

CHIWAWA RIVER PROJECT:

AREA G PHASE 2

LARGE WOOD AND SIDE CHANNEL PROJECTS

TECHNICAL SPECIFICATIONS

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April 29, 2026

INTRODUCTION

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

THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION 2026 (WSDOT STANDARD SPECIFICATIONS) SHALL APPLY UNLESS OTHERWISE NOTED IN THE FOLLOWING PROVISIONS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL. 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 1 - JULY 31, 2026. HIGH WATER IN THE RIVER IS EXPECTED THROUGH MID-JULY. WORK MAY OCCUR OUTSIDE OF WATER BEFORE OR AFTER THE IN-WATER WORK WINDOW. WORK SHALL BE ONLY 7AM TO 7PM, 6 DAYS PER WEEK (MON-SAT).

IN A CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, LOCAL REGULATIONS, OR OTHER CONTRACT DOCUMENTATION, THE MORE STRINGENT WILL PREVAIL, UNLESS SPECIFIED IN WRITING BY THE OWNER.

ALL EXCAVATION ACTIVITY WILL BE MONITORED BY A CULTURAL RESOURCE SPECIALIST. IF YOUR WORK BRINGS YOU INTO CONTACT WITH ANY OF THE FOLLOWING CULTURAL RESOURCES:

- NATIVE AMERICAN CULTURAL ARTIFACTS (EXAMPLE: FLAKES, ARROWHEADS, STONE TOOLS, BONE TOOLS, POTTERY, ETC.)
- HISTORIC ERA ARTIFACTS (EXAMPLE: BUILDING FOUNDATIONS, HOMESTEADS, SHIPWRECKS, MINING CAMPS, ETC.)
- HUMAN SKELETAL REMAINS AND BONE FRAGMENTS

YOU MUST IMMEDIATELY DISCONTINUE ALL GROUND-DISTURBING ACTIVITY. DO NOT TOUCH OR MOVE THE OBJECTS AND MAINTAIN THE CONFIDENTIALITY OF THE SITE. FOLLOW THE PROCEDURES LISTED IN THE FOREST SERVICE INADVERTENT DISCOVERY

PROCEDURE AND AWAIT FURTHER DIRECTION FROM THE ARCHEOLOGIST AND FOREST SERVICE'S CULTURAL RESOURCES STAFF.

ITEM 001 - MOBILIZATION/DEMOBILIZATION

DESCRIPTION

1. THIS ITEM SHALL CONSIST OF PREPARATION WORK AND OPERATIONS PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH APPLICABLE CHELAN COUNTY ROAD REQUIREMENTS, USFS ROAD REQUIREMENTS, THE PROVISIONS OF SECTION 2-01 OF THE WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (STANDARD SPECIFICATIONS), AND AS AMENDED BY THESE SPECIAL PROVISIONS.
 - a. PRIOR TO ENTERING THE SITE, ALL EQUIPMENT SHALL BE POWER WASHED, BECOME FULLY DRY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE. IF EQUIPMENT LEAVES THE SITE AND RETURNS, IT SHALL BE REWASHED AND INSPECTED PRIOR TO ACCESSING THE SITE.
 - b. TEMPORARY SITE ACCESS SHALL BE ALONG ACCESS ROUTES AND STAGING AREAS SHOWN IN THE DRAWINGS. THESE ARE APPROXIMATE. ACTUAL DISTURBANCE LIMITS WILL BE STAKED AND FLAGGED IN THE FIELD BY THE OWNER. DESIGNATED DISTURBANCE LIMITS SHALL BE STRICTLY ADHERED TO AND NO LARGE TREES WILL BE IMPACTED WITHOUT PERMISSION FROM THE OWNER.
 - c. TEMPORARY TRAFFIC CONTROL REQUIREMENTS SHALL INCLUDE MEASURES PER SECTION 1-10 OF THE STANDARD SPECIFICATIONS AND ANY APPLICABLE LOCAL OR REGIONAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND COMPLY WITH APPLICABLE LOCAL AND STATE PERMITS.
 - d. PRIOR TO DEMOBILIZATION, ALL DISTURBED GROUND SHALL BE GRADED SMOOTH TO BLEND WITH EXISTING TOPOGRAPHY, AND IF DIRECTED BY THE OWNER, RIPPED TO A DEPTH OF 18 INCHES TO DECOMPACT SOILS.
 - d.1. ALL DISTURBED ROAD SURFACES SHALL BE RESTORED TO PRE-PROJECT CONDITIONS OR BETTER, UNLESS OTHERWISE DIRECTED BY THE OWNER.
 - d.2. EXCESS SLASH MATERIAL NOT USED IN LARGE WOOD STRUCTURES SHALL BE PLACED ALONG THE DECOMMISSIONED ACCESS ROUTES FOR

THE REVEGETATION CONTRACTOR TO INSTALL FOR FURTHER EROSION CONTROL.

- d.3. SALVAGED BOULDERS AND/OR TREES SHALL BE PLACED IN FRONT OF ACCESS POINTS FROM EXISTING ROADS TO PREVENT MOTORIZED VEHICLE ACCESS, AS DIRECTED BY THE OWNER.

MEASUREMENT AND PAYMENT

2. MOBILIZATION/DEMobilIZATION SHALL BE MEASURED AND PAID FOR BY LUMP SUM. ANY NECESSARY TRAFFIC CONTROL SHALL BE CONSIDERED INCIDENTAL TO MOBILIZATION. PARTIAL PAYMENTS WILL BE MADE IN ACCORDANCE WITH SECTION 2-01.5 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 002- TESC, SPCC PLAN AND IMPLEMENTATION

DESCRIPTION

1. THIS WORK SHALL PROVIDE FOR PREPARATION, IMPLEMENTATION, AND REMOVAL OF A TEMPORARY EROSION SEDIMENT CONTROL (TESC) PLAN AND FOR THE PREPARATION AND IMPLEMENTATION OF A SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN IN ACCORDANCE WITH SECTION 1-07.15 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.
 - a. THE CONTRACTOR SHALL SUBMIT A TESC PLAN FOR THE PROJECT TO THE OWNER FOR APPROVAL. THE TESC 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 THEIR 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.

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

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

MEASUREMENT

2. "TESC, SPCC PLAN AND IMPLEMENTATION," WILL BE MEASURED BY LUMP SUM.

PAYMENT

3. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED. PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: "TESC, SPCC PLAN AND IMPLEMENTATION" PER LUMP SUM.

ITEM 003- CLEARING, GRUBBING, AND TREE SALVAGE

DESCRIPTION

1. THIS ITEM CONSISTS OF CLEARING, GRUBBING, AND TREE SALVAGE FOR CONSTRUCTION AS SHOWN ON THE DRAWINGS, INCLUDING THOSE AREAS REQUIRED FOR TEMPORARY ACCESS ROUTES AND IN ACCORDANCE WITH SECTION 3-01 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

a. AREAS FOR CLEARING AND GRUBBING ARE SHOWN IN THE DRAWINGS. 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.

b. INCLUDED IN THIS ITEM ARE THE REMOVAL AND SALVAGE OF TREES, SHRUBS, AND SLASH FOR INCORPORATION INTO LARGE WOOD STRUCTURES. SALVAGED TREES, SHRUBS, AND SLASH SHALL BE INSTALLED

AS WOODY MATERIAL DURING CONSTRUCTION IN ACCORDANCE WITH THE DRAWINGS AND THESE SPECIFICATIONS.

- c. TO THE MAXIMUM PRACTICABLE EXTENT, THE CONTRACTOR SHALL REMOVE OWNER-IDENTIFIED SALVAGED TREES GREATER THAN 12" DBH BY EXCAVATING TO LOOSEN SOIL AROUND EACH ROOTWAD AND THEN PUSH OVER THE TREES IN ORDER TO SALVAGE LOGS WITH INTACT AND ATTACHED ROOTS. SALVAGED TREES MAY BE TEMPORARILY STOCKPILED OUTSIDE OF THE CLEARING LIMITS BUT WITHIN REACH OF THE EXCAVATOR DURING LARGE WOOD STRUCTURE CONSTRUCTION. SALVAGED TREES SHALL BE HANDLED SUCH THAT THE BRANCHES REMAIN INTACT TO THE MAXIMUM EXTENT PRACTICABLE. THE MAXIMUM DIAMETER OF SALVAGED TREES WILL BE 25" DBH.
- d. THIS ITEM ALSO INCLUDES SALVAGING DOWNED TREES ALONG THE FORMER ACCESS ROUTE USED TO CONSTRUCT PHASE 1 LARGE WOOD STRUCTURES. THE CONTRACTOR SHALL COLLECT OWNER-IDENTIFIED TREES ALONG THE ACCESS ROUTE AND HAUL THEM TO EITHER:
 - d.1. THE PROPOSED SIDE CHANNEL FOR INCORPORATION INTO LARGE WOOD STRUCTURES AS A FIELD SET ITEM IN ACCORDANCE WITH ITEMS 007 THROUGH 009, OR
 - d.2. THE PHASE 1 STAGING AREA FOR HELICOPTER TRANSPORT. SALVAGED TREES HAULED TO THE STAGING AREA SHALL BE STOCKPILED FOR HELICOPTER TRANSPORT IN A MANNER THAT MINIMIZES DAMAGE TO BRANCHES AND ROOTS. BUNDLING AND PREPARING OF SALVAGED TREES FOR HELICOPTER TRANSPORT SHALL BE COVERED UNDER ITEM 014 "HELICOPTER SUPPORT"
 - d.3. DOWNED TREES ARE EXPECTED TO HAVE DIAMETERS RANGING BETWEEN 12" DBH AND 25" DBH AND SHALL BE HANDLED SUCH THAT THE ROOTWADS AND BRANCHES REMAIN INTACT TO THE MAXIMUM EXTENT PRACTICABLE.
- e. VEGETATION PROTECTION AND RESTORATION PER SECTION 1-07.16(2) SHALL BE INCIDENTAL TO CLEARING AND GRUBBING. 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 TREES OUTSIDE OF CLEARING LIMITS. WITH

PRIOR APPROVAL BY THE OWNER, TREES MAY BE LIMBED TO FACILITATE EQUIPMENT MOVEMENT AND SITE SAFETY.

MEASUREMENT

2. "CLEARING, GRUBBING, AND TREE SALVAGE," INCLUDING THE ABOVE AMENDMENTS, WILL BE MEASURED BY LUMP SUM.
3. MEASUREMENT AND COMPENSATION FOR THE INSTALLATION OF SALVAGED TREES AND SLASH IS DESCRIBED UNDER ITEMS 005 THOROUGH 013 "LARGE WOOD STRUCTURES" AND PAID UNDER THAT ITEM. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

PAYMENT

4. PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-09.9 FOR THE FOLLOWING BID ITEMS: "CLEARING, GRUBBING, AND TREE SALVAGE" PER LUMP SUM.

ITEMS 004 THROUGH 015: LARGE WOOD PROJECT

ITEM 004- DIVERSION AND DEWATERING: LARGE WOOD PROJECT

DESCRIPTION

1. THIS ITEM INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 - a. INSTALLING, MAINTAINING, AND REMOVING MEASURES TO ISOLATE IN-WATER WORK AREAS FROM FLOWING SURFACE WATER AND TO PREVENT TURBIDITY FROM ENTERING THE RIVER.
 - b. DEWATERING AND CONTROLLING TURBIDITY WITHIN CONSTRUCTION AREAS ISOLATED FROM THE RIVER BY COFFERDAMS.
 - c. FURNISHING, MONITORING, OPERATING, MAINTAINING, AND REMOVING PUMPS.
 - d. COORDINATING WITH THE OWNER FOR FISH SALVAGE AND RELOCATION ACTIVITIES
 - e. INSTALLATION OF WATER CONTROL BMPS.

MATERIALS

2. WORK AREA ISOLATION
 - a. COFFERDAMS CONSTRUCTED OF SHEET PILE INSTALLED BY VIBRATORY DRIVER IS A PRE-APPROVED METHOD OF WORK AREA ISOLATION.
 - b. ANY SANDBAGS UTILIZED TO SECURE PLASTIC SHEETING OR FOR OTHER REASONS DEEMED NECESSARY BY THE CONTRACTOR SHALL BE FILLED WITH PEA GRAVEL OR STREAM GRAVEL. USING SAND WILL NOT BE ALLOWED.
3. PUMPING
 - a. THE CONTRACTOR SHALL PROVIDE SUFFICIENT SIZE AND NUMBERS OF PUMPS TO DEWATER ISOLATED WORK AREAS AND CONTROL TURBIDITY FOR THE PROJECT AND ENCOUNTERED FLOWS AND GROUNDWATER CONDITIONS.
 - b. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF TWO 3" TRASH PUMPS, OR AS NECESSARY TO PROVIDE COMBINED PUMPING CAPACITY GREATER

THAN 400 GPM, ASSUMING 20 FEET OF VERTICAL LIFT AND 300 FEET OF DISCHARGE HOSE.

- c. IF AN ALTERNATE COFFERDAM METHOD IS UTILIZED, THE PUMPING REQUIREMENTS SHALL BE INCREASED TO A MINIMUM OF TWO 4" TRASH PUMPS, OR AS NECESSARY TO PROVIDE COMBINED PUMPING CAPACITY GREATER THAN 800 GPM.
- d. IF NEEDED, THE CONTRACTOR SHALL PROVIDE ADDITIONAL PUMPS OR PUMPING CAPACITY AT NO ADDITIONAL COST TO THE OWNER.

CONSTRUCTION REQUIREMENTS

4. COFFERDAMS

- a. THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE RIVER BY INSTALLING COFFERDAM PER THE DRAWINGS. NO TURBIDITY FROM CONSTRUCTION ACTIVITIES SHALL ENTER THE RIVER.
- b. SHEET PILE INSTALLED BY VIBRATORY DRIVER IS A PRE-APPROVED METHOD. DRIVING SHEET PILE BY IMPACT HAMMER IS NOT ACCEPTABLE.
 - b.1. THE CONTRACTOR MAY PROPOSE A DIFFERENT METHOD THAT PROVIDES EQUAL OR BETTER ISOLATION OF THE WORK AREA FROM THE FLOW. IF A DIFFERENT METHOD IS PROPOSED, THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING DETAILS OF PROPOSED METHODS FOR PROVIDING TEMPORARY ISOLATION OF SURFACE WATER DURING CONSTRUCTION ACTIVITIES.
 - b.2. REVIEW AND APPROVAL OF ANY ALTERNATE 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 ACTIVITIES MUST IMMEDIATELY SHUT DOWN UNTIL A NEW PLAN IS EXECUTED THAT ISOLATES AND PREVENTS TURBIDITY FROM LEAVING THE CONSTRUCTION SITE.
- c. COFFERDAMS SHALL BE SUITABLY OFFSET FROM WORK AREA SO AS TO NOT INTERFERE WITH LOG PLACEMENT NOR LIMIT SCOUR POOL EXCAVATION SHOWN IN THE DRAWINGS.

5. PUMPING

- a. 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.
- b. PUMPS SHALL BE PLACED WITHIN A CONTAINER TO CONTAIN FUEL OR OIL SPILLS. OIL ABSORBENT DIAPERS SHALL BE STORED AT EACH PUMP.
- c. THE CONTRACTOR SHALL PROVIDE ENVIRONMENTAL PROTECTION MEASURES SUCH AS STRAW BALES, PERFORATED PIPE FOR DISCHARGE FLOW DISTRIBUTORS, GEOTEXTILES, FILTER BAGS, OR OTHER MEANS OF CONTROLLING DISCHARGE WATER AND TURBIDITY. NO TURBIDITY SHALL BE ALLOWED TO ENTER SURFACE WATERS OR WETLANDS.
- d. TO HELP PREVENT TURBIDITY FROM LEAKING THROUGH COFFERDAMS, THE CONTRACTOR SHALL OPERATE PUMP(S) TO LOWER THE WATER SURFACE WITHIN THE ISOLATED AREA AND DISCHARGE TO AN INFILTRATION AREA.

6. FISH SALVAGE

- a. THIS 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. THE CONTRACTOR SHALL PROVIDE SUFFICIENT ADVANCE NOTICE TO THE OWNER BEFORE EACH COFFERDAM INSTALLATION DATE.
- b. THE CONTRACTOR SHALL PROVIDE OWNER ACCESS TO COFFERDAMS AND SUPPORTING STAFF FOR OWNER'S DEFISHING. THE CONTRACTOR IS ADVISED THAT FISH RESCUE WILL NOT OCCUR ON SATURDAYS OR SUNDAYS AND MAY TAKE SEVERAL HOURS PER COFFERDAM.

7. ENVIRONMENTAL PROTECTION MEASURES

- a. TURBIDITY MONITORING AND CORRECTION SHALL BE IN ACCORDANCE WITH ALL PERMIT CONDITIONS AND THE GENERAL CONSERVATION MEASURES ON SHEET 5 OF THE LARGE WOOD DRAWINGS.

MEASUREMENT

8. "DIVERSION AND DEWATERING," INCLUDING THE ABOVE AMENDMENTS TO THE ITEM WILL BE MEASURED BY LUMP SUM. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND

INCIDENTALS NECESSARY TO COMPLETE THIS WORK AND MEET PERFORMANCE CRITERIA AS SPECIFIED FOR THE ENTIRETY OF THE PROJECT.

PAYMENT

9. PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: "DIVERSION AND DEWATERING" PER LUMP SUM.

ITEMS 005 - 013 LARGE WOOD STRUCTURES: LARGE WOOD PROJECT

DESCRIPTION

1. "LARGE WOOD STRUCTURES" INCLUDE:

ITEMS 005 THROUGH 009 - BANK-BURIED STRUCTURES B2-1 THROUGH B2-5

ITEMS 010 THROUGH 013 - APEX LW STRUCTURES A2-1 THROUGH A2-4

2. THE WORK COVERED UNDER THIS ITEM INCLUDES ALL WORK ASSOCIATED WITH ON-SITE HAULING, HANDLING, AND INSTALLATION OF LARGE WOOD MATERIAL (LWM), SALVAGED TREES, AND SLASH TO CONSTRUCT THE LARGE WOOD STRUCTURES SHOWN ON THE DRAWINGS.
3. THIS ITEM ALSO INCLUDES EXCAVATION OF HABITAT POOLS, EXCAVATION FOR LOG PLACEMENT, TEMPORARY STOCKPILING, BACKFILL TO PARTIALLY BURY LWM, AND SHAPING BANKS ADJACENT TO LWM PLACEMENTS. WORK AREA ISOLATION IS REQUIRED AT DESIGNATED "LARGE WOOD STRUCTURES" SHOWN IN THE DRAWINGS, IN ACCORDANCE WITH ITEM 004 "DIVERSION AND DEWATERING: LARGE WOOD PROJECT".
4. LARGE WOOD STRUCTURES SHALL BE CONSTRUCTED OF LARGE WOOD MATERIAL (LWM), EXCAVATION AND BACKFILL, SLASH, SALVAGED TREE TOPS, SALVAGED TREES, AND BOLTED CONNECTIONS APPLY TO LARGE WOOD STRUCTURES AS SHOWN ON THE DRAWINGS.

MATERIALS

5. LARGE WOOD MATERIAL (LWM)
 - a. LWM IS SUPPLIED BY THE OWNER AND WILL BE MOVED VIA HELICOPTER TO LOCATIONS IMMEDIATELY ADJACENT TO THE LARGE WOOD STRUCTURE LOCATIONS DEPICTED ON THE DRAWINGS.
 - b. LWM WILL HAVE THE FOLLOWING CHARACTERISTICS:
 - c. ROOTWAD LOGS WITH ROOTWADS: 40' LONG AND 18"-24" DBH.

d. VERTICAL LOGS: 20' LONG AND 15" DIAMETER IN MIDDLE OF LOG.

6. SALVAGED TREE

a. SALVAGED TREE INCLUDES OWNER-IDENTIFIED TREES RANGING BETWEEN 12" AND 25" DBH REMOVED FROM ACCESS ROUTES, STAGING/STOCKPILE AREAS, AND EXCAVATION AREAS IN ACCORDANCE WITH ITEM 003- CLEARING, GRUBBING, AND TREE SALVAGE.

7. SLASH

a. SLASH WILL BE CREATED AND SALVAGED FROM THE DEVELOPMENT OF ACCESS ROUTES AND EXCAVATION AREAS. SALVAGED SLASH MATERIAL INCLUDES: SHRUBS, TREES <12" DBH AND TREE TOPS REMOVED FROM ACCESS ROUTES AND EXCAVATION AREAS.

8. BOLTED CONNECTIONS

a. PRE-APPROVED MATERIALS FOR BOLTED CONNECTIONS ARE AS FOLLOWS:

a.1. BOLTS

a.1.1. BOLTS SHALL BE A MINIMUM OF 1" DIAMETER NON-GALVANIZED ASTM A615 GRADE 75 STEEL THREADBAR (EQUIVALENT TO A #8 SIZE BAR) OR,

a.1.2. BOLTS SHALL BE A MINIMUM OF 1" DIAMETER NON-GALVANIZED FULLY THREADED ROD (FTR) MEETING THE REQUIREMENTS OF ASTM F1554, GRADE 55 STEEL.

a.2. WASHERS AND NUTS

a.2.1. WASHERS SHALL BE SQUARE PLATE, 3/16" X 3" X 3" MINIMUM, OR ROUND WITH A DIAMETER OF 3.5"

a.2.2. NUTS SHALL BE DOMED OR HEAVY HEX WITH MATERIAL PROPERTIES EQUIVALENT TO OR STRONGER THAN THE BOLTS.

CONSTRUCTION REQUIREMENTS

9. LOCATIONS FOR PLACEMENT AND DETAILS OF CONSTRUCTION FOR EACH LARGE WOOD STRUCTURE TYPE ARE SHOWN IN THE DRAWINGS. FINAL LOCATION AND INSTALLATION WILL DEPEND UPON THE SIZE, SHAPE AND QUANTITY OF MATERIAL DELIVERED OR SALVAGED. INSTALLATION OF LWM SHALL BE UNDERSTOOD TO REQUIRE A "FIELD SET" APPROACH AS DIRECTED BY THE OWNER. LWM SHALL BE

STABILIZED BY PARTIAL BURIAL, BRACING AGAINST INSTALLED VERTICAL LOGS, AND BRACING AGAINST EXISTING TREES OR BOULDERS AS SHOWN IN THE DRAWINGS.

10. CONSTRUCTION OF VERTICAL LOGS SHALL INCLUDE ON-SITE MOVEMENT AND INSTALLATION OF VERTICAL LOGS AT DESIGNATED SITES SHOWN IN THE DRAWINGS. VERTICAL LOGS SHALL BE PER THE APPROXIMATE NUMBERS AND QUANTITIES INDICATED ON THE DRAWINGS. SPECIFIC LOCATIONS SHALL BE DETERMINED IN THE FIELD AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE. THE REQUIRED EMBEDMENT DEPTH IS INDICATED ON THE DRAWINGS.
11. VERTICAL LOGS SHALL BE INSTALLED BY VIBRATORY PILE DRIVER MEETING OR EXCEEDING 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 WITHOUT NEEDING TO SLIDE THE GRIP OVER THE END AND DOWN THE LOG.
 - c. PRE-APPROVED PILE DRIVERS INCLUDE: MOVAX SP-80, GRIZZLY MG90, OR EQUIVALENT.
12. THE CHANNEL SUBSTRATE IS KNOWN TO CONTAIN LARGE BOULDERS AND THE PREFERRED METHOD OF INSTALLING VERTICAL LOGS BY VIBRATORY PILE DRIVER MAY NOT BE FEASIBLE IN ALL LOCATIONS. VERTICAL LOGS FOR APEX LARGE WOOD STRUCTURES WILL REQUIRE A MINIMUM OF THREE (3) TEST PILES AT EACH STRUCTURE LOCATION, AS NOTED IN THE LARGE WOOD DRAWINGS ON SHEET 14. IN THE EVENT THAT INSTALLATION BY VIBRATORY PILE DRIVER IS DETERMINED INFEASIBLE, INSTALLATION OF VERTICAL LOGS BY EXCAVATION MAY ALSO BE REQUIRED AS DESCRIBED IN THE LARGE WOOD DRAWINGS ON SHEET 14.
 - a. INSTALLATION OF VERTICAL LOGS BY EXCAVATION WILL REQUIRE ADDITIONAL BOLTED CONNECTIONS, AS INDICATED IN THE LARGE WOOD DRAWINGS ON SHEET 14.
13. SLASH: SLASH IS A CRITICAL COMPONENT OF LARGE WOOD STRUCTURE FUNCTION AND WILL BE TREATED AS SUCH. SLASH SHALL BE INCORPORATED INTO LARGE WOOD STRUCTURES AS SHOWN IN THE DRAWINGS AND AS DIRECTED BY THE OWNER. SLASH WILL BE STACKED AND RACKED AGAINST INSTALLED LWM AND VERTICAL LOGS TO EMULATE NATURAL ACCUMULATIONS OF WOOD MATERIAL.

14. SALVAGED TREE: ANY TREES CLEARED FOR ACCESS OR ALREADY DOWNED TREES IMMEDIATELY ADJACENT TO CONSTRUCTION SITE AND REQUIRING MOVEMENT FOR SITE ACCESS MAY BE INCORPORATED INTO A LARGE WOOD STRUCTURE, AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SALVAGED TREE TOPS MAY BE USED AS SLASH. AT A MINIMUM, THE NUMBER OF SALVAGED TREES INDICATED ON THE DRAWINGS SHALL BE INCORPORATED INTO EACH OF THE LARGE WOOD STRUCTURES.
15. WHERE PARTIAL BURIAL OF LWM IS REQUIRED, EXCAVATE TO SUBGRADE AND STOCKPILE MATERIAL WITHIN THE DESIGNATED DISTURBANCE AREA. SORT MATERIALS BY GENERAL SIZES, SEPARATING PILES FOR COARSE AND FINE MATERIAL. BACKFILL SHALL BE PLACED ON THE LWM AS EACH LAYER IS INSTALLED. COARSE FILL SHALL BE PREFERENTIALLY PLACED ALONG EXTERIOR OF FILL ZONE AND ALONG WATERWARD EDGE, AND FINER MATERIALS WITHIN INTERIOR OF FILL ZONE. WHERE POOL EXCAVATION IS INCLUDED, EXCAVATED MATERIAL SHALL BE SALVAGED AND PLACED AS BACKFILL IN LWM STRUCTURES.
16. BOLTED CONNECTIONS SHALL BE INSTALLED FOR LARGE WOOD STRUCTURES CONTAINING VERTICAL LOGS. BOLTED CONNECTIONS SHALL BE INSTALLED PER DRAWINGS.
17. AT PROJECT COMPLETION, CONTRACTOR SHALL RESTORE THE LWM STAGING AREA(S) BY REMOVING DEBRIS AND GRADING SMOOTH AND BLENDING TO EXISTING TOPOGRAPHY, AS DIRECTED BY THE OWNER.

QUALITY CONTROL

18. AT EACH LARGE WOOD STRUCTURE SITE CONTAINING VERTICAL LOGS, VERTICAL LOGS SHALL BE TESTED FOR PULLOUT RESISTANCE IN ACCORDANCE WITH THE DETAILS ON SHEET 18 OF THE LARGE WOOD DRAWINGS.
19. THE CONTRACTOR SHALL PROVIDE THE TENSION LINK, METER, AND ASSOCIATED HARDWARE (RATED 12 TON).
20. A MINIMUM PULLOUT RESISTANCE OF 10,000 LB AT THE MINIMUM EMBEDMENT DEPTH IS REQUIRED. IF THESE CRITERIA ARE NOT MET, THE FOLLOWING ADDITIONAL STABILITY MEASURES SHALL BE IMPLEMENTED:
 - a. INCREASING THE NUMBER OF VERTICAL LOGS REQUIRING TESTING IN ACCORDANCE WITH THE DETAILS ON SHEET 18 OF THE LARGE WOOD DRAWINGS.
 - b. ADDING ADDITIONAL BOLTED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS FOR VERTICAL LOGS INSTALLED BY EXCAVATION SHOWN ON SHEET 18 OF THE LARGE WOOD DRAWINGS.

MEASUREMENT

21. MEASUREMENT AND PAYMENT SHALL BE MADE AS A LUMP SUM PER EACH STRUCTURE FOR:

ITEMS 005 THROUGH 009 - BANK-BURIED STRUCTURES B2-1 THROUGH B2-5

ITEMS 010 THROUGH 013 - APEX LW STRUCTURES A2-1 THROUGH A2-4

PAYMENT

22. THE CONTRACT PRICE FOR "LARGE WOOD STRUCTURE" SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS AND LABOR FOR HANDLING, LOADING AND HAULING LWM FROM STOCKPILE AREAS, EXCAVATING TO SUBGRADE, SELECTIVE HANDLING OF EXCAVATED MATERIALS AND BACKFILL, INSTALLING AND SECURING LWM, VERTICAL LOGS, SLASH AND SALVAGED TREES AS OUTLINED IN THE DRAWINGS. QUALITY CONTROL TESTING, EARTHWORK, AND INSTALLING SLASH AND SALVAGED TREES SHALL BE INCIDENTAL TO "LARGE WOOD STRUCTURES".

ITEM 014- HELICOPTER SUPPORT

DESCRIPTION

1. THIS ITEM INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
 - a. PREPARATION OF THE LARGE WOOD STAGING AREA.
 - b. DUST ABATEMENT
 - c. SORTING AND DECKING OF LARGE WOOD MATERIAL DURING HELICOPTER TRANSPORT
 - d. CLEAN UP AND RESTORATION OF THE HELICOPTER SERVICE LANDING AND LARGE WOOD STAGING AREA

CONSTRUCTION REQUIREMENTS

2. A MINIMUM OF ONE EXCAVATOR CAPABLE OF EFFICIENTLY COMPLETING THE PROJECT WORK DESCRIBED IN THIS BID ITEM SHALL BE REQUIRED. UNDER NO CIRCUMSTANCES SHALL SORTING OF MATERIALS INHIBIT THE ABILITY OF THE HELICOPTER TO PERFORM TRANSPORT WORK.

3. DUST ABATEMENT SHALL BE COMPLETED USING A MINIMUM OF ONE WATER TENDER. ALL DUST ABATEMENT SHALL BE IN ACCORDANCE WITH PERMIT CONDITIONS.
4. PREPARATION OF THE LARGE WOOD STAGING AREA INCLUDES PRE-SORTING A PORTION OF THE LARGE WOOD MATERIAL IN A MANNER THAT FACILITATES THE HELICOPTER CREW PREPARING LOADS THAT WILL TYPICALLY CONSIST OF 2 ROOTWAD LOGS EACH, AND UP TO 4 LOGS EACH.
5. SORTING AND DECKING OF LARGE WOOD MATERIAL INCLUDES SORTING AND DECKING OF APPROXIMATELY 260 ROOTWAD LOGS AND 60 LOGS PRIOR TO AND DURING HELICOPTER TRANSPORT. ADDITIONAL PREPARATION OF APPROXIMATELY 20 BUNDLES OF STOCKPILED SLASH AND SALVAGED TREES MAY ALSO BE REQUIRED.
 - a. DURING HELICOPTER OPERATIONS THE EXCAVATOR WILL OPERATE THROUGHOUT THE LARGE WOOD DECK, MOVING LARGE WOOD MATERIAL FROM HIGH DECKS TO CHOKER SETTING LOCATIONS. THIS WILL REQUIRE EFFICIENT OPERATION AND CLOSE COMMUNICATION WITH THE DECK MANAGER AND OTHER HELICOPTER OPERATIONS CREW AS NECESSARY.
6. THE HELICOPTER SERVICE LANDING IS LOCATED AT THE MEADOW CREEK GRAVEL PIT. CURRENTLY THERE ARE SOME LOG DECKS AND LOGGING DEBRIS THAT NEED TO BE CONSOLIDATED AND MOVED TO CREATE A SAFE AND CLEAN HELICOPTER LANDING AREA. MEADOW CREEK PIT IS LOCATED APPROXIMATELY 7 ROAD MILES SOUTH OF THE PROJECT SITE. THIS ITEM WILL REQUIRE AN EXCAVATOR PRIOR TO HELICOPTER MOBILIZATION ON JULY 6, 2026. UPON COMPLETION OF HELICOPTER OPERATIONS, IT MAY BE NECESSARY TO REORGANIZE MATERIAL IN THE MEADOW CREEK PIT AS DIRECTED BY THE OWNER.

MEASUREMENT

7. THIS ITEM WILL BE MEASURED BY THE TOTAL NUMBER OF HOURS REQUIRED TO COMPLETE THE WORK. A MAXIMUM OF 19 HOURS OF HELICOPTER-RELATED WORK ARE ANTICIPATED AS PART OF THIS PROJECT. THE ACTUAL NUMBER OF HOURS FLIGHT TIME RECORDED BY THE HELICOPTER WILL BE USED TO INFORM THE TOTAL NUMBER OF HOURS WORKED.

PAYMENT

8. THE CONTRACT HOURLY PRICE FOR "HELICOPTER SUPPORT" SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS, AND LABOR FOR PREPARATION, SORTING AND HANDLING MATERIALS, AND SITE CLEAN UP. HANDLING AND ADEQUATE DISPOSAL OF ANY HELICOPTER DEBRIS

GENERATED DURING THE WORK SHALL BE CONSIDERED INCIDENTAL TO
"HELICOPTER SUPPORT"

ITEM 015- CONTINGENCY LARGE WOOD HAUL (EXCAVATOR AND DUMP TRUCK)

DESCRIPTION

1. THIS CONTINGENCY ITEM INCLUDES HAULING UP TO 30 SALVAGED TREES AND SLASH MATERIAL FROM THE PHASE 1/SIDE CHANNEL WORK AREA AND ASSOCIATED ACCESS ROUTES TO THE LARGE WOOD STRUCTURE INSTALL LOCATIONS DEPICTED ON THE DRAWINGS.
2. IF THE MINIMUM REQUIREMENTS FOR SLASH IN LARGE WOOD STRUCTURES CANNOT BE MET, SALVAGED TREES IN THE PHASE 1 WORK AREA MAY BE AVAILABLE AS AN ADDITIONAL MATERIAL SOURCE.
3. ALL TREES TO BE HAULED MUST BE PRE-APPROVED BY THE OWNER'S REPRESENTATIVE.
4. SALVAGED TREES TO BE HAULED UNDER THIS ITEM ARE ANTICIPATED TO BE LESS THAN 16" DBH.
5. INSTALLING THE SALVAGED TREES AND SLASH IS NOT INCLUDED IN THIS ITEM AND SHALL BE IN ACCORDANCE WITH ITEMS 005 THROUGH 013 "LARGE WOOD".

EXECUTION

6. SALVAGED TREES TO BE HAULED ARE ANTICIPATED TO BE LOCATED AT VARIOUS POINTS BETWEEN THE PHASE 1 LARGE WOOD STAGING AREA AND THE SIDE CHANNEL WORK AREA. THE MAXIMUM NUMBER OF ADDITIONAL SALVAGED TREES TO BE HAULED IS NOT ANTICIPATED TO EXCEED 35 TREES.
7. SALVAGED TREES SHALL BE HANDLED IN ACCORDANCE WITH ITEM 003 AND ITEMS 005 THROUGH 013, SUCH THAT DAMAGE TO LIMBS AND ROOTWADS IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE.
8. ANY HAULING OCCURRING UNDER THIS ITEM IS CONSIDERED SEPARATE FROM UTILIZING, HANDLING, OR HARVESTING SALVAGED TREES IN ACCORDANCE WITH OTHER WORK ITEMS IN THESE SPECIFICATIONS AND THE DRAWINGS.
9. THE OWNER MUST PRE-APPROVE ANY HAULING TO BE CONSIDERED PART OF THIS CONTINGENCY ITEM PRIOR TO THE CONTRACTOR PERFORMING ANY WORK ASSOCIATED WITH CONTINGENCY LARGE WOOD HAUL.

MEASUREMENT

10. CONTINGENCY LARGE WOOD HAUL WILL BE MEASURED BY LUMP SUM.
11. MEASUREMENT AND COMPENSATION FOR THE INSTALLATION OF SALVAGED TREES IS DESCRIBED UNDER ITEMS 005 THROUGH 013 "LARGE WOOD

STRUCTURES" AND PAID UNDER THAT ITEM. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

PAYMENT

12. PAYMENT FOR THIS CONTINGENCY ITEM WILL BE MADE AT THE CONTRACT LUMP SUM PRICE FOR "CONTINGENCY LARGE WOOD HAUL" UPON COMPLETION OF THE WORK

ITEMS 016 THROUGH 020: SIDE CHANNEL PROJECT

ITEM 016- DIVERSION AND DEWATERING: SIDE CHANNEL PROJECT

DESCRIPTION

1. THIS ITEM INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 - a. INSTALLING, MAINTAINING, AND REMOVING MEASURES TO ISOLATE IN-WATER WORK AREAS FROM FLOWING SURFACE WATER AND TO PREVENT TURBIDITY FROM ENTERING THE RIVER.
 - b. DEWATERING AND CONTROLLING TURBIDITY WITHIN CONSTRUCTION AREAS ISOLATED FROM THE RIVER BY COFFERDAMS.
 - c. DEWATERING AND CONTROLLING TRUBIDITY ASSOCIATED WITH GROUNDWATER INFLOW TO THE WORK AREA.
 - d. FURNISHING, MONITORING, OPERATING, MAINTAINING, AND REMOVING PUMPS.
 - e. COORDINATING WITH THE OWNER FOR FISH SALVAGE AND RELOCATION ACTIVITIES
 - f. INSTALLATION OF WATER CONTROL BMPS.
 - g. REWATERING THE CONSTRUCTED SIDE CHANNEL IN ACCORDANCE WITH PERMIT CONDITIONS AND THE STAGED REWATERING PLAN IDENTIFIED IN THE GENERAL CONSERVATION MEASURES ON SHEET 5 OF THE SIDE CHANNEL DRAWINGS.

MATERIALS

2. WORK AREA ISOLATION
 - a. COFFERDAMS CONSTRUCTED OF SHEET PILE INSTALLED BY VIBRATORY DRIVER IS A PRE-APPROVED METHOD OF WORK AREA ISOLATION. BULK BAGS FILLED WITH ALLUVIAL STREAMBED SEDIMENT MAY ALSO BE UTILIZED.
 - b. ANY SANDBAGS UTILIZED TO SECURE PLASTIC SHEETING OR FOR OTHER PURPOSES DEEMED NECESSARY BY THE CONTRACTOR SHALL BE FILLED WITH PEA GRAVEL OR STREAM GRAVEL. USING SAND WILL NOT BE ALLOWED.

3. PUMPING

- a. THE CONTRACTOR SHALL PROVIDE SUFFICIENT SIZE AND NUMBERS OF PUMPS TO DEWATER ISOLATED WORK AREAS AND CONTROL TURBIDITY FOR THE PROJECT AND ENCOUNTERED FLOWS AND GROUNDWATER CONDITIONS.
- b. IF NEEDED, THE CONTRACTOR SHALL PROVIDE ADDITIONAL PUMPS OR PUMPING CAPACITY AT NO ADDITIONAL COST TO THE OWNER.

CONSTRUCTION REQUIREMENTS

4. COFFERDAMS

- a. THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE RIVER BY INSTALLING COFFERDAM PER THE DRAWINGS. NO TURBIDITY FROM CONSTRUCTION ACTIVITIES SHALL ENTER THE RIVER.
- b. COFFERDAMS SHALL BE SUITABLY OFFSET FROM WORK AREA SO AS TO NOT INTERFERE WITH LOG PLACEMENT NOR LIMIT SCOUR POOL EXCAVATION SHOWN IN THE DRAWINGS.

5. PUMPING

- a. 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.
- b. PUMPS SHALL BE PLACED WITHIN A CONTAINER TO CONTAIN FUEL OR OIL SPILLS. OIL ABSORBENT DIAPERS SHALL BE STORED AT EACH PUMP.
- c. THE CONTRACTOR SHALL PROVIDE ENVIRONMENTAL PROTECTION MEASURES SUCH AS STRAW BALES, PERFORATED PIPE FOR DISCHARGE FLOW DISTRIBUTORS, GEOTEXTILES, FILTER BAGS, OR OTHER MEANS OF CONTROLLING DISCHARGE WATER AND TURBIDITY. NO TURBIDITY SHALL BE ALLOWED TO ENTER SURFACE WATERS OR WETLANDS.
- d. TO HELP PREVENT TURBIDITY FROM LEAKING THROUGH COFFERDAMS, THE CONTRACTOR SHALL OPERATE PUMP(S) TO LOWER THE WATER SURFACE WITHIN THE ISOLATED AREA AND DISCHARGE TO AN INFILTRATION AREA.

6. FISH SALVAGE

- a. THIS WORK INCLUDES COORDINATING WITH THE OWNER FOR FISH SALVAGE AND RELOCATION ACTIVITIES AS NEEDED. EXCAVATION OR LOG PLACEMENT SHALL NOT OCCUR UNTIL THE OWNER COMPLETES FISH SALVAGE. THE CONTRACTOR SHALL PROVIDE SUFFICIENT ADVANCE NOTICE TO THE OWNER BEFORE EACH COFFERDAM INSTALLATION DATE.
- b. THE CONTRACTOR SHALL PROVIDE OWNER ACCESS TO COFFERDAMS AND SUPPORTING STAFF FOR OWNER'S DEFISHING. THE CONTRACTOR IS ADVISED THAT FISH RESCUE WILL NOT OCCUR ON SATURDAYS OR SUNDAYS AND MAY TAKE SEVERAL HOURS PER COFFERDAM.

7. ENVIRONMENTAL PROTECTION MEASURES

- a. TURBIDITY MONITORING AND CORRECTION SHALL BE IN ACCORDANCE WITH ALL PERMIT CONDITIONS AND THE GENERAL CONSERVATION MEASURES ON SHEET 5.

MEASUREMENT

8. "DIVERSION AND DEWATERING," INCLUDING THE ABOVE AMENDMENTS TO THE ITEM WILL BE MEASURED BY LUMP SUM. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AND MEET PERFORMANCE CRITERIA AS SPECIFIED FOR THE ENTIRETY OF THE PROJECT.

PAYMENT

9. PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: "DIVERSION AND DEWATERING" PER LUMP SUM.

ITEM 017 EARTHWORK

DESCRIPTION

1. THIS ITEM INCLUDES ALL LABOR, EQUIPMENT, AND MATERIALS ASSOCIATED WITH EXCAVATION, BORROW, SORTING, HAULING, CONSTRUCTION OF FILLS, GRADING, SHAPING OF PROJECT FEATURES, AND DISPOSAL OF EXCESS MATERIALS REQUIRED TO ATTAIN THE LINES AND GRADES SHOWN ON THE DRAWINGS
2. THIS ITEM INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- a. SHAPING OF THE PROPOSED SIDE CHANNEL BED (TO THE ROUGH GRADE SURFACE ELEVATIONS), BANKS, AND FLOODPLAIN SURFACES.
 - b. PLACING SALVAGED ALLUVIUM AS GRAVEL AUGMENTATION IN THE MAIN CHANNEL AS SHOWN ON THE DRAWINGS.
 - c. SHAPING OF HABITAT ELEMENTS SUCH AS RIFFLES, POOLS, BAR SURFACES, POOL TAILOUTS, AND OTHER GRADED HABITAT FEATURES AS A FIELD SET ITEM.
3. THIS ITEM ALSO INCLUDES HAULING APPROXIMATELY 3-5 CUBIC YARDS OF SALVAGED GRAVELS FROM THE PHASE 1 STAGING AREA TO THE GRAVEL AUGMENTATION SITES.
 4. INSTALLATION OF LARGE WOOD MATERIAL IS INCLUDED UNDER ITEMS 018 THROUGH 020

MATERIALS

5. ESTIMATED MATERIAL VOLUMES DO NOT ACCOUNT FOR CONTRACTION OR EXPANSION. THE CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST TO THE OWNER.
6. SALVAGED ALLUVIUM IS DEFINED AS GRAVEL-COBBLE MATERIAL UP TO APPROXIMATELY 12 INCHES IN DIAMETER.
7. FINES ARE DEFINED AS MATERIAL THAT IS AT LEAST 50% ASH/SOIL/SAND BY VOLUME.
8. BOULDERS ARE DEFINED AS MATERIAL THAT IS GREATER THAN 12 INCHES IN DIAMETER
9. ANY NON-NATIVE DEBRIS OR MATERIAL ENCOUNTERED DURING EXCAVATION SHALL BE REMOVED BY THE CONTRACTOR AND LEGALLY DISPOSED OF IN AN OFF-SITE FACILITY AT NO ADDITIONAL COST TO THE OWNER.

EXECUTION

10. SALVAGED ALLUVIUM OR OTHER COARSE ALLUVIAL MATERIAL GENERATED DURING EXCAVATION SHALL BE STOCKPILED SEPARATELY FOR USE IN GRAVEL AUGMENTATION AS INDICATED IN THE DRAWINGS.
11. FINES SHALL BE TREATED AS TOPSOIL AND STOCKPILED SEPARATELY FOR HANDLING AS DIRECTED BY THE OWNER. FINES SHALL BE HANDLED AS FOLLOWS:

- a. FINES SHALL BE HAULED TO THE PHASE 1 STAGING AREA DEPICTED ON THE DRAWINGS AND WIDELY SPREAD OVER THE STAGING AREA TO PROVIDE A NATURAL APPEARANCE. THE MAXIMUM DEPTH OF FINES PLACED ANYWHERE IN THE STAGING AREA SHALL NOT EXCEED 1 FOOT.
 - b. THE OWNER MAY REQUIRE RESERVING FINES FOR INCORPORATION INTO THE SURFACE LAYER (TOP 12-INCHES) OF GRAVEL AUGMENTATION TO FACILITATE PLANT GROWTH.
- 12. WHERE FEASIBLE, ANY BOULDERS ENCOUNTERED DURING EXCAVATION SHALL BE STOCKPILED FOR SELECT USE IN HABITAT ELEMENTS AS A FIELD SET ITEM.
 - 13. EARTHWORK ASSOCIATED WITH SIDE CHANNEL CONSTRUCTION SHALL BE CONDUCTED USING A STAGED APPROACH, AS INDICATED ON THE DRAWINGS.
 - 14. SIDE CHANNEL HABITAT SHALL BE CONSTRUCTED AS A FIELD SET ITEM IN ACCORDANCE WITH THE DRAWINGS. THE OWNER'S REPRESENTATIVE WILL DIRECT PLACEMENT OF EXCAVATED ALLUVIUM FROM POOLS TO CONSTRUCT RIFFLES AND GRAVEL BARS. STOCKPILING AND SELECTIVE HANDLING OF MATERIALS IN ACCORDANCE WITH THESE DRAWINGS AND SPECIFICATIONS MAY BE REQUIRED.
 - 15. THE CONTRACTOR IS ADVISED THAT GROUNDWATER MAY BE ENCOUNTERED DURING EXCAVATION.

EARTHWORK TOLERANCES

- 16. FINAL GRADES SHALL BE CONTINUOUS WITH EXISTING GRADES OUTSIDE THE PROJECT DISTURBANCE UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.
- 17. WHEN COMPLETED, ELEVATIONS SHALL CONFORM TO THE GRADES INDICATED ON THE DRAWINGS. TOLERANCES FOR GRADING SHALL BE ± 0.10 FEET.

MEASUREMENT

- 18. EXCAVATION SHALL BE MEASURED BY CUBIC YARD. ALL EXCAVATED MATERIAL SHALL BE MEASURED IN THE POSITION IT OCCUPIED BEFORE THE EXCAVATION WAS PERFORMED AND SHALL INCLUDE EXCAVATION, SORTING, TEMPORARY STOCKPILE, AND SELECTIVE HANDLING FOR APPROPRIATE MATERIALS. THE ORIGINAL GROUND SHALL BE TAKEN AS ONE OF THE FOLLOWING:
 - a. THE EXISTING GRADE (PRE-PROJECT, PRIOR TO MOBILIZATION) SHOWN ON THE DRAWINGS, OR

b. A PRE-EXCAVATION (PRIOR TO EQUIPMENT MOBILIZATION) GROUND SURVEY CONDUCTED BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF WASHINGTON AND HIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

19. THE ORIGINAL GROUND SHALL BE COMPARED WITH THE PLANNED FINISHED GRADE SHOWN ON THE DRAWINGS. REQUESTS FOR MODIFICATIONS TO QUANTITIES SHALL BE BASED ON SURVEY DATA PROVIDED BY THE CONTRACTOR AND VERIFIED BY THE OWNER'S REPRESENTATIVE. A RECORD OF LOAD TICKETS OF MATERIALS TRANSPORTED, OR SIMILAR MEASURES, WILL NOT BE CONSIDERED VALID SURVEY DATA.
20. NO ADDITIONAL COMPENSATION WILL BE MADE FOR EXCAVATED MATERIAL THAT IS STOCKPILED, RE-EXCAVATED, AND MOVED AGAIN. NO ALLOWANCE IS MADE FOR EXPANSION OF EXCAVATED MATERIALS NOR COMPACTION OF PLACED MATERIALS. EXPANSION AND COMPACTION SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

PAYMENT

21. THE CONTRACT PRICE FOR "EARTHWORK" SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE EARTHWORK ACTIVITIES. THE UNIT CONTRACT PRICE FOR EXCAVATION SHALL BE PER CUBIC YARD AND SHALL INCLUDE EXCAVATION, HAUL, STOCKPILE, SELECTIVE HANDLING, AND PLACEMENT OF MATERIAL IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

ITEMS 018 THROUGH 020 LARGE WOOD: SIDE CHANNEL PROJECT

DESCRIPTION

1. "LARGE WOOD" INCLUDES:
 - ITEM 018 - MISCELLANEOUS LARGE WOOD STRUCTURE M2-1
 - ITEM 019 - SIDE CHANNEL LARGE WOOD STRUCTURES SC2-1 THROUGH SC2-9
 - ITEM 020 - MISCELLANEOUS LARGE WOOD PLACEMENTS
2. THE WORK COVERED UNDER ITEMS 018 AND 019 INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- a. ALL WORK ASSOCIATED WITH HAULING 30 ROOTWAD LOGS CURRENTLY DECKED AT WINTON MILL APPROXIMATELY 16 ROAD MILES TO THE PROJECT SITE.
 - b. ALL WORK ASSOCIATED WITH ON-SITE HAULING, HANDLING, AND INSTALLATION OF LARGE WOOD MATERIAL (LWM), SALVAGED TREES, AND SLASH TO CONSTRUCT THE LARGE WOOD STRUCTURES SHOWN ON THE DRAWINGS.
 - c. EXCAVATION FOR LOG PLACEMENT, TEMPORARY STOCKPILING, BACKFILL TO PARTIALLY BURY LWM, AND SHAPING BANKS ADJACENT TO LWM PLACEMENTS.
 - d. WORK AREA ISOLATION IS REQUIRED AS SHOWN IN THE DRAWINGS, IN ACCORDANCE WITH ITEM 004 "DIVERSION AND DEWATERING".
3. THE WORK COVERED UNDER ITEM 020 INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
- a. MISCELLANEOUS PLACEMENTS OF LARGE WOOD MATERIAL (LWM), EXCAVATION AND BACKFILL, SLASH, SALVAGED TREE TOPS, AND SALVAGED TREES NOT INCORPORATED INTO LARGE WOOD STRUCTURES SHOWN ON THE DRAWINGS.
 - b. THE ESTIMATED QUANTITY OF MISCELLANEOUS LARGE WOOD PLACEMENTS IS 30 PIECES OF LWM.

MATERIALS

LARGE WOOD MATERIAL (LWM)

4. LWM WILL BE SUPPLIED BY THE OWNER OR SALVAGED FROM THE SITE. LARGE WOOD MATERIAL SUPPLIED BY THE OWNER WILL BE DECKED AT THE PHASE 1 STAGING AREA DEPICTED ON SHEET 7 OF THE SIDE CHANNEL DRAWINGS.
5. LARGE WOOD MATERIAL SHALL CONSIST OF THE FOLLOWING
 - ROOTWAD LOGS
 - VERTICAL LOGS
 - SALVAGED TREE
 - SUPPLEMENTAL ROOTWAD LOGS
 - SLASH

6. OWNER-PROVIDED LWM WILL HAVE THE FOLLOWING CHARACTERISTICS:

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

VERTICAL LOGS: VERTICAL LOGS: 20' LONG AND 15" DIAMETER IN MIDDLE OF LOG. VERTICAL LOGS MAY BE DECKED IN LENGTHS OF 40' AND REQUIRE BUCKING PRIOR TO INSTALLATION.

7. SALVAGED TREE INCLUDES OWNER-IDENTIFIED TREES RANGING BETWEEN 12" AND 25" DBH REMOVED FROM ACCESS ROUTES, STAGING/STOCKPILE AREAS, AND EXCAVATION AREAS IN ACCORDANCE WITH ITEM 003-CLEARING, GRUBBING, AND TREE SALVAGE. ADDITIONAL SALVAGED TREES AVAILABLE FOR USE ARE ALREADY DOWNED ALONG THE FORMER ACCESS ROUTES BETWEEN THE PHASE 1 STAGING AREA AND WORK AREA DEPICTED ON THE DRAWINGS
8. SUPPLEMENTAL ROOTWAD LOGS MEETING THE FOLLOWING REQUIREMENTS SHALL BE GENERATED FROM SALVAGED TREES TO MEET THE ROOTWAD LOG QUANTITIES SHOWN ON THE DRAWINGS.

MINIMUM LENGTH: 40'

MINIMUM DBH: 16"

9. SUPPLEMENTAL ROOTWAD LOGS SHALL CONSIST OF THE FOLLOWING TREE SPECIES UNLESS OTHERWISE APPROVED BY THE OWNER.

DOUGLAS FIR

WESTERN REDCEDAR

SPRUCE

10. SUPPLEMENTAL ROOTWAD LOGS SHALL BE STRUCTURALLY SOUND WITH AN INTACT ROOTWAD. USE OF ROTTEN AND/OR BROKEN MATERIAL WILL NOT BE ALLOWED. THE OWNER'S REPRESENTATIVE MUST APPROVE ALL SUPPLEMENTAL ROOTWAD LOGS PRIOR TO INSTALLATION INTO THE PROJECT.
11. TREE TOPS BROKEN OR CUT OFF OF SUPPLEMENTAL ROOTWAD LOGS SHALL BE INCORPORATED INTO LARGE WOOD STRUCTURES AS SLASH.
12. THE ESTIMATED QUANTITIES OF SUPPLEMENTAL ROOTWAD LOGS AVAILABLE FOR USE ARE AS SUMMARIZED BELOW. STANDING TREES SHALL BE PRIORITIZED FOR USE AS SALVAGED TREES QUANTIFIED ON THE DRAWINGS AHEAD OF SUPPLEMENTAL ROOTWAD LOGS.

DOWNED- 20

STANDING-10

13. ESTIMATED LOCATIONS, SIZE, AND SPECIES OF STANDING TREES WITHIN THE SIDE CHANNEL FOOTPRINT ARE SUMMARIZED IN THE SIDE CHANNEL DRAWINGS ON SHEET 10.
14. SLASH WILL BE CREATED AND SALVAGED FROM THE DEVELOPMENT OF ACCESS ROUTES AND EXCAVATION AREAS. SALVAGED SLASH MATERIAL INCLUDES: SHRUBS, TREES <12" DBH AND TREE TOPS REMOVED FROM ACCESS ROUTES AND EXCAVATION AREAS.

CONSTRUCTION REQUIREMENTS

15. APPROXIMATE LOCATIONS FOR PLACEMENT AND DETAILS OF CONSTRUCTION FOR EACH LARGE WOOD STRUCTURE TYPE SHOWN IN THE DRAWINGS. FINAL LOCATION AND INSTALLATION WILL DEPEND UPON THE SIZE, SHAPE AND QUANTITY OF MATERIAL DELIVERED OR SALVAGED. INSTALLATION OF LWM SHALL BE UNDERSTOOD TO REQUIRE A "FIELD SET" APPROACH AS DIRECTED BY THE OWNER'S REPRESENTATIVE. LWM SHALL BE STABILIZED BY PARTIAL BURIAL, BRACING AGAINST VERTICAL LOGS INSTALLED, AND BRACING AGAINST EXISTING TREES OR BOULDERS AS SHOWN IN THE DRAWINGS.
16. CONSTRUCTION OF VERTICAL LOGS SHALL INCLUDE ON-SITE MOVEMENT AND INSTALLATION OF VERTICAL LOGS AT DESIGNATED SITES SHOWN IN THE DRAWINGS. VERTICAL LOGS SHALL BE PER THE APPROXIMATE NUMBERS AND QUANTITIES INDICATED ON THE DRAWINGS. SPECIFIC LOCATIONS SHALL BE DETERMINED IN THE FIELD AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE. THE REQUIRED EMBEDMENT DEPTH IS INDICATED ON THE DRAWINGS. VERTICAL LOGS WILL REQUIRE A MINIMUM OF ONE BOLTED CONNECTION EACH TO A ROOTWAD LOG, IN ACCORDANCE WITH THE DRAWINGS. CONNECTION LOCATIONS WILL BE AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
17. SLASH: SLASH IS A CRITICAL COMPONENT OF LARGE WOOD STRUCTURE FUNCTION AND WILL BE TREATED AS SUCH. SLASH SHALL BE INCORPORATED INTO LARGE WOOD STRUCTURES AS SHOWN IN THE DRAWINGS AND AS DIRECTED BY THE OWNER. SLASH WILL BE STACKED AND RACKED AGAINST INSTALLED LWM AND VERTICAL LOGS TO EMULATE NATURAL ACCUMULATIONS OF WOOD MATERIAL.
18. SALVAGED TREE: ANY TREES CLEARED FOR ACCESS OR ALREADY DOWNED TREES IMMEDIATELY ADJACENT TO CONSTRUCTION SITE AND REQUIRING MOVEMENT FOR SITE ACCESS MAY BE INCORPORATED INTO A LARGE WOOD STRUCTURE, AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SALVAGED TREE TOPS MAY BE USED AS SLASH. AT A MINIMUM, THE NUMBER OF SALVAGED TREES INDICATED

ON THE DRAWINGS SHALL BE INCORPORATED INTO EACH OF THE LARGE WOOD STRUCTURES.

19. ROOTWAD LOGS: A PORTION OF THE ROOTWAD LOG QUANTITIES WILL CONSIST OF IMPORTED ROOTWAD LOGS PROVIDED BY THE OWNER.
 - a. THE CONTRACTOR SHALL HAUL 30 ROOTWAD LOGS CURRENTLY DECKED AT WINTON MILL TO THE PROJECT SITE, APPROXIMATELY 16 ROAD MILES. ALL HAULING AND ASSOCIATED TRAFFIC CONTROL SHALL BE ACCORDANCE WITH FEDERAL, STATE, AND REGIONAL REQUIREMENTS.
 - b. ADDITIONAL ROOTWAD LOGS MEETING THE MATERIALS SPECIFICATIONS SHALL BE CREATED BY REMOVING TOPS FROM SALVAGED TREES. THE TREE TOPS GENERATED FROM ROOTWAD LOG CREATION SHALL BE INCORPORATED INTO LARGE WOOD STRUCTURES AS SLASH.
20. MISCELLANEOUS LARGE WOOD PLACEMENTS CONSISTS OF PLACING APPROXIMATELY 30 ADDITIONAL SALVAGED TREES NOT DEPICTED ON THE DRAWINGS, WITH DIAMETERS RANGING BETWEEN 12" AND 16" AS A FIELD SET ITEM.
 - a. MISCELLANEOUS LARGE WOOD PLACEMENTS ARE ANTICIPATED TO OCCUR WITHIN THE SIDE CHANNEL FOOTPRINT AND AS SUPPLEMENTAL LWM ON EXISTING PHASE 1 LARGE WOOD STRUCTURES AS DIRECTED BY THE OWNER.
 - b. STABILIZATION OF MISCELLANEOUS LARGE WOOD PLACEMENTS WILL BE LIMITED TO BRACING AGAINST PILES OR MATURE STANDING TREES, OR LAYERING WITH OTHER LARGE WOOD MATERIAL.
 - c. ANY REQUIRED HAULING OF MISCELLANEOUS LARGE WOOD TO THE LARGE WOOD PROJECT AREA IS COVERED UNDER ITEM 015- "CONTINGENCY LARGE WOOD HAUL"
21. WHERE PARTIAL BURIAL OF LWM IS REQUIRED, EXCAVATE TO SUBGRADE AND STOCKPILE MATERIAL WITHIN THE DESIGNATED DISTURBANCE AREA. SORT MATERIALS BY GENERAL SIZES, SEPARATING PILES FOR COARSE AND FINE MATERIAL. BACKFILL SHALL BE PLACED ON THE LWM AS EACH LAYER IS INSTALLED. COARSE FILL SHALL BE PREFERENTIALLY PLACED ALONG EXTERIOR OF FILL ZONE AND ALONG WATERWARD EDGE, AND FINER MATERIALS WITHIN INTERIOR OF FILL ZONE. WHERE POOL EXCAVATION IS INCLUDED, EXCAVATED MATERIAL SHALL BE SALVAGED AND PLACED AS BACKFILL IN LWM STRUCTURES.
22. AT PROJECT COMPLETION, CONTRACTOR SHALL RESTORE THE LWM STAGING AREA(S) BY REMOVING DEBRIS AND GRADING SMOOTH AND BLENDING TO EXISTING TOPOGRAPHY, AS DIRECTED BY THE OWNER.

QUALITY CONTROL

23. AT EACH LARGE WOOD STRUCTURE SITE CONTAINING VERTICAL LOGS, VERTICAL LOGS SHALL BE TESTED FOR PULLOUT RESISTANCE IN ACCORDANCE WITH THE DETAILS ON SHEET 18 OF THE SIDE CHANNEL DRAWINGS.
24. THE CONTRACTOR SHALL PROVIDE THE TENSION LINK, METER, AND ASSOCIATED HARDWARE (RATED 12 TON).
25. A MINIMUM PULLOUT RESISTANCE OF 10,000 LB AT THE MINIMUM EMBEDMENT DEPTH IS REQUIRED. IF THESE CRITERIA ARE NOT MET, THE FOLLOWING ADDITIONAL STABILITY MEASURES SHALL BE IMPLEMENTED:
 - a. INCREASING THE NUMBER OF VERTICAL LOGS REQUIRING TESTING IN ACCORDANCE WITH THE DETAILS ON SHEET 18 OF THE SIDE CHANNEL DRAWINGS.
 - b. ADDING ADDITIONAL BOLTED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS FOR VERTICAL LOGS INSTALLED BY EXCAVATION SHOWN ON SHEET 18 OF THE SIDE CHANNEL DRAWINGS.

MEASUREMENT

26. MEASUREMENT AND PAYMENT SHALL BE MADE AS A LUMP SUM PER EACH FOR:
 - ITEM 018 - MISCELLANEOUS HABITAT STRUCTURE M2-1
 - ITEM 019 - SIDE CHANNEL HABITAT STRUCTURES SC2-1 THROUGH SC2-8
 - ITEM 020 - MISCELLANEOUS LARGE WOOD PLACEMENTS

PAYMENT

27. THE CONTRACT PRICE FOR "LARGE WOOD STRUCTURE" SHALL BE FULL COMPENSATION FOR ALL COSTS INCURRED FOR EQUIPMENT, MATERIALS AND LABOR FOR HANDLING, LOADING AND HAULING LWM FROM STOCKPILE AREAS, EXCAVATING TO SUBGRADE, SELECTIVE HANDLING OF EXCAVATED MATERIALS AND BACKFILL, INSTALLING AND SECURING LWM, VERTICAL LOGS, SLASH AND SALVAGED TREES AS OUTLINED IN THE DRAWINGS. QUALITY CONTROL TESTING, EARTHWORK, AND INSTALLING SLASH AND SALVAGED TREES SHALL BE INCIDENTAL TO "LARGE WOOD STRUCTURES".

