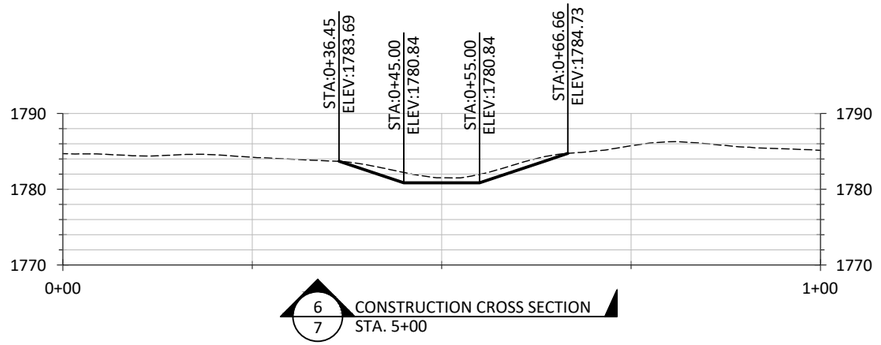
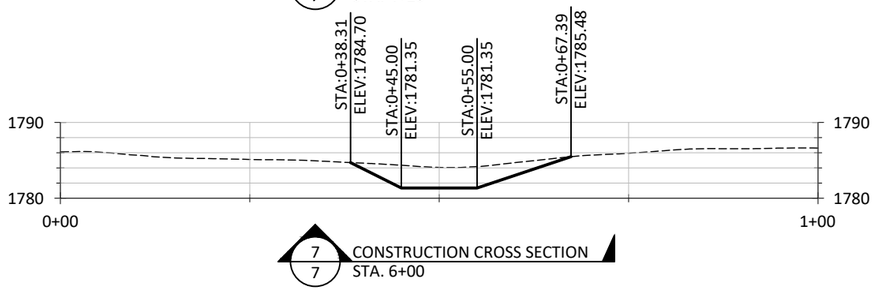
STA. 3+00



5 / 7 CONSTRUCTION CROSS SECTION
STA. 4+20



6 / 7 CONSTRUCTION CROSS SECTION
STA. 5+00



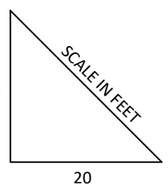
7 / 7 CONSTRUCTION CROSS SECTION
STA. 6+00

LEGEND

EXISTING GRADE

PROPOSED GRADE

NOTE:
1. CROSS-SECTION ORIENTATIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM.
2. SHAPE MIN. 6-INCH DEEP LOW FLOW CHANNEL THROUGH ENTIRE LENGTH OF SIDE CHANNEL.



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LOWER SIDE CHANNEL CONSTRUCTION SECTIONS

SHEET 8 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER

1/21/21

PLAN LEGEND

- PROPOSED CHANNEL ALIGNMENT
- EXISTING 1 FT CONTOUR
- PROPOSED 1 FT CONTOUR
- PROPERTY BOUNDARIES
- LIMITS OF DISTURBANCE
- TEMPORARY CONSTRUCTION ACCESS
- OHW — ESTIMATED ORDINARY HIGH WATER
- EXISTING WETLAND
- WETLAND IMPACT
- COFFERDAM

LOG NOTES

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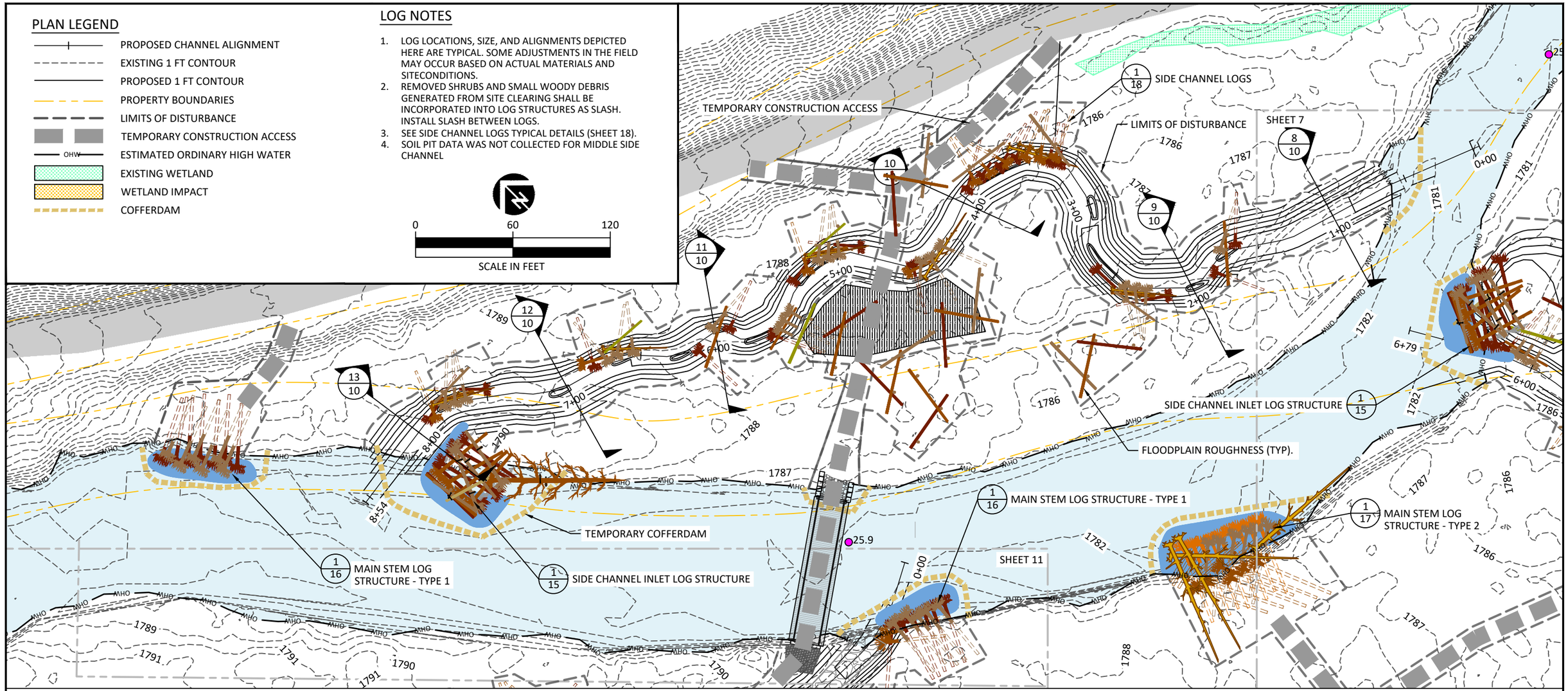
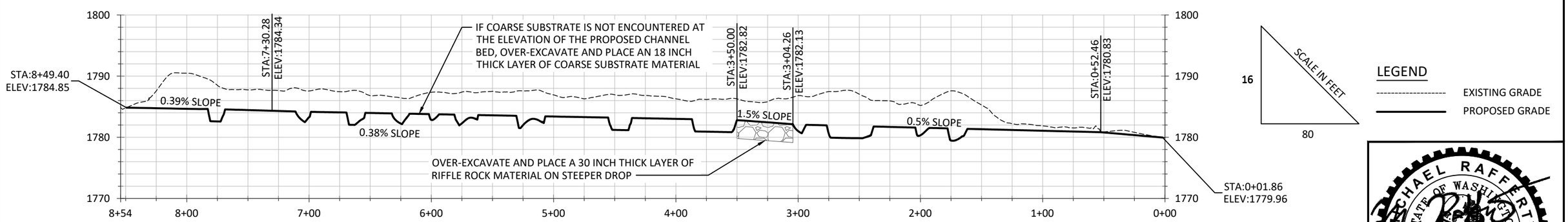
2. REMOVED SHRUBS AND SMALL WOODY DEBRIS GENERATED FROM SITE CLEARING SHALL BE INCORPORATED INTO LOG STRUCTURES AS SLASH. INSTALL SLASH BETWEEN LOGS.
3. SEE SIDE CHANNEL LOGS TYPICAL DETAILS (SHEET 18).
4. SOIL PIT DATA WAS NOT COLLECTED FOR MIDDLE SIDE CHANNEL

0 60 120

SCALE IN FEET





MIDDLE SIDE CHANNEL ALIGNMENT PROFILE

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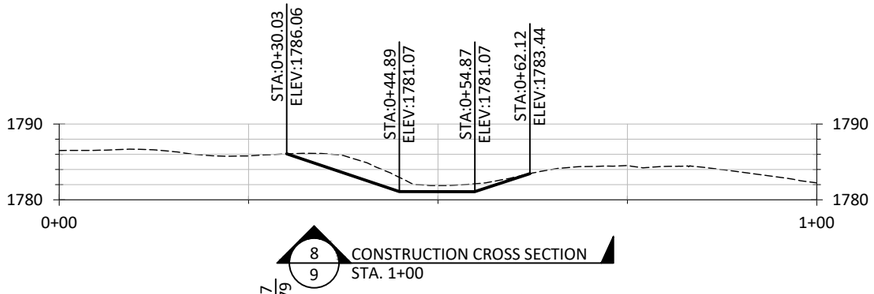
MIDDLE SIDE CHANNEL PLAN & PROFILE

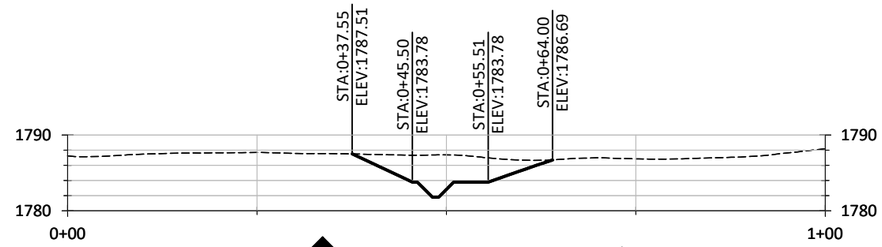
SHEET 9 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER

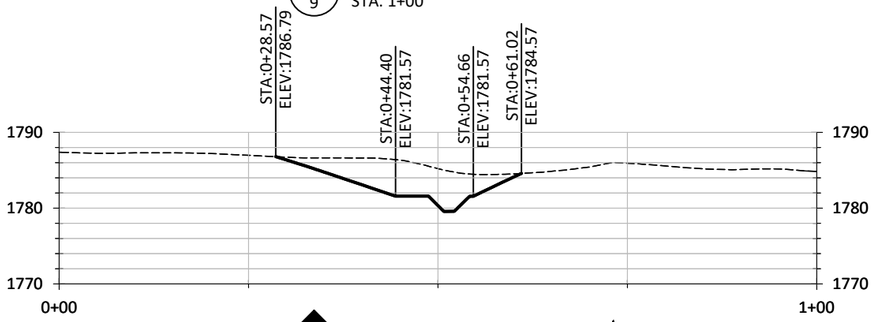
1/21/21



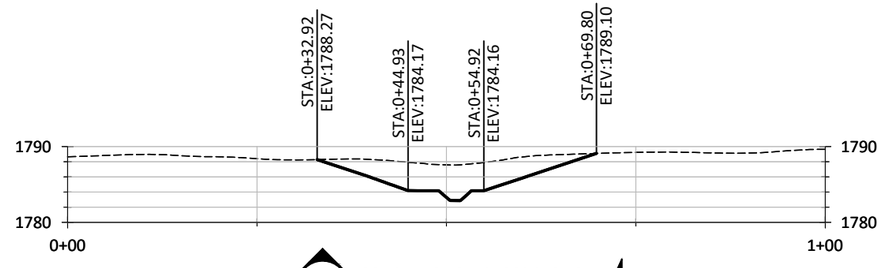
8/9 CONSTRUCTION CROSS SECTION
STA. 1+00



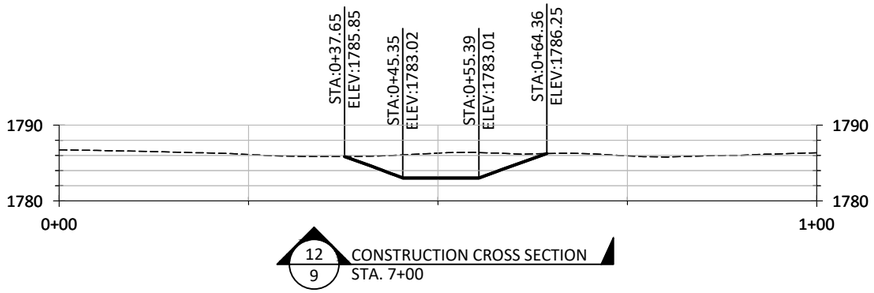
9/9 CONSTRUCTION CROSS SECTION
STA. 2+00



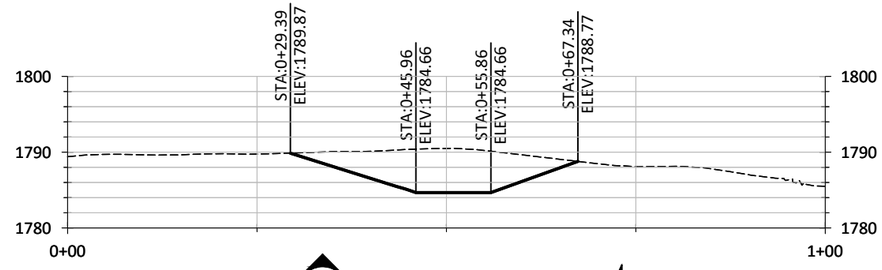
10/9 CONSTRUCTION CROSS SECTION
STA. 4+00



11/9 CONSTRUCTION CROSS SECTION
STA. 6+00



12/9 CONSTRUCTION CROSS SECTION
STA. 7+00



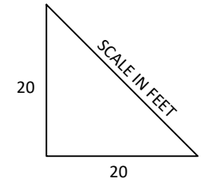
13/9 CONSTRUCTION CROSS SECTION
STA. 8+00

NOTE:
1. CROSS-SECTION ORIENTATIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM.
2. SHAPE MIN. 6-INCH DEEP LOW FLOW CHANNEL THROUGH ENTIRE LENGTH OF SIDE CHANNEL.

LEGEND

---------- EXISTING GRADE

———— PROPOSED GRADE



1/21/21

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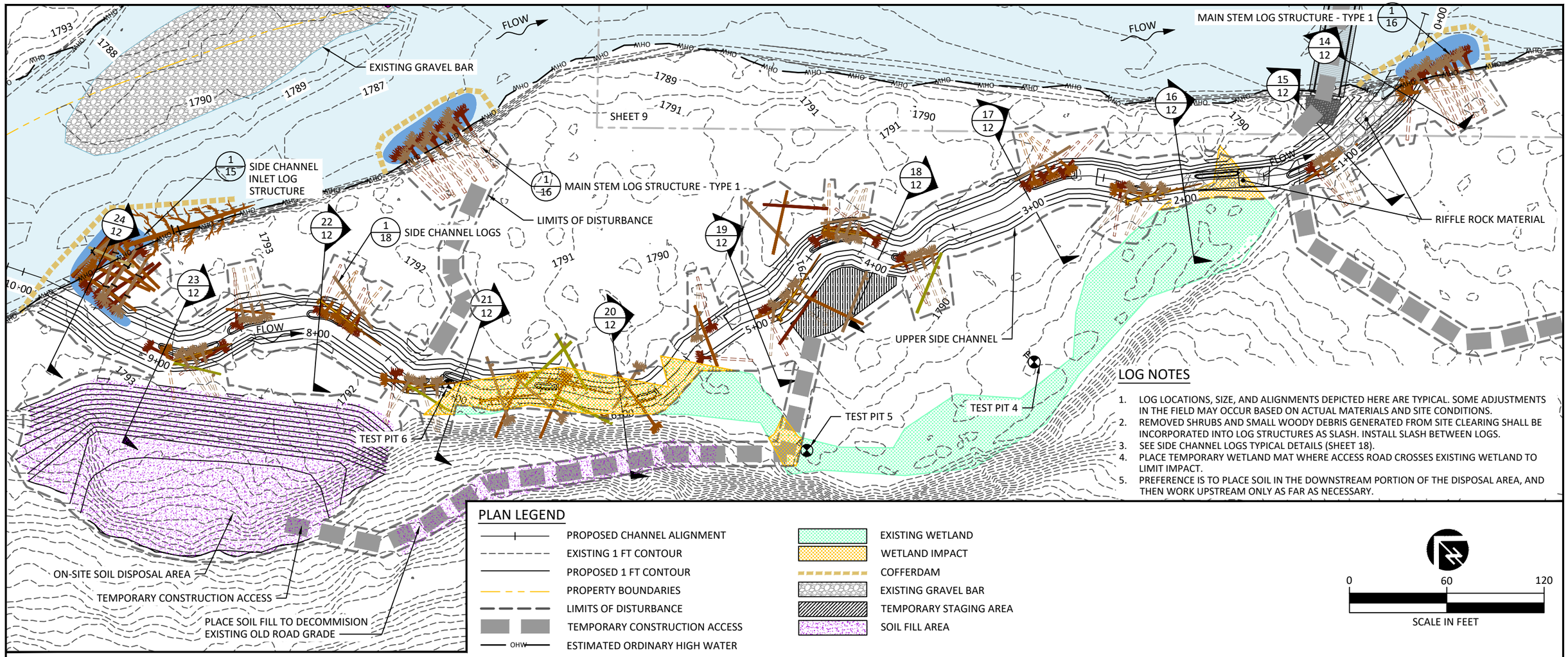
MIDDLE SIDE CHANNEL CONSTRUCTION SECTIONS

SHEET
10 OF 25



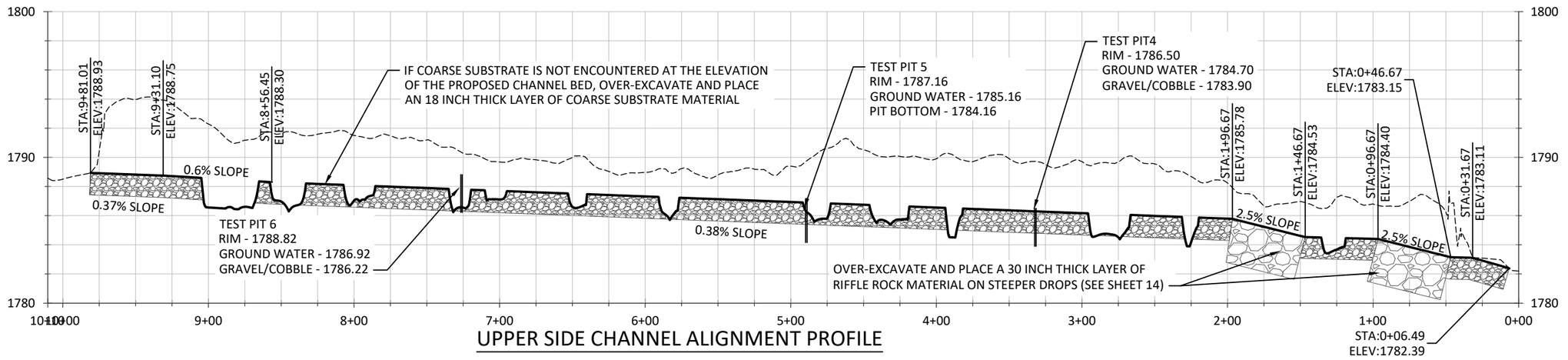
LOG NOTES

1. LOG LOCATIONS, SIZE, AND ALIGNMENTS DEPICTED HERE ARE TYPICAL. SOME ADJUSTMENTS IN THE FIELD MAY OCCUR BASED ON ACTUAL MATERIALS AND SITE CONDITIONS.
2. REMOVED SHRUBS AND SMALL WOODY DEBRIS GENERATED FROM SITE CLEARING SHALL BE INCORPORATED INTO LOG STRUCTURES AS SLASH. INSTALL SLASH BETWEEN LOGS.
3. SEE SIDE CHANNEL LOGS TYPICAL DETAILS (SHEET 18).
4. PLACE TEMPORARY WETLAND MAT WHERE ACCESS ROAD CROSSES EXISTING WETLAND TO LIMIT IMPACT.
5. PREFERENCE IS TO PLACE SOIL IN THE DOWNSTREAM PORTION OF THE DISPOSAL AREA, AND THEN WORK UPSTREAM ONLY AS FAR AS NECESSARY.

PLAN LEGEND

- PROPOSED CHANNEL ALIGNMENT
- EXISTING 1 FT CONTOUR
- PROPOSED 1 FT CONTOUR
- PROPERTY BOUNDARIES
- LIMITS OF DISTURBANCE
- TEMPORARY CONSTRUCTION ACCESS
- OHW — ESTIMATED ORDINARY HIGH WATER
- EXISTING WETLAND
- WETLAND IMPACT
- COFFERDAM
- EXISTING GRAVEL BAR
- TEMPORARY STAGING AREA
- SOIL FILL AREA

0 60 120
SCALE IN FEET



UPPER SIDE CHANNEL ALIGNMENT PROFILE

8 SCALE IN FEET 80

LEGEND
- EXISTING GRADE
- PROPOSED GRADE

MICHAEL RAFFERTY — STATE OF WASHINGTON — 44449 — REGISTERED PROFESSIONAL ENGINEER
1/21/21

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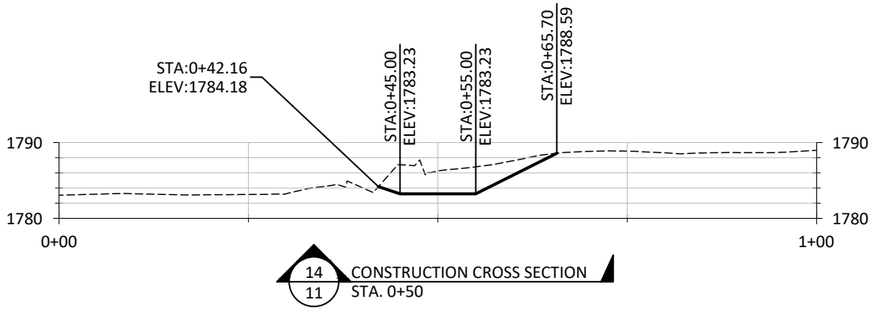
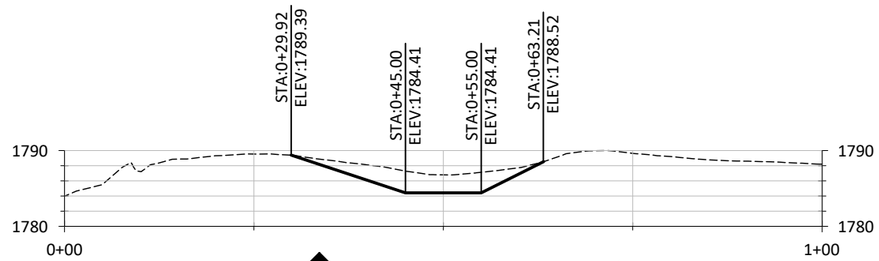
UPPER SIDE CHANNEL PLAN & PROFILE

SHEET 11 OF 25



14/11 CONSTRUCTION CROSS SECTION
STA. 0+50



15/11 CONSTRUCTION CROSS SECTION
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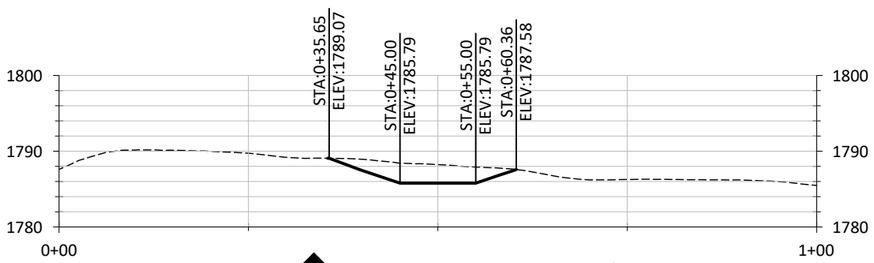

16/11 CONSTRUCTION CROSS SECTION
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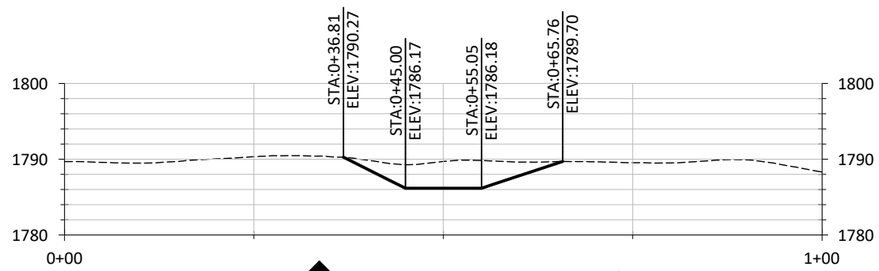

17/11 CONSTRUCTION CROSS SECTION
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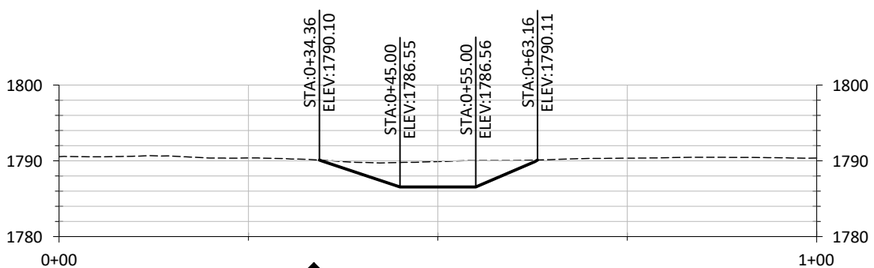

18/11 CONSTRUCTION CROSS SECTION
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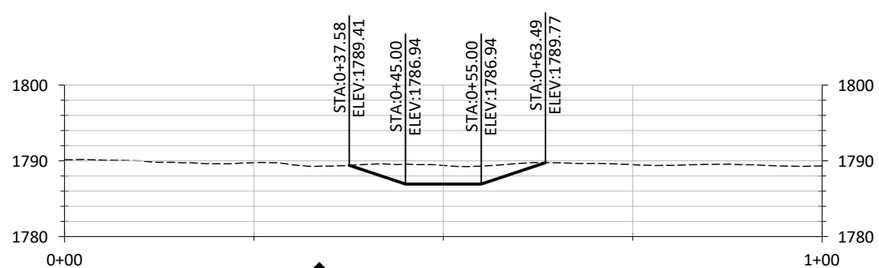
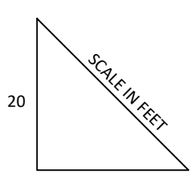


19/11 CONSTRUCTION CROSS SECTION
STA. 5+00

LEGEND

EXISTING GRADE

PROPOSED GRADE



NOTE:
1. CROSS-SECTION ORIENTATIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM.
2. SHAPE MIN. 6-INCH DEEP LOW FLOW CHANNEL THROUGH ENTIRE LENGTH OF SIDE CHANNEL.

NO.	DATE	REVISION DESCRIPTION

CP	MR	DM
DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
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Upper Burns & Angle Point Habitat Enhancement Project
Confederated Tribes and Bands of The Yakama Nation
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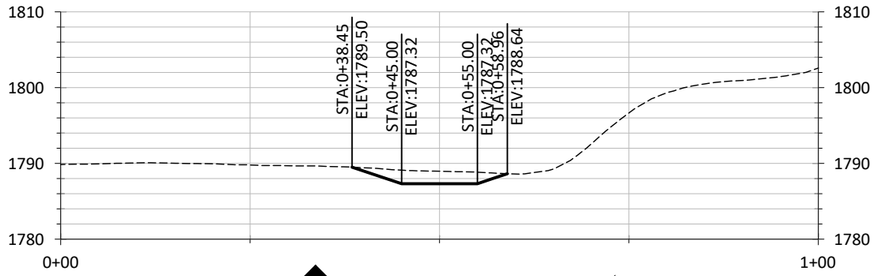
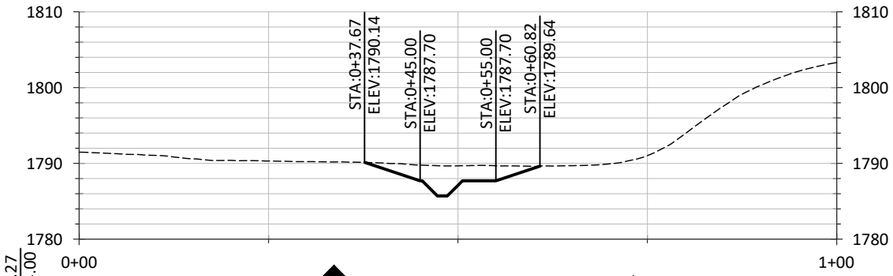
UPPER SIDE CHANNEL CONSTRUCTION SECTIONS 1 OF 2

SHEET 12 OF 25

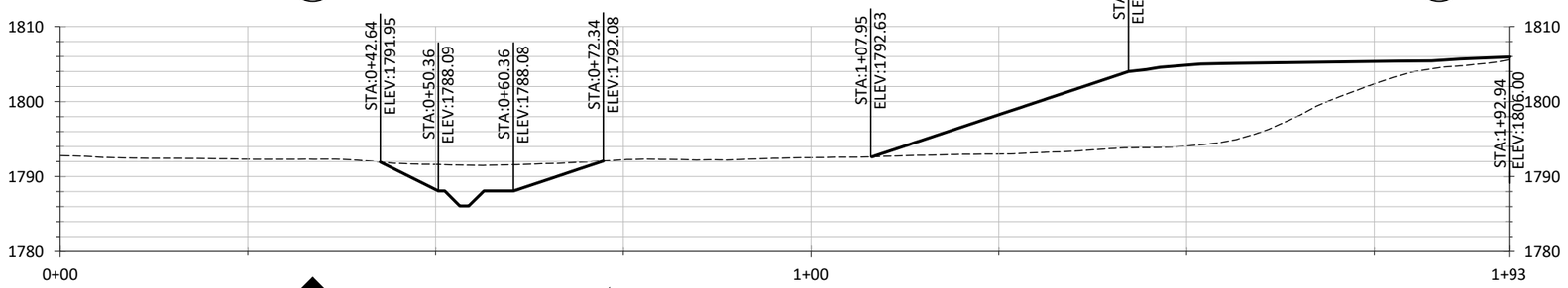
MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21



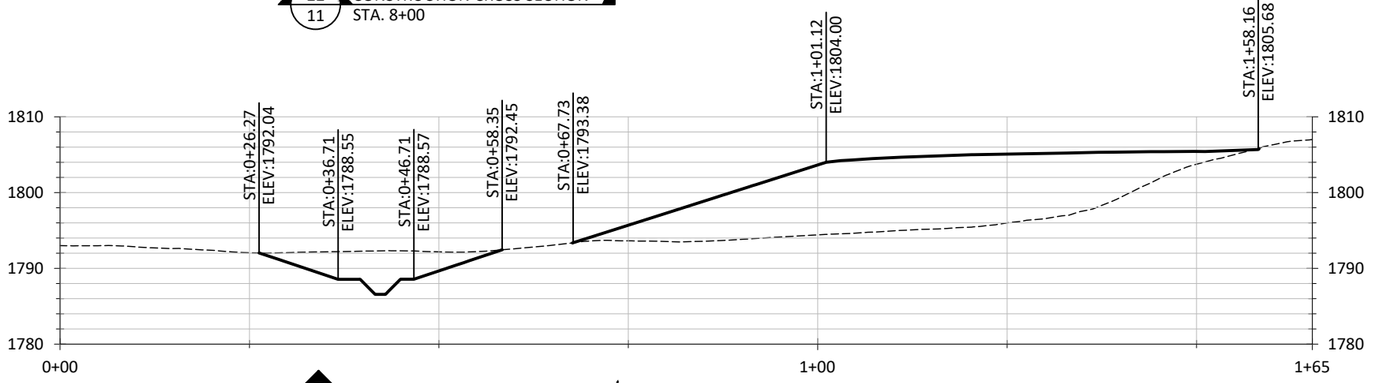
20/11 CONSTRUCTION CROSS SECTION
STA. 6+00



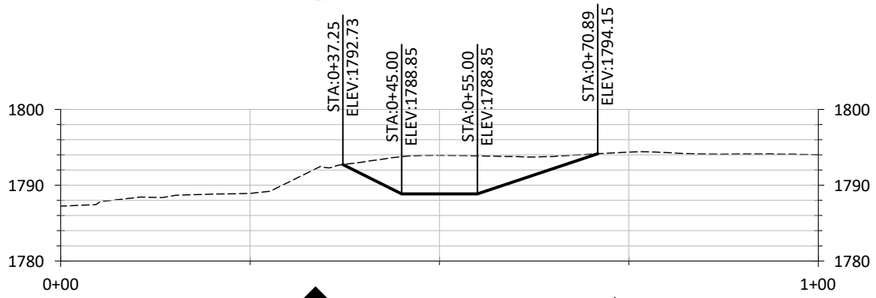
21/11 CONSTRUCTION CROSS SECTION
STA. 7+00



22/11 CONSTRUCTION CROSS SECTION
STA. 8+00



23/11 CONSTRUCTION CROSS SECTION
STA. 9+00



24/11 CONSTRUCTION CROSS SECTION
STA. 9+50

LEGEND

---------- EXISTING GRADE

———— PROPOSED GRADE

NOTE:
1. CROSS-SECTION ORIENTATIONS ARE LEFT TO RIGHT LOOKING DOWNSTREAM.
2. SHAPE MIN. 6-INCH DEEP LOW FLOW CHANNEL THROUGH ENTIRE LENGTH OF SIDE CHANNEL.

20 SCALE IN FEET 20

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21

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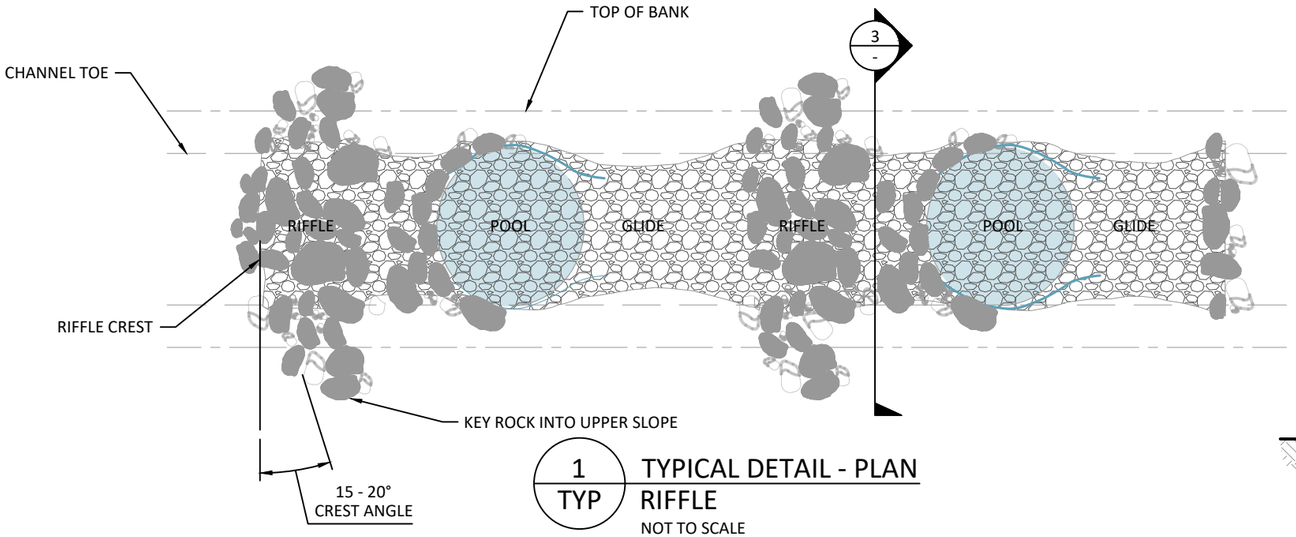
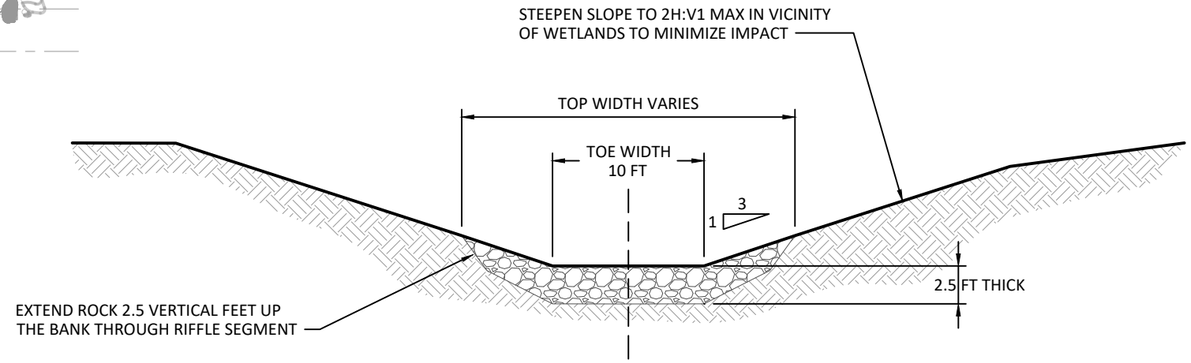
UPPER SIDE CHANNEL CONSTRUCTION SECTIONS 2 OF 2

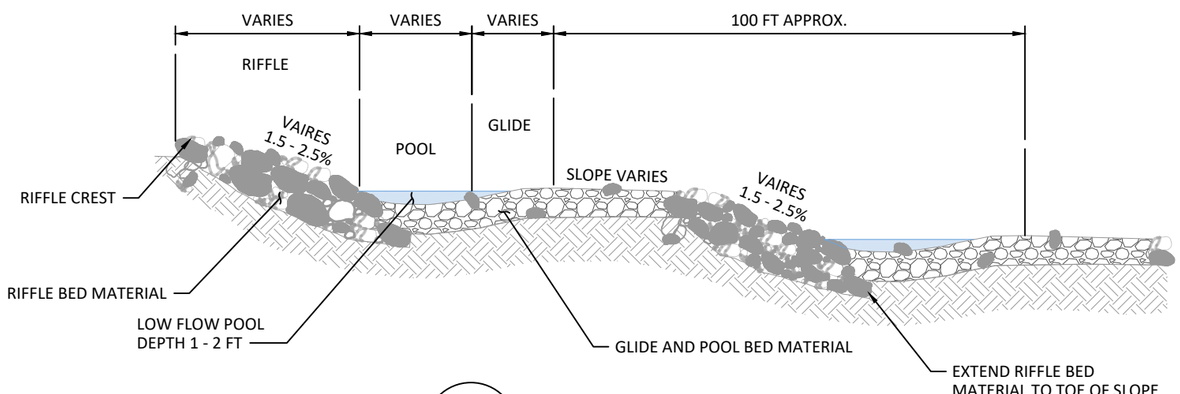
SHEET 13 OF 25



1 / TYP — TYPICAL DETAIL - PLAN
RIFFLE
NOT TO SCALE



3 / - — TYPICAL SECTION
RIFFLE
NOT TO SCALE



2 / - — TYPICAL DETAIL - PROFILE
RIFFLE
NOT TO SCALE

RIFFLE MATERIAL GRADATION*
D_{min} = SAND
D_{16} = 1''
D_{50} = 3.5''
D_{84} = 6''
D_{max} = 18''

*SALVAGED MATERIAL FROM THE MAIN STEM ENTIAT RIVER SHALL BE STOCKPILED AND REUSED TO CONSTRUCT RIFFLES

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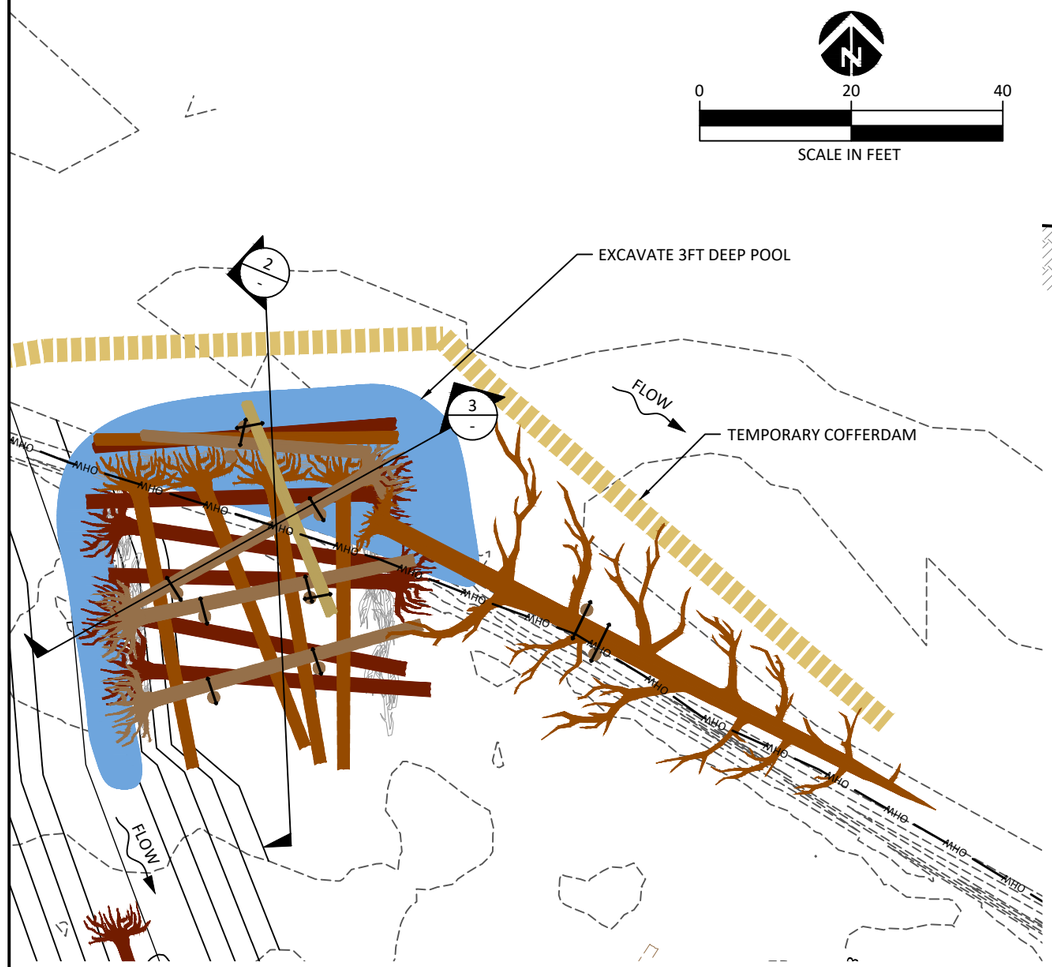
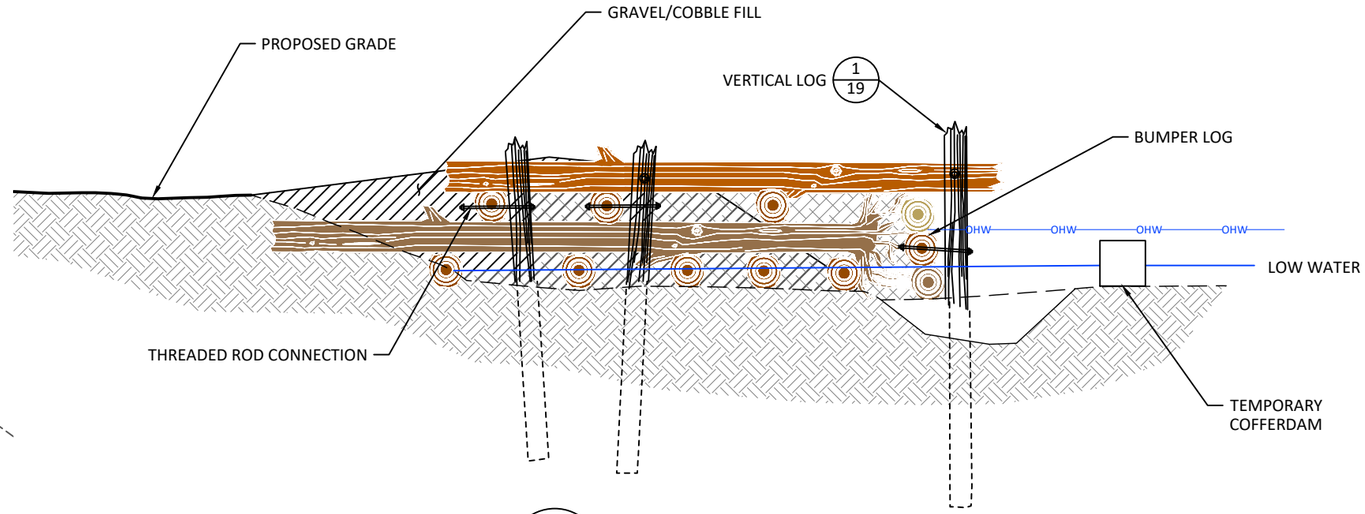
TYPICAL DETAILS
RIFFLE STRUCTURE

SHEET
14 OF 25

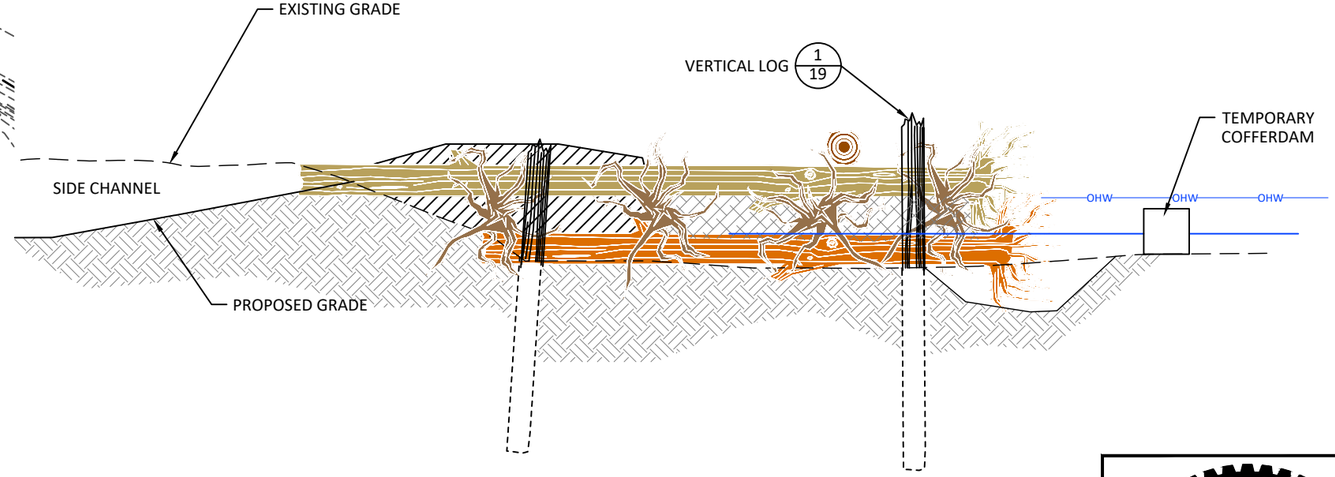
MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED
PROFESSIONAL ENGINEER
1/21/21



1 / TYP — PLAN VIEW
SIDE CHANNEL INLET LOG STRUCTURE
NOT TO SCALE



2 / - TYPICAL SECTION
SIDE CHANNEL INLET LOG STRUCTURE
NOT TO SCALE



3 / - TYPICAL SECTION
SIDE CHANNEL INLET LOG STRUCTURE
NOT TO SCALE

QUANTITIES	LOWER CHANNEL	MIDDLE CHANNEL	UPPER CHANNEL
LOGS (BUMPER)	4	4	4
LOGS WITH ROOTS	12	12	12
WHOLE TREE	0	1	1
VERTICAL LOGS	7	9	9
THREADED ROD	9	11	11
POOL EXCAVATION	85 CY	85 CY	85 CY
BANK EXCAVATION	90 CY (COARSE)	220 CY	250 CY
FILL (NATIVE GRAVEL)*	200 CY	85 CY	105 CY

* BACKFILL NOTE:

WHEN EXCAVATING THIS AREA, SORT MATERIALS BY GENERAL SIZES, KEEPING A STOCKPILE OF COARSE MATERIAL FOR BACKFILL. BACKFILL SHALL BE SALVAGED GRAVEL AND COBBLE (NOT SAND OR MUCK) ALONG THE EXPOSED FACE OF THE BANK AND FOR THE ENTIRE LOWER 4 FEET OF THE EXCAVATION FOOTPRINT. A MIX OF GRAVEL/COBBLE/SOIL MATERIAL SHOULD BE USED FOR THE REMAINING BACKFILL VOLUME.

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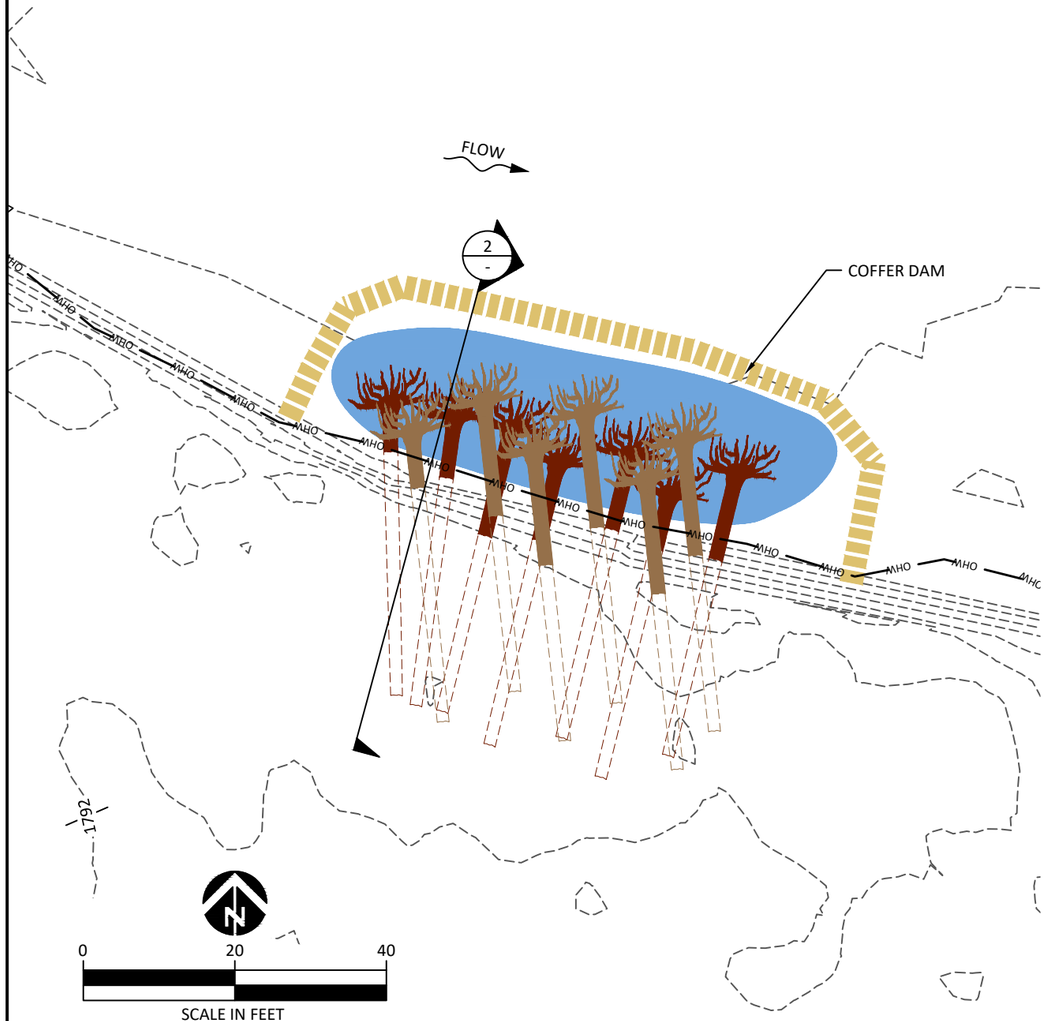
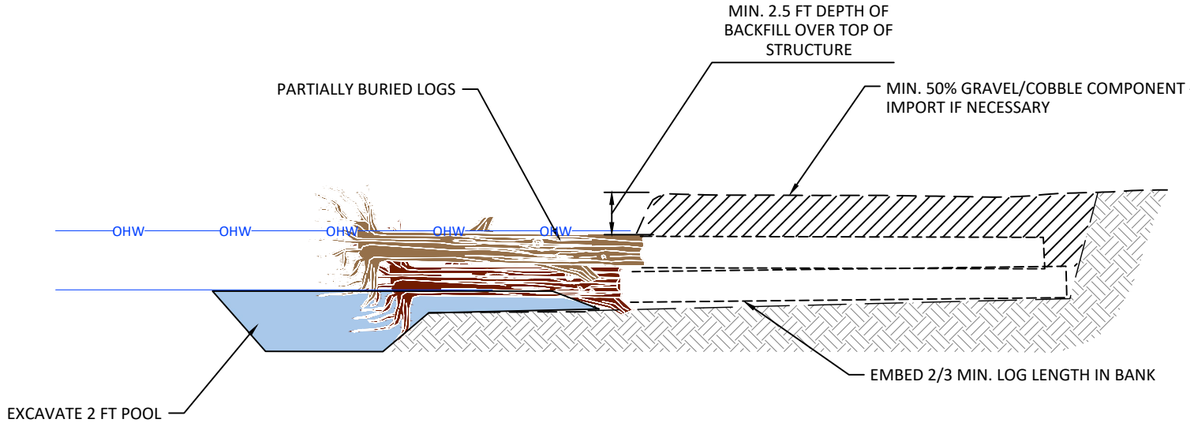
TYPICAL DETAILS SIDE CHANNEL INLET LOG STRUCTURE

SHEET 15 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21



1 / TYP — PLAN VIEW
MAIN STEM LOG STRUCTURE - TYPE 1
NOT TO SCALE



2 / - — TYPICAL SECTION
MAIN STEM LOG STRUCTURE - TYPE 1
NOT TO SCALE

QUANTITIES (FOR ALL THREE TYPE 1 STRUCTURES)	
LOGS WITH ROOTS	13
POOL EXCAVATION	65 CY
BANK EXCAVATION	250 CY
BACKFILL (50% GRAVELS)*	225 CY

* BACKFILL NOTE:

WHEN EXCAVATING THIS AREA, SORT MATERIALS BY GENERAL SIZES, KEEPING A STOCKPILE OF COARSE MATERIAL FOR BACKFILL. BACKFILL SHALL BE GRAVEL, COBBLE, AND NOT SAND OR MUCK.

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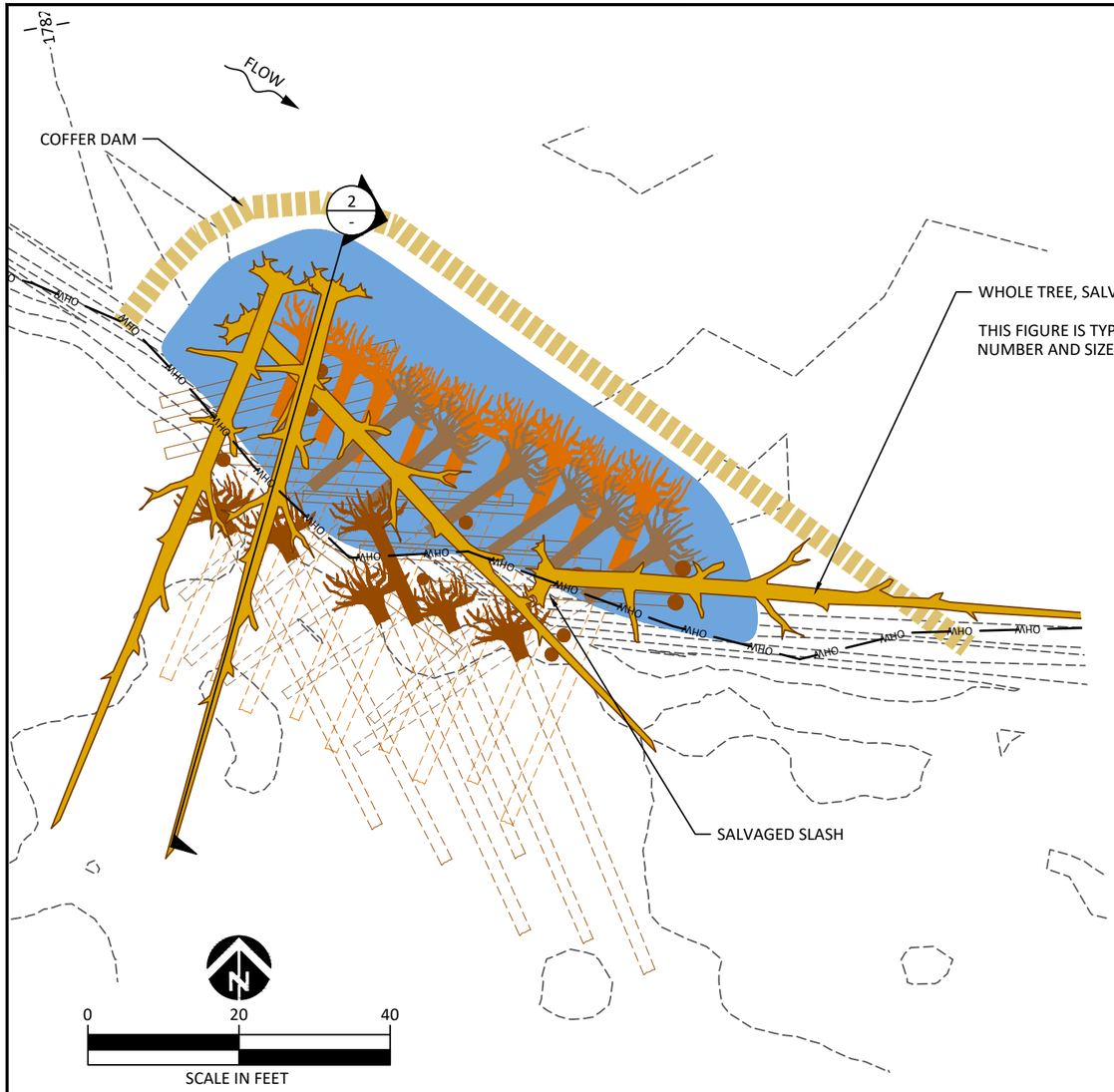
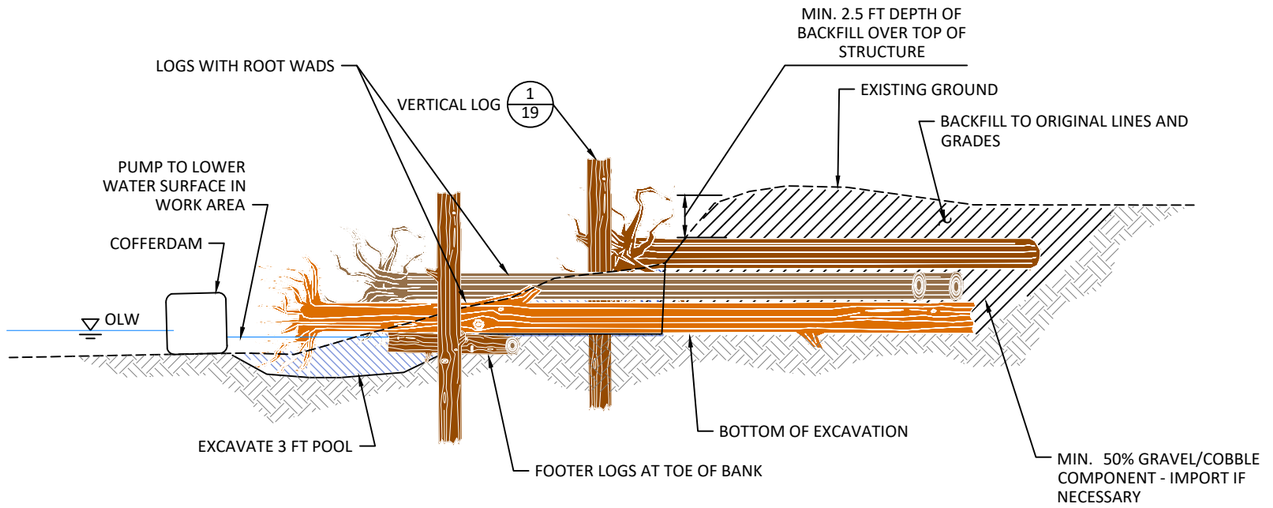
TYPICAL DETAILS MAIN STEM LOG STRUCTURE 1

SHEET 16 OF 25

MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21



1 / TYP — PLAN VIEW
MAIN STEM LOG STRUCTURE - TYPE 2
NOT TO SCALE



2 / - — TYPICAL SECTION
MAIN STEM LOG STRUCTURE - TYPE 2
NOT TO SCALE

QUANTITIES	
LOGS WITHOUT ROOTS	10
LOGS WITH ROOTS	21
WHOLE TREE	4
VERTICAL LOGS	11
THREADED ROD	22
POOL EXCAVATION	160 CY
BANK EXCAVATION	485 CY
FILL (50% GRAVEL)*	400 CY

* BACKFILL NOTE:

WHEN EXCAVATING THIS AREA, SORT MATERIALS BY GENERAL SIZES, KEEPING A STOCKPILE OF COARSE MATERIAL FOR BACKFILL. BACKFILL SHALL BE GRAVEL, COBBLE, AND NOT SAND OR MUCK.

1/21/21

NO.	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
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TYPICAL DETAILS MAIN STEM LOG STRUCTURE 2

SHEET 17 OF 25

NOTES:

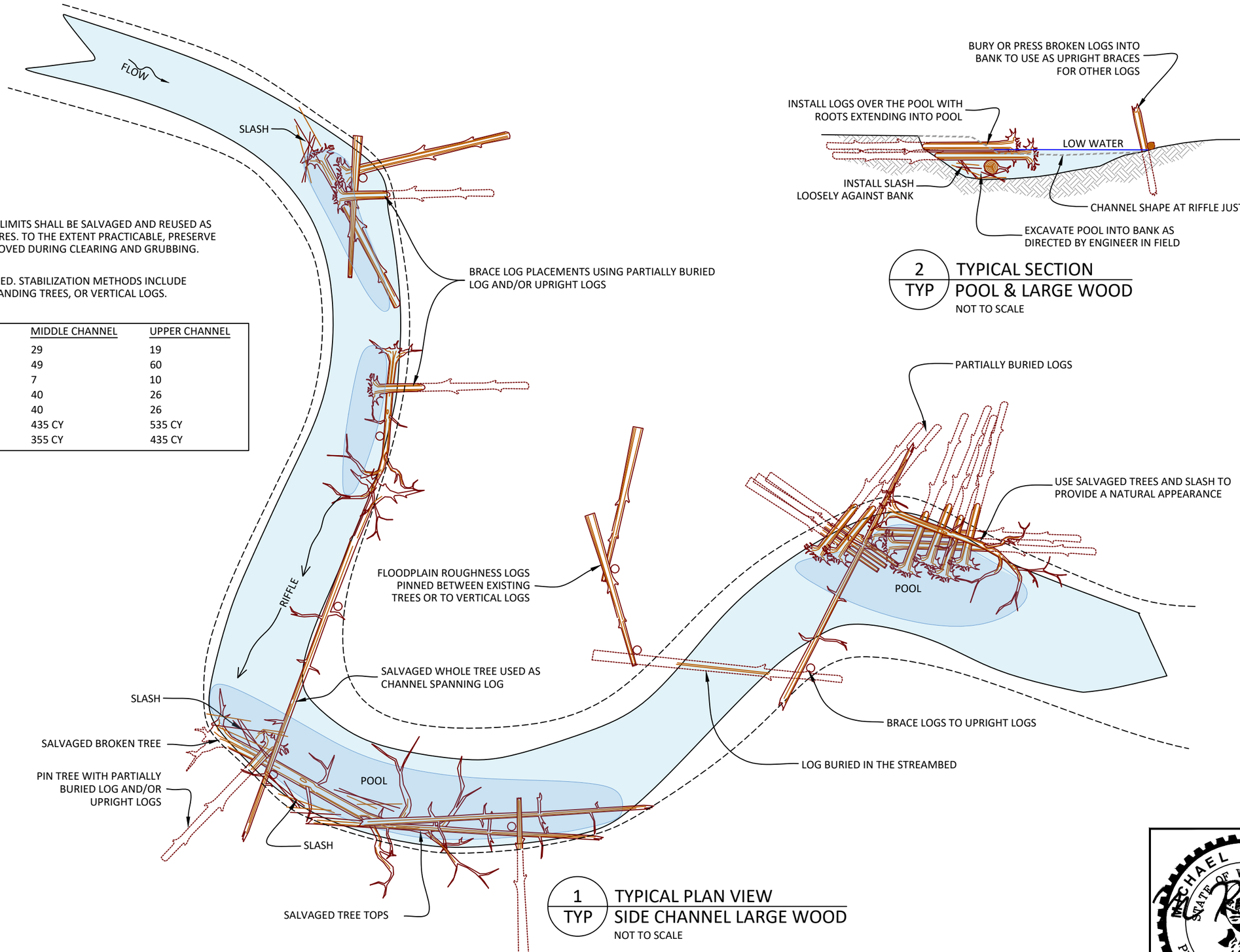
1. TREES AND SHRUBS WITHIN CLEARING LIMITS SHALL BE SALVAGED AND REUSED AS LOGS AND SLASH IN HABITAT STRUCTURES. TO THE EXTENT PRACTICABLE, PRESERVE BRANCHES AND ROOTS ON TREES REMOVED DURING CLEARING AND GRUBBING.

2. WOOD STRUCTURES SHALL BE STABILIZED. STABILIZATION METHODS INCLUDE PARTIAL BURIAL, BRACING AGAINST STANDING TREES, OR VERTICAL LOGS.

QUANTITIES	LOWER CHANNEL	MIDDLE CHANNEL	UPPER CHANNEL
LOGS WITHOUT ROOTS	19	29	19
LOGS WITH ROOTS	46	49	60
WHOLE TREE	8	7	10
VERTICAL LOGS	26	40	26
THREADED ROD	26	40	26
BANK EXCAVATION	400 CY	435 CY	535 CY
FILL*	325 CY	355 CY	435 CY

* BACKFILL NOTE:

WHEN EXCAVATING THIS AREA, SORT MATERIALS BY GENERAL SIZES, KEEPING A STOCKPILE OF COARSE MATERIAL FOR BACKFILL ALONG FACE OF SIDE CHANNEL BANKS. BACKFILL SHOULD 50% GRAVEL AND COBBLE, AND NOT SAND OR MUCK.



1 / TYP — TYPICAL PLAN VIEW
SIDE CHANNEL LARGE WOOD
NOT TO SCALE

2 / TYP — TYPICAL SECTION
POOL & LARGE WOOD
NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
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TYPICAL DETAILS SIDE CHANNEL LOGS

SHEET 18 OF 25

MICHAEL RAFFERTY — STATE OF WASHINGTON — 44449 — REGISTERED PROFESSIONAL ENGINEER
1/21/21

NOTES:

GENERAL

1. ALL CHANNEL WORK TO BE COMPLETED PER ONSITE DIRECTION OF ENGINEER.

RIGGING

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

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

TESTING

1. TESTING OF VERTICAL LOG SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER. UP TO FOUR LOAD TESTS SHALL BE APPLIED TO EACH TESTED VERTICAL LOG. EACH OF THE FOUR LOAD TESTS SHALL BE APPLIED TO THE VERTICAL LOG WITH A DIFFERENT INSTALLED DEPTH.

2. EACH VERTICAL LOG TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF PILE AS POSSIBLE. RECORD THE VERTICAL LOG DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE PILE VERTICALLY APPROXIMATELY 1 INCH. THEN DRIVE THE VERTICAL LOG TO A NEW DEPTH IN CONSULTATION WITH THE ENGINEER. APPLY NEW LOAD AND RECORD MAX FORCE THAT CAUSES THE VERTICAL LOG TO MOVE VERTICALLY 1 INCH. REPEAT FOR THIRD AND FOURTH TEST.

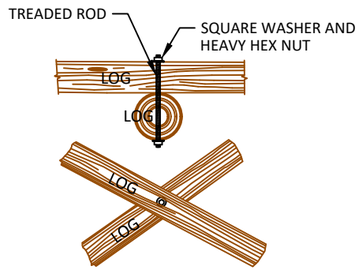
3. PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS FOR EACH VERTICAL LOG. DEPTHS SHALL BE DETERMINED IN THE FIELD. AS A GUIDELINE, TEST EMBEDMENT DEPTHS MAY INCLUDE 8 FT, 10 FT, 12 FT, AND 14 FT. TESTS AT 12 FT AND 14 FT WILL ONLY BE REQUIRED IF PILES MUST BE DRIVEN DEEPER THAN 10 FT TO ACHIEVE TARGET PULLOUT RESISTANCE. SEE NOTE BELOW.

4. 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. LIMIT COMPRESSIVE LOADING OF THE TRACKS ON THE GROUND BY DRIVING THE EXCAVATOR ONTO LOGS LAID ON THE GROUND TO DISTRIBUTE THE WEIGHT OVER A LARGER AREA.

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

6. UP TO 10% OF PRODUCTION VERTICAL LOGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THEN IT SHOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION VERTICAL LOGS SHALL BE PROOF TESTED.

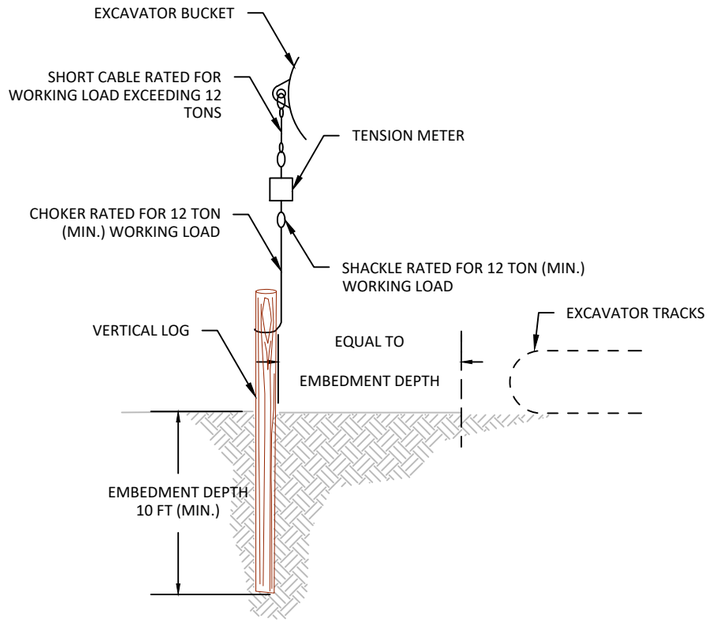
7. VERTICAL LOG EMBEDMENT DEPTH SPECIFIED IN THESE DRAWINGS MAY BE INCREASED, AT NO ADDITIONAL COST, PENDING COMPARISON OF PULL OUT TEST RESULTS TO AN ASSUMED RAW PULLOUT RESISTANCE OF 15,000 POUNDS. IF TESTING REVEALS FIELD PULLOUT RESISTANCE VALUES THAT ARE LESS THAN THE ASSUMED VALUES, VERTICAL LOGS MAY BE REQUIRED TO BE DRIVEN UP TO 5 FT DEEPER THAN INDICATED. ENGINEER WILL DETERMINE WHETHER THE NUMBER OF VERTICAL LOGS MAY BE REDUCED IF TESTING YIELDS VALUES THAT EXCEED ASSUMED VALUES, BASED ON EVALUATION OF VERTICAL PULLOUT AND LATERAL BRACING OBJECTIVES AT EACH LOCATION.



1 / TYP TYPICAL DETAIL
LOG-LOG CONNECTIONS
NOT TO SCALE

BOLTED CONNECTION NOTES

PIN LOGS TO LOGS
1. DRILL 1-1/2" DIA HOLE THROUGH LOGS.
2. INSERT 1-1/4" DIA THREADED ROD.
3. INSTALL STEEL PLATES AND HEAVY HEX NUTS. SECURE NUTS BY CHISELING THREADS OR MUSHROOMING EXPOSED ENDS OF ROD.
4. FILE OR GRIND OFF SHARP EDGES



2 / TYP TYPICAL DETAIL
VERTICAL LOG PULL OUT TEST
NOT TO SCALE

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TYPICAL DETAILS
VERTICAL LOGS

SHEET
19 OF 25

MICHAEL RAFFERTY
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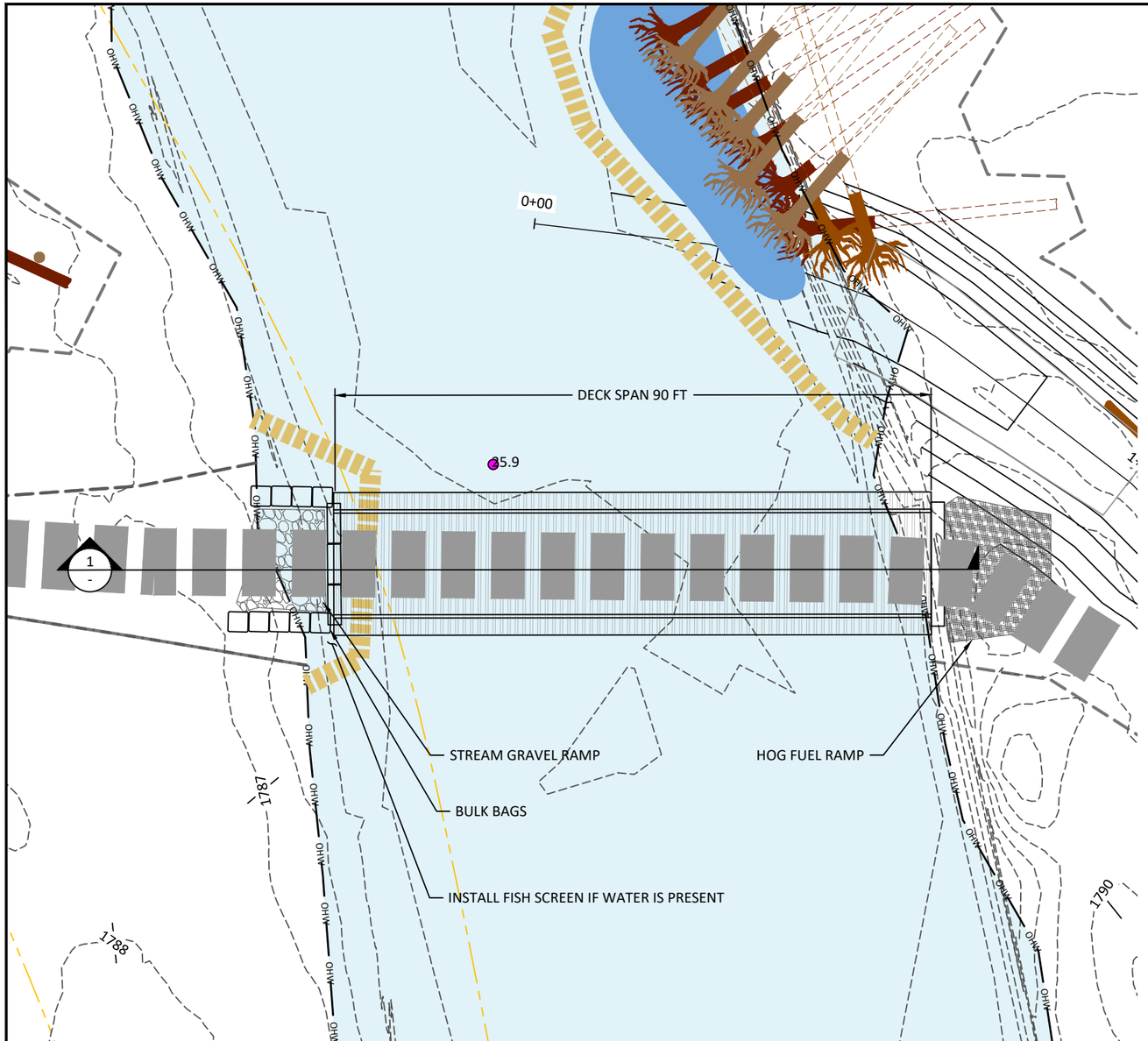
REGISTERED PROFESSIONAL ENGINEER
1/21/21



PLAN LEGEND

- EXISTING 1 FT CONTOUR
- PROPOSED 1 FT CONTOUR
- PROPERTY BOUNDARIES
- LIMITS OF DISTURBANCE
- TEMPORARY CONSTRUCTION ACCESS
- OHW — ESTIMATED ORDINARY HIGH WATER
- COFFER DAM
- STREAM GRAVEL RAMP
- HOG FUEL RAMP

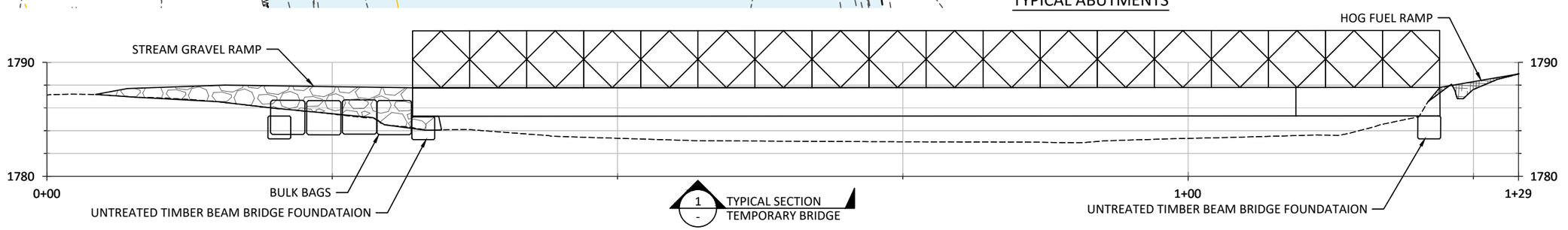
NOTES:

1. THIS FIGURE SHOWS A SUGGESTED LAYOUT AND LOCATION OF A TEMPORARY BRIDGE TO PROVIDE ACCESS TO THE SIDE CHANNEL CONSTRUCTION AREA. THIS IS NOT A DESIGN. ACTUAL BRIDGE STRUCTURE, FOUNDATION, AND RAMPS TO BE DESIGNED BY OTHERS. SUBMIT SHOP DRAWINGS TO THE YAKAMA NATION FISHERIES PROJECT MANAGER PRIOR TO MOBILIZATION .
2. SEE TYPICAL BRIDGE DETAILS ON SHEETS 22 AND 23.
3. BEFORE REMOVING BRIDGE, REMOVE RAMP SUPPORT MATERIAL ON SOUTH SIDE AND SPREAD HOG FUEL ONTO FLOODPLAIN SURFACE.
4. AFTER BRIDGE IS REMOVED, REMOVE FOUNDATION TIMBERS ON SOUTH SIDE BY HAND. REMOVE FOUNDATION MATERIALS ON NORTH SIDE. SPREAD RESIDUAL STREAM GRAVEL ONTO GRAVEL BAR.

0 20 40

SCALE IN FEET

TYPICAL ABUTMENTS



1 - TYPICAL SECTION TEMPORARY BRIDGE

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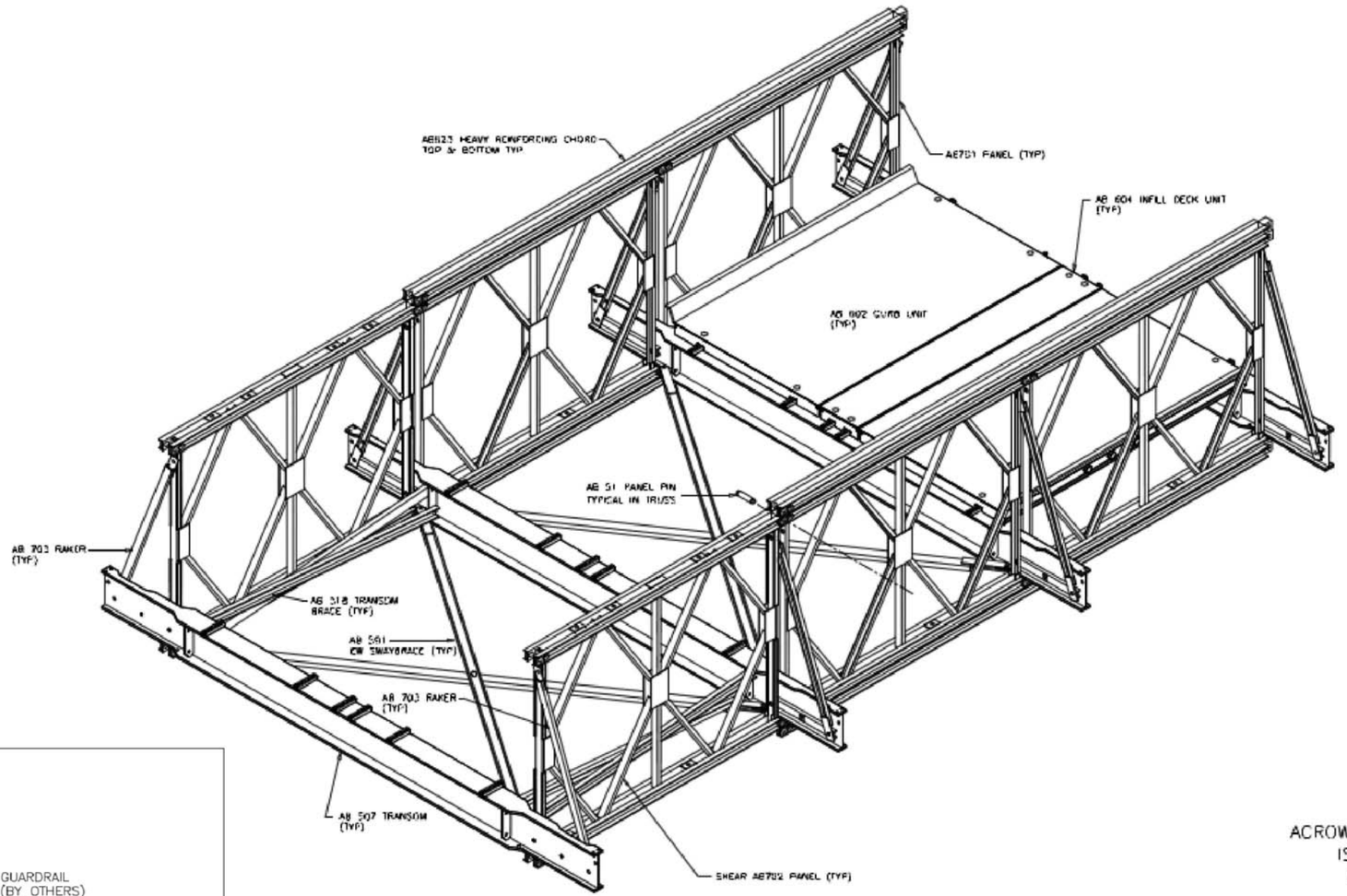
TEMPORARY BRIDGE SCHEMATIC

SHEET 20 OF 25

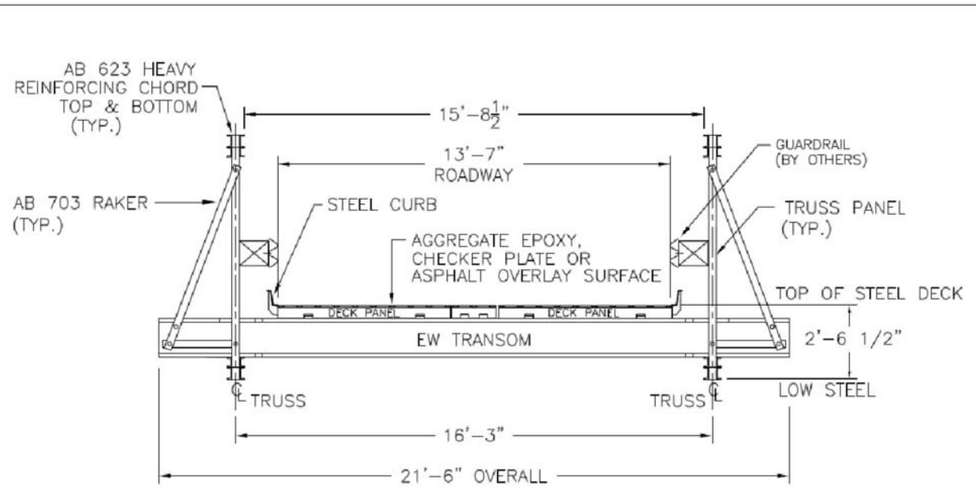
MICHAEL RAFFERTY
STATE OF WASHINGTON
44449
REGISTERED PROFESSIONAL ENGINEER
1/21/21

ACROW BRIDGE
Building Bridges.
Connecting People.



ISOMETRIC VIEW OF FEMALE END OF BRIDGE

ACROW 700XS PANEL BRIDGE
ISOMETRIC VIEW OF
SSRH EW BRIDGE



EXTRA WIDE BRIDGE

NOTES:
H-20 LOADING
MIN DECK ELEVATION = 2159FT

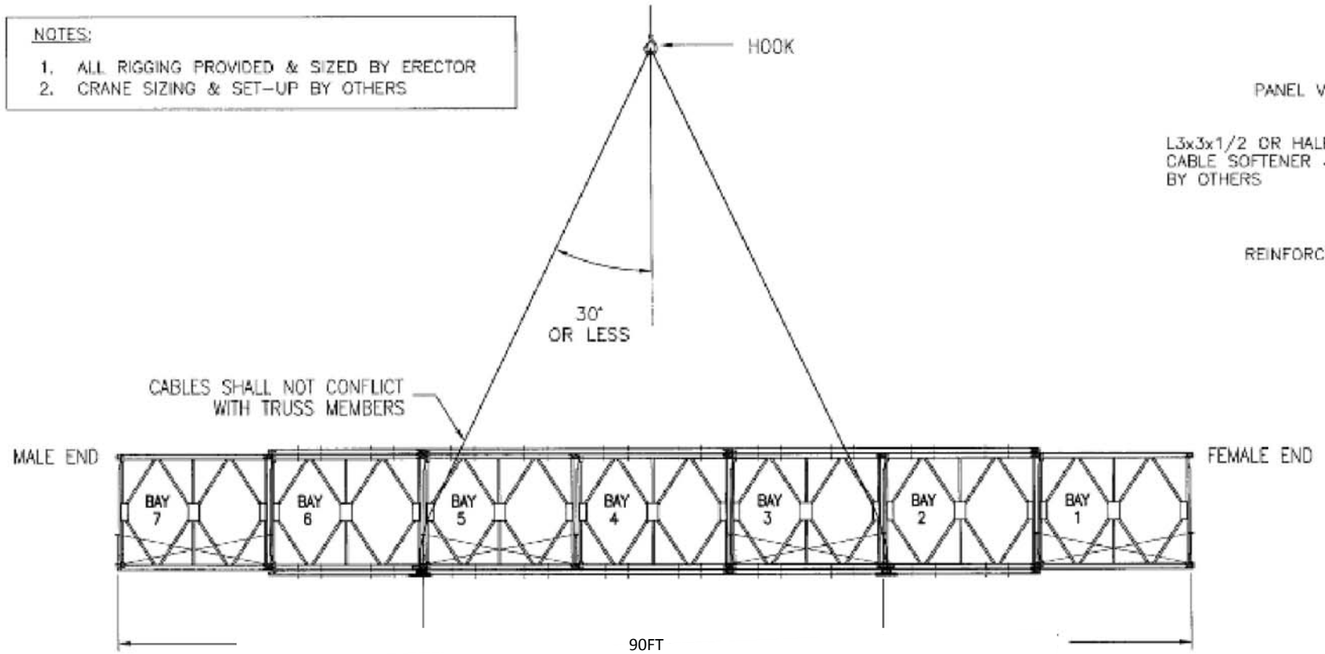
ACROW BRIDGE
Building Bridges.
Connecting People.
Acrow Bridge
161 New Road, Parsippany, NJ 07054

ACROW 700XS BRIDGE
EXTRA WIDE SSRH
CROSS SECTION

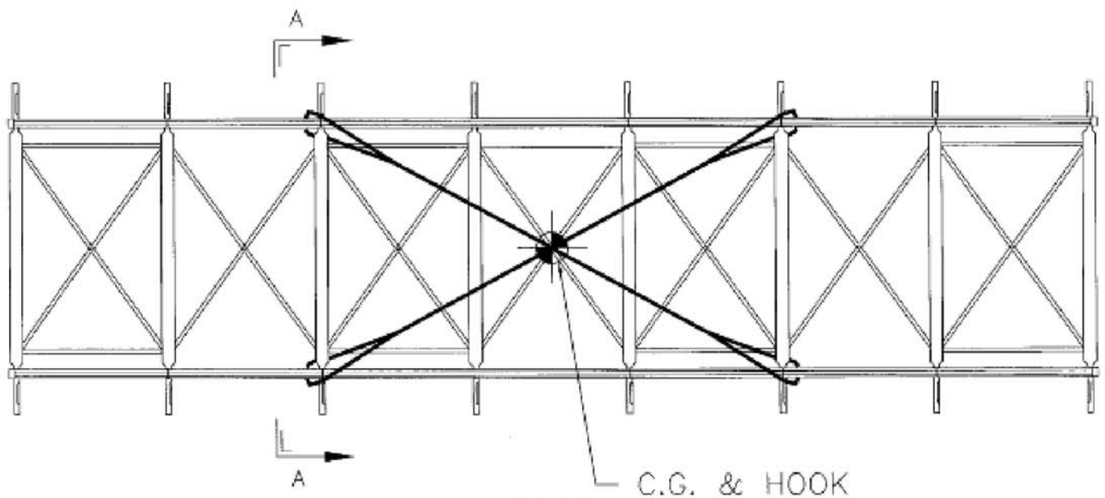
DRAWN BY RJ | DATE MAY 22, 2013 | CONTRACT NO.
CHECKED BY SP
APPROVED BY SP | SCALE: N.T.S.
DRAWING NO. | REV.
SHT 1 OF 1

NOTES:

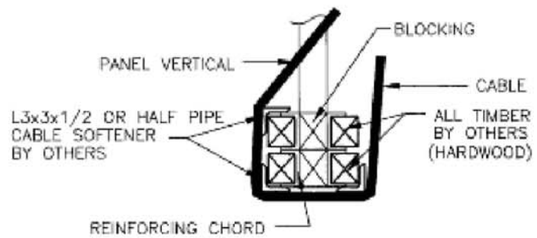
1. ALL RIGGING PROVIDED & SIZED BY ERECTOR
2. CRANE SIZING & SET-UP BY OTHERS



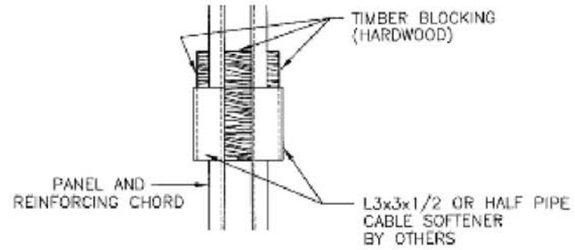
ELEVATION



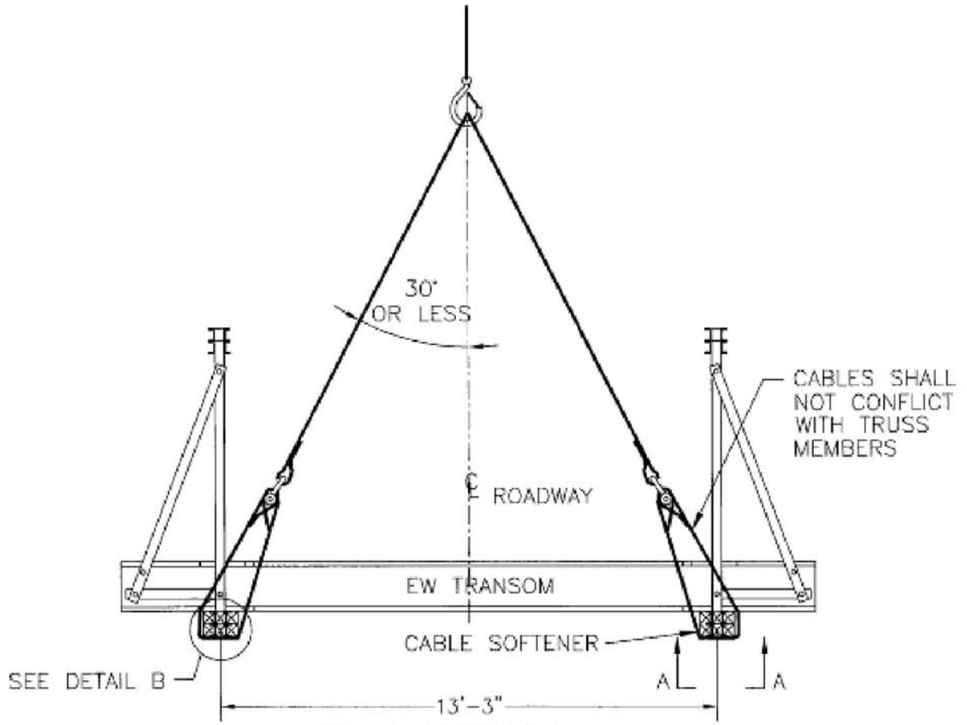
PLAN



DETAIL B



SECTION A-A



CROSS SECTION A-A

APPROXIMATE WEIGHT WITHOUT DECK = 25 KIPS (12.5 TONS)

APPROXIMATE WEIGHT WITH DECK = 48 KIPS (24 TONS)

APPR.	BY	DESCRIPTION	DATE	REV.

SEAL

ACROW BRIDGE

Building Bridges. Connecting People.

Acrow Corporation of America
181 New Road, Parsippany, NJ 07054

ACROW PANEL 700XS BRIDGE
LIFTING/ RIGGING PLAN
70FT x SCW SSR BRIDGE
BOND SPRING RD. BRIDGE 399 REPLACEMENT
GRANT COUNTY, DPW
WENATCHEE, WASHINGTON

DRAWN BY	RM	DATE: MAY 29, 2015	CONTRACT NO.
CHECKED BY	TW	SCALE: AS SHOWN	
APPROVED BY	SP		

WEST COMPANY CONSTRUCTION
AIRWAY HEIGHTS, WA

DRAWING NO. AB1741-LP

SHT 1 OF 1

REV.

PROVISIONS

INTRODUCTION

THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION 2014 (WSDOT STANDARD SPECIFICATIONS) SHALL APPLY UNLESS OTHERWISE NOTED IN THE FOLLOWING SPECIAL PROVISIONS. THE "CONTRACTING AGENCY" OR "OWNER" SHALL BE THE CONFEDERATED TRIBES AND BANDS OF THE YAKAMA NATION. ADDITIONAL SPECIFICATIONS IN THE FOLLOWING CONTRACT SECTIONS ARE INCLUDED FOR ITEMS NOT COVERED BY THE WSDOT STANDARD SPECIFICATIONS.

SECTIONS 1-02, 1-03, AND 1-08 (EXCEPT 1-08.6, 1-08.7, 1-08.8) OF THE STANDARD SPECIFICATIONS DO NOT APPLY.

THE IN-WATER WORK WINDOW IS JULY 16 - JULY 31, 2021.

ITEM 001- TESC, SPCC PLAN AND IMPLEMENTATION

THIS WORK SHALL PREPARE A TEMPORARY EROSION SEDIMENT CONTROL (TESC) PLAN AND A SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN. THIS ITEM ALSO CONSISTS OF IMPLEMENTATION AND REMOVAL OF TESC MEASURES IN ACCORDANCE WITH SECTION 1-07.15 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. THE CONTRACTOR SHALL SUBMIT A TESC PLAN FOR THE PROJECT TO THE OWNER FOR APPROVAL. THE TESC PLAN MUST SATISFY THE REQUIREMENTS OF THE WASHINGTON DEPARTMENT OF ECOLOGY NPDES STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY AND ALL OTHER APPLICABLE PERMITS. THE TESC MEASURES INCLUDED IN THE DRAWINGS AND DESCRIBED HEREIN IS INTENDED TO PROVIDE A BASELINE FOR SEDIMENT AND EROSION CONTROL AND DOES NOT ENSURE THAT THE STANDARDS ESTABLISHED BY ANY APPLICABLE PERMITS WILL BE MET. THE CONTRACTOR MAY USE THESE MEASURES OR ALTERNATIVE MEASURES OF HIS OWN DESIGN TO ENSURE SATISFACTORY PERFORMANCE AND THAT THE EROSION CONTROL REQUIREMENTS OF ALL APPLICABLE PERMITS ARE MET. THE CONTRACTOR SHALL BE NAMED AS THE PERMIT HOLDER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING, INSPECTING AND FILING REPORTS, MAINTAINING, REPLACING, AND REMOVING TESC AND SPCC MEASURES. THE PLAN SHALL INCLUDE THE NAME, ADDRESS AND 24-HOUR CONTACT NUMBER OF THE PERSON RESPONSIBLE FOR EROSION PREVENTION AND SEDIMENT CONTROL MEASURES.

2. A SPILL CONTAINMENT KIT SHALL BE ON SITE AND CREWS SHALL BE TRAINED IN ITS USE.

3. BIODEGRADABLE HYDRAULIC FLUID SHALL BE INSTALLED INTO EACH PIECE OF HEAVY MACHINERY WORKING WITHIN 50 FEET OF THE RIVER.

MEASUREMENT AND PAYMENT

"TESC, SPCC PLAN AND IMPLEMENTATION," INCLUDING THE ABOVE AMENDMENTS TO THE ITEM WILL BE MEASURED AND PAID FOR BY LUMP SUM IN ACCORDANCE WITH SECTION 1-04.1. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED.

ITEM 002 - MOBILIZATION

THIS ITEM SHALL CONSIST OF PREPARATION WORK AND OPERATIONS PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 1-09.7 OF THE WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (STANDARD SPECIFICATIONS), AND AS AMENDED BY THESE SPECIAL PROVISIONS.

CONSTRUCTION REQUIREMENTS

1. TEMPORARY SITE ACCESS SHALL BE ALONG ALIGNMENTS SHOWN IN THE PLANS. MINOR DEVIATIONS TO THE ALIGNMENTS MAY OCCUR AS APPROVED BY THE OWNER TO PRESERVE SENSITIVE AREAS OR TREES, OR TO AVOID DAMAGE TO OTHER FEATURES IDENTIFIED IN THE FIELD.

2. PLACE TEMPORARY WETLAND MAT WHERE ACCESS ROADS CROSS EXISTING WETLANDS TO LIMIT IMPACT.

3. IN SELECT AREAS TO BE DETERMINED ALONG THE ACCESS ROUTES, TOPSOIL SHALL BE STRIPPED AND STOCKPILED ALONG THE ACCESS ROUTE AND NEAR EACH STRIPPING AREA, UP TO 20 CY TOTAL PER AREA.

4. FILL MAY BE PLACED TO DEVELOP APPROACHES FROM ENTIAT RIVER ROAD. FILL SHALL BE REMOVED UPON COMPLETION OF PROJECT.

5. PRIOR TO DEMOBILIZATION, STAGING AREAS AND SITE ACCESS ROUTES SHALL BE RIPPED TO DECOMPACT SOILS TO 18" OR GREATER DEPTH.

MEASUREMENT AND PAYMENT

PAYMENT FOR "MOBILIZATION" SHALL BE BY THE LUMP SUM CONTRACT PRICE. PARTIAL PAYMENTS WILL BE MADE AS IN ACCORDANCE WITH SECTION 1-09.9 OF THE STANDARD SPECIFICATIONS. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED.

ITEM 003 - TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL REQUIREMENTS SHALL INCLUDE BARRICADES AND CONSTRUCTION SIGNAGE AT THE ENTRANCE TO THE PROJECT SITE AND ANY OTHER MEASURES PER SECTION 1-10 AND LOCAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COUNTY RIGHT-OF-WAY PERMIT.

MEASUREMENT AND PAYMENT

"TRAFFIC CONTROL" WILL BE MEASURED AND PAID FOR BY LUMP SUM. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ACQUIRING THE RIGHT-OF-WAY PERMIT AS WELL AS ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS TO COMPLETE THE WORK.

ITEM 004 - TEMPORARY BRIDGE

A TEMPORARY BRIDGE, 90 FEET LONG, SHALL BE REQUIRED TO ACCESS THE LOWER AND UPPER SIDE CHANNELS AND SOIL DISPOSAL AREAS. A TYPICAL BRIDGE IS SHOWN IN THE PLANS AND SUPPLIER INFORMATION WILL BE PROVIDED UPON REQUEST. CONTRACTOR SHALL SUBMIT AN ACCESS PLAN INCLUDING DRAWINGS SHOWING DETAILS OF PROPOSED METHODS FOR PROVIDING ACCESS FOR EQUIPMENT, INCLUDING LOADED HAUL TRUCKS, TO THE SITES. REVIEW AND APPROVAL OF THE PLAN SHALL NOT RELIEVE THE CONTRACTOR FROM FULL RESPONSIBILITY FOR THE ADEQUACY AND SAFETY OF THE CROSSING.

THE CONSTRUCTION CONTRACTOR SHALL ALLOW THE BRIDGE TO BE USED BY A SEPARATE VEGETATION CONTRACTOR SO THAT THEY MAY STOCKPILE PLANTS AND SUPPLIES IN THE PROJECT AREA FOR LATER REVEGETATION EFFORTS. SCHEDULING FOR THIS WILL BE COORDINATED BETWEEN THE OWNER AND THE CONSTRUCTION CONTRACTOR.

THE TEMPORARY BRIDGE SHALL BE REMOVED BEFORE THE END OF THE IN-WATER WORK WINDOW.

MEASUREMENT AND PAYMENT

"TEMPORARY BRIDGE" WILL BE MEASURED AND PAID FOR BY LUMP SUM. INSTALLATION OF THE TEMPORARY BRIDGE, REMOVAL, MAINTENANCE, AND ASSOCIATED ITEMS SUCH AS ABUTMENTS, FOOTINGS, RAMPS, AND SEDIMENT AND WATER CONTROLS SHALL BE INCLUDED IN THIS ITEM.

ITEM 005 - CLEARING AND GRUBBING

THIS ITEM CONSISTS OF CLEARING AND GRUBBING FOR CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING THOSE AREAS REQUIRED FOR TEMPORARY ACCESS ROUTES AND IN ACCORDANCE WITH SECTION 2-01 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

CONSTRUCTION REQUIREMENTS

1. AREAS FOR CLEARING AND GRUBBING ARE SHOWN IN THE PLANS. ADJUSTMENTS TO ALIGNMENTS AND EXTENTS MAY BE ADJUSTED BY THE OWNER TO REDUCE DAMAGE TO THE ENVIRONMENT. THE FINAL AREAS WILL BE FLAGGED IN THE FIELD BY THE OWNER PRIOR TO CLEARING AND GRUBBING WORK. CLEARING AND GRUBBING SHALL NOT OCCUR OUTSIDE OF THE DESIGNATED LIMITS WITHOUT PRIOR APPROVAL BY THE OWNER.

2. INCLUDED IN THIS ITEM ARE THE REMOVAL AND SALVAGE OF APPROXIMATELY 31 TREES, VARYING IN SIZE FROM 12" TO 24" DIAMETER AT BREAST HEIGHT (DBH). SALVAGED TREES SHALL BE INSTALLED AS LARGE WOODY MATERIAL DURING CONSTRUCTION OF THE PROJECT. TO THE MAXIMUM PRACTICABLE EXTENT, THE CONTRACTOR SHALL EXCAVATE TO LOOSEN SOIL AROUND EACH ROOTWAD AND THEN PUSH OVER THE TREES IN ORDER TO SALVAGE LOGS WITH INTACT ATTACHED ROOTS. SALVAGED TREES MAY BE TEMPORARILY STOCKPILED OUTSIDE OF THE CLEARING LIMITS BUT WITHIN REACH OF THE EXCAVATOR DURING SIDE CHANNEL CONSTRUCTION.

3. TREES AND SHRUBS SMALLER THAN 12" DBH THAT ARE REMOVED DURING CLEARING AND GRUBBING SHALL BE LEFT ON SITE, PLACED OUTSIDE OF LIMITS OF DISTURBANCE, TO BE USED AS SLASH DURING INSTALLATION OF LOGS. UNUSED EXCESS SLASH MAY REMAIN ON SITE. SLASH REMAINING ON SITE SHALL NOT BE IN LEFT IN LARGE INDIVIDUAL PILES, BUT SHALL BE EVENLY DISTRIBUTED.

4. VEGETATION PROTECTION AND RESTORATION PER SECTION 1-07.16(2) SHALL BE INCIDENTAL TO CLEARING AND GRUBBING.

MEASUREMENT AND PAYMENT

"CLEARING AND GRUBBING," INCLUDING THE ABOVE AMENDMENTS TO THE ITEM WILL BE MEASURED AND PAID FOR BY LUMP SUM IN ACCORDANCE WITH SECTION 1-09.

REMOVAL AND SALVAGE OF TREES AND SHRUBS SHALL BE CONSIDERED INCIDENTAL TO CLEARING AND GRUBBING.

MEASUREMENT AND COMPENSATION FOR THE INSTALLATION OF THE SALVAGED TREES IS DESCRIBED IN THE SPECIFICATIONS FOR THE "LOGS" AND "LOG STRUCTURE " AND PAID UNDER THOSE ITEMS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

ITEMS 006-008 - CHANNEL EXCAVATION INCL. HAUL

THIS ITEM IS APPLICABLE TO EXCAVATION AT THE FOLLOWING SITES:

1. LOWER SIDE CHANNEL
2. MIDDLE SIDE CHANNEL
3. UPPER SIDE CHANNEL

THIS ITEM CONSISTS OF EXCAVATING, LOADING, HAULING, PLACING, AND COMPACTING EMBANKMENT, OR OTHERWISE DISPOSING OF THE MATERIAL IN ACCORDANCE WITH SECTION 2-03 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. PORTIONS OF WORK WILL BE IN WATER. THE CONTRACTOR IS ADVISED THAT SHALLOW GROUNDWATER MAY BE ENCOUNTERED THROUGHOUT EXCAVATION AREAS.

2. THIS ITEM INCLUDES "COFFERDAMS" AND "PUMPING" ASSOCIATED WITH THE WORK.

3. THIS ITEM INCLUDES HAULING OF EXCAVATED MATERIAL TO THE DISPOSAL SITES LISTED BELOW. THE UNIT CONTRACT PRICE PER CUBIC YARD SHALL INCLUDE "HAUL".

   LOWER AND UPPER SIDE CHANNELS (RIVER RIGHT) - DESIGNATED ON-SITE SOIL DISPOSAL AREAS, AS SHOWN ON PLANS.

   MIDDLE SIDE CHANNEL EXCAVATION (RIVER LEFT) - OFF-SITE HAUL TO PRESTON PIT, 4 MILE ROUNDTRIP FROM SITE. STOCKPILE SOIL IN AN OWNER-APPROVED AREA.

4. CONTRACTOR SHALL NOTIFY THE OWNER WHEN EACH SIDE CHANNEL HAS BEEN EXCAVATED TO LIMITS SHOWN ON THE PLANS. AN AUTHORIZED REPRESENTATIVE OF THE OWNER SHALL INSPECT THE EXPOSED BED MATERIAL BEFORE THE CONTRACTOR PROCEEDS WITH FINE GRADING.

5. THIS ITEM INCLUDES DETAIL GRADING TO SHAPE THE CHANNEL, INCLUDING CREATING POOLS WITHIN THE CHANNEL, AS SHOWN IN THE PLANS. POOLS SHALL BE OVER-EXCAVATED INTO THE STREAMBANK TO PROVIDE ROOM TO INSTALL LOGS WITH ROOTS AND SALVAGED TREES.

6. NO WORK SHALL OCCUR OUTSIDE OF THE LIMITS OF DISTURBANCE SHOWN IN THE PLANS UNLESS AUTHORIZED BY THE OWNER.

7. A CULTURAL STAFF PERSON WILL BE PRESENT ON SITE DURING ALL EXCAVATION ACTIVITIES.

MEASUREMENT

"CHANNEL EXCAVATION INCL. HAUL" WILL BE MEASURED BY CUBIC YARD. ALL EXCAVATED MATERIAL WILL BE MEASURED IN THE POSITION IT OCCUPIED BEFORE THE EXCAVATION WAS PERFORMED. AN ORIGINAL GROUND MEASUREMENT WAS TAKEN USING DIGITAL TERRAIN MODELING SURVEY TECHNIQUES. THE ORIGINAL GROUND WILL BE COMPARED WITH THE PLANNED FINISHED SECTION SHOWN IN THE PLANS. SLOPE/GROUND INTERCEPT POINTS DEFINING THE LIMITS OF THE MEASUREMENT WILL BE AS STAKED BY THE OWNER.

PAYMENT

PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: "CHANNEL EXCAVATION INCL. HAUL" PER CUBIC YARD BY SITE. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED. NO ADDITIONAL COMPENSATION WILL BE MADE FOR EXCAVATED MATERIAL THAT IS STOCKPILED, RE-EXCAVATED, AND MOVED AGAIN.

ITEMS 009 - SALVAGE COBBLE

THIS ITEM INCLUDES LOADING, HAULING, STOCKPILING, AND PLACING NATIVE RIVER COBBLE ENCOUNTERED DURING SIDE CHANNEL EXCAVATION, AS WELL AS EXCAVATION OF MAIN STEM POOLS, TO BE RESERVED IN A STOCKPILE FOR USE AS SELECT FILL AS NEEDED TO CONSTRUCT RIFFLE STRUCTURES, REPLACE SOFT SOILS, OR AS BACKFILL OF LOG STRUCTURES. UNUSED COBBLE SHALL BE MOVED TO THE FILL AREA.

MEASUREMENT

"SALVAGE COBBLE" WILL BE MEASURED BY THE CUBIC YARD OF STOCKPILED MATERIAL. ONSITE MOVEMENT, STOCKPILING, AND PLACEMENT ARE INCLUDED IN THIS ITEM.

PAYMENT

PAYMENT WILL BE MADE FOR "SALVAGE COBBLE" PER CUBIC YARD. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED.

MICHAEL RAFFERTY — STATE OF WASHINGTON — 44449 — REGISTERED PROFESSIONAL ENGINEER

1/21/21

NO.	DATE	REVISION DESCRIPTION

CP	MR	DM
DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
APPROVED	DATE	PROJECT

Upper Burns & Angle Point Habitat Enhancement Project
Confederated Tribes and Bands of The Yakama Nation
Chelan County, WA

inter·fluve
501 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
www.interfluve.com

SPECIFICATIONS
1 OF 3

SHEET
23 OF 25

I**ITEMS 010-012 - LOGS** {SIDE CHANNELS}

LOGS INCLUDES ALL WORK ASSOCIATED WITH INSTALLATION OF LOGS, LOGS WITH ROOTS, VERTICAL LOGS, THREADED ROD, AND SALVAGED TREES AT THE FOLLOWING SITES:

1. LOWER SIDE CHANNEL
2. MIDDLE SIDE CHANNEL
3. UPPER SIDE CHANNEL

THIS ITEM INCLUDES MOVEMENT OF MATERIALS FROM STOCKPILES TO INSTALLATION AREAS, AND EXCAVATION AND BACKFILL TO PARTIALLY BURY LOGS, AND CONTROLLING WATER AND TURBIDITY USING COFFERDAMS AND PUMPING.

OWNER SUPPLIED LOGS WILL BE STOCKPILED AT THE PRESTON PIT, APPROXIMATELY 2 MILES FROM THE PROJECT SITE. THE CONTRACTOR WILL BE GIVEN A KEY THAT MUST BE RETURNED IMMEDIATELY UPON PROJECT COMPLETION. LOGS BECOME AVAILABLE BEGINNING JULY 8, 2021.

MATERIALS

1. LOGS: LOGS AND LOGS WITH ROOTS WILL BE SUPPLIED BY THE OWNER . QUANTITIES FOR EACH SITE ARE SHOWN IN THE PLANS. OWNER SUPPLIED LOGS WILL HAVE THE FOLLOWING CHARACTERISTICS:

   LOGS WITHOUT ROOTS: 40' LONG AND 18-20" DIAMETER AT SCALED END.

   LOGS WITH ROOTS: 40' LONG AND 18-24" DBH.

   AT THE DIRECTION OF THE OWNER, THE CONTRACTOR SHALL MAKE UP TO 92 VERTICAL LOGS BY BREAKING 10-15 FEET OFF OF THE CUT END OF IMPORTED LOGS WITH ROOTS.
2. VERTICAL LOGS: VERTICAL LOGS WILL BE SUPPLIED BY THE OWNER. QUANTITIES FOR EACH SITE ARE SHOWN IN THE PLANS. TIMBER PILES WILL HAVE THE FOLLOWING CHARACTERISTICS: 30' LONG AND 14-16" DIAMETER IN MIDDLE OF LOG.
3. SALVAGED TREES: SALVAGED TREES ARE WHOLE CONIFEROUS TREES INCLUDING ROOTS, SALVAGED FROM THE CLEARING LIMITS. DECIDUOUS TREES MAY ALSO BE USED AT THE DISCRETION OF THE OWNER.
4. SLASH: SLASH INCLUDES SHRUBS AND SMALL TREES REMOVED WITHIN THE CLEARING LIMITS, OR PROVIDED BY THE OWNER AT STOCKPILES NEAR THE SITES.
5. THREADED ROD: INSTALL THREADED ROD, WASHERS, AND NUTS AS SPECIFIED IN THE PLANS.

CONSTRUCTION REQUIREMENTS

LOGS: LOCATIONS OF LOGS AND LOGS WITH ROOTS SHALL GENERALLY BE AS INDICATED ON THE PLANS. HOWEVER, FINAL LOCATION WILL DEPEND UPON THE SIZE, SHAPE AND QUANTITY OF MATERIAL DELIVERED OR SALVAGED. INSTALLATION OF LOGS SHALL BE UNDERSTOOD TO REQUIRE A "FIT IN THE FIELD" APPROACH AS DIRECTED BY THE OWNER. LOGS SHALL BE STABILIZED BY PARTIAL BURIAL AND/OR BRACING PROVIDED BY VERTICAL LOGS OR STANDING TREES. SOME LOGS SHALL BE SECURED TO TIMBER PILES OR OTHER LOGS VIA FULLY THREADED ROD. THE ENDS OF CUT LOGS SHALL NOT BE LEFT ON SITE, BUT SHALL BE DISPOSED OF OFF SITE AT THE CONTRACTOR'S EXPENSE.

VERTICAL LOGS: CONSTRUCTION OF VERTICAL LOGS SHALL INCLUDE ON-SITE MOVEMENT AND INSTALLATION OF VERTICAL LOGS TO DESIGNATED SITES SHOWN IN THE PLANS. VERTICAL LOGS SHALL BE PER THE APPROXIMATE NUMBERS AND QUANTITIES INDICATED ON THE PLANS. SPECIFIC LOCATIONS SHALL BE DETERMINED IN THE FIELD AND DIRECTED BY THE OWNER. THE REQUIRED EMBEDMENT DEPTH IS INDICATED ON THE PLANS. INSTALLED VERTICAL LOGS SHALL ALSO HAVE THE FOLLOWING FIELD-DIRECTED CHARACTERISTICS:

a. VERTICAL LOGS SHALL BE INSTALLED AT VARIOUS ANGLES AND WITH VARYING HEIGHTS ABOVE GROUND TO BREAK UP A UNIFORM APPEARANCE.

b. EACH VERTICAL LOG SHALL HAVE A BROKEN TOP UNLESS DIRECTED OTHERWISE BY THE OWNER'S REPRESENTATIVE. THE PREFERRED METHOD SHALL BE TO BREAK OFF THE TOP BEFORE INSTALLING THE VERTICAL LOG. GRINDING OR MAKING MULTIPLE PLUNGE CUTS WITH CHAIN SAW TO PROVIDE A ROUGHENED TOP ARE OTHER ACCEPTABLE METHODS.

VERTICAL LOGS SHALL BE INSTALLED BY VIBRATORY PILE DRIVER. VIBRATORY PILE DRIVER SHALL HAVE THE FOLLOWING CHARACTERISTICS:

a. MINIMUM OF 800 KN (80 TONS) OF CENTRIFUGAL FORCE.

b. SIDE GRIP WITH MINIMUM 16" SPACE BETWEEN ENDS OF JAWS SO THAT 16" DIAMETER LOG WILL FIT INTO THE JAWS.

c. PRE-APPROVED PILE DRIVERS INCLUDE: MORAX SP-80, GRIZZLY MG90, OR EQUIVALENT.

AT EACH PILE INSTALLATION SITE, A MINIMUM OF ONE VERTICAL LOG SHALL BE TESTED FOR PULLOUT RESISTANCE. EACH TEST WILL REQUIRE UP TO FOUR INDIVIDUAL PULLS, EACH AT A DEEPER DEPTH. SEE DETAILS IN PLANS. THE CONTRACTOR SHALL PROVIDE THE TENSIOMETER AND ASSOCIATED HARDWARE.

INSTALL THREADED ROD WHERE SHOWN IN THE PLANS OR AS DIRECTED BY OWNER.

SALVAGED TREES: SALVAGED TREES SHALL BE INSTALLED AS DIRECTED BY THE OWNER. CARE SHALL BE TAKEN WHEN MOVING AND INSTALLING SALVAGED TREES SO THAT BRANCHES AND ROOTS REMAIN ATTACHED TO THE TREE. SALVAGED TREES SHALL BE STABILIZED BY PARTIAL BURIAL, BRACING TO UPRIGHT LOGS OR STANDING TREES, OR HELD DOWN BY OTHER PARTIALLY BURIED LOGS. SOME SALVAGED TREES SHALL BE MOVED UP TO 1,000 FEET TO THEIR INSTALLATION SITES.

SLASH: SLASH CLEARED FROM WITHIN THE CLEARING SHALL BE INCORPORATED INTO LOG STRUCTURES AS DIRECTED BY THE OWNER. INTERMINGLE, STACK, AND RACK SLASH MATERIAL TO THE INSTALLED LOGS AND PILES TO EMULATE NATURAL ACCUMULATIONS OF WOOD MATERIAL.

EARTHWORK: WHERE PARTIAL BURIAL OF LOGS IS REQUIRED, EXCAVATE TRENCH OR PIT AS DIRECTED BY THE OWNER. STOCKPILE THE FILL WITHIN THE DESIGNATED DISTURBANCE AREA. BACKFILL THE LOGS AS EACH LAYER IS INSTALLED. A CULTURAL STAFF PERSON WILL BE PRESENT ON SITE DURING ALL EXCAVATION ACTIVITIES.

MEASUREMENT

MEASUREMENT WILL BE BASED ON THE PORTION OF WORK COMPLETED, MEASURED AS EACH COMPLETED. "LOGS" WILL BE MEASURED BY LUMP SUM PER SITE.

COFFERDAMS AND PUMPING ASSOCIATED WITH PREVENTING TURBIDITY FROM ENTERING THE RIVER SHALL BE INCIDENTAL TO THE LUMP SUM PRICE FOR "LOGS" AT EACH SITE.

PAYMENT

THE CONTRACT PRICE FOR "LOGS" SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS AND LABOR FOR LOADING AND HAULING LOGS FROM STOCKPILE AREAS, AND INSTALLING LOGS. PAYMENT WILL BE MADE FOR "LOGS" BID ITEMS AS LUMP SUMP PER SITE IN ACCORDANCE WITH SECTION 1-09.9 FOR THE FOLLOWING BID ITEMS: "LOGS - LOWER SIDE CHANNEL", "LOGS - MIDDLE SIDE CHANNEL", AND "LOGS - UPPER SIDE CHANNEL."

ITEMS 013 - 015 - LOG STRUCTURE

"LOG STRUCTURE" IS APPLICABLE TO ITEMS SHOWN IN THE PLANS LABELED:

1. SIDE CHANNEL INLET LOG STRUCTURE
2. MAIN STEM LOG STRUCTURE - TYPE 1
3. MAIN STEM LOG STRUCTURE - TYPE 2

"LOG STRUCTURE" INCLUDES ALL WORK ASSOCIATED WITH ONSITE MOVEMENT AND INSTALLATION OF LOGS, LOGS WITH ROOTS, VERTICAL LOGS, WHOLE TREES, SALVAGED TREES, SLASH, BUMPERS, AND SECURING WITH THREADED ROD. THIS ITEM INCLUDES MOVEMENT FROM STOCKPILES TO INSTALLATION AREAS, EXCAVATION AND BACKFILL TO PARTIALLY BURY "LOG STRUCTURE", HAULING AND DISPOSAL OF EXCESS FILL, AND CONTROLLING WATER AND TURBIDITY USING COFFERDAMS AND PUMPING.

OWNER SUPPLIED LOGS WILL BE STOCKPILED AT THE PRESTON PIT, APPROXIMATELY 2 MILES FROM THE PROJECT SITE. THE CONTRACTOR WILL BE GIVEN A KEY THAT MUST BE RETURNED IMMEDIATELY UPON PROJECT COMPLETION. LOGS BECOME AVAILABLE BEGINNING JULY 8, 2021.

MATERIALS

MATERIAL QUANTITIES FOR EACH SITE ARE SHOWN IN THE PLANS.

1. LOGS: LOGS AND LOGS WITH ROOTS WILL BE SUPPLIED BY THE OWNER TO THE SITE STAGING AREAS. QUANTITIES FOR EACH SITE ARE SHOWN IN THE PLANS. OWNER SUPPLIED LOGS WILL HAVE THE FOLLOWING CHARACTERISTICS:

   LOGS WITHOUT ROOTS: 40' LONG AND 18-20" DIAMETER AT SCALED END.

   LOGS WITH ROOTS: 40' LONG AND 18-24" DBH.

   AT THE DIRECTION OF THE OWNER, THE CONTRACTOR SHALL MAKE UP TO 38 VERTICAL LOGS BY BREAKING 10-15 FEET OFF OF THE CUT END OF IMPORTED LOGS WITH ROOTS.
2. VERTICAL LOGS: VERTICAL LOGS WILL BE SUPPLIED BY THE OWNER TO THE SITE STAGING AREAS. QUANTITIES FOR EACH SITE ARE SHOWN IN THE PLANS. VERTICAL LOGS WILL HAVE THE FOLLOWING CHARACTERISTICS: 30' LONG AND 14-16" DIAMETER IN MIDDLE OF LOG.
3. SALVAGED TREES: SALVAGED TREES ARE WHOLE CONIFEROUS TREES INCLUDING ROOTS SALVAGED FROM WITHIN THE CLEARING LIMITS. DECIDUOUS TREES MAY ALSO BE USED AT THE DISCRETION OF THE OWNER.
4. SLASH: SLASH INCLUDES SHRUBS AND SMALL TREES REMOVED WITHIN THE CLEARING LIMITS, OR PROVIDED BY THE OWNER AT STOCKPILES NEAR THE SITES.
5. THREADED ROD: INSTALL THREADED ROD, WASHERS, AND NUTS AS SPECIFIED IN THE PLANS.

CONSTRUCTION REQUIREMENTS

LOGS: LOCATIONS OF ALL LOGS TYPES SHALL GENERALLY BE AS INDICATED ON THE PLANS. HOWEVER, FINAL LOCATION WILL DEPEND UPON THE SIZE, SHAPE AND QUANTITY OF MATERIAL DELIVERED OR SALVAGED. INSTALLATION OF LOGS SHALL BE UNDERSTOOD TO REQUIRE A "FIT IN THE FIELD" APPROACH AS DIRECTED BY THE OWNER. LOGS SHALL BE STABILIZED BY PARTIAL BURIAL AND/OR BRACING PROVIDED BY VERTICAL LOGS. SOME LOGS SHALL BE SECURED TO VERTICAL LOGS OR OTHER LOGS VIA FULLY THREADED ROD. THE ENDS OF CUT LOGS SHALL NOT BE LEFT ON SITE, BUT SHALL BE DISPOSED OF OFF SITE AT THE CONTRACTOR'S EXPENSE.

VERTICAL LOGS: CONSTRUCTION OF VERTICAL LOGS SHALL INCLUDE ON-SITE MOVEMENT AND INSTALLATION OF VERTICAL LOGS TO DESIGNATED SITES SHOWN IN THE PLANS. VERTICAL LOGS SHALL BE PER THE APPROXIMATE NUMBERS AND QUANTITIES INDICATED ON THE PLANS. SPECIFIC LOCATIONS SHALL BE DETERMINED IN THE FIELD AND DIRECTED BY THE OWNER. THE REQUIRED EMBEDMENT DEPTH IS INDICATED ON THE PLANS. INSTALLED VERTICAL LOGS SHALL ALSO HAVE THE FOLLOWING FIELD-DIRECTED CHARACTERISTICS:

a. VERTICAL LOGS SHALL BE INSTALLED AT VARIOUS ANGLES AND WITH VARYING HEIGHTS ABOVE GROUND TO BREAK UP A UNIFORM APPEARANCE.

b. EACH VERTICAL LOG SHALL HAVE A BROKEN TOP UNLESS DIRECTED OTHERWISE BY THE OWNER'S REPRESENTATIVE. THE PREFERRED METHOD SHALL BE TO BREAK OFF THE TOP BEFORE INSTALLING THE VERTICAL LOG. GRINDING OR MAKING MULTIPLE PLUNGE CUTS WITH CHAIN SAW TO PROVIDE A ROUGHENED TOP ARE OTHER ACCEPTABLE METHODS.

VERTICAL LOGS SHALL BE INSTALLED BY VIBRATORY PILE DRIVER. VIBRATORY PILE DRIVERS SHALL HAVE THE FOLLOWING CHARACTERISTICS:

a. MINIMUM OF 800 KN (80 TONS) OF CENTRIFUGAL FORCE.

b. SIDE GRIP WITH MINIMUM 16" SPACE BETWEEN ENDS OF JAWS SO THAT 16" DIAMETER LOG WILL FIT INTO THE JAWS.

c. PRE-APPROVED PILE DRIVERS INCLUDE: MORAX SP-80, GRIZZLY MG90, OR EQUIVALENT.

AT EACH VERTICAL LOG INSTALLATION SITE, A MINIMUM OF ONE VERTICAL SHALL BE TESTED FOR PULLOUT RESISTANCE. EACH TEST WILL REQUIRE UP TO FOUR INDIVIDUAL PULLS, EACH AT A DEEPER DEPTH. SEE DETAILS IN PLANS. THE CONTRACTOR SHALL PROVIDE THE TENSIOMETER AND ASSOCIATED HARDWARE.

INSTALL THREADED ROD WHERE SHOWN IN THE PLANS OR AS DIRECTED BY OWNER.

SALVAGED TREES: SALVAGED TREES SHALL BE INSTALLED AS DIRECTED BY THE OWNER. CARE SHALL BE TAKEN WHEN MOVING AND INSTALLING SALVAGED TREES SO THAT BRANCHES AND ROOTS REMAIN ATTACHED TO THE TREE. SALVAGED TREES SHALL BE STABILIZED BY PARTIAL BURIAL, BRACING TO VERTICAL LOGS OR STANDING TREES, OR HELD DOWN BY OTHER PARTIALLY BURIED LOGS.

SLASH: SLASH CLEARED FROM WITHIN THE CLEARING SHALL BE INCORPORATED INTO LOG STRUCTURES AS DIRECTED BY THE OWNER. INTERMINGLE, STACK, AND RACK SLASH MATERIAL TO THE INSTALLED LOGS AND PILES TO EMULATE NATURAL ACCUMULATIONS OF WOOD MATERIAL.

EARTHWORK: WHERE PARTIAL BURIAL OF LOGS IS REQUIRED, EXCAVATE TO SUBGRADE. STOCKPILE THE FILL WITHIN THE DESIGNATED DISTURBANCE AREA. SORT MATERIALS BY GENERAL SIZES, SEPARATING PILES FOR COARSE AND FINE MATERIAL. BACKFILL THE LOGS AS EACH LAYER IS INSTALLED. USE COARSE FILL IN LOWER LAYER AND ALONG WATERWARD EDGE, AND FINER MATERIALS ON TOP LAYER. LOAD AND HAUL EXCESS FILL TO THE FILL SITE PROVIDED BY THE OWNER. A CULTURAL STAFF PERSON WILL BE PRESENT ON SITE DURING ALL EXCAVATION ACTIVITIES.

MEASUREMENT

"LOG STRUCTURE" BID ITEMS WILL BE MEASURED BY EACH.

PAYMENT

PAYMENT WILL BE MADE PER EACH IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: "LOG STRUCTURE - SIDE CHANNEL INLET", "LOG STUCTURE - MAIN STEM TYPE 1", AND "LOG STRUCTURE - MAIN STEM TYPE 2."

THE CONTRACT PRICE FOR EACH "LOG STRUCTURE" BID ITEM SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS AND LABOR FOR LOADING AND HAULING LOGS FROM STOCKPILE AREAS, INSTALLING AND SECURING LOGS, VERTICAL LOGS, AND SALVAGED TREES AS OUTLINED IN THE PLANS. EARTHWORK, INSTALLING SLASH AND THREADED ROD SHALL BE INCIDENTAL TO LOG STRUCTURES.

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1/21/21

NO.	DATE	REVISION DESCRIPTION

CP	MR	DM
DRAWN	DESIGNED	CHECKED
-	1/21/2021	16-02-19
APPROVED	DATE	PROJECT

Upper Burns & Angle Point Habitat Enhancement Project
Confederated Tribes and Bands of The Yakama Nation
Chelan County, WA

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ITEM 016 - SURPLUS LOG

LOGS BROUGHT TO THE SITE STOCKPILE OR INSTALLATION AREAS, BUT ARE NOT USED SHALL BE LOADED, HAULED, AND UNLOADED AT THE PRESTON PIT.

MEASUREMENT

MEASUREMENT WILL BE BASED PER EACH “SURPLUS LOG”.

PAYMENT

THE CONTRACT PRICE FOR “SURPLUS LOG” SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS AND LABOR FOR LOADING AND HAULING EACH LOG TO THE PRESTON PIT.

ITEM 017 - CONTINGENCY - ADDITIONAL SIDE CHANNEL EXCAVATION

THIS CONTINGENCY ITEM CONSISTS OF ADDITIONAL EXCAVATION TO REMOVE SOFT AND FINE-GRAINED SOILS WITHIN THE LOWER AND UPPER SIDE CHANNELS. THIS ITEM CONSISTS OF EXCAVATING, LOADING, HAULING, AND DISPOSING OF THE MATERIAL IN ACCORDANCE WITH SECTION 2-03 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. PORTIONS OF WORK WILL BE IN WATER. THE CONTRACTOR IS ADVISED THAT SHALLOW GROUNDWATER MAY BE ENCOUNTERED THROUGHOUT EXCAVATION AREAS.
2. THIS ITEM INCLUDES “PUMPING” ASSOCIATED WITH THE WORK.
3. THIS ITEM INCLUDES HAULING OF EXCAVATED MATERIAL TO AN ON-SITE DISPOSAL SITE PROVIDED BY THE OWNER. THE UNIT CONTRACT PRICE PER CUBIC YARD SHALL INCLUDE “HAUL”.
4. A CULTURAL STAFF PERSON WILL BE PRESENT ON SITE DURING ALL EXCAVATION ACTIVITIES.

MEASUREMENT

“CONTINGENCY - ADDITIONAL SIDE CHANNEL EXCAVATION” WILL BE MEASURED BY CUBIC YARD. ALL EXCAVATED MATERIAL WILL BE MEASURED IN THE POSITION IT OCCUPIED BEFORE THE EXCAVATION WAS PERFORMED. BID QUANTITIES ARE BASED ON 18-INCH DEEP, 20 FEET WIDE EXCAVATIONS ALONG 175 LINEAR FEET OF THE LOWER SIDE CHANNEL, 640 LINEAR FEET OF THE MIDDLE SIDE CHANNEL, AND 760 LINEAR FEET OF THE UPPER SIDE CHANNEL.

PAYMENT

IF AUTHORIZED BY THE OWNER, PAYMENT FOR "CONTINGENCY - ADDITIONAL SIDE CHANNEL EXCAVATION" WILL BE MADE PER CUBIC YARD IN ACCORDANCE WITH SECTION 1-04.1. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED. NO ADDITIONAL COMPENSATION WILL BE MADE FOR EXCAVATED MATERIAL THAT IS STOCKPILED, RE-EXCAVATED, AND MOVED AGAIN.

ITEM 018 - CONTINGENCY - IMPORT AND PLACE COARSE SUBSTRATE

THIS CONTINGENCY ITEM INCLUDES IMPORTING COARSE BED SUBSTRATE MATERIAL TO REPLACE SOFT AND FINE-GRAINED SOILS WITHIN THE LOWER AND UPPER SIDE CHANNELS. THIS ITEM INCLUDES PROCURING, DELIVERY, HANDLING, STOCKPILING, MIXING, AND PLACING THE SUBSTRATE MATERIAL IN THE SIDE CHANNEL SEGMENTS THAT HAVE BEEN EXCAVATED UNDER THE BID ITEM "ADDITIONAL SIDE CHANNEL EXCAVATION". THE COARSE SUBSTRATE MIX MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 9-03.10 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. BY VOLUME, THE COARSE SUBSTRATE MIX SHALL CONSIST OF 75% STREAMBED SEDIMENT (WSDOT 9-03.11(1)) MIXED WITH 25% 12-INCH MINUS STREAMBED COBBLE (WSDOT 9-03.11(2)).
2. CONTRACTOR SHALL MIX COARSE SUBSTRATE MATERIALS AND NOTIFY OWNER FOR INSPECTION BEFORE PLACING IN THE SIDE CHANNELS.

MEASUREMENT

"CONTINGENCY - IMPORT AND PLACE COARSE SUBSTRATE" WILL BE MEASURED BY THE CUBIC YARD OF PLACED MATERIAL.

PAYMENT

IF AUTHORIZED BY THE OWNER, PAYMENT WILL BE MADE FOR "CONTINGENCY - IMPORT AND PLACE COARSE SUBSTRATE" PER CUBIC YARD. PAYMENT WILL FULL COMPENSATION FOR ALL COSTS INCURRED FOR PROCURING, DELIVERY, HANDLING, STOCKPILING, MIXING, AND PLACING THE SUBSTRATE MATERIAL.

ITEM 019 - CONTINGENCY - ADDITIONAL HAUL OFF-SITE (18 MI ROUNDTRIP)

THIS CONTINGENCY ITEM CONSISTS OF ADDITIONAL HAUL OF EXCAVATED MATERIAL TO AN APPROVED OFF-SITE DISPOSAL AREA AS DIRECTED BY THE OWNER. THIS ITEM CONSISTS OF ADDITIONAL LOADING, HAULING, PLACING, AND COMPACTING EMBANKMENT AT AN OFF-SITE LOCATION. THE OFF-SITE DISPOSAL SITE IS ASSUMED TO BE 18 MILES ROUNDTRIP FROM THE PROJECT SITE. ADDITIONAL TRAFFIC CONTROL MEASURES SHALL BE INCLUDED IN THIS BID ITEM.

MEASUREMENT

“CONTINGENCY - ADDITIONAL HAUL OFF-SITE (18 MI ROUNDTRIP)” WILL BE MEASURED BY CUBIC YARD.

PAYMENT

IF AUTHORIZED BY OWNER, PAYMENT FOR “CONTINGENCY - ADDITIONAL HAUL OFF-SITE (18 MI ROUNDTRIP)” WILL BE MADE PER CUBIC YARD. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED. NO ADDITIONAL COMPENSATION WILL BE MADE FOR EXCAVATED MATERIAL THAT IS STOCKPILED, RE-EXCAVATED, AND MOVED AGAIN.

COFFERDAM {INCIDENTAL TO "CHANNEL EXCAVATION INCL. HAUL", **“**LOGS**”**, AND "LOG STRUCTURE" BID ITEMS}

THIS ITEM CONSISTS OF PROVIDING AND INSTALLING, MAINTAINING, AND REMOVING MEASURES TO BYPASS THE SURFACE WATERS OF THE STREAM AROUND IN-CHANNEL WORK AREAS, AND TO PREVENT TURBIDITY FROM ENTERING THE RIVER.

COFFERDAM LOCATIONS SHOWN IN THE PLANS IS ONE ACCEPTABLE METHOD. THE CONTRACTOR MAY USE THIS METHOD OR PROPOSE A DIFFERENT METHOD THAT PROVIDES EQUAL OR BETTER ISOLATION OF THE WORK AREA FROM THE FLOW. IF A DIFFERENT METHOD IS PROPOSED, CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING DETAILS OF PROPOSED METHODS FOR PROVIDING TEMPORARY ISOLATION OF SURFACE WATER DURING CONSTRUCTION ACTIVITIES. REVIEW AND APPROVAL OF THE COFFERDAM PLAN SHALL NOT RELIEVE THE CONTRACTOR FROM FULL RESPONSIBILITY FOR THE ADEQUACY OF COFFERDAM WORK IF THE PROPOSED PLAN IS NOT SUCCESSFUL AT PROPERLY ISOLATING THE WORK AREA. SHEET PILE INSTALLED BY VIBRATORY DRIVER IS A PRE-APPROVED COFFERDAM METHOD. DRIVING SHEET PILE BY IMPACT HAMMER IS NOT ACCEPTABLE.

COFFERDAMS SHALL BE SUITABLY OFFSET FROM WORK AREA SO AS TO NOT INTERFERE WITH LOG PLACEMENT OR LIMIT POOL EXCAVATION.

THE WORK INCLUDES COORDINATING WITH THE OWNER FOR FISH SALVAGE AND RELOCATION ACTIVITIES. EXCAVATION OR LOG PLACEMENT SHALL NOT OCCUR UNTIL THE OWNER COMPLETES FISH SALVAGE.

MATERIALS

THE CONTRACTOR SHALL PROVIDE ALL REQUIRED MATERIALS FOR THE PROJECT. IF BULK BAG COFFERDAM IS THE METHOD TO BE USED, SEE DETAILS FOR BULK BAG COFFERDAMS ON THE PLANS.

SANDBAGS SHALL BE FILLED WITH PEA GRAVEL OR STREAM GRAVEL. USING SAND WILL NOT BE ALLOWED.

CONSTRUCTION REQUIREMENTS

THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE RIVER BY INSTALLING A COFFERDAM PER THE PLANS. NO TURBIDITY FROM CONSTRUCTION ACTIVITIES SHALL ENTER THE RIVER. COFFERDAMS SHOWN ON THE PLANS ARE A SUGGESTED METHOD. IF CONTRACTOR ELECTS TO USE ALTERNATE METHOD(S) FOR TEMPORARY COFFERDAMS, CONTRACTOR SHALL PROVIDE TO THE OWNER A COFFERDAM/DIVERSION PLAN FOR REVIEW PRIOR TO IMPLEMENTATION.

1. COFFERDAM

a. CONSTRUCTION METHODS FOR BULK BAG COFFERDAMS ARE DESCRIBED IN THE PROJECT PLANS.

2. COORDINATION WITH FISH RESCUE

a. THE CONTRACTOR SHALL PROVIDE MINIMUM 2 DAYS ADVANCE NOTICE TO THE OWNER BEFORE EACH COFFERDAM INSTALLATION DATE. THE CONTRACTOR SHALL UNDERSTAND THAT COFFERDAM INSTALLATION REQUIRES COORDINATION WITH THE OWNER AND ONLY AFTER THE OWNER HAS COMPLETED FISH RESCUE CAN THE COFFERDAMS BE COMPLETED. THE CONTRACTOR IS ADVISED THAT FISH RESCUE MAY TAKE UP TO 2 DAYS PER COFFERDAM.

MEASUREMENT AND PAYMENT

COFFERDAM SHALL BE INCIDENTAL TO "CHANNEL EXCAVATION INCL. HAUL", "LOGS", AND "LOG STRUCTURE".

PUMPING {INCIDENTAL TO "CHANNEL EXCAVATION INCL. HAUL", “LOGS”, "LOG STRUCTURE", AND "CONTINGENCY - ADDITIONAL SIDE CHANNEL EXCAVATION" BID ITEMS}

THIS ITEM INCLUDES DEWATERING AND CONTROLLING TURBIDITY WITHIN CONSTRUCTION AREAS ISOLATED FROM THE RIVER BY COFFERDAMS. THE WORK CONSISTS OF FURNISHING, MONITORING, OPERATING, MAINTAINING, AND REMOVING PUMPS, COORDINATING WITH THE OWNER FOR FISH SALVAGE RELOCATION ACTIVITIES, AND INSTALLATION OF CONTROL OF WATER BMPS.

MATERIALS

1. TWO GODWIN DRIPRIME 3” TRASH PUMPS, OR APPROVED EQUAL, EACH WITH PUMPING CAPACITY GREATER THAN 600 GPM, ASSUMING 12 FEET OF VERTICAL LIFT AND 300 FEET OF DISCHARGE HOSE. TO PREVENT TURBIDITY FROM ENTERING THE RIVER, PUMPS MAY NEED TO RUN 24 HRS OR UNTIL WATER IS CLEAR. PUMPS SHALL HAVE SOUNDPROOFING. ELECTRIC PUMPS WITH GENERATORS AND QUIET PACKS ARE A PREFERRED AND PRE-APPROVED METHOD.
2. ONE OR MORE 2” PUMP(S) WITH 100 FEET OF DISCHARGE HOSE FOR EACH PUMP.
3. EACH WATER INTAKE SHALL HAVE A FISH SCREEN INSTALLED, OPERATED AND MAINTAINED ACCORDING TO NMFS' FISH SCREEN CRITERIA (NMFS 1997; NMFS 2008). NO PUMPING CAN OCCUR UNTIL FISH SCREEN HAS BEEN APPROVED BY OWNER PRIOR TO INSTALLATION.
4. PUMPS SHALL BE PLACED WITHIN A RIGID OR FLEXIBLE POOL TO CONTAIN FUEL OR OIL SPILLS. DIAPERS SHALL BE STORED AT EACH PUMP.
5. ENVIRONMENTAL PROTECTION MEASURES SUCH AS STRAW BALES, PERFORATED PIPE FOR DISCHARGE FLOW DISTRIBUTORS, GEOTEXTILES, FILTER BAGS, OR OTHER MEANS OF CONTROLLING WATER AND TURBIDITY. NO TURBIDITY SHALL BE ALLOWED TO ENTER THE RIVER OR WETLANDS.

CONSTRUCTION REQUIREMENTS

1. PUMPS

a. GROUNDWATER WILL BE ENCOUNTERED DURING EXCAVATIONS. DURING CONSTRUCTION OF THE SIDE-CHANNELS, CONSTRUCTION WATER SHALL BE PUMPED AWAY FROM WORK AREAS TO BE INFILTRATED INTO THE GROUND AND WITHOUT ENTERING THE RIVER.

b. TO HELP PREVENT TURBIDITY FROM LEAKING THROUGH COFFERDAMS, THE CONTRACTOR SHALL PROVIDE AND OPERATE 3” GODWIN DRIPRIME TRASH PUMP(S), OR APPROVED EQUAL, TO LOWER THE WATER SURFACE WITHIN THE ISOLATED AREA AND DISCHARGE TO AN INFILTRATION AREA.

2. ENVIRONMENTAL PROTECTION MEASURES

a. IF OBSERVED OR MEASURED TURBIDITY DOWNSTREAM OF COFFERDAM OR PUMP DISCHARGE IS MORE THAN 10% ABOVE THE UPSTREAM BACKGROUND VISUAL OBSERVATION OR MEASUREMENT, THE ACTIVITY MUST BE MODIFIED TO REDUCE TURBIDITY. CONTINUE TO MONITOR EVERY 2 HOURS AS LONG AS INSTREAM ACTIVITY CONTINUES.

b. IF EXCEEDANCES OCCUR FOR MORE THAN TWO CONSECUTIVE MONITORING INTERVALS (AFTER 4 HOURS), THE ACTIVITY MUST STOP UNTIL THE TURBIDITY LEVEL RETURNS TO BACKGROUND, AND THE EC LEAD MUST BE NOTIFIED WITHIN 48 HOURS.

c. IF AT ANY TIME, MONITORING, INSPECTIONS, OR OBSERVATIONS/SAMPLES SHOW THAT THE TURBIDITY CONTROLS ARE INEFFECTIVE, IMMEDIATELY MOBILIZE WORK CREWS TO REPAIR, REPLACE, OR REINFORCE CONTROLS AS NECESSARY. ADDITIONAL AND ALTERNATIVE METHODS, SUCH AS PUMPING INTO STILLING BASINS OR FILTRATION GEOTEXTILE FABRIC SHALL BE REQUIRED AT THE CONTRACTOR'S EXPENSE.

MEASUREMENT AND PAYMENT

MEASUREMENT WILL BE BASED ON THE ITEM FROM THE BID LIST INSTALLED AND THE WORK FOR THAT PORTION COMPLETED. THE UNIT CONTRACT PRICES FOR “PUMPING” SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS AND LABOR FOR FURNISHING, INSTALLING, SECURING, MAINTAINING AND REMOVAL OF PUMPING EQUIPMENT AS OUTLINED IN THE PLANS. IF ADDITIONAL ENVIRONMENTAL PROTECTION MEASURES ARE REQUIRED TO CONTROL TURBIDITY, THEY SHALL BE CONSIDERED INCIDENTAL TO PUMPING AND NO ADDITIONAL COMPENSATION WILL BE MADE.

PUMPING SHALL BE INCIDENTAL TO "CHANNEL EXCAVATION INCL. HAUL", "LOGS", "LOG STRUCTURE", AND "CONTINGENCY - ADDITIONAL SIDE CHANNEL EXCAVATION".

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