

LOWER CHIWAWA RIVER PROJECT

AREA G - PHASE 1

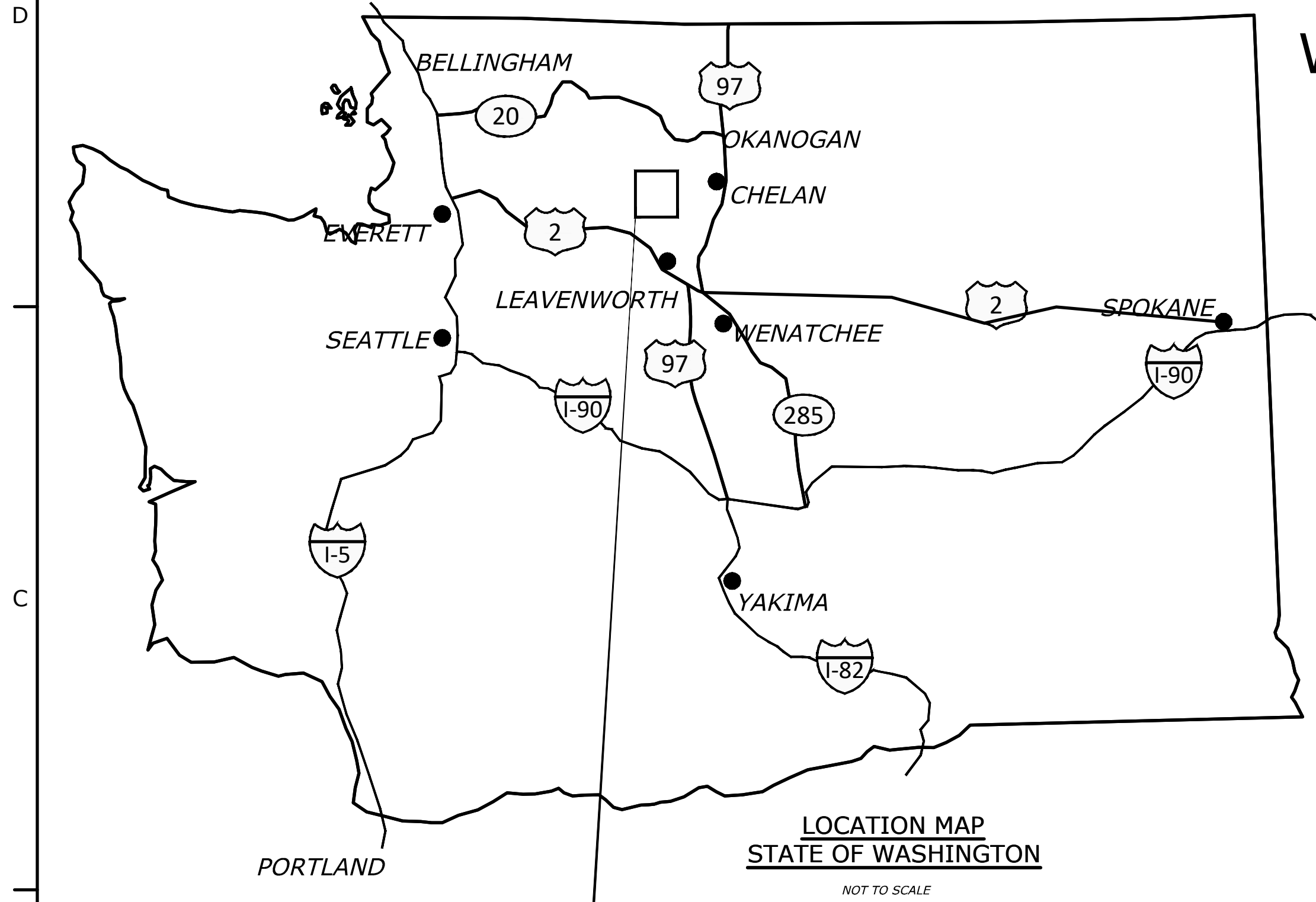
LOWER CHIWAWA RIVER ASSESSMENT UNIT

WENATCHEE RIVER SUB-BASIN, WASHINGTON

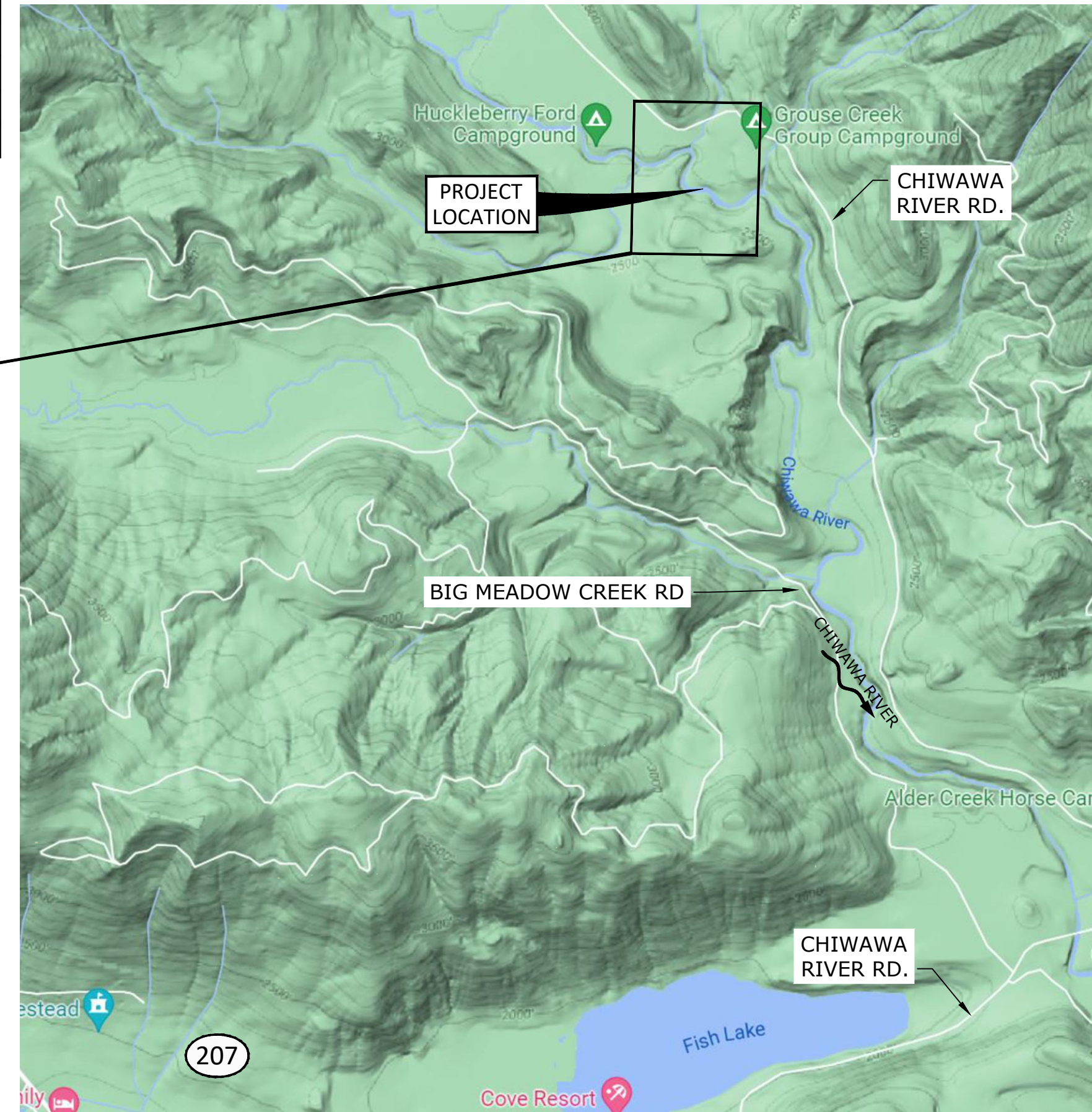
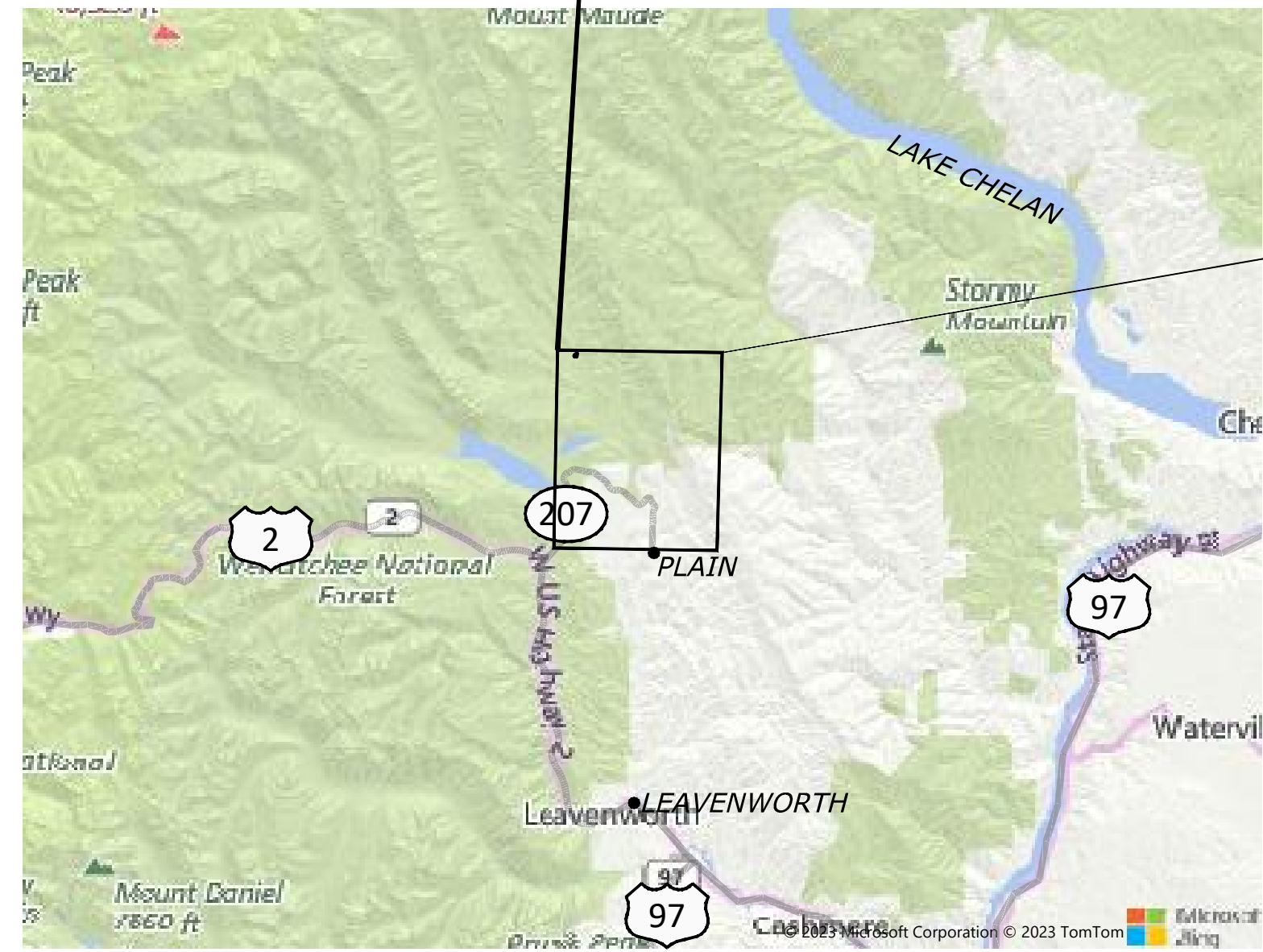
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Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	GENERAL NOTES
3	GENERAL CONSERVATION MEASURES (1 OF 3)
4	GENERAL CONSERVATION MEASURES (2 OF 3)
5	GENERAL CONSERVATION MEASURES (3 OF 3)
6	TYPICAL EROSION AND SEDIMENT CONTROL DETAIL
7	EXISTING CONDITIONS, SITE ACCESS AND STAGING
8	SITE OVERVIEW AND SHEET INDEX
9	PROPOSED CONDITIONS (1 OF 3)
10	PROPOSED CONDITIONS (2 OF 3)
11	PROPOSED CONDITIONS (3 OF 3)
12	BANK BURIED CROSS SECTIONS
13	APEX CROSS SECTIONS
14	TYPICAL DETAILS (1 OF 4)
15	TYPICAL DETAILS (2 OF 4)
16	TYPICAL DETAILS (3 OF 4)
17	TYPICAL DETAILS (4 OF 4)
18	SPECIFICATIONS (1 OF 2)
19	SPECIFICATIONS (2 OF 2)



PREPARED FOR:
YAKAMA NATION FISHERIES
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LOWER CHIWAWA ASSESSMENT UNIT
PROJECT AREA G - PHASE I
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BOISE, ID APRIL 10, 2024

COVER SHEET

SHEET 1

SHEET 1 OF 19

EXISTING DATA

TOPOGRAPHY AND BATHYMETRY WAS COLLECTED ON AUGUST 3RD AND 4TH, 2021 BY NV5G USING RED/GREEN LIDAR. AS DOCUMENTED IN THE REPORT: NV5, GEOSPATIAL, OCTOBER 5, 2021. CHIWAWA RIVER, WASHINGTON. TOPOBATHYMETRIC LIDAR TECHNICAL DATA REPORT. DATA SOLICITED BY INTER-FLUVE DELIVERED BY: NV5 GEOSPATIAL. CERTIFIED BY: VON PETER SILVIA, PLS NO. 53957.

AERIAL IMAGERY COLLECTED AUGUST 3-5, 2021 BY NV5.

WETLANDS AND WATERS OF THE US

ORDINARY HIGH WATER DEPICTED ON THESE PLANS IS BASED ON HYDRAULIC MODEL RESULTS FOR THE 2-YEAR FLOOD.

A WETLAND ASSESSMENT WAS PERFORMED BY HAMER ENVIRONMENTAL IN 2023.

SOILS

SOILS AT THE SITE ARE EXPECTED TO CONSIST OF LOWER CHIWAWA RIVER ALLUVIUM (BOULDERS/COBBLES/GRAVELS) AND FLOODPLAIN SOILS (SILT/SAND WITH COBBLES AND GRAVELS). CHORALMONT CINDERY SANDY LOAM IN THE OVERBANK AND UPLAND AREAS, PER NRCS WEB SOIL SURVEY (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CALL (800-424-5555) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE EFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES. THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID THE EFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST TO OWNER OR PROJECT SPONSOR.

CONSTRUCTION TIMING

ALL IN-WATER CONSTRUCTION WORK SHALL OCCUR WITHIN THE DESIGNATED IN-WATER WORK WINDOW, JULY 1 - JULY 31, UNLESS OTHERWISE APPROVED BY REGULATORY AGENCIES IN WRITING. ALL OTHER SITE WORK SHALL OCCUR WITHIN THE DESIGNATED SEASONAL GENERAL CONSTRUCTION WORK WINDOW.

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, PERMIT CONDITIONS AND THE APPROVED TESC IN ACCORDANCE WITH THE SPECIFICATIONS. SEE GENERAL AQUATIC CONSERVATION MEASURES ON SHEETS 3-5 FOR ADDITIONAL REQUIREMENTS.

FISH SALVAGE

FISH SALVAGE SHALL BE COMPLETED BY EXPERIENCED FISH BIOLOGIST AND COORDINATED WITH OWNER. SEE GENERAL AQUATIC CONSERVATION MEASURES ON SHEETS 3-5 FOR ADDITIONAL REQUIREMENTS.

CULTURAL RESOURCES

A YAKAMA NATION ARCHEOLOGIST WILL BE ON SITE DURING CONSTRUCTION. ENCOUNTERING THE FOLLOWING CULTURAL RESOURCES REQUIRES THE IMMEDIATE DISCONTINUATION OF ALL GROUND-DISTURBING ACTIVITY:

- 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

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.

CONSTRUCTION PLANS AND SPECIFICATIONS

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 REGULATORY STANDARDS, LOCAL REGULATIONS, OR OTHER CONTRACT DOCUMENTATION, THE MORE STRINGENT SHALL PREVAIL, UNLESS OTHERWISE SPECIFIED IN WRITING BY THE OWNER

CONSTRUCTION STAKING

THE OWNERS REPRESENTATIVE WILL FLAG OR MARK LARGE WOOD STRUCTURE LOCATIONS AND APPROXIMATE EXTENTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

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

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST TO OWNER OR PROJECT SPONSOR.

CONSTRUCTION ACCESS

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

FOR DURATION OF PROJECT, CONTRACTOR SHALL KEEP ALL PRIVATE AND PUBLIC ROADS USED FOR ACCESS FREE OF DEBRIS AND MUD.

TREE SALVAGE

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

ALL REMOVED NON-INVASIVE VEGETATION SHALL BE INCORPORATED INTO LARGE WOOD STRUCTURES IN ACCORDANCE WITH THE SPECIFICATIONS. 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, UNLESS OTHERWISE NOTED, SHALL BE REMOVED WHOLE WITH ROOTS INTACT AND UTILIZED IN OTHER PROJECT 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 EXISTING MATURE TREES NOT MARKED FOR REMOVAL.

Table with 7 columns: LARGE WOOD STRUCTURE, ROOTWAD LOGS (EA), VERTICAL LOGS (EA), SALVAGED TREES (EA), SLASH (CY), POOL EXCAVATION (CY), TEMPORARY CUT/FILL (CY). Rows include B1-B6, A1-A2, and a TOTAL row.

ABBREVIATIONS

- ° DEGREE
' FEET
" INCH
% PERCENT
APPROX. APPROXIMATE
CON'T CONTINUED
CY. CUBIC YARD
DIA. DIAMETER
D.S. DOWNSTREAM
ELEV ELEVATION
ESC EROSION SEDIMENT AND CONTROL
EXIST EXISTING
FT FEET
I.D. IDENTIFICATION
IN INCH
INV INVERT
LF LINIER FOOT
LLC LIMITED LIABILITY COMPANY
LWM LARGE WOODY MATERIAL
LWS LARGE WOOD STRUCTURE
MAX MAXIMUM
MIN MINIMUM
NO. NUMBER
OHW ORDINARY HIGH WATER
PDC PULSED DIRECT CURRENT
RD ROAD
SF SQUARE FEET
SIM SIMILAR
STA STATION
TESC TEMPORARY EROSION AND SEDIMENT CONTROL
TYP TYPICAL
U.S. UPSTREAM
WA WASHINGTON
YR YEAR

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GENERAL NOTES

SHEET 2

SHEET 2 OF 19

GENERAL CONSERVATION MEASURES APPLICABLE TO ALL ACTIONS

THE ACTIVITIES COVERED UNDER ARBO ARE INTENDED TO PROTECT AND RESTORE FISH AND WILDLIFE HABITAT WITH LONG-TERM BENEFITS TO ESA-LISTED SPECIES. THE FOLLOWING GENERAL CONSERVATION MEASURES (DEVELOPED IN COORDINATION WITH USFWS, NMFS AND ADAPTED FROM THE HIP GENERAL CONSERVATION MEASURES.) WILL BE APPLIED TO ALL ACTIONS OF THIS PROJECT.

PROJECT DESIGN AND SITE PREPARATION

1. STATE AND FEDERAL PERMITS

- A. ALL APPLICABLE REGULATORY PERMITS AND OFFICIAL PROJECT AUTHORIZATIONS WILL BE OBTAINED BEFORE PROJECT IMPLEMENTATION.
B. THESE PERMITS AND AUTHORIZATIONS INCLUDE, BUT ARE NOT LIMITED TO, NATIONAL ENVIRONMENTAL POLICY ACT, NATIONAL HISTORIC PRESERVATION ACT, THE APPROPRIATE STATE AGENCY REMOVAL AND FILL PERMIT, USACE CLEAN WATER ACT (CWA) 404 PERMITS, AND CWA SECTION 401 WATER QUALITY CERTIFICATIONS.

2. TIMING OF IN-WATER WORK

- A. APPROPRIATE STATE (OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG), AND MONTANA FISH WILDLIFE AND PARKS (MFWP)) GUIDELINES FOR TIMING OF IN-WATER WORK WINDOWS (IWW) WILL BE FOLLOWED.
B. CHANGES TO ESTABLISHED WORK WINDOWS WILL BE APPROVED BY REGIONAL STATE BIOLOGISTS AND REGULATORY AGENCIES.
C. BULL TROUT. FOR AREAS WITH DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT OR AREAS KNOWN TO HAVE BULL TROUT, PROJECT PROPONENTS WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE TO INSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS BEING USED TO MINIMIZE PROJECT EFFECTS.
D. LAMPREY. WORKING IN STREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY WILL BE AVOIDED FROM MARCH 1 TO JULY 1 FOR REACHES <5,000 FEET IN ELEVATION AND FROM MARCH 1 TO AUGUST 1 FOR REACHES >5,000 FEET. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOWN TO EXIST, THE PROJECT SPONSOR WILL UTILIZE DEWATERING AND SALVAGE PROCEDURES (SEE FISH SALVAGE AND ELECTROFISHING SECTIONS) TO MINIMIZE ADVERSE EFFECTS.
E. THE IN-WATER WORK WINDOW WILL BE JULY 1 THROUGH JULY 31.

3. CONTAMINANTS

- A. EXCAVATION OF MORE THAN 20 CUBIC YARDS WILL REQUIRE A SITE VISIT AND DOCUMENTED ASSESSMENT FOR POTENTIAL CONTAMINANT SOURCES. THE SITE ASSESSMENT WILL BE STORED WITH PROJECT FILES OR AS AN APPENDIX TO THE BASIS OF DESIGN REPORT.
B. THE SITE ASSESSMENT WILL SUMMARIZE:
1. THE SITE VISIT, CONDITION OF THE PROPERTY, AND IDENTIFICATION OF ANY AREAS USED FOR VARIOUS INDUSTRIAL PROCESSES;
2. AVAILABLE RECORDS, SUCH AS FORMER SITE USE, BUILDING PLANS, AND RECORDS OF ANY PRIOR CONTAMINATION EVENTS;
3. INTERVIEWS WITH KNOWLEDGEABLE PEOPLE, SUCH AS SITE OWNERS, OPERATORS, OCCUPANTS, NEIGHBORS, OR LOCAL GOVERNMENT OFFICIALS; AND
4. THE TYPE, QUANTITY, AND EXTENT OF ANY POTENTIAL CONTAMINATION SOURCES.

4. SITE LAYOUT AND FLAGGING

- A. CONSTRUCTION AREAS TO BE CLEARLY FLAGGED PRIOR TO CONSTRUCTION
B. AREAS TO BE FLAGGED WILL INCLUDE:
1. SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER, SPAWNING AREAS, SPRINGS, AND WETLANDS;
2. EQUIPMENT ENTRY AND EXIT POINTS;
3. ROAD AND STREAM CROSSING ALIGNMENTS;
4. STAGING, STORAGE, AND STOCKPILE AREAS; AND
5. NO-SPRAY AREAS AND BUFFERS.

5. TEMPORARY ACCESS ROADS AND PATHS

- A. EXISTING ACCESS ROADS AND PATHS WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER AND LENGTH OF TEMPORARY ACCESS ROADS AND PATHS THROUGH RIPARIAN AREAS AND FLOODPLAINS WILL BE MINIMIZED.
B. VEHICLE USE AND HUMAN ACTIVITIES, INCLUDING WALKING, IN AREAS OCCUPIED BY TERRESTRIAL ESA-LISTED SPECIES WILL BE MINIMIZED.
C. TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST A LIKELIHOOD OF EXCESSIVE EROSION OR FAILURE. IF SLOPES ARE STEEPER THAN 30%, THEN THE ROAD WILL BE DESIGNED BY A CIVIL ENGINEER WITH EXPERIENCE IN STEEP ROAD DESIGN.
D. THE REMOVAL OF RIPARIAN VEGETATION DURING CONSTRUCTION OF TEMPORARY ACCESS ROADS WILL BE MINIMIZED. WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED, VEGETATION WILL BE CUT AT GROUND LEVEL (NOT GRUBBED). TREES SUITABLE FOR USE IN LARGE WOOD STRUCTURES WILL BE HARVESTED WITH ROOTS AND BRANCHES INTACT TO THE EXTENT PRACTICABLE. SOIL WILL BE REPLACED INTO THE ROOT CAVITY AND SMOOTHED TO THE NATIVE CONTOURS.
E. AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE OBLITERATED, AND THE SOIL WILL BE STABILIZED AND REVEGETATED. ROAD AND PATH OBLITERATION REFERS TO THE MOST COMPREHENSIVE DEGREE OF DECOMMISSIONING AND INVOLVES DECOMPACTING THE SURFACE AND DITCH, PULLING THE FILL MATERIAL ONTO THE RUNNING SURFACE, AND RESHAPING TO MATCH THE ORIGINAL CONTOUR.

6. TEMPORARY STREAM CROSSINGS

- A. EXISTING STREAM CROSSINGS OR BEDROCK WILL BE PREFERENTIALLY USED WHENEVER REASONABLE, AND THE NUMBER OF TEMPORARY STREAM CROSSINGS WILL BE MINIMIZED.
B. TEMPORARY BRIDGES AND CULVERTS WILL BE INSTALLED TO ALLOW FOR EQUIPMENT AND VEHICLE CROSSING OVER PERENNIAL STREAMS DURING CONSTRUCTION. TREATED WOOD SHALL NOT BE USED ON TEMPORARY BRIDGE CROSSINGS OR IN LOCATIONS IN CONTACT WITH OR DIRECTLY OVER WATER.
C. FOR PROJECTS THAT REQUIRE EQUIPMENT AND VEHICLES TO CROSS IN THE WET:
1. THE LOCATION AND NUMBER OF ALL WET CROSSINGS SHALL BE APPROVED BY THE EC LEAD AND DOCUMENTED IN THE CONSTRUCTION PLANS;
2. VEHICLES AND MACHINERY SHALL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHENEVER POSSIBLE;
3. NO STREAM CROSSINGS WILL OCCUR 300 FEET UPSTREAM OR 100 FEET DOWNSTREAM OF AN EXISTING REDD OR SPAWNING FISH; AND
4. AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED AND BANKS RESTORED.

7. STAGING, STORAGE, AND STOCKPILE AREAS

- A. STAGING AREAS (USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE) WILL BE 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND. STAGING AREAS CLOSER THAN 150 FEET WILL BE APPROVED BY THE EC LEAD.
B. NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN 150 FEET IF CLEARLY INDICATED IN THE PLANS THAT AREA IS FOR NATURAL MATERIALS ONLY.
C. ANY LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION WILL BE STOCKPILED FOR USE DURING SITE RESTORATION AT A SPECIFICALLY IDENTIFIED AND FLAGGED AREA.
D. ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, WILL BE DISPOSED OF OUTSIDE THE 100-YEAR FLOODPLAIN.

8. EQUIPMENT

- A. MECHANIZED EQUIPMENT AND VEHICLES WILL 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).
B. EQUIPMENT WILL BE STORED, FUELED, AND MAINTAINED IN AN CLEARLY IDENTIFIED STAGING AREA THAT MEETS STAGING AREA CONSERVATION MEASURES.
C. EQUIPMENT WILL BE REFUELED IN A VEHICLE STAGING AREA 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).
D. BIODEGRADABLE LUBRICANTS AND FLUIDS WILL BE USED ON EQUIPMENT OPERATING IN AND ADJACENT TO THE STREAM CHANNEL AND LIVE WATER.
E. EQUIPMENT WILL BE INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND.
F. EQUIPMENT WILL BE THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER, AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN GREASE FREE.

9. EROSION CONTROL

- A. TEMPORARY EROSION CONTROL MEASURES INCLUDE:
1. TEMPORARY EROSION CONTROLS WILL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE AND APPROPRIATELY INSTALLED DOWNSLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE;
2. IF THERE IS A POTENTIAL FOR ERODED SEDIMENT TO ENTER THE STREAM, SEDIMENT BARRIERS WILL BE INSTALLED AND MAINTAINED FOR THE DURATION OF PROJECT IMPLEMENTATION;
3. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE SEDGE MATS, FIBER WATTLES, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH AND SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC;
4. SOIL STABILIZATION UTILIZING WOOD FIBER MULCH AND TACKIFIER (HYDRO-APPLIED) MAY BE USED TO REDUCE EROSION OF BARE SOIL IF THE MATERIALS ARE NOXIOUS WEED FREE AND NONTOXIC TO AQUATIC AND TERRESTRIAL ANIMALS, SOIL MICROORGANISMS, AND VEGETATION;
5. SEDIMENT WILL BE REMOVED FROM EROSION CONTROLS ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE CONTROL; AND
6. ONCE THE SITE IS STABILIZED AFTER CONSTRUCTION, TEMPORARY EROSION CONTROL MEASURES WILL BE REMOVED.
B. EMERGENCY EROSION CONTROLS. THE FOLLOWING MATERIALS FOR EMERGENCY EROSION CONTROL WILL BE AVAILABLE AT THE WORK SITE:
1. A SUPPLY OF SEDIMENT CONTROL MATERIALS; AND
2. AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.

10. DUST ABATEMENT

- A. THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES.
B. WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.
C. DUST-ABATEMENT ADDITIVES AND STABILIZATION CHEMICALS (TYPICALLY MAGNESIUM CHLORIDE, CALCIUM CHLORIDE SALTS, OR LIGNINSULFONATE) WILL NOT BE APPLIED WITHIN 25 FEET OF WATER OR A STREAM CHANNEL AND WILL BE APPLIED SO AS TO MINIMIZE THE LIKELIHOOD THAT THEY WILL ENTER STREAMS. APPLICATIONS OF LIGNINSULFONATE WILL BE LIMITED TO A MAXIMUM RATE OF 0.5 GALLONS PER SQUARE YARD OF ROAD SURFACE, ASSUMING MIXED 50:50 WITH WATER.
D. APPLICATION OF DUST ABATEMENT CHEMICALS WILL BE AVOIDED DURING OR JUST BEFORE WET WEATHER, AND AT STREAM CROSSINGS OR OTHER AREAS THAT COULD RESULT IN UNFILTERED DELIVERY OF THE DUST ABATEMENT MATERIALS TO A WATERBODY (TYPICALLY THESE WOULD BE AREAS WITHIN 25 FEET OF A WATERBODY OR STREAM CHANNEL; DISTANCES MAY BE GREATER WHERE VEGETATION IS SPARSE OR SLOPES ARE STEEP).
E. SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.
F. PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

11. SPILL PREVENTION, CONTROL, AND COUNTER MEASURES

- A. A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES WILL BE AVAILABLE ON-SITE.
B. WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.
C. 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.
D. WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.
E. 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.
F. PUMPS USED ADJACENT TO WATER SHALL USE SPILL CONTAINMENT SYSTEMS.

12. INVASIVE SPECIES CONTROL

- A. 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.
B. WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES.
C. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES UNLESS DECONTAMINATION PROCEDURES HAVE BEEN APPROVED BY THE EC LEAD.



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BOISE, ID APRIL 10, 2024

GENERAL CONSERVATION MEASURES (1 OF 3)

SHEET 3

SHEET 3 OF 19

LAST SAVED DATE: 2024-04-09 10:51:00 AM
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WORK AREA ISOLATION AND FISH SALVAGE

1. WORK AREA ISOLATION

- A. ANY WORK AREA WITHIN THE WETTED CHANNEL WILL BE ISOLATED FROM THE ACTIVE STREAM WHENEVER ESA-LISTED FISH ARE REASONABLY CERTAIN TO BE PRESENT, OR IF THE WORK AREA IS LESS THAN 300-FEET UPSTREAM FROM KNOWN SPAWNING HABITATS.
B. WORK AREA ISOLATION AND FISH SALVAGE ACTIVITIES WILL COMPLY WITH THE IN-WATER WORK WINDOW.
C. DESIGN PLANS WILL INCLUDE ALL ISOLATION ELEMENTS AND AREAS (COFFER DAMS, PUMPS, DISCHARGE AREAS, FISH SCREENS, FISH RELEASE AREAS, ETC.).
D. WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES WILL OCCUR DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS AND DEATH OF SPECIES PRESENT.

2. FISH SALVAGE

- A. MONITORING AND RECORDING WILL TAKE PLACE FOR DURATION OF SALVAGE. THE SALVAGE REPORT WILL BE COMMUNICATED TO AGENCIES VIA THE PROJECT COMPLETION FORM (PCF).
B. SALVAGE ACTIVITIES SHOULD TAKE PLACE DURING CONDITIONS TO MINIMIZE STRESS TO FISH SPECIES, TYPICALLY PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES WHICH OCCUR IN THE MORNING VERSUS LATE IN THE DAY.
C. SALVAGE OPERATIONS WILL FOLLOW THE ORDERING, METHODS, AND CONSERVATION MEASURES SPECIFIED BELOW:
1. SLOWLY REDUCE WATER FROM THE WORK AREA TO ALLOW SOME FISH TO LEAVE VOLITIONALLY.
2. BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.
3. BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH AS LONG AS PASSAGE REQUIREMENTS ARE MET.
4. NETS WILL BE MONITORED HOURLY DURING IN-STREAM DISTURBANCE.
5. IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED AND FREE OF ORGANIC ACCUMULATION. IF BULL TROUT ARE PRESENT, NETS ARE TO BE CHECKED EVERY 4 HOURS FOR FISH IMPINGEMENT.
6. CAPTURE FISH THROUGH SEINING AND RELOCATE TO STREAMS.
7. WHILE DEWATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.
8. SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.
9. MINNOW TRAPS WILL BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.
10. ELECTROFISH TO CAPTURE AND RELOCATED FISH NOT CAUGHT DURING SEINING PER ELECTROFISH CONSERVATION MEASURES.
11. CONTINUE TO SLOWLY DEWATER STREAM REACH.
12. COLLECT ANY REMAINING FISH IN COLD-WATER BUCKETS AND RELOCATED TO THE STREAM.
13. LIMIT THE TIME FISH ARE IN A TRANSPORT BUCKET.
14. MINIMIZE PREDATION BY TRANSPORTING COMPARABLE SIZES IN BUCKETS.
15. BUCKET WATER TO BE CHANGED EVERY 15 MINUTES OR AERATED.
16. BUCKETS WILL BE KEPT IN SHADED AREAS OR COVERED.
17. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS, BUT WILL BE LEFT ON THE STREAM BANK TO AVOID MORTALITY COUNTING ERRORS.
D. SALVAGE GUIDELINES FOR BULL TROUT, LAMPREY, MUSSELS, AND NATIVE FISH
1. CONDUCT SITE SURVEY TO ESTIMATE SALVAGE NUMBERS.
2. PRE-SELECT SITE(S) FOR RELEASE AND/OR MUSSEL BED RELOCATION.
3. SALVAGE OF BULL TROUT WILL NOT TAKE PLACE WHEN WATER TEMPERATURES EXCEED 15 DEGREES CELSIUS.
4. IF DRAWDOWN LESS THAN 48 HOURS, SALVAGE OF LAMPREY AND MUSSELS MAY NOT BE NECESSARY IF TEMPERATURES SUPPORT SURVIVAL IN SEDIMENTS.
5. SALVAGE MUSSELS BY HAND, LOCATING BY SNORKELING OR WADING.
6. SALVAGE LAMPREY BY ELECTROFISHING (SEE ELECTROFISHING FOR LARVAL LAMPREY SETTINGS AND LARVAL LAMPREY DRY SHOCKING SETTINGS).
7. SALVAGE BONY FISH AFTER LAMPREY WITH NETS OR ELECTROFISHING (SEE ELECTROFISHING FOR APPROPRIATE SETTINGS).
8. REGULARLY INSPECT DEWATERED SITE SINCE LAMPREY LIKELY TO EMERGE AFTER DEWATERING AND MUSSELS MAY BECOME VISIBLE.
9. MUSSELS MAY BE TRANSFERRED IN COOLERS.
10. MUSSELS WILL BE PLACED INDIVIDUALLY TO ENSURE ABILITY TO BURROW INTO NEW HABITAT.

3. ELECTROFISHING

- A. INITIAL SITE SURVEY AND INITIAL SETTINGS
1. IDENTIFY SPAWNING ADULTS AND ACTIVE REDDS TO AVOID.
2. RECORD WATER TEMPERATURE. ELECTROFISHING WILL NOT OCCUR WHEN WATER TEMPERATURES ARE ABOVE 18 DEGREES CELSIUS.
3. IF POSSIBLE, A BLOCK NET WILL BE PLACED DOWNSTREAM AND CHECKED REGULARLY TO CAPTURE STUNNED FISH THAT DRIFT DOWNSTREAM.
4. INITIAL SETTINGS WILL BE 100 VOLTS, PULSE WIDTH OF 500 MICRO SECONDS, AND PULSE RATE OF 30 HERTZ.
5. RECORDS FOR CONDUCTIVITY, WATER TEMPERATURE, AIR TEMPERATURE, ELECTROFISHING SETTINGS, ELECTROFISHER MODEL, ELECTROFISHER CALIBRATION, FISH CONDITIONS, FISH MORTALITIES, AND TOTAL CAPTURE RATES WILL BE INCLUDED IN THE SALVAGE LOG BOOK.
B. ELECTROFISHING TECHNIQUE
1. SAMPLING WILL BEGIN USING STRAIGHT DC. POWER WILL REMAIN ON UNTIL THE FISH IS NETTED WHEN USING STRAIGHT DC GRADUALLY INCREASE VOLTAGE WHILE REMAINING BELOW MAXIMUM LEVELS.
2. MAXIMUM VOLTAGE WILL BE 1100 VOLTS WHEN CONDUCTIVITY IS <100 MILLISECONDS, 800 VOLTS WHEN CONDUCTIVITY IS BETWEEN 100 AND 300 MILLISECONDS, AND 400 VOLTS WHEN CONDUCTIVITY IS >300 MILLISECONDS.
3. IF FISH CAPTURE IS NOT SUCCESSFUL USING STRAIGHT DC, THE ELECTROFISHER WILL BE SET TO INITIAL VOLTAGE FOR PDC. VOLTAGE, PULSE WIDTH, AND PULSE FREQUENCY WILL BE GRADUALLY INCREASED WITHIN MAXIMUM VALUES UNTIL CAPTURE IS SUCCESSFUL.
4. MAXIMUM PULSE WIDTH IS 5 MILLISECONDS. MAXIMUM PULSE RATE IS 70 HERTZ
5. ELECTROFISHING WILL NOT OCCUR IN ONE AREA FOR AN EXTENDED PERIOD.
6. THE ANODE WILL NOT INTENTIONALLY COME INTO CONTACT WITH FISH. THE ZONE FOR POTENTIAL INJURY OF 0.5 M FROM THE ANODE WILL BE AVOIDED.
7. SETTINGS WILL BE LOWERED IN SHALLOWER WATER SINCE VOLTAGE GRADIENTS LIKELY TO INCREASE.
8. ELECTROFISHING WILL NOT OCCUR IN TURBID WATER WHERE VISIBILITY IS POOR (I.E. UNABLE TO SEE THE BED OF THE STREAM).
9. OPERATIONS WILL IMMEDIATELY STOP IF MORTALITY OR OBVIOUS FISH INJURY IS OBSERVED. ELECTROFISHING SETTINGS WILL BE REEVALUATED.
C. SAMPLE PROCESSING
1. FISH SHALL BE SORTED BY SIZE TO AVOID PREDATION DURING CONTAINMENT.
2. SAMPLERS WILL REGULARLY CHECK CONDITIONS OF FISH HOLDING CONTAINERS, AIR PUMPS, WATER TRANSFERS, ETC.
3. FISH WILL BE OBSERVED FOR GENERAL CONDITIONS AND INJURIES
4. EACH FISH WILL BE COMPLETELY REVIVED BEFORE RELEASE. ESA-LISTED SPECIES WILL BE PRIORITIZED FOR SUCCESSFUL RELEASE.
D. BULL TROUT ELECTROFISHING
1. ELECTROFISHING FOR BULL TROUT WILL ONLY OCCUR FROM MAY 1 TO JULY 31. NO ELECTROFISHING WILL OCCUR IN ANY BULL TROUT OCCUPIED HABITAT AFTER AUGUST 15. IN FMO HABITATS ELECTROFISHING MAY OCCUR ANY TIME.
2. ELECTROFISHING OF BULL TROUT WILL NOT OCCUR WHEN WATER TEMPERATURES EXCEED 15 DEGREES CELSIUS.

E. LARVAL LAMPREY ELECTROFISHING

- 1. PERMISSION FROM EC LEAD WILL BE OBTAINED IF LARVAL LAMPREY ELECTROFISHER IS NOT ONE OF FOLLOWING PRE-APPROVED MODELS: ABP-2 "WISCONSIN", SMITH-ROOT LR-24, OR SMITH-ROOT APEX BACKPACK.
2. LARVAL LAMPREY SAMPLING WILL INCORPORATE 2-STAGE METHOD: "TICKLE" AND "STUN".
3. FIRST STAGE: USE 125 VOLT DC WITH A 25 PERCENT DUTY CYCLE APPLIED AT A SLOW RATE OF 3 PULSES PER SECOND. IF TEMPERATURES ARE BELOW 10 DEGREES CELSIUS, VOLTAGE MAY BE INCREASED GRADUALLY (NOT TO EXCEED 200 VOLTS). BURSTED PULSES (THREE SLOW AND ONE SKIPPED) RECOMMENDED TO INCREASE EMERGENCE.
4. SECOND STAGE (OPTIONAL FOR EXPERIENCED NETTERS): IMMEDIATELY AFTER LAMPREY EMERGE, USE A FAST PULSE SETTING OF 30 PULSES PER SECOND.
5. USE DIP NETS FOR VISIBLE LAMPREY. SIENES AND FINE MESH NET SWEEPS MAY BE USED IN POOR VISIBILITY.
6. SAMPLING WILL OCCUR SLOWLY (>60 SECONDS PER METER) STARTING AT UPSTREAM AND WORKING DOWNSTREAM.
7. MULTIPLE SWEEPS TO OCCUR WITH 15 MINUTES BETWEEN SWEEPS.
8. POST-DRAWDOWN "DRY-SHOCKING" WILL BE APPLIED IF LARVAL LAMPREY CONTINUE TO EMERGE. ANODES TO BE PLACED ONE METER APART TO SAMPLE ONE SQUARE METER AT A TIME FOR AT LEAST 60 SECONDS. FOR TEMPERATURES LESS THAN 10 DEGREES CELSIUS, MAXIMUM VOLTAGE MAY BE GRADUALLY INCREASED TO 400 VOLTS (DRY-SHOCKING ONLY).

4. DEWATERING

- C. DEWATERING WILL OCCUR AT A RATE SLOW ENOUGH TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA.
D. WHERE A GRAVITY FEED DIVERSION IS NOT POSSIBLE, A PUMP MAY BE USED. PUMPS WILL BE INSTALLED TO AVOID REPETIVE DEWATERING AND REWATERING.
E. WHEN FISH ARE PRESENT, PUMPS WILL BE SCREENED IN ACCORDANCE WITH NMFS FISH SCREEN CRITERIA. NMFS ENGINEERING REVIEW AND APPROVAL WILL BE OBTAINED FOR PUMPS EXCEEDING 3 CUBIC FEET PER SECOND.
F. DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO THE STREAM CHANNEL AND RIPARIAN VEGETATION.
G. SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OF INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL AND VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.

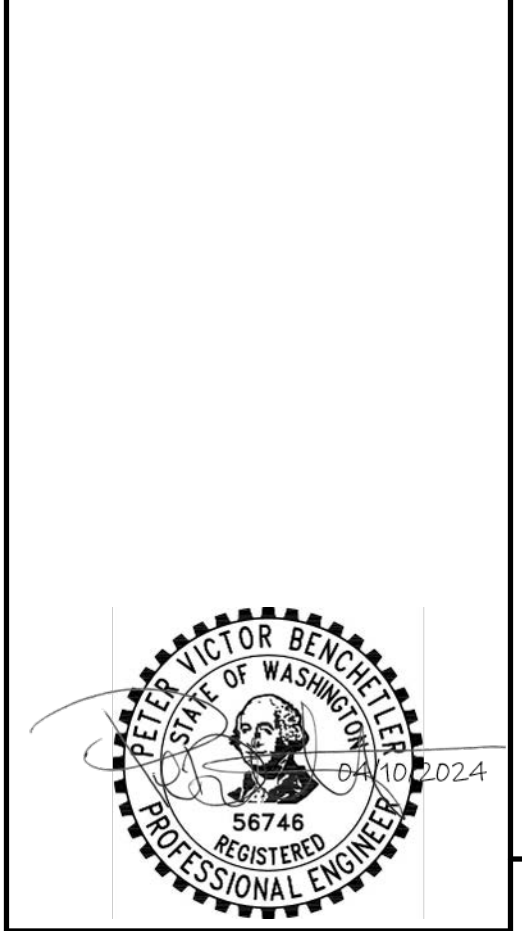
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CAD SYSTEM AutoCAD 24.25 (LMS TECH)
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BOISE, ID APRIL 10, 2024

GENERAL CONSERVATION MEASURES (2 OF 3)
SHEET 4

CONSTRUCTION AND POST CONSTRUCTION CONSERVATION MEASURES.

1. FISH PASSAGE

- A. FISH PASSAGE WILL BE PROVIDED FOR ADULT AND JUVENILE FISH LIKELY TO BE PRESENT DURING CONSTRUCTION UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION, THE STREAM IS NATURALLY IMPASSABLE, OR PASSAGE WILL NEGATIVELY IMPACT ESA-LISTED SPECIES OR THEIR HABITAT.
- B. FISH PASSAGE ALTERNATIVES WILL BE APPROVED UNDER ADVICE BY THE NMFS HABITAT BIOLOGIST.

2. CONSTRUCTION AND DISCHARGE WATER

- A. SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.
- B. DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.
- C. CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS, AND OTHER POLLUTANTS.

3. TIME AND EXTENT OF DISTURBANCE

- A. EARTHWORK REQUIRING IN-STREAM MECHANIZED EQUIPMENT (INCLUDING DRILLING, EXCAVATION, DREDGING, FILLING, AND COMPACTING) WILL BE COMPLETED AS QUICKLY AS POSSIBLE.
- B. MECHANIZED EQUIPMENT WILL WORK FROM TOP OF BANK UNLESS WORK FROM ANOTHER LOCATION WILL RESULT IN LESS HABITAT DISTURBANCE (TURBIDITY, VEGETATION DISTURBANCE, ETC.).

4. CESSATION OF WORK

- A. PROJECT OPERATIONS WILL CEASE WHEN HIGH FLOW CONDITIONS MAY RESULT IN INUNDATION OF THE PROJECT AREA (FLOOD EFFORTS TO DECREASE DAMAGES TO NATURAL RESOURCES PERMITTED).
- B. WATER QUALITY LEVELS EXCEEDED. SEE CWA SECTION 401 WATER QUALITY CERTIFICATION AND TURBIDITY MEASURES.

5. SITE RESTORATION

- A. DISTURBED AREAS, STREAM BANKS, SOILS, AND VEGETATION WILL BE CLEANED UP AND RESTORED TO IMPROVED OR PRE-PROJECT CONDITIONS.
- B. PROJECT-RELATED WASTE WILL BE REMOVED.
- C. TEMPORARY ACCESS ROADS AND STAGING WILL BE DECOMPACTED AND RESTORED. SOILS WILL BE LOOSENEED IF NEEDED FOR REVEGETATION OR WATER INFILTRATION.
- D. THE PROJECT SPONSOR WILL RETAIN THE RIGHT OF REASONABLE ACCESS TO THE SITE TO MONITOR AND MAINTAIN THE SITE OVER THE LIFE OF THE PROJECT.

6. REVEGETATION

- A. PLANTING AND SEEDING WILL OCCUR PRIOR TO OR AT THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.
- B. A MIX OF NATIVE SPECIES (INVASIVE SPECIES NOT ALLOWED) APPROPRIATE TO THE SITE WILL BE USED TO REESTABLISH VEGETATION, PROVIDE SHADE, AND REDUCE EROSION. REESTABLISHED VEGETATION SHOULD BE AT LEAST 70% OF PRE-PROJECT CONDITIONS WITHIN THREE YEARS.
- C. VEGETATION SUCH AS WILLOWS, SEDGES, OR RUSH MATS WILL BE SALVAGED FROM DISTURBED OR ABANDONED AREAS TO BE REPLANTED.
- D. SHORT-TERM STABILIZATION MEASURE MAY INCLUDE THE USE OF NON-NATIVE STERILE SEED MIX (WHEN NATIVE NOT AVAILABLE), WEED-FREE CERTIFIED STRAW, OR OTHER SIMILAR TECHNIQUES.
- E. SURFACE FERTILIZER WILL NOT BE APPLIED WITHIN 50 FEET OF ANY STREAM, WATE BODY, OR WETLAND.
- F. FENCING WILL BE INSTALLED AS NECESSARY TO PREVENT ACCESS TO REVEGETATED SITES BY LIVESTOCK OR UNAUTHORIZED PERSONS.
- G. INVASIVE PLANTS WILL BE REMOVED OR CONTROLLED UNTIL NATIVE PLANT SPECIES ARE WELL ESTABLISHED (TYPICALLY THREE YEARS POST-CONSTRUCTION).

7. SITE ACCESS AND IMPLEMENTATION MONITORING

- A. THE PROJECT SPONSOR WILL PROVIDE CONSTRUCTION MONITORING DURING IMPLEMENTATION TO ENSURE ALL CONSERVATION MEASURES ARE ADEQUATELY FOLLOWED, EFFECTS TO LISTED SPECIES ARE NOT GREATER THAN PREDICTED, AND INCIDENTAL TAKE LIMITATIONS ARE NOT EXCEEDED.
- B. THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL SUBMIT THE PROJECT COMPLETION FORM (PCF) WITHIN 30 DAYS OF PROJECT COMPLETION.

8. CWA SECTION 401 WATER QUALITY CERTIFICATION

- A. THE PROJECT SPONSOR OR DESIGNATED REPRESENTATIVE WILL COMPLETE AND RECORD WATER QUALITY OBSERVATIONS (SEE TURBIDITY MONITORING) TO ENSURE IN-WATER WORK IS NOT DEGRADING WATER QUALITY.
- B. DURING CONSTRUCTION, WATER QUALITY PROVISIONS PROVIDED BY THE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, WASHINGTON DEPARTMENT OF ECOLOGY.

STAGED REWATERING PLAN

- A. WHEN REINTRODUCING WATER TO DEWATERED AREAS AND NEWLY CONSTRUCTED CHANNELS, A STAGED REWATERING PLAN WILL BE APPLIED.
- B. THE FOLLOWING WILL BE APPLIED TO ALL REWATERING EFFORTS. COMPLEX REWATERING EFFORTS MAY REQUIRE ADDITIONAL NOTES OR A DEDICATED SHEET IN THE CONSTRUCTION DETAILS.
 - 1. TURBIDITY MONITORING PROTOCOL WILL BE APPLIED TO REWATERING EFFORTS.
 - 2. PRE-WASH THE AREA BEFORE REWATERING. TURBID WASH WATER WILL BE DETAINED AND PUMPED TO THE FLOODPLAIN OR SEDIMENT CAPTURE AREAS RATHER THAN DISCHARGING TO FISH-BEARING STREAMS.
 - 3. INSTALL SEINE NETS AT UPSTREAM END TO PREVENT FISH FROM MOVING DOWNSTREAM UNTIL 2/3 OF TOTAL FLOW IS RESTORED TO THE CHANNEL.
 - 4. STARTING IN EARLY MORNING INTRODUCE 1/3 OF NEW CHANNEL FLOW OVER PERIOD OF 1-2 HOURS.
 - 5. INTRODUCE SECOND THIRD OF FLOW OVER NEXT 1 TO 2 HOURS AND BEGIN FISH SALVAGE OF BYPASS CHANNEL IF FISH ARE PRESENT.
 - 6. REMOVE UPSTREAM SEINE NETS ONCE 2/3 FLOW IN REWATERED CHANNEL AND DOWNSTREAM TURBIDITY IS WITHIN ACCEPTABLE RANGE (LESS THAN 40 NTU OR LESS THAN 10% BACKGROUND).
 - 7. INTRODUCE FINAL THIRD OF FLOW ONCE FISH SALVAGE EFFORTS ARE COMPLETE AND DOWNSTREAM TURBIDITY VERIFIED TO BE WITHIN ACCEPTABLE RANGE.
 - 8. INSTALL PLUG TO BLOCK FLOW INTO OLD CHANNEL OR BYPASS. REMOVE ANY REMAINING SEINE NETS.
 - 9. IN LAMPREY SYSTEMS, LAMPREY SALVAGE AND DRY SHOCKING MAY BE NECESSARY.

TURBIDITY MONITORING

- A. RECORD THE READING, LOCATION, AND TIME FOR THE BACKGROUND READING APPROXIMATELY 100 FEET UPSTREAM OF THE PROJECT AREA USING A RECENTLY CALIBRATED TURBIDIMETER OR VIA VISUAL OBSERVATION (SEE THE HIP HANDBOOK TURBIDITY MONITORING SECTION FOR A VISUAL OBSERVATION KEY).
- B. RECORD THE TURBIDITY READING, LOCATION, AND TIME AT THE MEASUREMENT COMPLIANCE LOCATION POINT.
 - 1. 50 FEET DOWNSTREAM FOR STREAMS LESS THAN 30 FEET WIDE.
 - 2. 100 FEET DOWNSTREAM FOR STREAMS BETWEEN 30 AND 100 FEET WIDE.
 - 3. 200 FEET DOWNSTREAM FOR STREAMS GREATER THAN 100 FEET WIDE.
 - 4. 300 FEET FROM THE DISCHARGE POINT OR NONPOINT SOURCE FOR LOCATIONS SUBJECT TO TIDAL OR COASTAL SCOUR.
- C. TURBIDITY SHALL BE MEASURED (BACKGROUND LOCATION AND COMPLIANCE POINTS) EVERY 4 HOURS WHILE WORK IS BEING IMPLEMENTED.
- D. IF THERE IS A VISIBLE DIFFERENCE BETWEEN A COMPLIANCE POINT AND THE BACKGROUND, THE EXCEEDANCE WILL BE NOTED IN THE PROJECT COMPLETION FORM (PCF). ADJUSTMENTS OR CORRECTIVE MEASURES WILL BE TAKEN IN ORDER TO REDUCE TURBIDITY.
- E. IF EXCEEDANCES OCCUR FOR MORE THAN TWO CONSECUTIVE MONITORING INTERVALS (AFTER 8 HOURS), THE ACTIVITY WILL STOP UNTIL THE TURBIDITY LEVEL RETURNS TO BACKGROUND. THE BPA EC LEAD WILL BE NOTIFIED OF ALL EXCEEDANCES AND CORRECTIVE ACTIONS AT PROJECT COMPLETION.
- F. IF TURBIDITY CONTROLS (COFFER DAMS, WADDLES, FENCING, ETC.) ARE DETERMINED INEFFECTIVE, CREWS WILL BE MOBILIZED TO MODIFY AS NECESSARY. OCCURRENCES WILL BE DOCUMENTED IN THE PROJECT COMPLETION FORM (PCF).
- G. FINAL TURBIDITY READINGS, EXCEEDANCES, AND CONTROL FAILURES WILL BE SUBMITTED TO THE BPA EC LEAD USING THE PROJECT COMPLETION FORM (PCF).

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PROJECT AREA G - PHASE I
FINAL DESIGN



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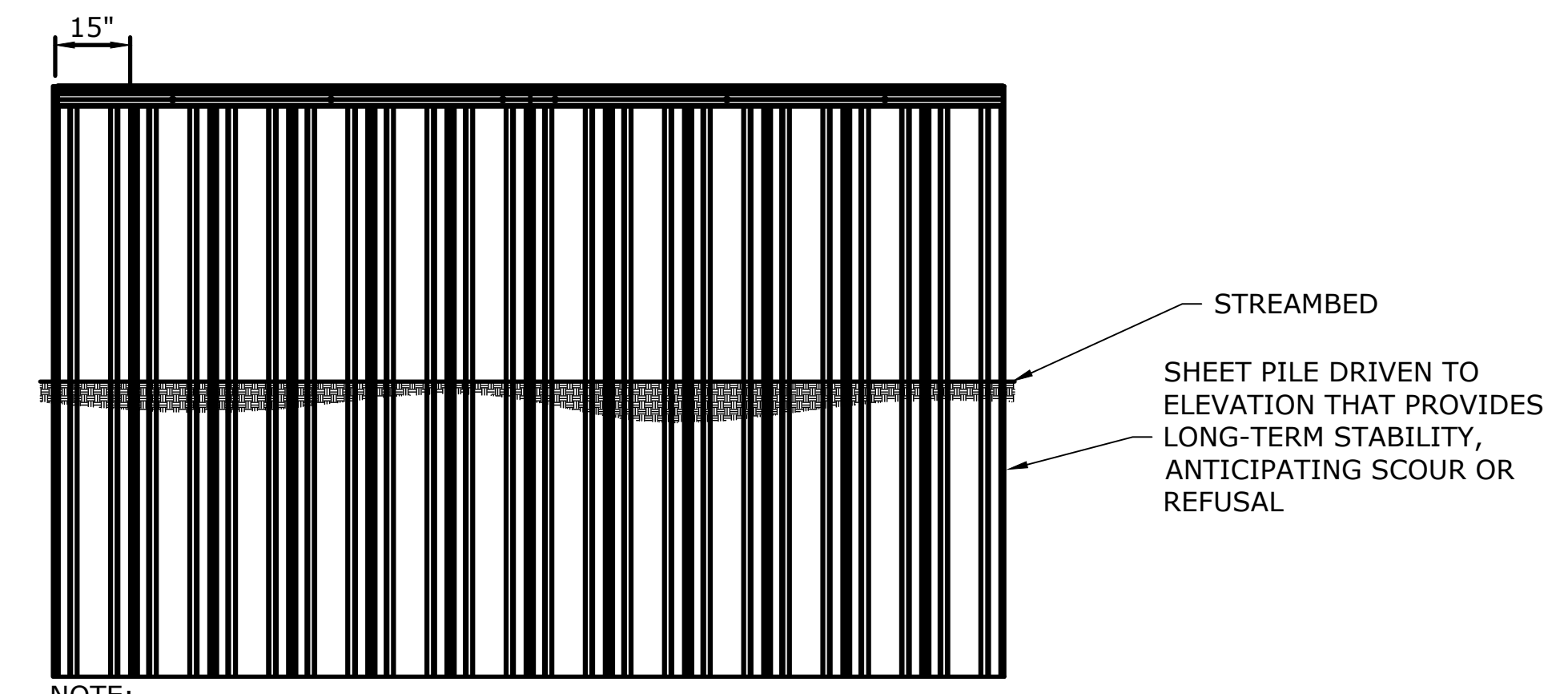
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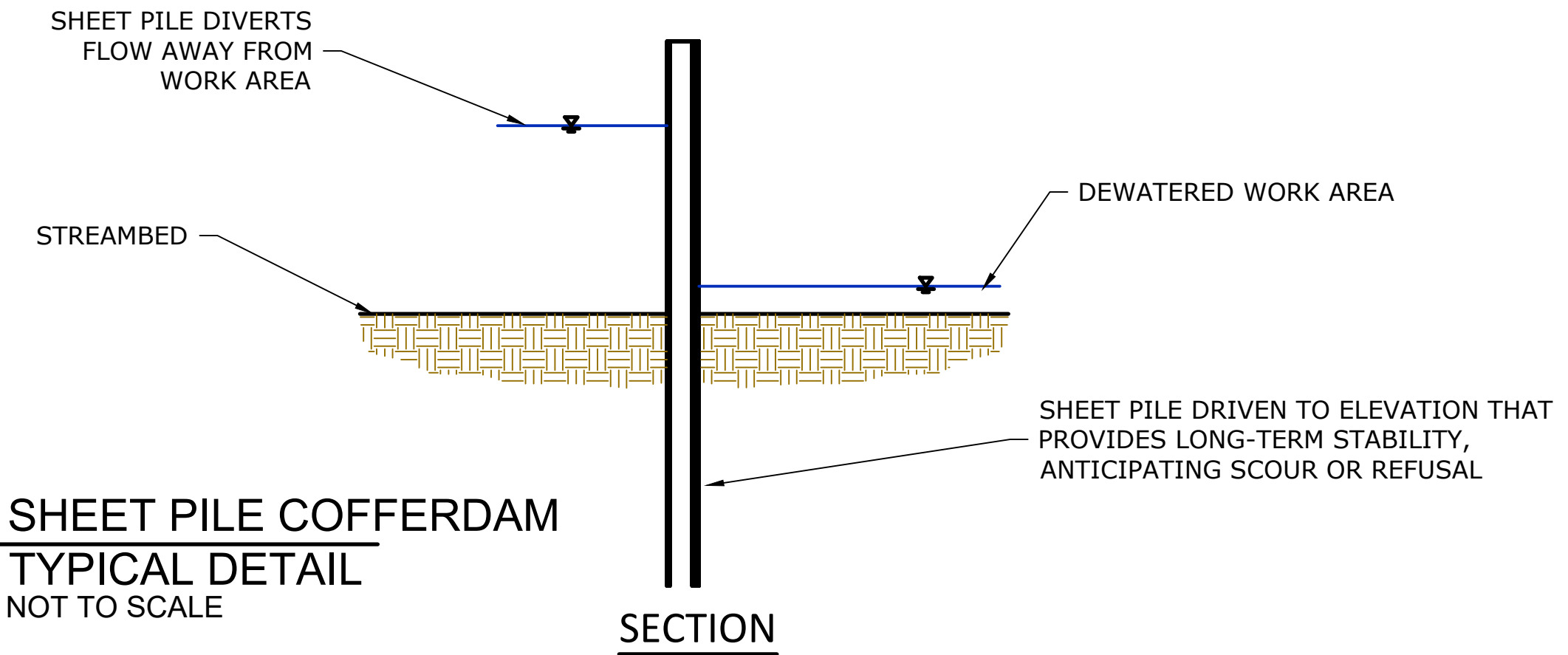
GENERAL
CONSERVATION
MEASURES (3 OF 3)

SHEET 5

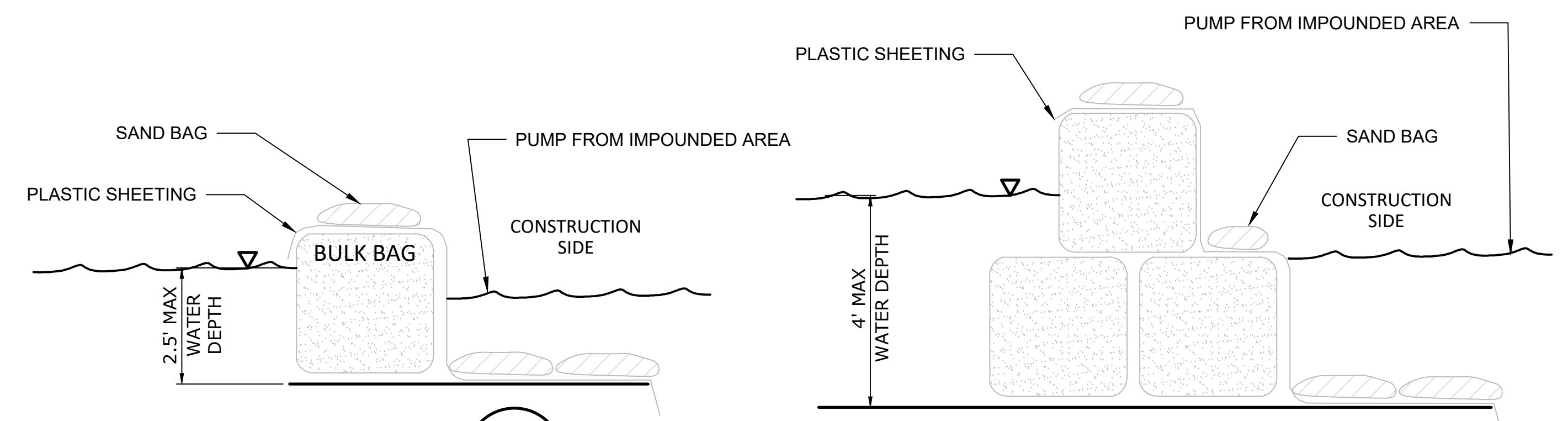
SHEET 5 OF 19



NOTE:
INDIVIDUAL SHEET WEIGHT 45 LBS PER LINEAR FOOT
ELEVATION



1
TYP SHEET PILE COFFERDAM
TYPICAL DETAIL
NOT TO SCALE



2
TYP BULK BAG COFFERDAM
TYPICAL DETAIL
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.

TEMPORARY COFFERDAM NOTES:

1. TEMPORARY SHEET PILE AND BULK BAGS ARE PRE-APPROVED METHODS OF ISOLATING CONSTRUCTION WATER FROM THE WATERWAY. SHEET PILE COFFERDAM IS THE PREFERRED ISOLATION METHOD. ALTERNATIVE METHODS PROPOSED BY THE CONTRACTOR MAY BE UTILIZED WITH APPROVAL BY THE OWNER.
2. CONTRACTOR SHALL PROVIDE PUMPING SUFFICIENT FOR A NET INFLOW TO THE WORK AREA, AND DISCHARGE TURBID WATER TO UPLAND FLOODPLAIN.
3. COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.

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FINAL DESIGN



CM DRAWN

LS, PB ACCEPTED

BOISE, ID APRIL 10, 2024

TYPICAL EROSION AND SEDIMENT CONTROL DETAIL

SHEET 6

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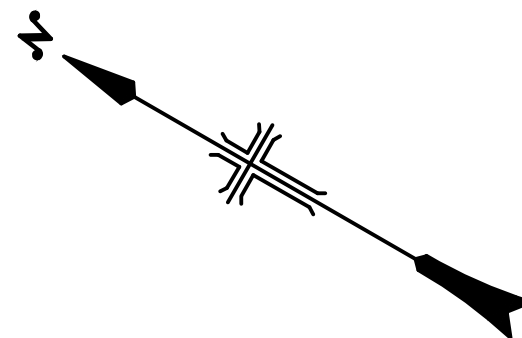
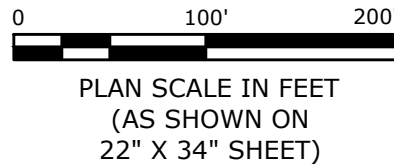


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NOTES:

1. THE DEPICTED TEMPORARY ACCESS ROUTES AND STAGING AREAS SHOWN ON THESE PLANS ARE APPROXIMATE. THE FINAL ALIGNMENTS WILL REQUIRE APPROVAL IN THE FIELD BY THE OWNER.
2. ALL TEMPORARY ACCESS ROADS AND HAUL ROUTES SHALL USE EXISTING AND/OR DECOMMISSIONED FOREST ROADS WHERE FEASIBLE
3. ALL ACCESS ROUTES SHALL AVOID EXISTING MATURE TREES AND VEGETATION WHERE FEASIBLE.
4. ALL TEMPORARY ACCESS ROUTES AND STAGING/STOCKPILE AREAS SHALL BE DECOMMISSIONED AND STABILIZED IN ACCORDANCE WITH THE SPECIFICATIONS UNLESS OTHERWISE APPROVED BY THE OWNER.



LEGEND

- EXISTING SURFACE CONTOUR 10'
- EXISTING SURFACE CONTOUR 2'
- TAXLOTS
- OHW
- ORDINARY HIGH WATER
- TEMPORARY ACCESS ROUTE - USE EXISTING
- TEMPORARY ACCESS ROUTE - PIONEER NEW
- CHIWAHA RIVER ALIGNMENT
- TEMPORARY STAGING/STOCKPILE AREA
- EXISTING DISPERSED CAMPSITE



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PROJECT AREA G - PHASE I**

FINAL DESIGN



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EXISTING CONDITIONS,
SITE ACCESS AND
STAGING

SHEET 7



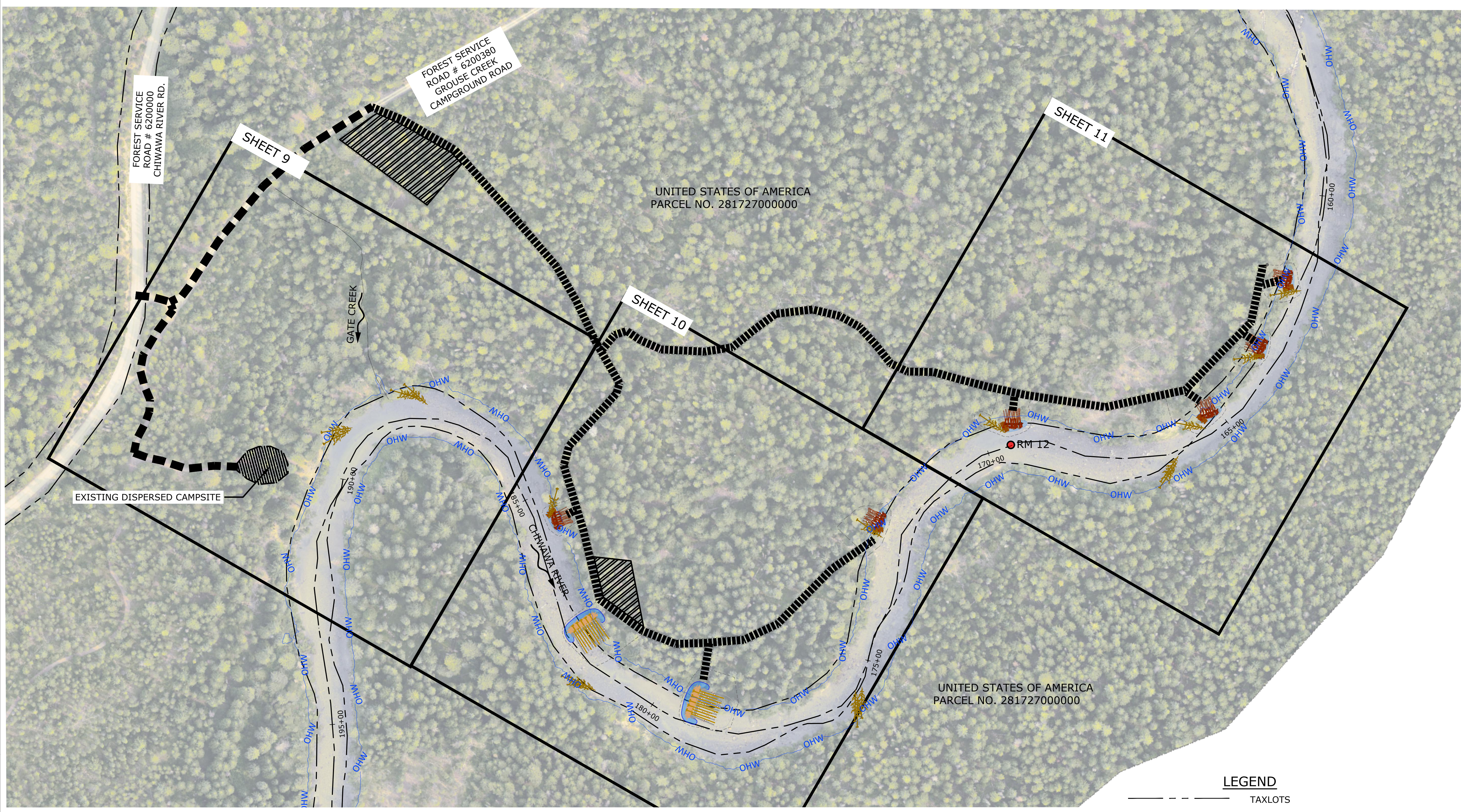
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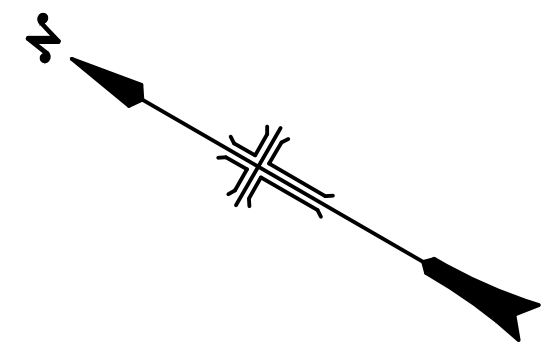
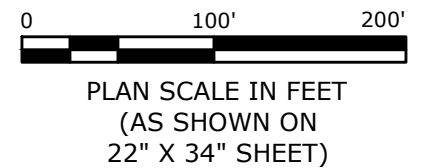
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SITE OVERVIEW AND SHEET INDEX
SHEET 8



LEGEND

- TAXLOTS
- ORDINARY HIGH WATER
- TEMPORARY ACCESS ROUTE - USE EXISTING
- TEMPORARY ACCESS ROUTE - PIONEER NEW
- CHIWAWA RIVER ALIGNMENT
000+00
- LARGE WOOD PLACEMENT (TYPE VARIES)
- TEMPORARY STAGING/STOCKPILE AREA
- EXISTING DISPERSED CAMPSITE



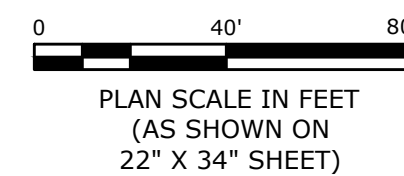
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LAC
DRAWN BY
CIRCONWELL

CAD SYSTEM
AutoCAD 2025 (LMS TECH)
PROJECT: LOWER CHIWAWA AREA_G_PHL_D.DWG



NOTES:

1. LARGE WOOD LAYOUT, LOCATIONS, AND ORIENTATIONS ARE APPROXIMATE AND WILL VARY DEPENDING ON SITE CONDITIONS AND THE DIMENSIONS OF WOOD RECEIVED.
2. LARGE WOOD PLACEMENTS SHALL UTILIZE EXISTING BOULDERS IN THE CHANNEL TO THE EXTENT PRACTICABLE.
3. PARCEL BOUNDARY INFORMATION IS APPROXIMATE
4. THE CONTRACTOR SHALL TIP OVER UP TO 15 WHOLE TREES (<25" DBH) WITH ROOTWADS ATTACHED TO ACHIEVE A TARGET DENSITY OF 30 TREES/MILE. THE DEPICTED LOCATIONS ARE APPROXIMATE AND SUBJECT TO CHANGE PENDING SITE CONDITIONS AT THE TIME OF CONSTRUCTION. ALL TREE TIPPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SPECIFICATIONS OUTLINED ON SHEET 12.



LEGEND

- EXISTING SURFACE CONTOUR 10'
- EXISTING SURFACE CONTOUR 2'
- TAXLOTS
- TEMPORARY ACCESS ROUTE - USE EXISTING
- CHIWAWA RIVER ALIGNMENT
- LARGE WOOD PLACEMENT (TYPE VARIES)
- ORDINARY HIGH WATER
- EXISTING DISPERSED CAMPSITE

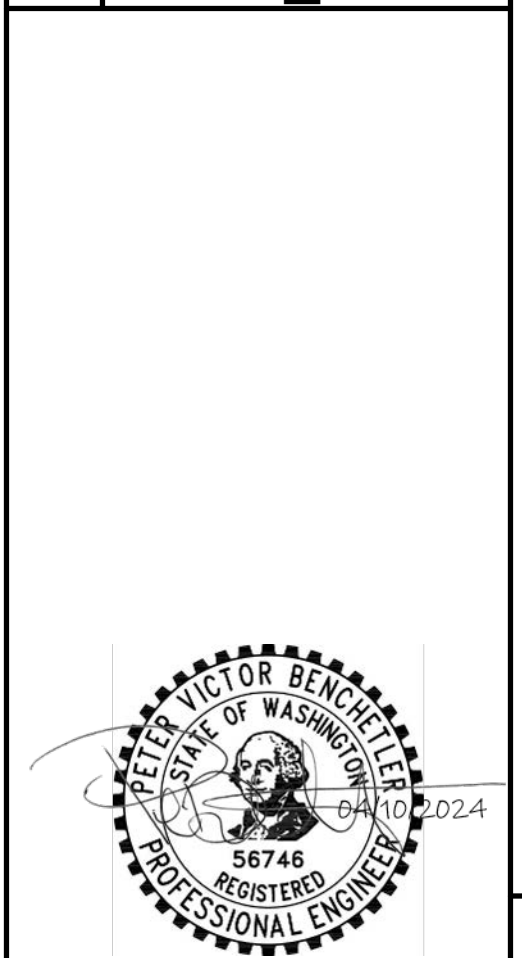
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MATCH LINE SHEET 10



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PROJECT AREA G - PHASE I
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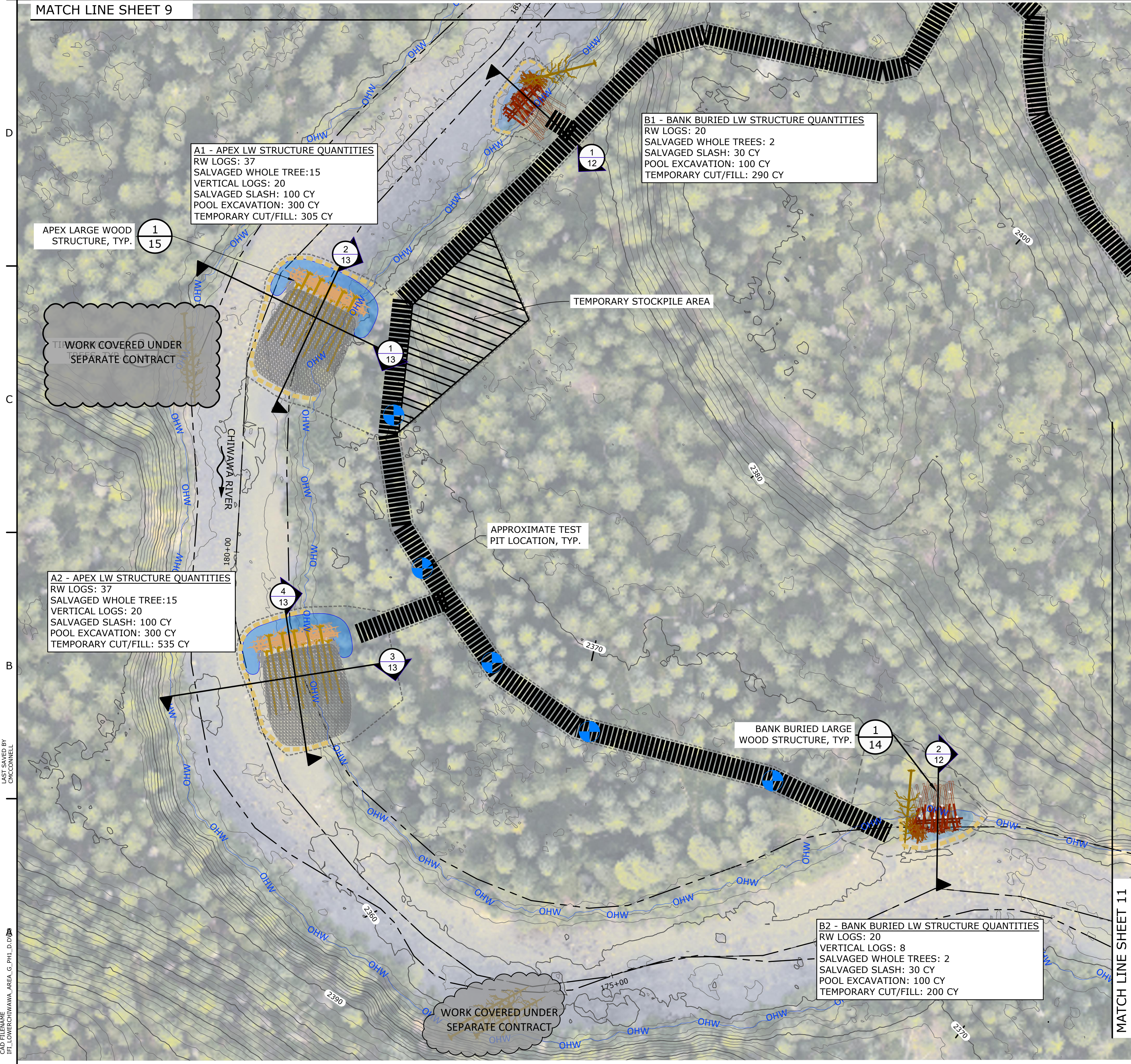
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PROPOSED CONDITIONS
(1 OF 3)

SHEET 9

MATCH LINE SHEET 9



NOTES:

1. LARGE WOOD LAYOUT, LOCATIONS, AND ORIENTATIONS ARE APPROXIMATE AND WILL VARY DEPENDING ON SITE CONDITIONS AND THE DIMENSIONS OF WOOD RECEIVED.
2. LARGE WOOD PLACEMENTS SHALL UTILIZE EXISTING BOULDERS IN THE CHANNEL TO THE EXTENT PRACTICABLE.
3. PARCEL BOUNDARY INFORMATION IS APPROXIMATE
4. THE CONTRACTOR SHALL TIP OVER UP TO 15 WHOLE TREES (<25" DBH) WITH ROOTWADS AT A TARGET DENSITY OF 30 TREES/MILE. THE DELETED CALLOUTS ARE APPROXIMATE AND SUBJECT TO CHANGE UNDER A SEPARATE CONTRACT AT THE TIME OF CONSTRUCTION. ALL TREE TIPPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SPECIFICATIONS OUTLINED ON SHEET 12.



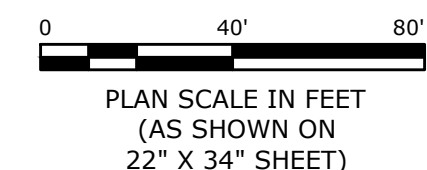
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**LOWER CHIWAWA ASSESSMENT UNIT
 PROJECT AREA G - PHASE I**

FINAL DESIGN



LEGEND

- EXISTING SURFACE CONTOUR 10'
- EXISTING SURFACE CONTOUR 2'
- TAXLOTS
- TEMPORARY ACCESS ROUTE - PIONEER NEW
- CHIWAWA RIVER ALIGNMENT
- LARGE WOOD PLACEMENT (TYPE VARIES)
- ALLUVIAL FILL
- TEMPORARY STAGING/STOCKPILE AREA
- APPROXIMATE LOCATION OF TEST PIT
- ORDINARY HIGH WATER
- TEMPORARY COFFER DAM
- LIMITS OF DISTURBANCE

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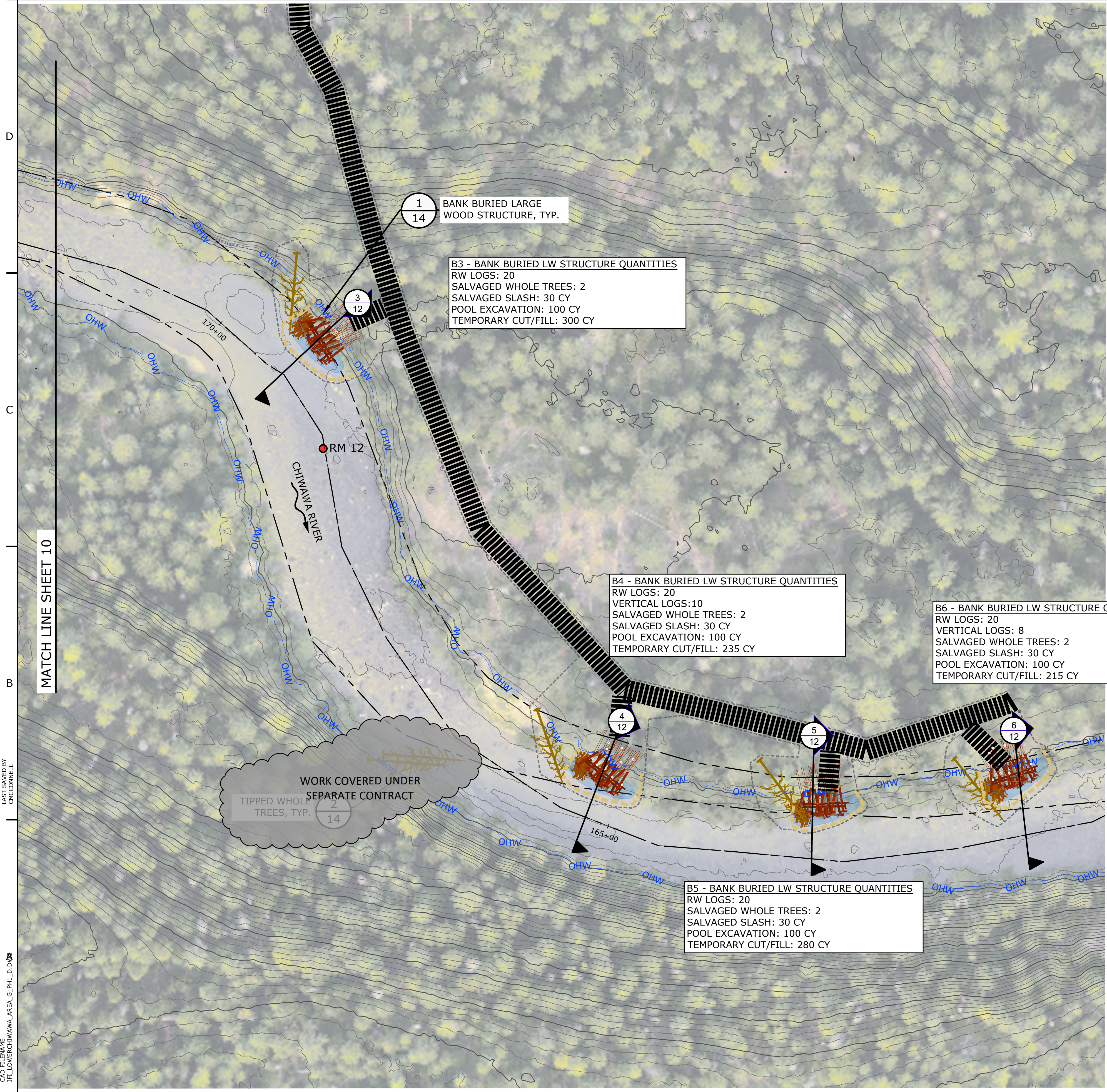
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PROPOSED CONDITIONS (2 OF 3)

SHEET 10



NOTES:

1. LARGE WOOD LAYOUT, LOCATIONS, AND ORIENTATIONS ARE APPROXIMATE AND WILL VARY DEPENDING ON SITE CONDITIONS AND THE DIMENSIONS OF WOOD RECEIVED.
2. LARGE WOOD PLACEMENTS SHALL UTILIZE EXISTING BOULDERS IN THE CHANNEL TO THE EXTENT PRACTICABLE.
3. PARCEL BOUNDARY INFORMATION IS APPROXIMATE
4. THE CONTRACT WORK COVERED UNDER THIS CONTRACT INCLUDES THE PLACEMENT OF TREES (<25" DBH) WITH ROOTWADS ATTACHED AT A DENSITY OF 30 TREES/MILE. THE DEPICTED LOCATIONS, SEPARATE CONTRACT SUBJECT TO CHANGE PENDING SITE CONDITIONS AT THE TIME OF CONSTRUCTION. ALL TREE TIPPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SPECIFICATIONS OUTLINED ON SHEET 12.

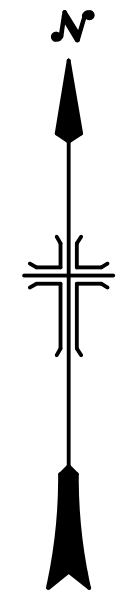
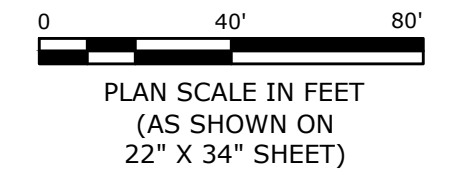


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**LOWER CHIWAWA ASSESSMENT UNIT
PROJECT AREA G - PHASE I
FINAL DESIGN**



LEGEND

- EXISTING SURFACE CONTOUR 10'
- EXISTING SURFACE CONTOUR 2'
- TAXLOTS
- TEMPORARY ACCESS ROUTE - PIONEER NEW
- CHIWAWA RIVER ALIGNMENT
- LARGE WOOD STRUCTURE (TYPE VARIES)
- ORDINARY HIGH WATER
- TEMPORARY COFFER DAM
- LIMITS OF DISTURBANCE

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PROPOSED CONDITIONS
(3 OF 3)

SHEET 11

1

2

3

4

5



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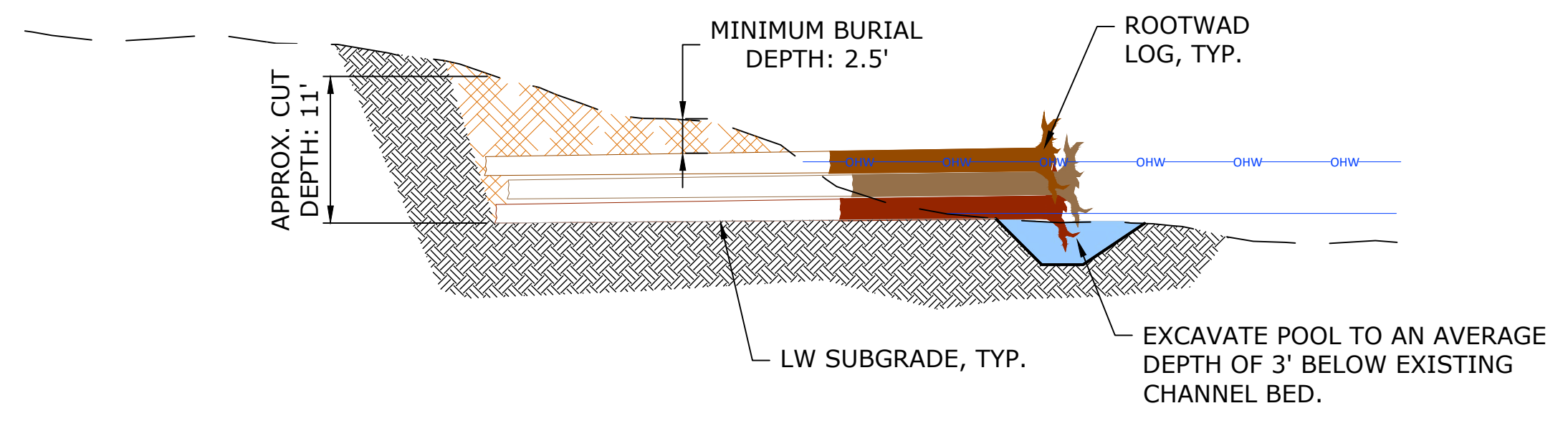
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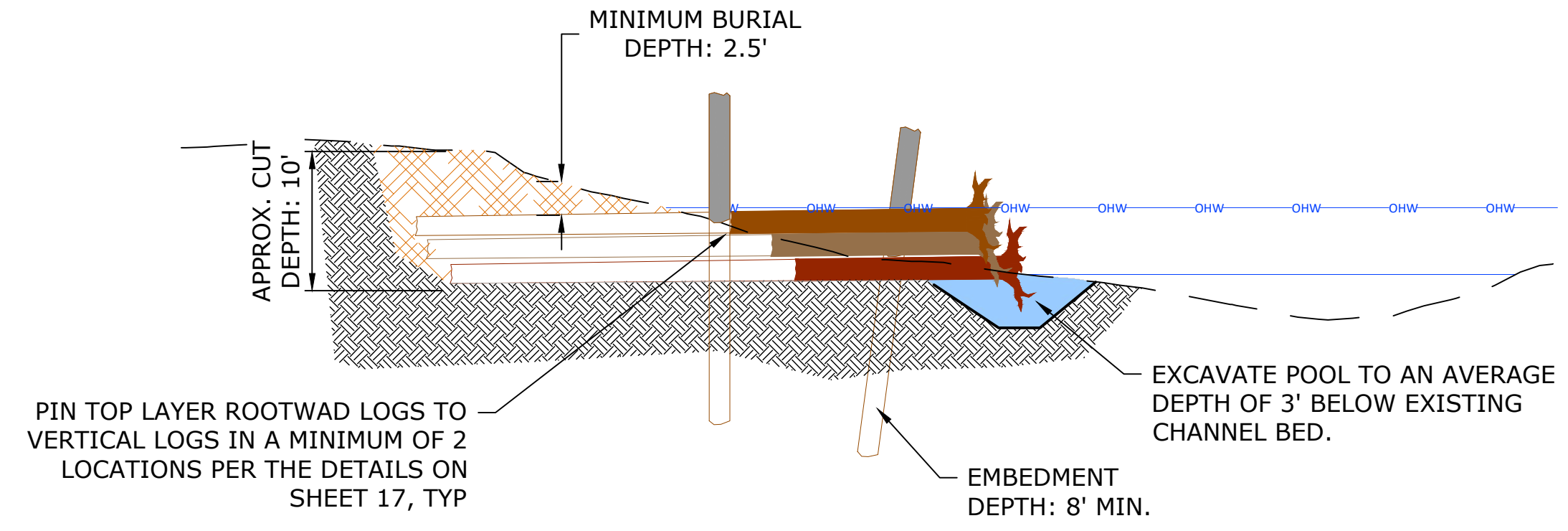
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BANK BURIED CROSS SECTIONS
SHEET 12

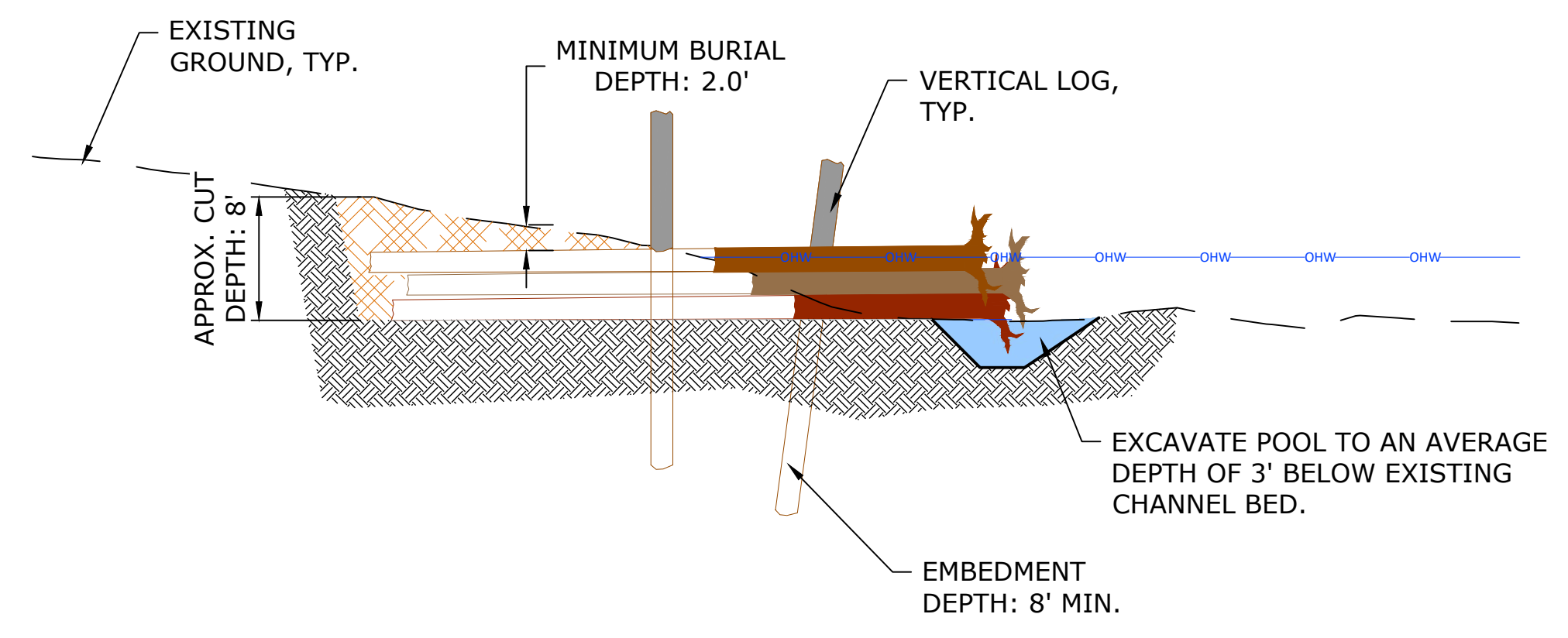
SHEET 12 OF 19



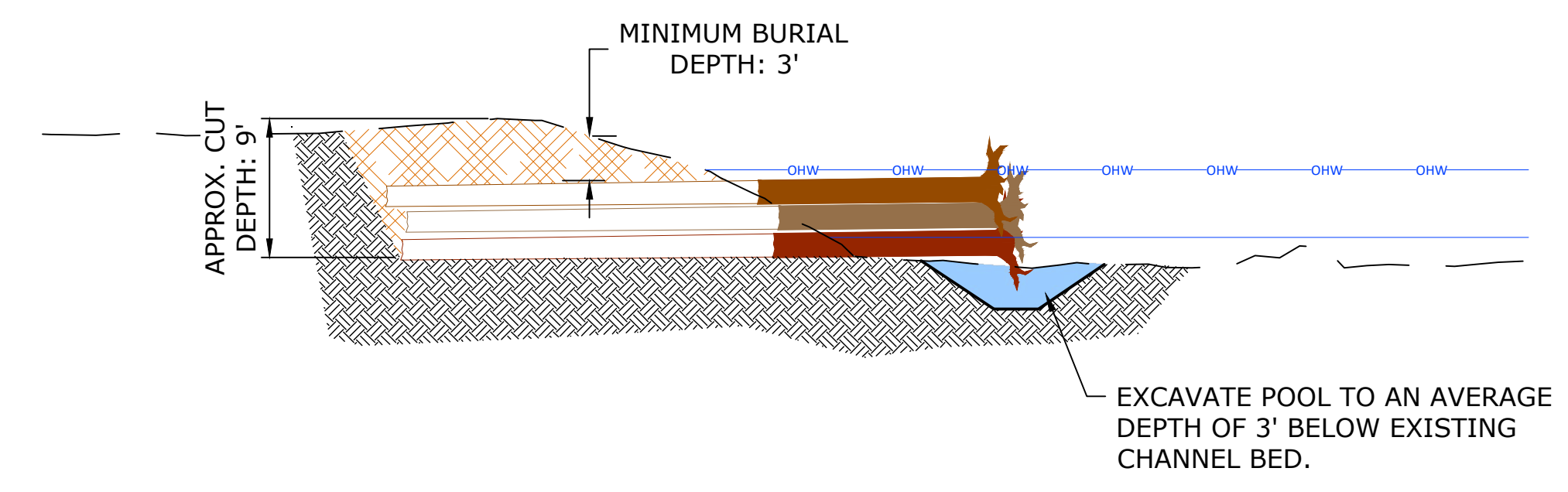
1 B1 - BANK-BURIED LARGE WOOD STRUCTURE
12 1"=10'



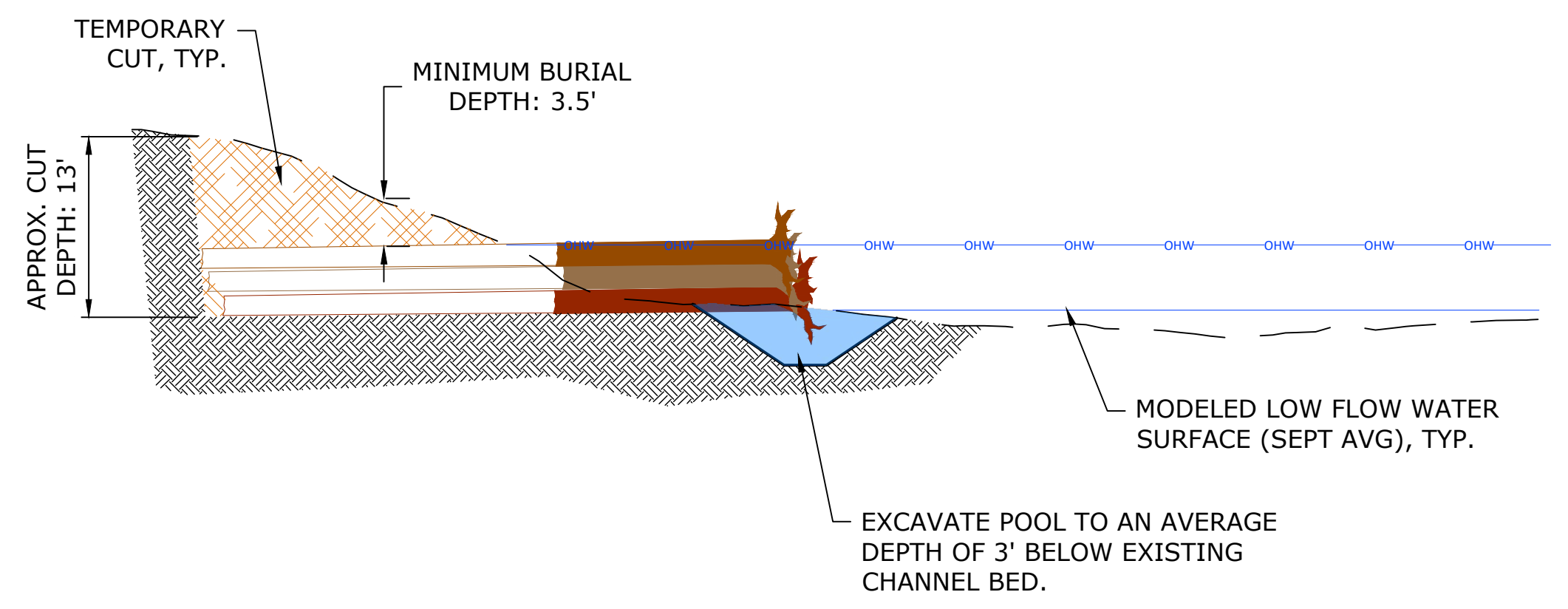
4 B4 - BANK-BURIED LARGE WOOD STRUCTURE
12 1"=10'



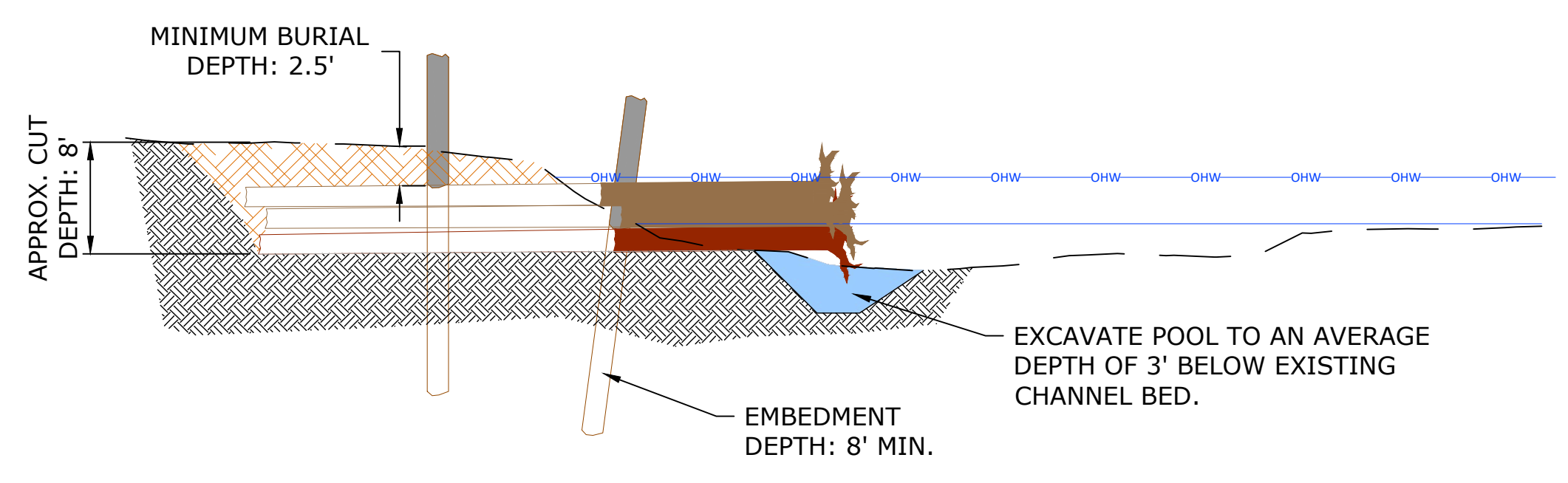
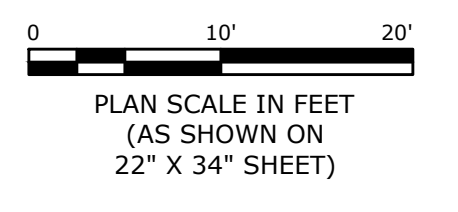
2 B2 - BANK-BURIED LARGE WOOD STRUCTURE
12 1"=10'



5 B5 - BANK-BURIED LARGE WOOD STRUCTURE
12 1"=10'



3 B3 - BANK-BURIED LARGE WOOD STRUCTURE
12 1"=10'



6 B6 - BANK-BURIED LARGE WOOD STRUCTURE
12 1"=10'

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1

2

3

4

5



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B

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A

A

EXCAVATE BANK MATERIAL. STOCKPILE COARSE ALLUVIAL MATERIAL AND FINES SEPARATELY. INCORPORATE EXCAVATED MATERIAL INTO LARGE WOOD STRUCTURE AS BACKFILL AS DESCRIBED ON SHEET 16, TYP.

APPROXIMATE FINISHED GRADE LINE. LANDWARD BANK SHALL BE GRADED AND SHAPED AS DIRECTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE, TYP.

VERTICAL LOG, TYP.
ROOTWAD LOG, TYP.

APPROX. STRUCTURE HEIGHT: 10'-12'

LW PLACEMENT SUBGRADE, TYP.

EXCAVATED POOL AND SLASH/RACKING WOOD NOT DEPICTED FOR CLARITY

MODELED LOW FLOW WATER SURFACE (SEPT AVG), TYP.

1
13
1"=10'
A1 - APEX LARGE WOOD STRUCTURE - SECTION VIEW

SLAVAGED TREES, SLASH, AND RACKING MATERIAL NOT DEPICTED FOR CLARITY. SEE DETAIL

VERTICAL LOG, TYP.

ROOTWAD LOG, TYP.

FINISHED GRADE, TYP.

FLOW

LW PLACEMENT SUBGRADE, TYP.

MINIMUM EMBEDMENT DEPTH: 10', TYP.

EXCAVATE POOL TO AN AVERAGE DEPTH OF APPROXIMATELY 4 FT BELOW EXISTING CHANNEL BED.

2
13
1"=10'
A1 - APEX LARGE WOOD STRUCTURE - PROFILE VIEW

VARY HEIGHTS OF VERTICAL LOGS TO BREAK UP UNIFORMITY. MAXIMUM HEIGHT ABOVE TOP LAYER LOG SHALL BE 3 FT.

APPROX. STRUCTURE HEIGHT: 10'-12'

PIN TOP LAYER ROOTWAD LOGS TO VERTICAL LOGS IN A MINIMUM OF 2 LOCATIONS PER THE DETAILS ON SHEET 17, TYP.

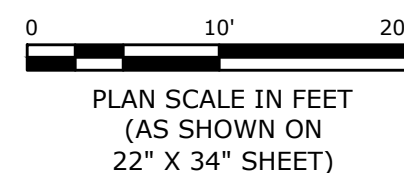
USE EXCAVATED MATERIAL AS BACKFILL. COMPACT COARSE BACKFILL IN 12" LIFTS. INCORPORATE FINES INTO TOP LAYER TO FACILITATE PLANT GROWTH, TYP.

EXCAVATE POOL TO AN AVERAGE DEPTH OF APPROXIMATELY 4 FT BELOW EXISTING CHANNEL BED.

MINIMUM EMBEDMENT DEPTH: 10', TYP.

3
13
1"=10'
A2 - APEX LARGE WOOD STRUCTURE - SECTION VIEW

4
13
1"=10'
A2 - APEX LARGE WOOD STRUCTURE - PROFILE VIEW



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PROJECT AREA G - PHASE I
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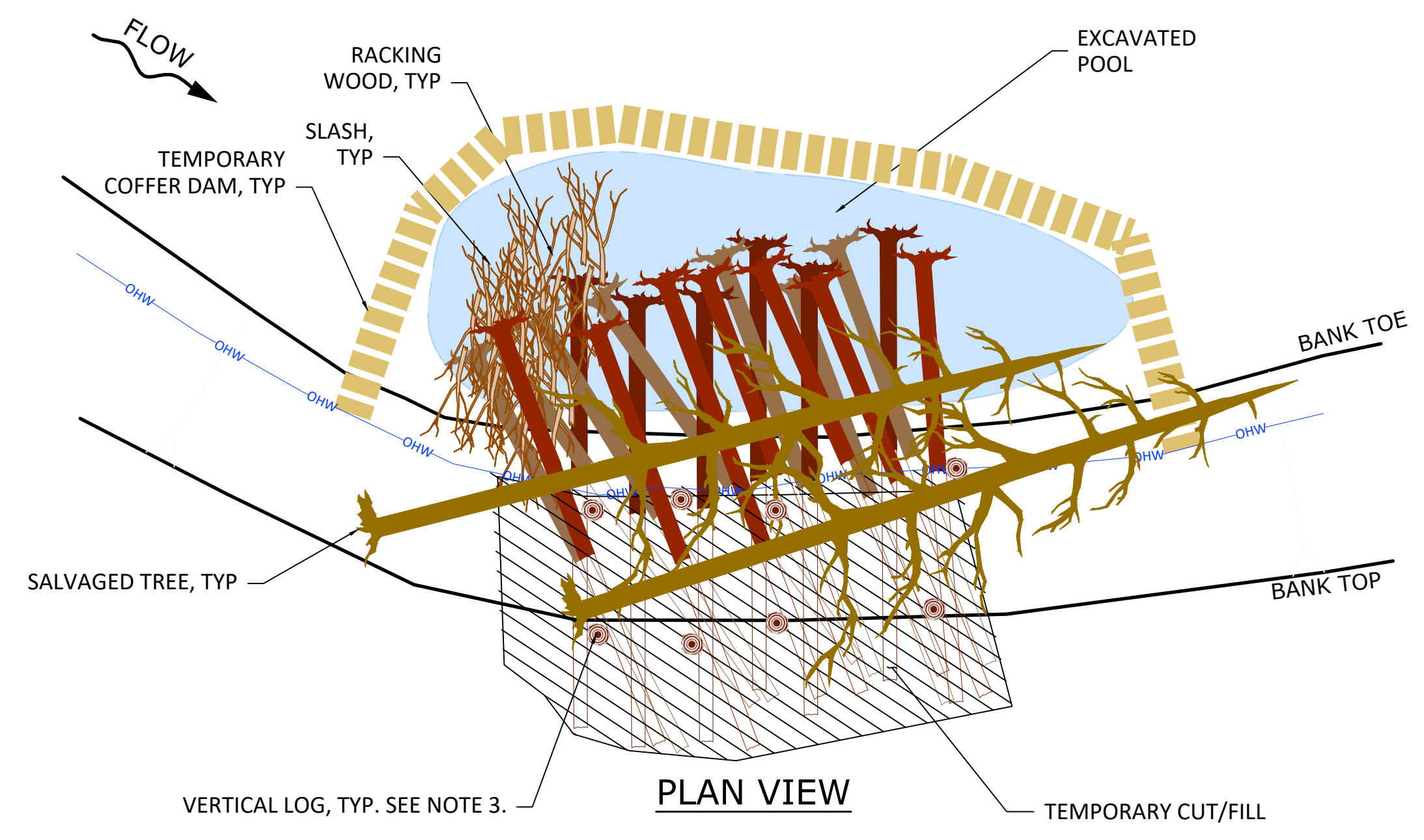
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APRIL 10, 2024

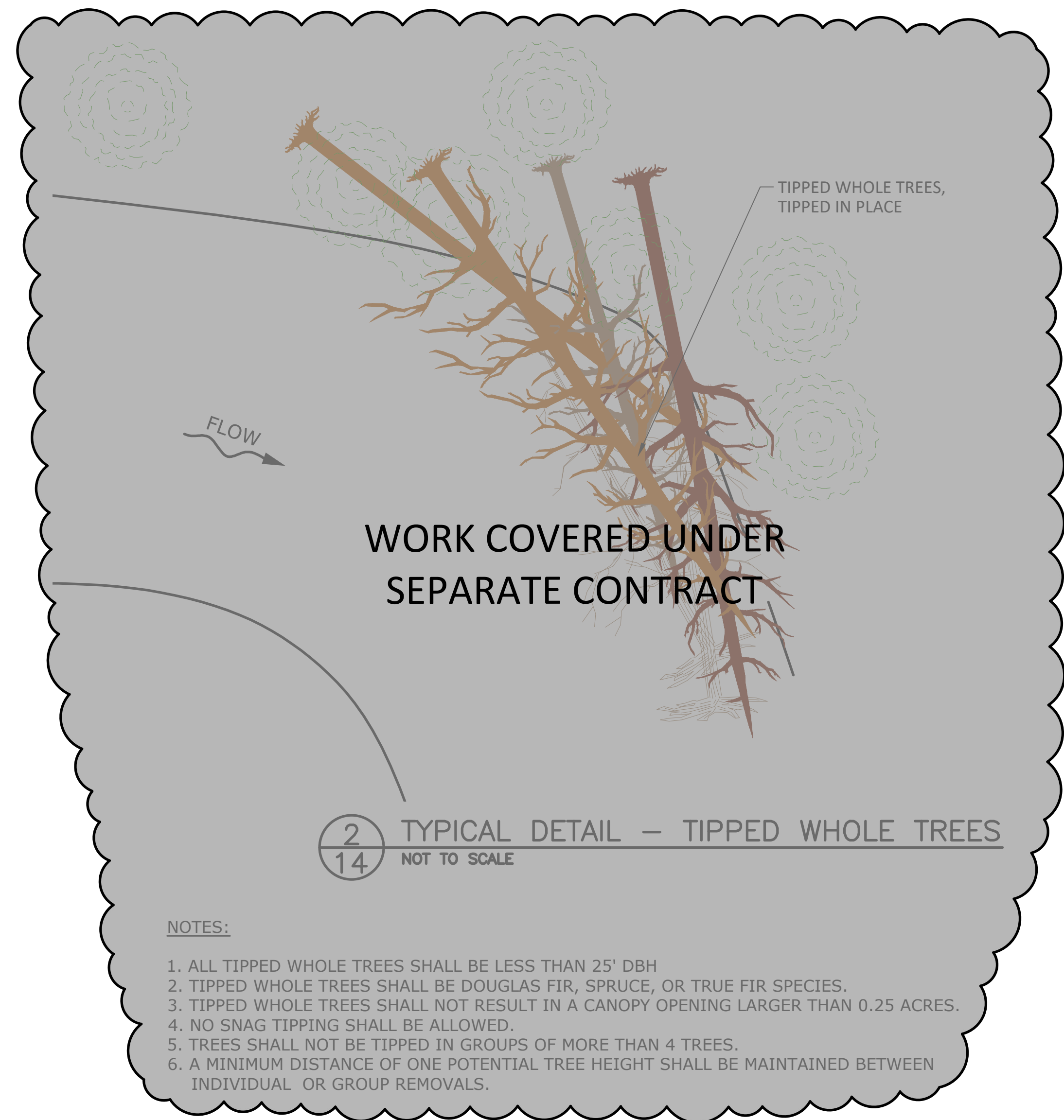
APEX CROSS SECTIONS

SHEET 13

SHEET 13 OF 19



TYPICAL CONSTRUCTED BANK-BURIED LARGE WOOD STRUCTURE

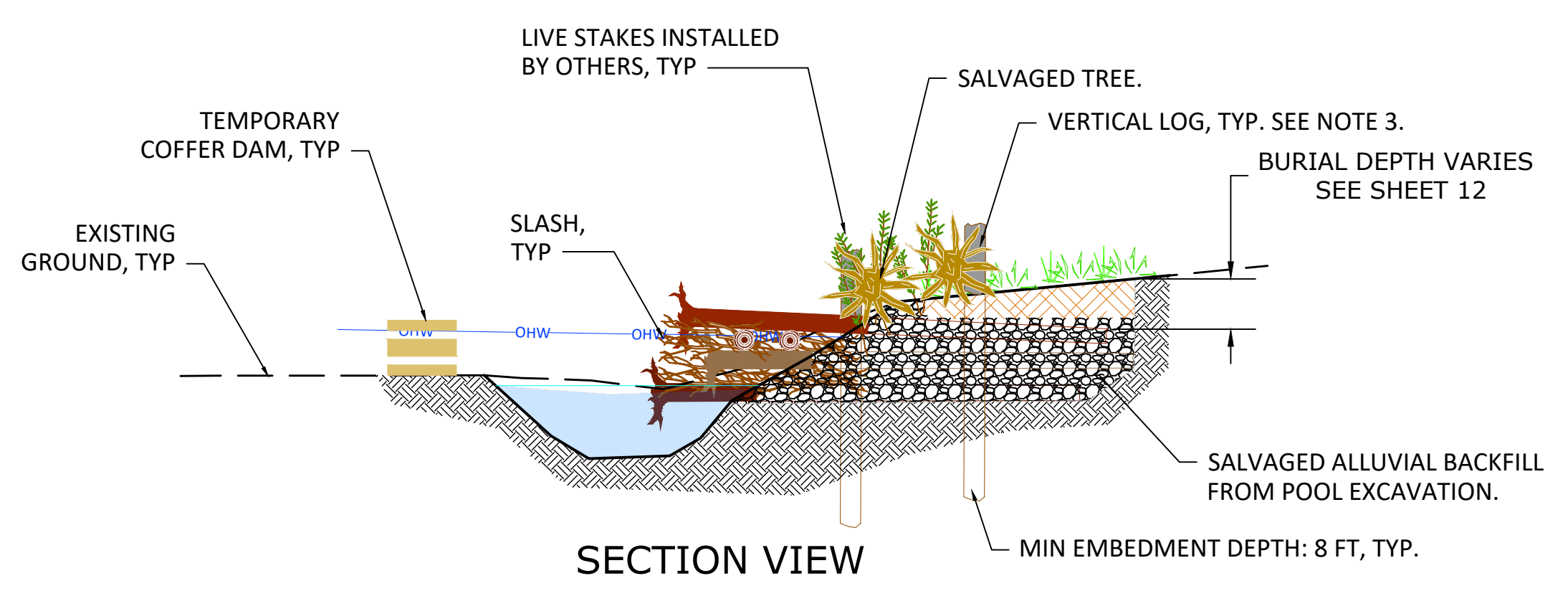


NOTES:

1. ALL TIPPED WHOLE TREES SHALL BE LESS THAN 25' DBH
2. TIPPED WHOLE TREES SHALL BE DOUGLAS FIR, SPRUCE, OR TRUE FIR SPECIES.
3. TIPPED WHOLE TREES SHALL NOT RESULT IN A CANOPY OPENING LARGER THAN 0.25 ACRES.
4. NO SNAG TIPPING SHALL BE ALLOWED.
5. TREES SHALL NOT BE TIPPED IN GROUPS OF MORE THAN 4 TREES.
6. A MINIMUM DISTANCE OF ONE POTENTIAL TREE HEIGHT SHALL BE MAINTAINED BETWEEN INDIVIDUAL OR GROUP REMOVALS.

NOTES:

1. THE DEPICTED LARGE WOOD DETAILS ARE TYPICAL REPRESENTATIONS. THE EXACT LAYOUT, ORIENTATION, AND CONFIGURATION OF LARGE WOOD MATERIAL IS SUBJECT TO CHANGE BASED ON SITE SPECIFIC CONDITIONS AND THE LARGE WOOD MATERIAL RECEIVED..
2. WHOLE TREES AND SLASH SHALL BE SALVAGED AND INCORPORATED INTO THE LARGE WOOD STRUCTURES IN ACCORDANCE WITH THE SPECIFICATIONS.
3. VERTICAL LOGS SHALL BE INSTALLED IN A PORTION OF THE BANK-BURIED LW STRUCTURES AS DEPICTED ON SHEET 12. EACH VERTICAL LOG SHALL HAVE A MINIMUM OF ONE (1) BOLTED CONNECTION TO A TOP LAYER ROOTWAD LOG PER THE DETAILS ON SHEET 17.
4. THE MINIMUM BURIAL DEPTHS DEPICTED ON SHEET 12 SHALL BE MEASURED AS THE DISTANCE BETWEEN THE TOP OF THE TOP LAYER LOG AND FINISHED GRADE, AT THE MIDPOINT OF BURIED PORTION OF THE LOG.
5. ROOTWAD LOGS SHALL BE EMBEDDED A MINIMUM OF 60% OF THE TOTAL LOG LENGTH INTO THE BANK.



1 TYPICAL DETAIL - BANK-BURIED LARGE WOOD STRUCTURE NOT TO SCALE

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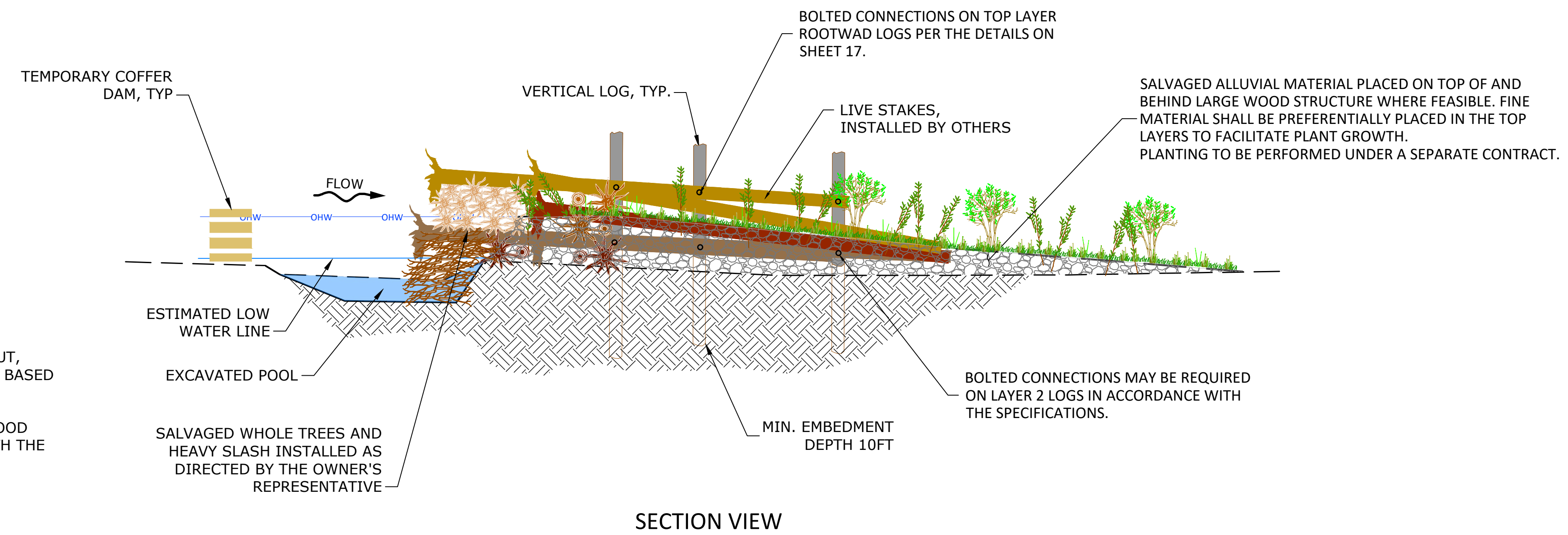
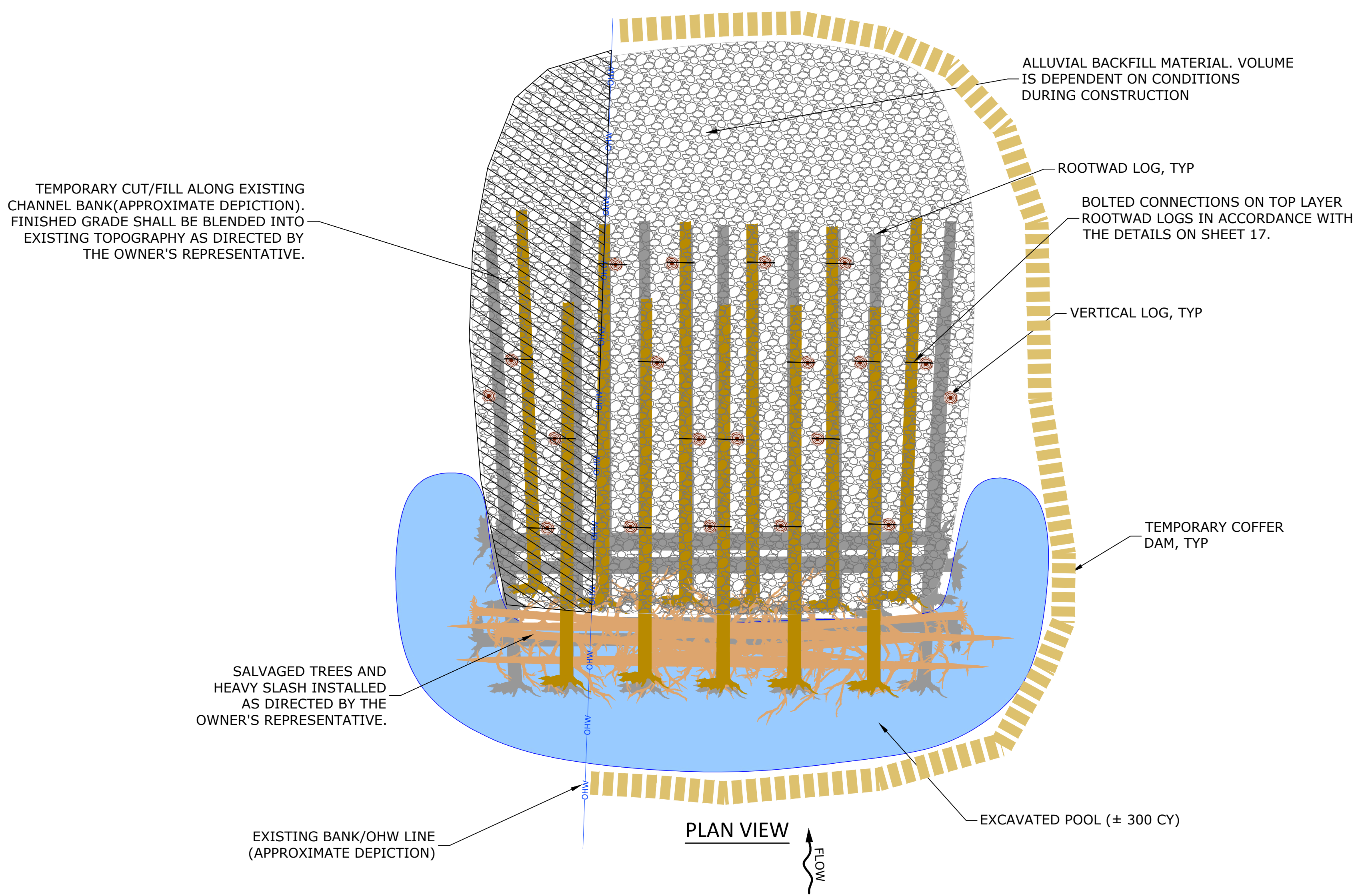
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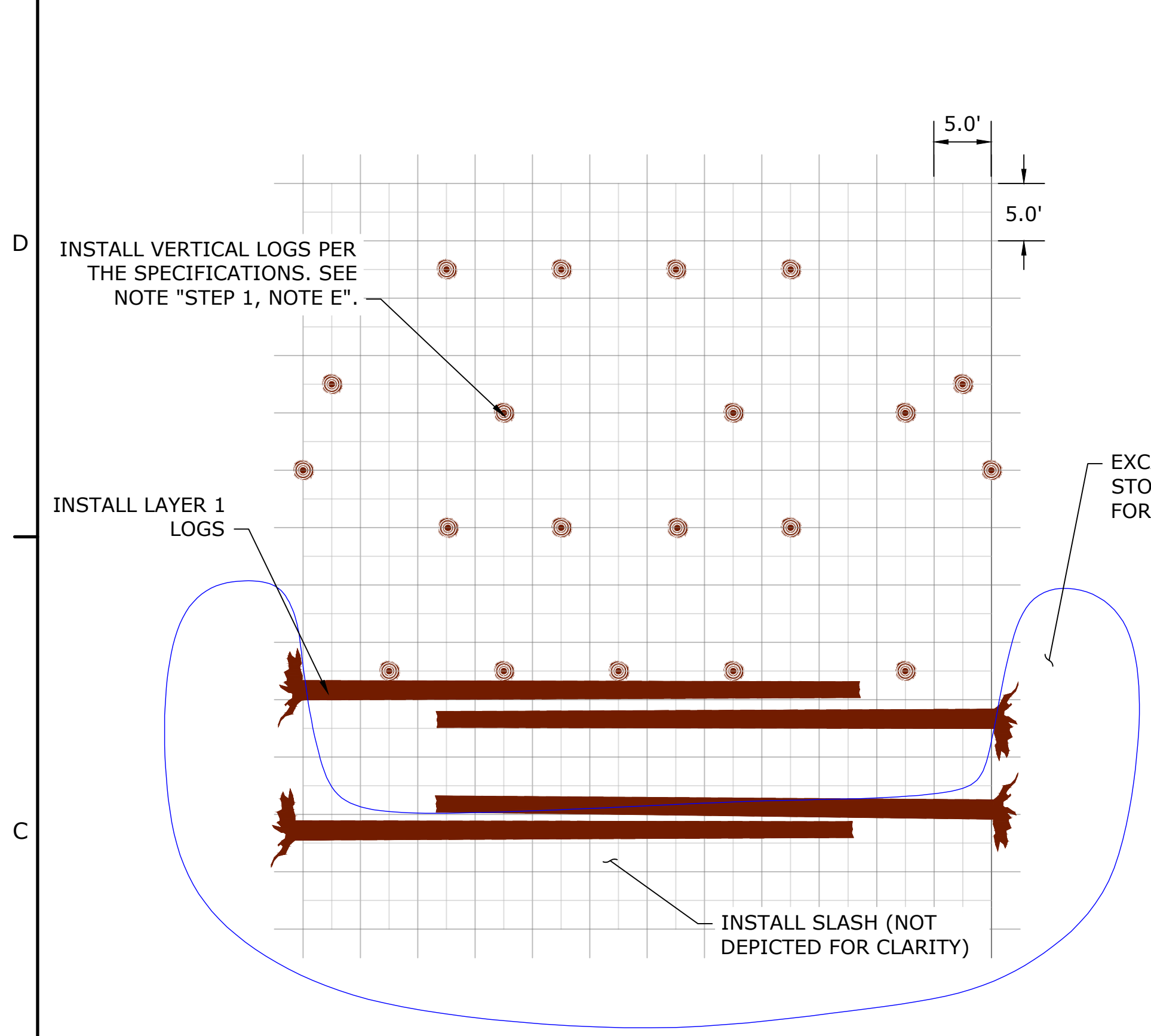
TYPICAL DETAILS
(2 OF 4)
SHEET 15
SHEET 15 OF 19



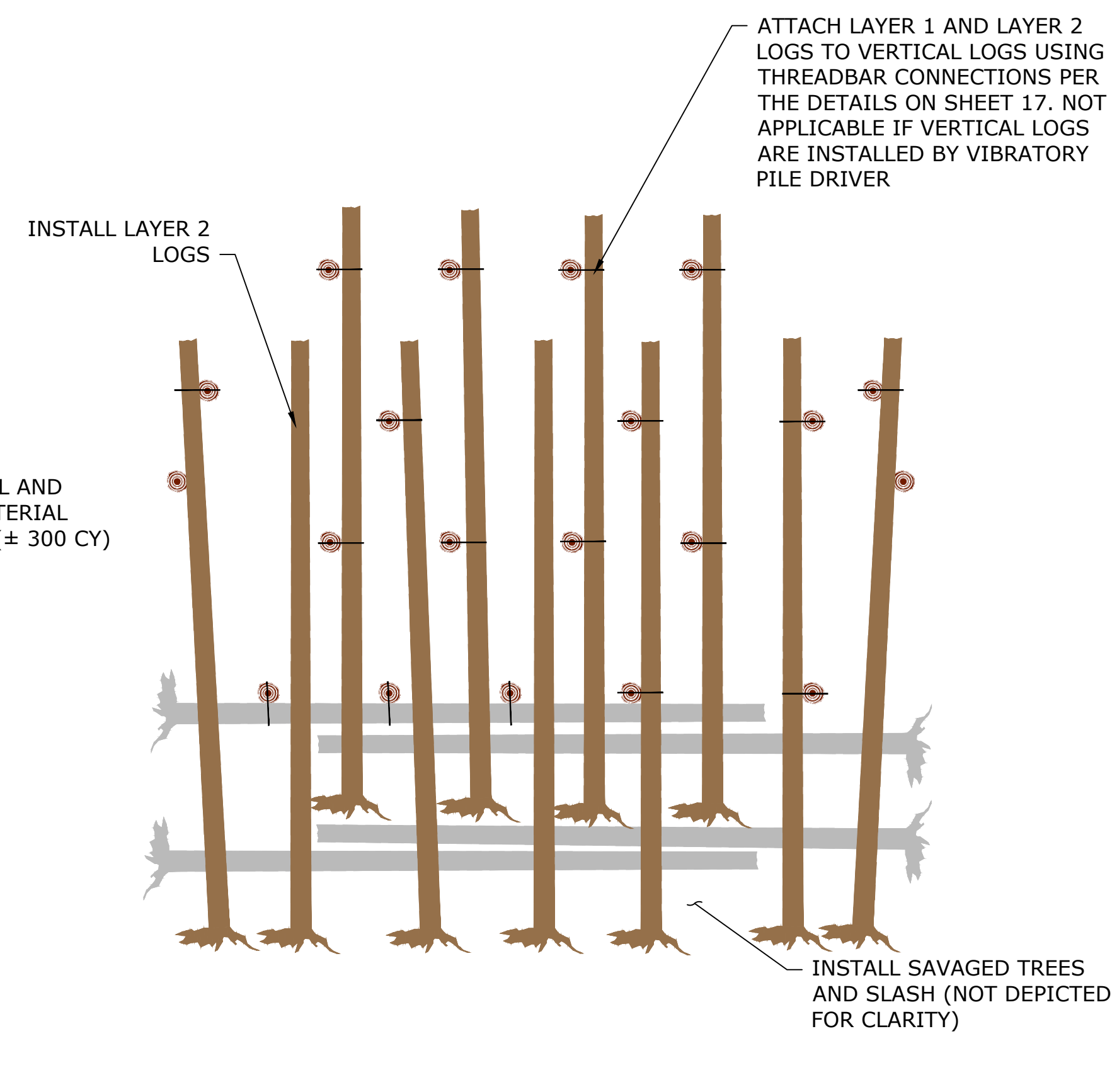
- NOTES:**
1. THE DEPICTED LARGE WOOD DETAILS ARE TYPICAL REPRESENTATIONS. THE EXACT LAYOUT, ORIENTATION, AND CONFIGURATION OF LARGE WOOD MATERIAL IS SUBJECT TO CHANGE BASED ON SITE SPECIFIC CONDITIONS AND THE LARGE WOOD MATERIAL RECEIVED.
 2. WHOLE TREES AND SLASH SHALL BE SALVAGED AND INCORPORATED INTO THE LARGE WOOD STRUCTURES AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND IN ACCORDANCE WITH THE SPECIFICATIONS.

1 PILE SUPPORTED APEX LARGE WOOD STRUCTURE
15 NOT TO SCALE

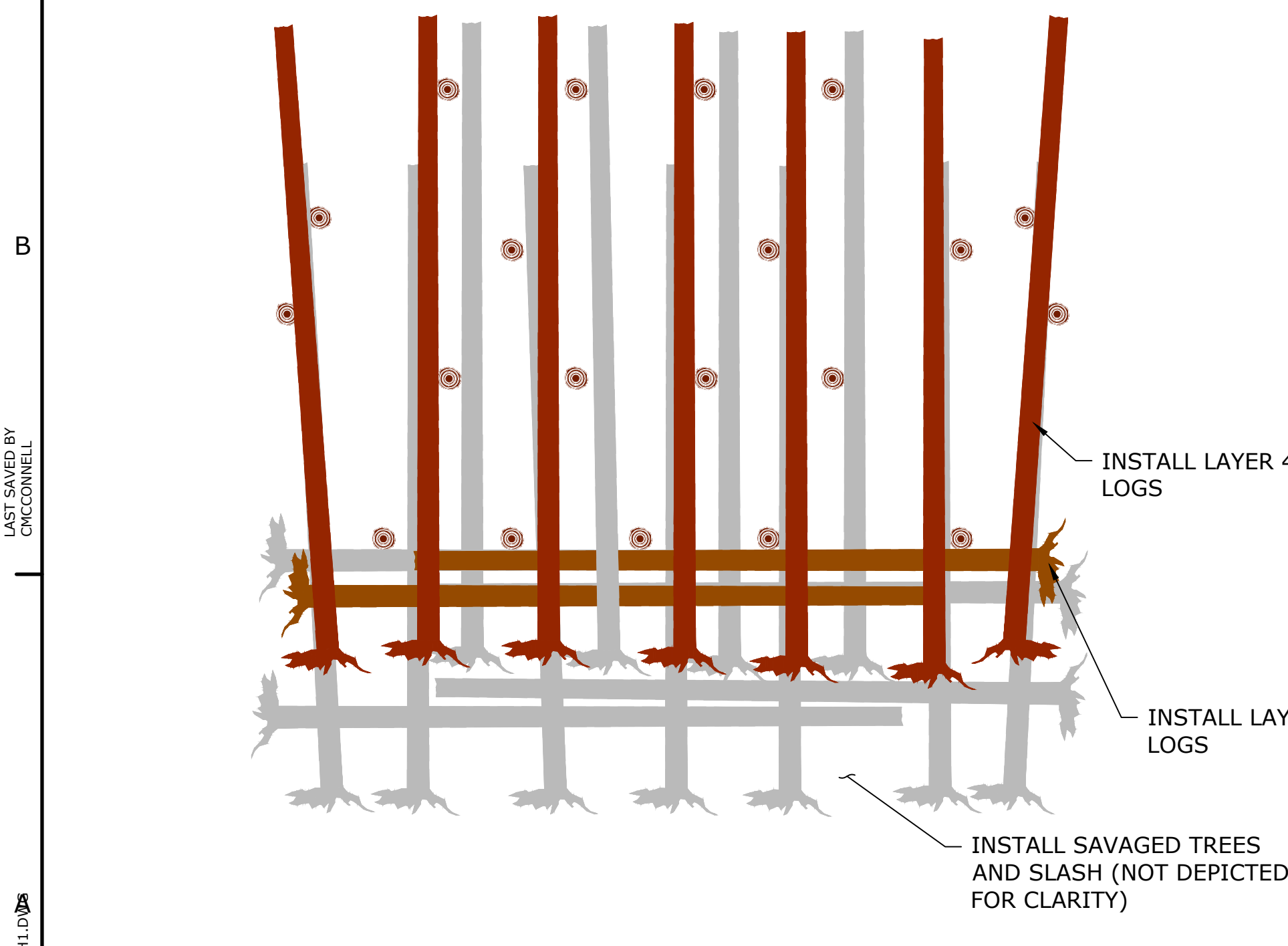
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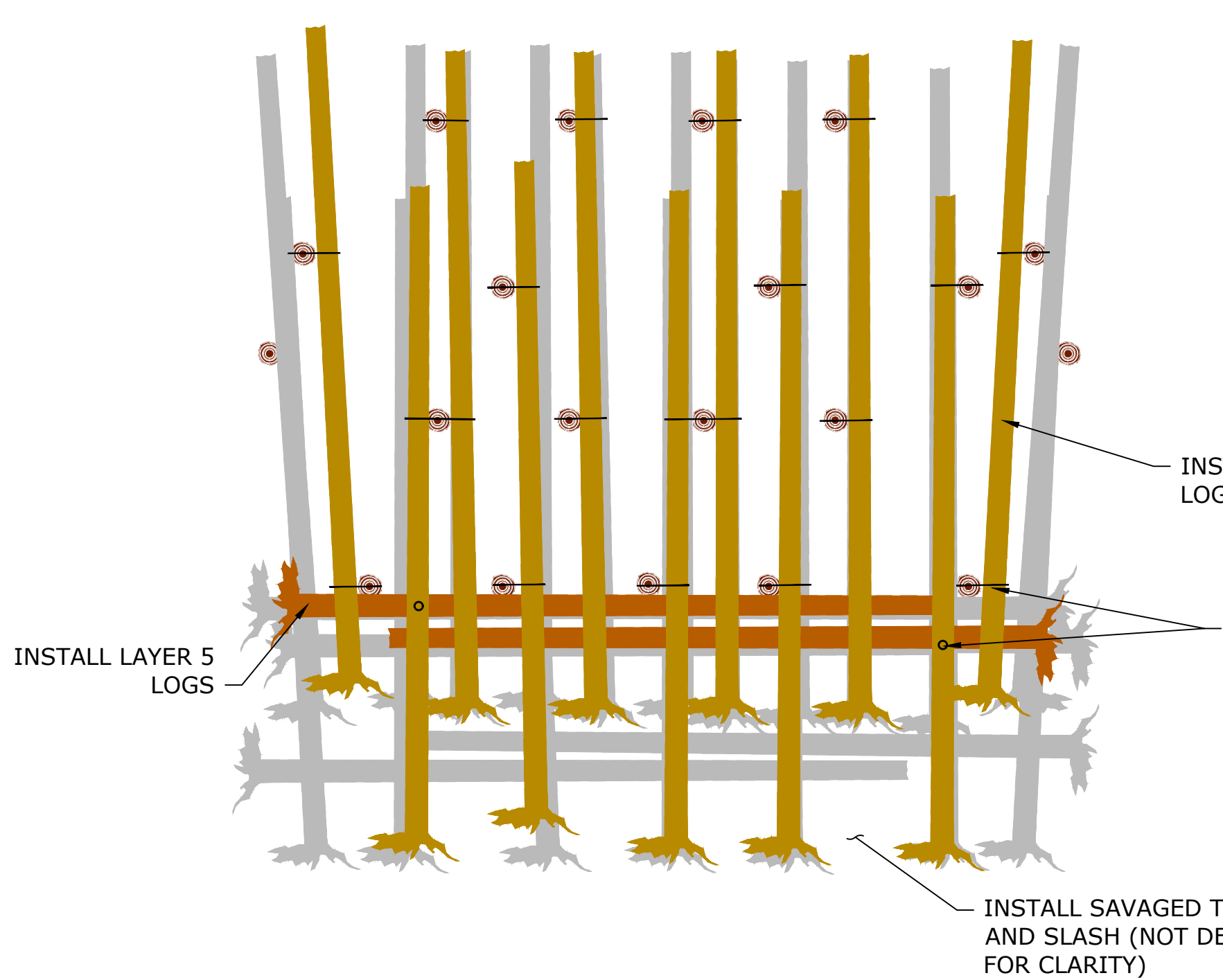
STEP 1: EXCAVATE WORK AREA, INSTALL LAYER 1 LOGS, AND VERTICAL LOGS



STEP 2: INSTALL LAYER 2 LOGS



STEP 3: INSTALL LAYER 3 AND LAYER 4 LOGS



STEP 4: INSTALL LAYER 5 AND LAYER 6 LOGS

SUGGESTED CONSTRUCTION SEQUENCING NOTES

STEP 1: EXCAVATE WORK AREA, INSTALL LAYER 1 LOGS, AND VERTICAL LOGS

- A. ISOLATE WORK AREA IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE PERMIT CONDITIONS. WORK AREA ISOLATION AND FISH SALVAGE MUST BE COMPLETED PRIOR TO BEGINNING LARGE WOOD STRUCTURE CONSTRUCTION.
- B. EXCAVATE WORK AREA. STOCKPILE EXCAVATED MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS.
- C. EXCAVATE POOL AS DIRECTED BY THE OWNER'S REPRESENTATIVE (± 300 CY).
- D. INSTALL LAYER 1 LOGS AND SLASH (NOT DEPICTED) AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- E. INSTALL VERTICAL LOGS BY VIBRATORY PILE DRIVER IN ACCORDANCE WITH THE SPECIFICATIONS. IF INSTALLATION BY VIBRATORY PILE DRIVER IS DEEMED INFEASIBLE, USE ALTERNATE METHOD DESCRIBED BELOW WITH APPROVAL BY THE OWNER'S REPRESENTATIVE.
 - E.1. ALTERNATE VERTICAL LOG INSTALLATION METHOD:
 - E.1.1. EXCAVATE TO A MINIMUM DEPTH OF 3 FT BELOW THE SUBGRADE ELEVATION AT THE VERTICAL LOG LOCATIONS IDENTIFIED BY THE OWNER'S REPRESENTATIVE.
 - E.1.2. DRIVE VERTICAL LOGS TO A MINIMUM DEPTH OF 2 FT BELOW THE BOTTOM OF THE EXCAVATED AREA.
 - E.1.3. BACKFILL AROUND THE INSTALLED VERTICAL LOG USING SALVAGED COARSE SUBSTRATE, AND COMPACT THE MATERIAL IN 8" LIFTS.

STEP 2: INSTALL LAYER 2 LOGS

- A. INSTALL LAYER 2 LOGS
 - A.1. IF EXCAVATION WAS USED TO INSTALL VERTICAL LOGS, OR THE MINIMUM PULLOUT RESISTANCE CRITERIA IN THE SPECIFICATIONS ARE NOT MET, THE FOLLOWING STEPS ARE REQUIRED:
 - A.1.1. ATTACH LAYER 1 AND 2 LOGS TO VERTICAL LOGS PER THE BOLTED CONNECTION DETAILS ON SHEET 17.
 - A.1.2. EACH VERTICAL LOG SHALL BE ATTACHED TO A LAYER 1 OR LAYER 2 ROOTWAD LOG.
 - A.1.3. EACH LAYER 1 AND LAYER 2 ROOTWAD LOG WITH A BOLTED CONNECTION SHALL HAVE A MINIMUM COARSE SUBSTRATE COVER DEPTH OF 4 FT.
- B. BACKFILL LAYER 2 LOGS USING COARSE ALLUVIUM SALVAGED FROM POOL/BANK EXCAVATION. COMPACT THE BACKFILL IN 12" LIFTS.
- C. INSTALL SLASH, AND SAVAGED TREES AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

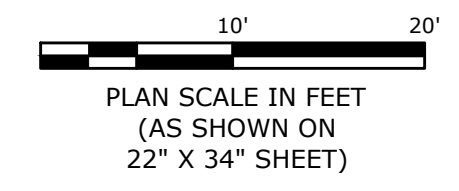
STEP 3: INSTALL LAYER 3 AND LAYER 4 LOGS

- A. INSTALL LAYER 3 LOGS.
- B. INSTALL SLASH AND SAVAGED TREES AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- C. INSTALL LAYER 4 LOGS.
- D. INSTALL SLASH, RACKING MATERIAL, AND SAVAGED TREES AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- E. PLACE ADDITIONAL COARSE BACKFILL WHERE FEASIBLE. COMPACT COARSE BACKFILL IN 12" LIFTS.

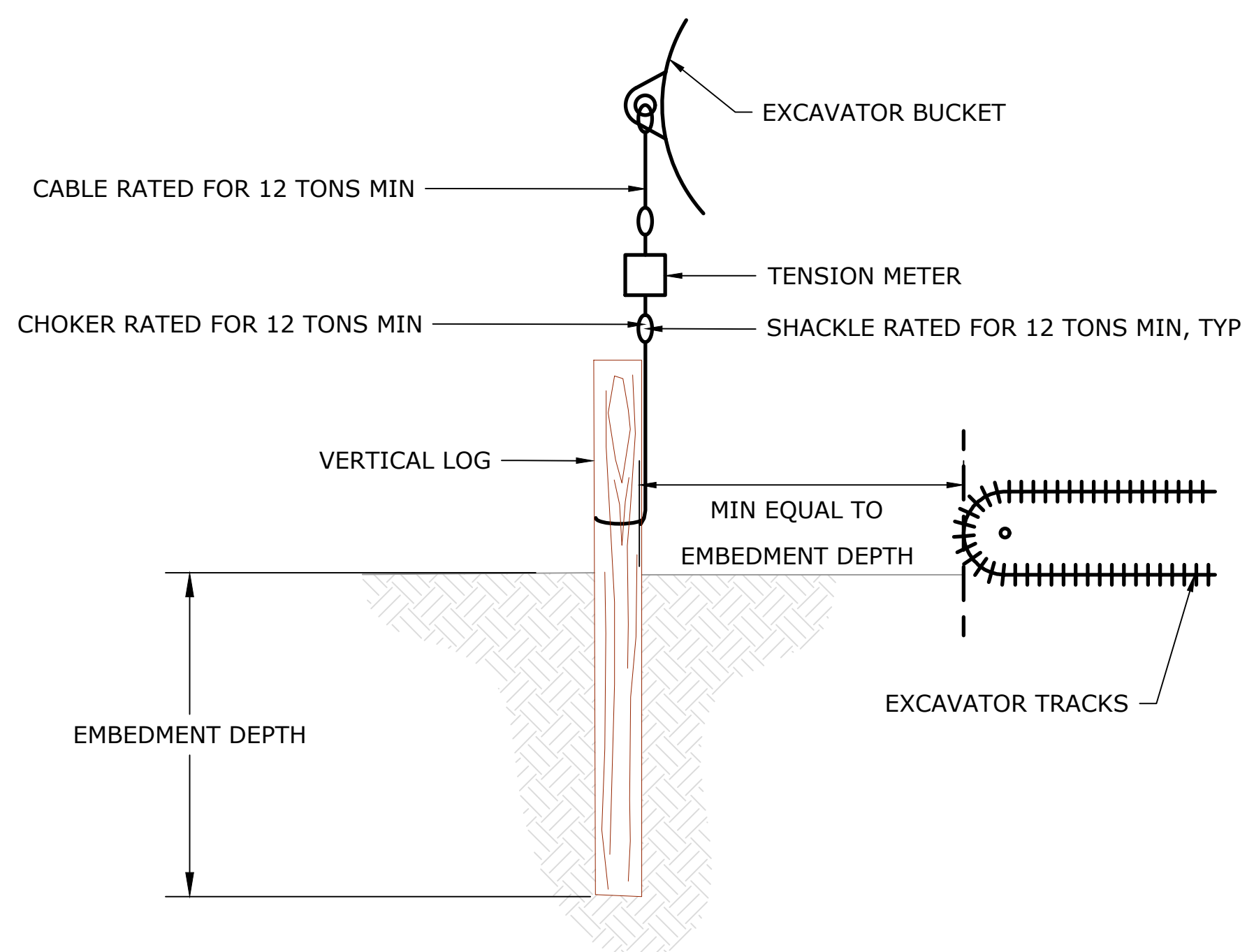
STEP 4: INSTALL LAYER 5 AND LAYER 6 LOGS

- A. INSTALL LAYER 5 LOGS.
- B. INSTALL SLASH AND SAVAGED TREES AS DIRECTED BY THE OWNER'S REPRESENTATIVE. PLACE ANY REMAINING COARSE BACKFILL. WORK SALVAGED FINE MATERIAL INTO TOP 12" OF BACKFILL AND LEAVE TOP 12" OF BACKFILL UNCOMPACTED.
- C. INSTALL LAYER 6 LOGS.
- D. CONNECT LAYER 6 LOGS TO VERTICAL LOGS AND LAYER 5 LOGS SUCH THAT EACH LAYER 6 ROOTWAD LOG HAS A MINIMUM OF 2 BOLTED CONNECTIONS.
- F. BOLTED CONNECTIONS SHALL BE SPACED A MINIMUM OF 10 FEET FROM EACH OTHER ON A SINGLE ROOTWAD LOG.

- LAYER 1 LOG
- LAYER 2 LOG
- LAYER 3 LOG
- LAYER 4 LOG
- LAYER 5 LOG
- LAYER 6 LOG
- LOG INSTALLED IN PREVIOUS STEP
- VERTICAL LOG
- BOLTED CONNECTION



LAST SAVED DATE: 2024-04-09
DRAWN BY: LAC
CHECKED BY: GREGG
CAD SYSTEM: AutoCAD 2024 (LMS TECH)
FILE: JFL_LOWERCHIWAWA-G_DETAILS_PH1.DWG



1 TYPICAL DETAIL - VERTICAL LOG TESTING
17 NOT TO SCALE

NOTES:

VERTICAL LOGS

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

RIGGING

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

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

TESTING

TESTING OF VERTICAL LOGS SHALL BE PERFORMED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.

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

PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS TO BE DETERMINED IN THE FIELD. AS A GUIDELINE TEST EMBEDMENT DEPTHS MAY INCLUDE 5 FT, 6 FT, 8 FT AND 10 FT.

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. EQUIPMENT GROUND PRESSURE MAY BE REDUCED BY POSITIONING THE EXCAVATOR ACROSS HORIZONTAL LOGS, WITH DISTANCE FROM VERTICAL LOG, LOG NUMBERS AND LENGTH NOTED IN THE TEST RECORD.

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

10% OF PRODUCTION VERTICAL LOGS SHALL BE PROOF TESTED TO REQUIRED LOAD. IF RESULTS VARY MORE THAN 50% THEN IT SHOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION VERTICAL LOGS SHALL BE PROOF TESTED. IF THE VERTICAL LOG EMBEDMENT DEPTH DOES NOT MEET MINIMUM, OWNER'S REPRESENTATIVE MAY REQUEST ADDITIONAL PULLOUT TESTING.

CONSTRUCTED DRIVEN VERTICAL LOG EMBEDMENT DEPTH SPECIFIED IN THE DRAWINGS MAY BE REDUCED OR INCREASED, PENDING PULL OUT TEST RESULTS, AT NO ADDITIONAL COST.

VIBRATORY DRIVEN VERTICAL LOGS SHALL INCLUDE REPOSITIONING AND MODIFICATIONS OF LOG TIP AS NEEDED FOR DRIVING AS INCIDENTAL TO THE LARGE WOOD STRUCTURE.

IN THE EVENT THAT 20 MINUTES OF FULL FORCE VIBRATORY DRIVING EFFORT FAILS TO EMBED LOGS TO A SUFFICIENT DEPTH TO PROVIDE 10,000 LB OF RESISTANCE TO PULLOUT, ENGINEER SHALL DETERMINE IF VERTICAL LOGS SHALL BE REPLACED OR SUPPLEMENTED WITH ADDITIONAL STABILITY MEASURES.

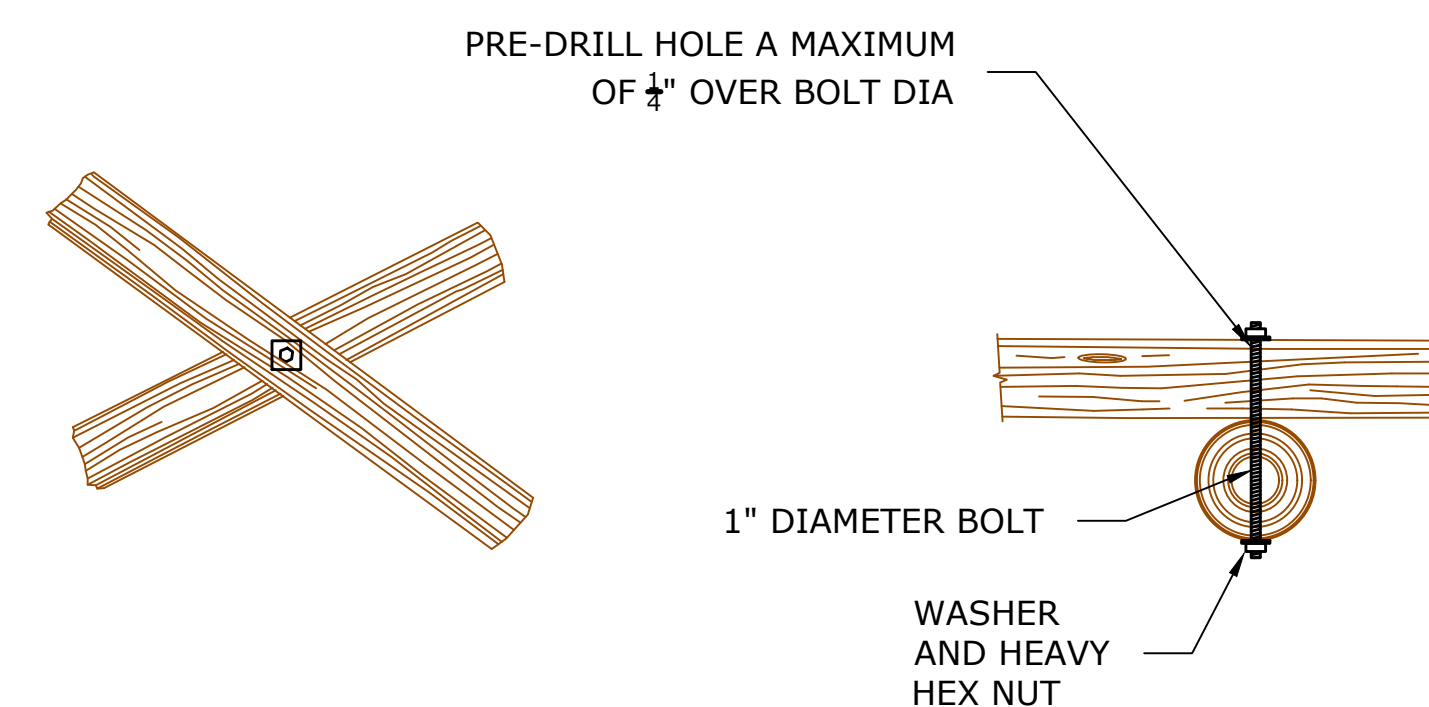
STUMP-GRIND OR CHAINSAW TOP OF LOGS TO PROVIDE A NATURAL APPEARANCE



2 ROUGHENED TOP TYPICAL DETAIL
17

NOTES:

- VISIBLE ENDS OF VERTICAL LOGS SHALL BE ROUGHENED WITH A CHAINSAW, STUMP-GRINDER, OR OTHER SIMILAR METHOD PROVIDED THAT THE ROUGHENING DOES NOT COMPROMISE THE STRUCTURAL INTEGRITY OF THE LOG.
- UNDER NO CIRCUMSTANCES MAY THE CONTRACTOR ATTEMPT TO BREAK THE TOPS OFF OF INSTALLED VERTICAL LOGS.
- ANY VERTICAL LOGS DAMAGED OR BROKEN AT DURING ROUGHENING SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.



PLAN

SECTION

3 TYPICAL DETAIL - BOLTED CONNECTION
17 NOT TO SCALE

NOTES:

- BOLTS, WASHERS, AND NUTS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- DRILL 1-1/4" HOLE THROUGH LOGS.
- INSERT 1" DIAMETER THREADBAR.
- INSTALL WASHERS OVER EACH END OF THE BOLT. THREAD NUTS ONTO EACH END OF THE BOLT AND TIGHTEN THE NUT UNTIL UNDERLYING WOOD BEGINS TO CRUSH.
- IF END OF BOLT EXTENDS MORE THAN 2 INCHES BEYOND THE TIGHTENED NUT, CUT OFF EXCESS BOLT NO CLOSER THAN 1 INCH FROM THE NUT.
- PEEN END OF BOLT OR CHISEL THREADS SO NUT CANNOT BE BACKED OFF.
- FILE OR GRIND OFF SHARP EDGES ON BOLT END.

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 2024 (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, 2024. 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

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 1-09.7 OF THE WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (STANDARD SPECIFICATIONS), AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. 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.
2. 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.
3. 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.
4. 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.
 - a. ALL DISTURBED ROAD SURFACES SHALL BE RESTORED TO PRE-PROJECT CONDITIONS OR BETTER, UNLESS OTHERWISE DIRECTED BY THE OWNER.
 - b. EXCESS SLASH MATERIAL SHALL BE PLACED ALONG THE DECOMMISSIONED ACCESS ROUTES FOR THE REVEGETATION CONTRACTOR TO INSTALL FOR FURTHER EROSION CONTROL.
 - c. 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

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 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 002- TESC, SPCC PLAN AND IMPLEMENTATION

DESCRIPTION

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.

1. THE CONTRACTOR SHALL SUBMIT A TESC 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 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.

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

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

PAYMENT

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

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 2-01 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. 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.
2. 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.
3. 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. THE MAXIMUM DIAMETER OF SALVAGED TREES WILL BE 25" DBH.
4. 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

"CLEARING, GRUBBING, AND TREE SALVAGE," INCLUDING THE ABOVE AMENDMENTS, WILL BE MEASURED BY LUMP SUM.

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

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

ITEM 004- DIVERSION AND DEWATERING

DESCRIPTION

THIS ITEM INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. INSTALLING, MAINTAINING, AND REMOVING MEASURES TO ISOLATE IN-WATER WORK AREAS FROM FLOWING SURFACE WATER AND TO PREVENT TURBIDITY FROM ENTERING THE RIVER.
2. DEWATERING AND CONTROLLING TURBIDITY WITHIN CONSTRUCTION AREAS ISOLATED FROM THE RIVER BY COFFERDAMS.
3. FURNISHING, MONITORING, OPERATING, MAINTAINING, AND REMOVING PUMPS.
4. COORDINATING WITH THE OWNER FOR FISH SALVAGE AND RELOCATION ACTIVITIES
5. INSTALLATION OF WATER CONTROL BMPS.

MATERIALS

1. WORK AREA ISOLATION
 - a. COFFERDAMS CONSTRUCTED OF SHEET PILE INSTALLED BY VIBRATORY DRIVER IS A PRE-APPROVED METHOD OF WORK AREA ISOLATION.
 - b. SANDBAGS SHALL BE FILLED WITH PEA GRAVEL OR STREAM GRAVEL. USING SAND WILL NOT BE ALLOWED.

2. 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.
- i. 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.
- c. IF NEEDED, THE CONTRACTOR SHALL PROVIDE ADDITIONAL PUMPS OR PUMPING CAPACITY AT NO ADDITIONAL COST TO THE OWNER.

3. FISH SALVAGE

- a. 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. THE CONTRACTOR SHALL PROVIDE SUFFICIENT ADVANCE NOTICE TO THE OWNER BEFORE EACH COFFERDAM INSTALLATION DATE. 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.

CONSTRUCTION REQUIREMENTS

1. 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.a. 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.b. 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 OR LIMIT SCOUR POOL EXCAVATION SHOWN IN THE DRAWINGS.

2. PUMPING

- a. EACH WATER INTAKE SHALL HAVE A FISH SCREEN INSTALLED, OPERATED AND MAINTAINED ACCORDING TO NMF'S FISH SCREEN CRITERIA (NMF5 1997; NMF5 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.

3. 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.

4. ENVIRONMENTAL PROTECTION MEASURES

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



ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA PACIFIC NORTHWEST REGION
FCRPS HABITAT IMPROVEMENT PROGRAM

**LOWER CHIWAWA ASSESSMENT UNIT
PROJECT AREA G - PHASE I**

FINAL DESIGN



CM DRAWN

LS, PB ACCEPTED

BOISE, ID APRIL 10, 2024

SPECIFICATIONS (1 OF 2)

SHEET 18

SHEET 18 OF 19

LAST SAVED DATE 2024-04-09 UNCHANGED BY GREGORWELL

CAD SYSTEM AutoCAD 2024 (LMS TECH) IFL LOWERCHIWAWA AREA_G_P11.DWG

ITEM 004 - DIVERSION AND DEWATERING (CONTINUED)

MEASUREMENT AND PAYMENT

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

ITEMS 005 - 012 LARGE WOOD STRUCTURES

DESCRIPTION

- 1. "LARGE WOOD STRUCTURES" INCLUDE: ITEMS 005 THROUGH 010 - BANK-BURIED STRUCTURES B1 THROUGH B6 ITEMS 011 THROUGH 012 - APEX LW STRUCTURES A1 THROUGH A2
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".
4. LARGE WOOD STRUCTURES SHALL BE CONSTRUCTED OF LARGE WOOD MATERIAL (LWM), EXCAVATION AND BACKFILL, SLASH, SALVAGED TREE TOPS, SLAVAGED TREES, AND BOLTED CONNECTIONS APPLY TO LARGE WOOD STRUCTURES AS SHOWN ON THE DRAWINGS.

MATERIALS

LARGE WOOD MATERIAL (LWM)

- 1. LWM IS SUPPLIED BY THE OWNER AND WILL BE DECKED AT THE STAGING AREA SHOWN ON THE DRAWINGS.
2. LWM WILL HAVE THE FOLLOWING CHARACTERISTICS:
a. ROOTWAD LOGS WITH ROOTWADS: 40' LONG AND 18"-24" DBH.
b. VERTICAL LOGS: 20' LONG AND 15" DIAMETER IN MIDDLE OF LOG.

SALVAGED TREE

- 3. SALVAGED TREE INCLUDES OWNER-IDENTIFIED TREES RANGING BETWEEN 12" AND 25" DBH REMOVED FROM ACCESS ROUTES, STAGING/STOCKPILE AREAS, AND EXCAVATION AREAS.

SLASH

- 4. 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.

TIPPED WHOLE TREES

- 5. TIPPED WHOLE TREES SHOWN ON THE DRAWINGS ARE NOT INCLUDED IN THIS CONTRACT. THIS WORK WILL BE COMPLETED UNDER A SEPARATE CONTRACT. BOTH CONTRACTORS WILL BE REQUIRED TO COORDINATE ON CONCURRENT ACTIVITIES AND A PRUDENT EFFORT SHALL BE MADE TO PRIORITIZE EACH CONTRACTOR'S SCHEDULE.

BOLTED CONNECTIONS

- 6. PRE-APPROVED MATERIALS FOR BOLTED CONNECTIONS ARE AS FOLLOWS:
a. BOLTS
a.a. BOLTS SHALL BE A MINIMUM OF 1" DIAMETER NON-GLAVANIZED ASTM A615 GRADE 75 STEEL THREADBAR (EQUIVALENT TO A #8 SIZE BAR) OR,
a.b. BOLTS SHALL BE A MINIMUM OF 1" DIAMETER NON-GALVANIZED FULLY THREADED ROD (FTR) MEETING THE REQUIREMENTS OF ASTM F1554, GRADE 55 STEEL.
b. WASHERS AND NUTS
b.a. WASHERS SHALL BE SQUARE PLATE, 3/16" X 3" X 3" MINIMUM, OR ROUND WITH A DIAMETER OF 3.5"
b.b. NUTS SHALL BE DOMED OR HEAVY HEX WITH MATERIAL PROPERTIES EQUIVALENT TO OR STRONGER THAN THE BOLTS.

CONSTRUCTION REQUIREMENTS

- 1. LOCATIONS FOR PLACEMENT AND DETAILS OF CONSTRUCTION FOR EACH 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 "FIT IN THE FIELD" APPROACH AS DIRECTED BY THE OWNER. LWM SHALL BE STABILIZED BY PARTIAL BURIAL, BRACING AGAINST VERTICAL LOGS AND BRACING AGAINST EXISTING TREES OR BOULDERS AS SHOWN IN THE DRAWINGS.
2. 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.
3. VERTICAL LOGS SHALL BE INSTALLED BY VIBRATORY PILE DRIVER MEETING OR EXCEEDING THE FOLLOWING CHARACTERISTICS:
i. MINIMUM OF 800 KN (80 TONS) OF CENTRIFUGAL FORCE.
j. 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.
k. PRE-APPROVED PILE DRIVERS INCLUDE: MOVAX SP-80, GRIZZLY MG90, OR EQUIVALENT.
4. 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. 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 DRAWINGS ON SHEET 16.
a. INSTALLATION OF VERTICAL LOGS BY EXCAVATION WILL REQUIRE ADDITIONAL BOLTED CONNECTIONS, AS INDICATED IN THE DRAWINGS ON SHEET 16.
5. 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.
6. 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. 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.
7. 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 THE LWM AS EACH LAYER IS INSTALLED. USE COARSE FILL 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 STRUCTURE. A CULTURAL STAFF PERSON WILL BE PRESENT ON SITE DURING ALL EXCAVATION ACTIVITIES.
8. BOLTED CONNECTIONS SHALL BE INSTALLED FOR LARGE WOOD STRUCTURES CONTAINING VERTICAL LOGS. BOLTED CONNECTIONS SHALL BE INSTALLED PER DRAWINGS.
9. AT PROJECT COMPLETION, CONTRACTOR SHALL RESTORE THE LWM STAGING AREA BY REMOVING DEBRIS AND GRADING SMOOTH AND BLENDING TO EXISTING TOPOGRAPHY, AS DIRECTED BY THE OWNER.

QUALITY CONTROL

- 1. AT EACH LARGE WOOD STRUCTURE SITE CONTAINING VERTICAL LOGS, VERTICAL LOGS SHALL BE TESTED FOR PULLOUT RESISTANCE IN ACCORDANCE WITH THE DETAILS ON SHEET 17.
2. THE CONTRACTOR SHALL PROVIDE THE TENSION LINK, METER, AND ASSOCIATED HARDWARE (RATED 12 TON).
3. A MINIMUM PULLOUT RESISTANCE AT THE MINIMUM EMBEDMENT DEPTH OF 10,000 LB IS REQUIRED. IF THESE CRITERIA ARE NOT MET, THE FOLLOWING ADDITIONAL STABILITY MEASURES SHALL BE IMPLEMENTED:
3.1. INCREASING THE NUMBER OF VERTICAL LOGS REQUIRING TESTING IN ACCORDANCE WITH THE DETAILS ON SHEET 17.
3.2. ADDING ADDITIONAL BOLTED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS FOR VERTICAL LOGS INSTALLED BY EXCAVATION SHOWN ON SHEET 16.

MEASUREMENT AND PAYMENT

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

- ITEMS 005 THROUGH 010 - BANK-BURIED STRUCTURES B1 THROUGH B6
• ITEMS 011 THROUGH 012 - APEX LW STRUCTURES A1 THROUGH A2

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 013 TEST PITS

DESCRIPTION

THE WORK COVERED UNDER THIS ITEM INCLUDES EXCAVATION OF UP TO FIVE (5) TEST PITS ALONG THE TEMPORARY ACCESS ROUTE WHERE A SIDE CHANNEL IS PROPOSED AS PART OF FUTURE PHASES OF THIS PROJECT.

CONSTRUCTION REQUIREMENTS

- 1. THE LOCATIONS OF THE TEST PITS WILL BE AS DIRECTED BY THE OWNER AND WILL BE ALONG THE GENERAL ALIGNMENT OF THE TEMPORARY ACCESS ROUTE BETWEEN LARGE WOOD STRUCTURES A-1 AND B-2. APPROXIMATE TEST PIT LOCATIONS ARE DEPICTED ON THE DRAWINGS.
2. THE MAXIMUM DEPTH OF THE TEST PITS IS ANTICIPATED TO BE APPROXIMATELY 8 FEET BELOW THE EXISTING GROUND SURFACE. GROUNDWATER MAY BE ENCOUNTERED DURING EXCAVATION.
3. EXCAVATION OF THE TEST PITS MUST BE OBSERVED BY A CULTURAL STAFF PERSON AND THE OWNER'S REPRESENTATIVE.
4. THE CONTRACTOR SHALL ALLOW THE OWNER'S REPRESENTATIVE TO TAKE PERIODIC PHOTOGRAPHS AND MEASUREMENTS OF THE EXCAVATED SUBSTRATE DURING THE EXCAVATION PROCESS.
5. AFTER ALL NECESSARY MEASUREMENTS AND PHOTOGRAPHS ARE TAKEN, THE CONTRACTOR SHALL FILL IN THE PIT AND SMOOTH THE FINISHED GROUND SURFACE TO MATCH EXISTING GROUND.

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT FOR "TEST PITS" SHALL BE MADE PER EACH COMPLETED TEST PIT. 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: "TEST PITS" PER EACH COMPLETED TEST PIT.

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA PACIFIC NORTHWEST REGION
FCRPS HABITAT IMPROVEMENT PROGRAM
PROJECT AREA G - PHASE I
FINAL DESIGN



CM DRAWN
LS, PB ACCEPTED
BOISE, ID APRIL 10, 2024

SPECIFICATIONS (2 OF 2)
SHEET 19