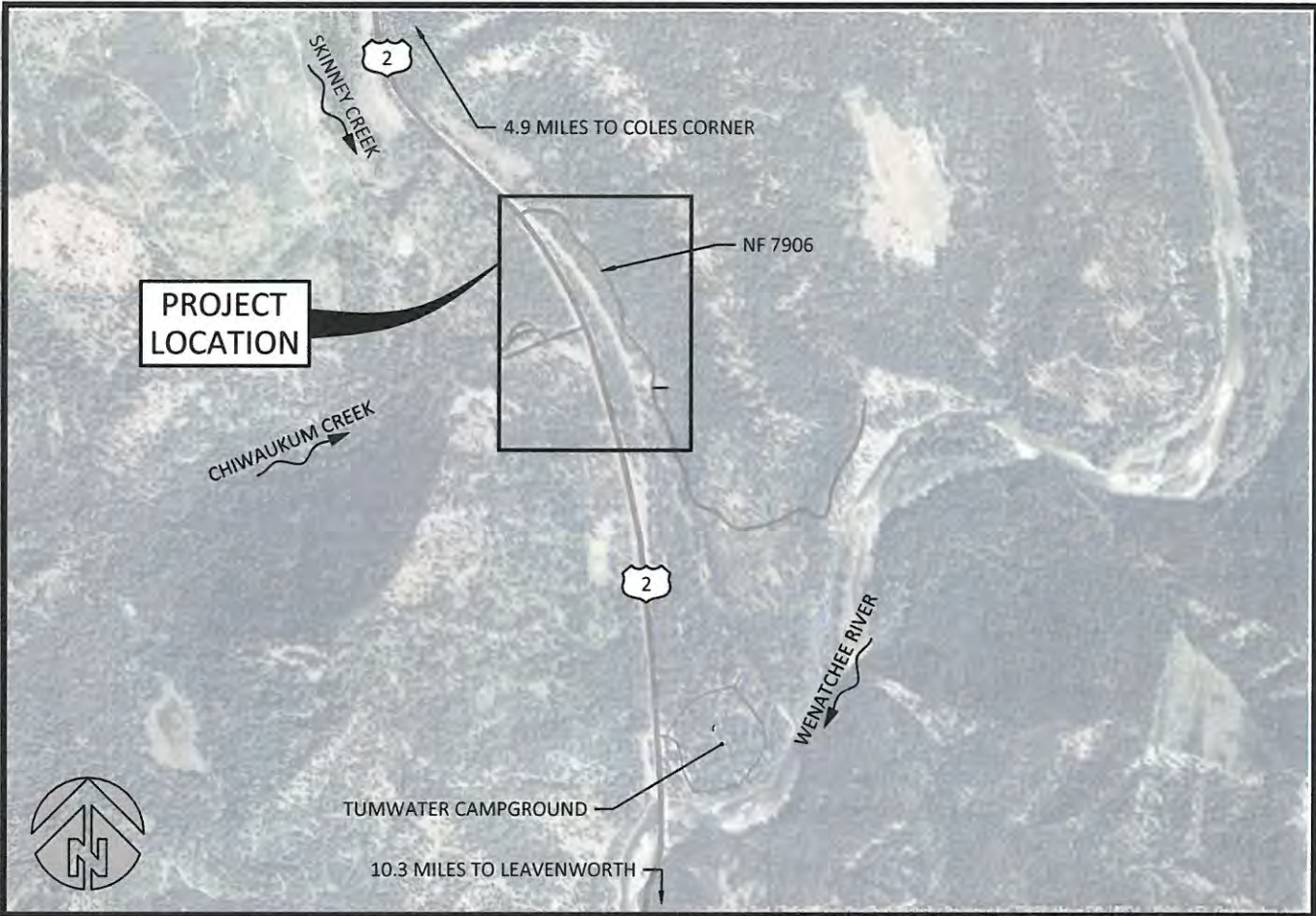
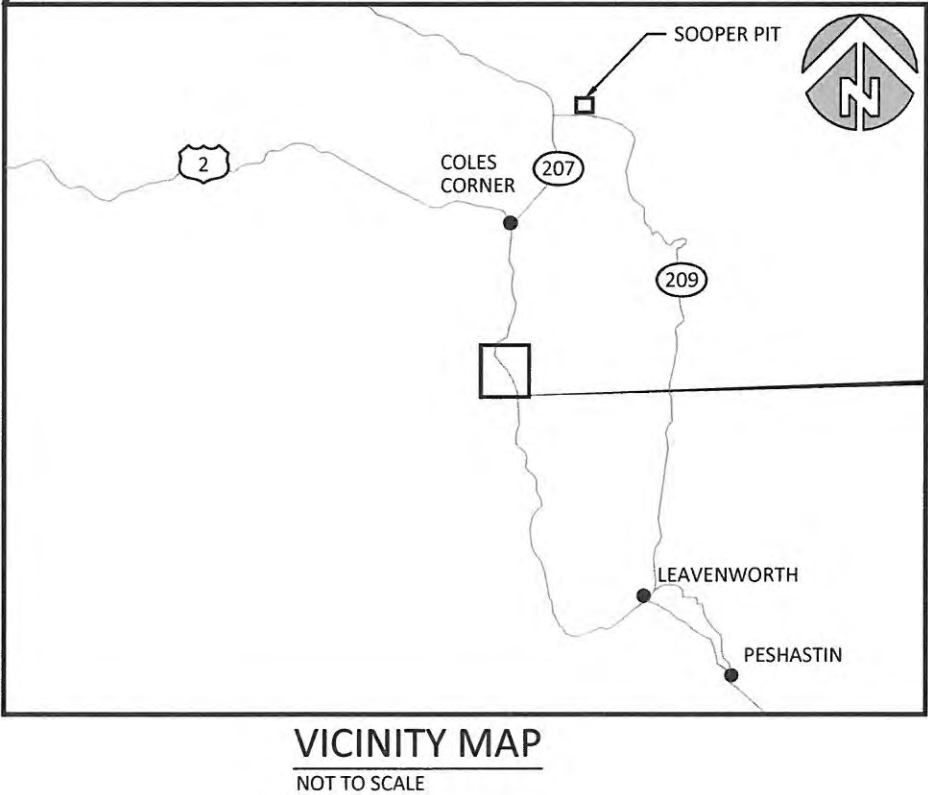


SKINNEY CREEK - FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN
CHELAN COUNTY, WA



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

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

WATERBODY: SKINNEY CREEK
TRIBUTARY OF: CHIWAUKUM CREEK



EXPIRES: 11/23/21

NO.	BY	DATE	REVISION DESCRIPTION

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

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



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

COVER, SHEET INDEX AND
VICINITY MAP

SHEET
1 OF 22

C:\Users\demiller\Documents\Client\Yakama Nation\Skinney Creek\Drawings\2019-08_YN-WSDOT\JE_SkinneyCreek_D.dwg -- demiller -- 12/13/19

THE OWNER WILL PROVIDE A PRE-BID SITE TOUR. IT IS HIGHLY RECOMMENDED THE CONTRACTOR ATTEND THIS PRE-BID TOUR FOR SITE FAMILIARIZATION AND TO POSE QUESTIONS TO THE OWNER AND OWNER'S REPRESENTATIVE.

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

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

WDFW IN-WATER WORK PERIODS

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

EXISTING DATA

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

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS 5.0.5.

LANDOWNERSHIP DATA OBTAINED FROM CHELAN COUNTY GIS.

SOILS

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

SOILS AVAILABLE FROM 2008 BOREHOLE DATA COLLECTED BY WSDOT ALONG THE NEW HIGHWAY 2 ALIGNMENT.

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

CONTRACTOR SHALL CONDUCT OWN SOILS INVESTIGATIONS AS NEEDED.

UTILITIES

THE PROJECT FOLLOWS A PRIOR ALIGNMENT OF HIGHWAY 2. UTILITIES MAY EXIST.

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

THE CONTRACTOR SHALL CALL (800-424-5555 OR 811) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION

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

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



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NS, DM	MB, JP, DM	JP
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YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN

	501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 www.interfluve.com
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GENERAL NOTES

SHEET
2 OF 22

CONSTRUCTION STAKING

CONTRACTOR SHALL STAKE PROJECT LIMITS AND GRADE STAKES BASED ON PROJECT ELEVATION CONTROL POINTS. THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

CONTRACTOR SHALL COORDINATE WITH ENGINEER FOR INITIAL AND PERIODIC CHECKING OF CONTRACTOR'S STAKEOUT. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

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

CONSTRUCTION MATERIALS

OWNER PROVIDED LOGS, LOGS WITH ROOTWADS AND VERTICAL LOGS WILL BE LOCATED IN A DESIGNATED STOCKPILE/STAGING AREA. CONTRACTOR SHALL PROCURE, PROVIDE AND PLACE SLASH MATERIALS.

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOT WADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS AND MATERIAL SIZE, PER DIRECTION BY OWNER OR OWNER'S REPRESENTATIVE.

ANY EXCESS CONSTRUCTION MATERIALS SHALL BE NEATLY STORED AT AN APPROVED STAGING LOCATION. UPON COMPLETION OF THE PROJECT ANY EXCESS MATERIALS, WITH THE EXCEPTION OF ANY LARGE WOODY MATERIAL (LWM), WILL BECOME THE PROPERTY OF THE CONTRACTOR AND HAULED OFFSITE IN A TIMELY MANNER AND LEGALLY DISPOSED OF.

UPON PROJECT COMPLETION, THE CONTRACTOR WILL BE RESPONSIBLE FOR HAULING ANY EXCESS LWM OFFSITE TO THE YAKAMA NATION'S APPROVED LONG-TERM WOOD STAGING AREA LOCATED AT YAKAMA NATION'S DESIGNATED LOCATION.

CONSTRUCTION ACCESS/TRAFFIC CONTROL

CONTRACTOR SHALL SUBMIT AN ACCESS, STAGING, AND STOCKPILE PLAN TO THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO MOBILIZATION.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS.

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

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

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

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

CONTRACTOR SHALL IMPLEMENT MEASURES TO CONTROL AND MINIMIZE WIND BLOWN DUST FROM THE SITE AND ACCESS ROUTES.

AT PROJECT COMPLETION, ROADS AND ACCESS ROUTES SHALL BE CLEANED, GRADED, AND RESURFACED TO PRE-PROJECT CONDITION PER WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION OR USFS STANDARDS PER JURISDICTION. WORK SHALL BE INCIDENTAL TO MOBILIZATION/DEMOBILIZATION.

ALL DISTURBED AREAS INCLUDING, BUT NOT LIMITED TO: ROADS, DRIVEWAYS, TEMPORARY ACCESS ROUTES, STAGING AREAS AND STRUCTURE LOCATIONS SHALL BE RESTORED TO PRE-PROJECT CONDITION OR BETTER. THIS WILL INCLUDE, BUT IS NOT LIMITED TO ANY GRADING/BLADING OF DISTURBED AREAS AS WELL AS REMOVAL OF ANY TRASH AND DEBRIS. THE OWNER'S REPRESENTATIVE WILL CONDUCT A FINAL WALK THROUGH WITH THE CONTRACTOR PRIOR TO DEMOBILIZATION.

CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED SURFACES EXCEPT CHANNEL BETWEEN TOPS OF BANK AND EXISTING GRAVEL ROADS.

ALL DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST.

SPILL POLLUTION AND PREVENTION PLAN (SPCC)

THE CONTRACTOR SHALL PREPARE AND IMPLEMENT A PROJECT-SPECIFIC SPILL PREVENTION, CONTROL, AND COUNTER MEASURES PLAN (SPCC PLAN) FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL SUBMIT THE PLAN TO THE OWNER'S REPRESENTATIVE NO LATER THAN THE DATE OF THE PRE-CONSTRUCTION CONFERENCE. NO ON-SITE CONSTRUCTION ACTIVITIES MAY COMMENCE UNTIL THE CONTRACTING AGENCY ACCEPTS AN SPCC PLAN FOR THE PROJECT.

EROSION CONTROL

CONTRACTOR SHALL BE SOLELY RESPONSIBLE, AT OWN EXPENSE, FOR DEVELOPING EROSION AND SEDIMENT CONTROL PLAN, PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES FOR DURATION OF PROJECT.

EROSION/SEDIMENTATION CONTROL PLAN

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

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE A GUIDELINE FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN.

- THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- ESC FACILITIES, AS APPROXIMATELY SHOWN ON THIS PLAN, ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.
- THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.
- STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT TO ENSURE ALL ACCESS ROADS ARE KEPT CLEAN AT NO ADDITIONAL COST.

CONTRACTOR'S ESC RECORD

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

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

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

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STABILIZE SOILS AND PROTECT SLOPES

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

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

AFTER FINAL SITE STABILIZATION

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

RIVER DIVERSION

EXCAVATED MATERIAL WILL BE PLACED IN SPOILS AREA INCLUDING EXISTING SKINNEY CREEK. STREAM DIVERSION SHALL BE AN 18INCH DIAMETER FLEXIBLE PIPE PLACED IN EXISTING SKINNEY CREEK AND BACKFILLED BY SPOILS PLACEMENT. PIPE SHALL HAVE SUFFICIENT STRENGTH TO WITHSTAND BACKFILL AND CONSTRUCTION EQUIPMENT. PIPE SHALL BE ABANDONED IN PLACE AND PLUGGED AT PROJECT COMPLETION.

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

FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE PERFORMED BY A YAKAMA NATION FISHERIES/AQUATIC BIOLOGIST EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONIDS FROM CONSTRUCTION SITES.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA WILL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF FRESH RIVER WATER.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED DOWNSTREAM OF PROJECT AREA.



TREE SALVAGE

ALL APPROPRIATE TREE SPECIES WITHIN CLEARING LIMITS REMOVED FOR CONSTRUCTION, AS APPROVED BY THE OWNER'S REPRESENTATIVE, SHALL TEMPORARILY BE STOCKPILED WITHIN LIMITS OF DISTURBANCE. STOCKPILED TREE/SLASH SHALL BE REINCORPORATED INTO FINISHED PROJECT.

ANY REMOVED VEGETATION GREATER THAN 6 INCHES DIAMETER AND 15 FEET LONG SHALL BE INCORPORATED INTO LOG STRUCTURES. SMALLER DEBRIS SHALL BE PLACED IN LOG STRUCTURES OR ON DISTURBED SURFACES AS APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOTWAD AND UTILIZED IN THE PROJECT CONSTRUCTION AS DIRECTED BY OWNER'S REPRESENTATIVE.

LIVE TREES

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

KEEP HEAVY EQUIPMENT OUT OF DRIP LINE OF EXISTING TREES.

CONSTRUCTION DEWATERING

IF ADDITIONAL PUMPING IS REQUIRED TO DEWATER DURING CONSTRUCTION, PUMPED DISCHARGE SHALL RELEASE SEDIMENT-LADEN WATER AT AN UPLAND DISCHARGE LOCATION IN A MANNER THAT DOES NOT CAUSE EROSION, CONTAMINATION, OR INCREASE TURBIDITY OF SURFACE WATERS.

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

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

CONTRACTOR WILL PROVIDE ANY PUMPS, HOSES AND FITTINGS NEEDED TO PERFORM THE DEWATERING. THE PUMP EQUIPMENT SELECTED BY THE CONTRACTOR SHALL BE SUFFICIENT TO DEWATER THE SITE THOROUGHLY.

CONTRACTOR SHALL PROVIDE VISQUEEN OR GEOTEXTILE LINER, PLYWOOD, OR METAL PLATING AS NECESSARY TO DISSIPATE PUMP DISCHARGE JET TO PREVENT EROSION.

WETLANDS AND WATERS OF THE US

NO WETLANDS WERE IDENTIFIED ON SITE AS DOCUMENTED IN "SKINNEY CREEK WETLAND ASSESSMENT" (INTER-FLUVE, AUGUST 2017).

ORDINARY HIGH WATER (OHW) LINES DISPLAYED IN THIS DESIGN PACKAGE WERE DETERMINED BY INTER-FLUVE STAFF. THESE LINES ARE BASED UPON ANALYSIS, MODELING, AND BEST PROFESSIONAL JUDGMENT.

THESE DO NOT NECESSARILY REPRESENT JURISDICTIONAL BOUNDARIES. WITHIN THE STATE OF WASHINGTON, THE ARMY CORPS OF ENGINEERS AND THE DEPARTMENT OF ECOLOGY HAVE THE FINAL AUTHORITY IN DETERMINING WATERS AND WETLAND BOUNDARIES AND REGULATIONS.

ABBREVIATIONS

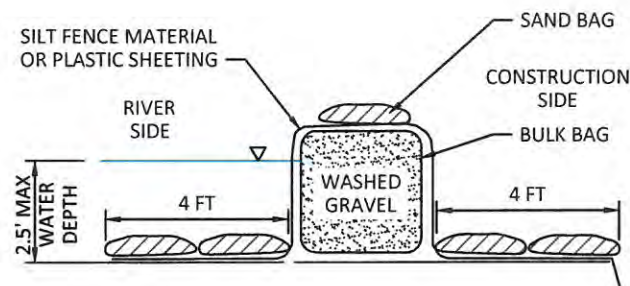
CY	CUBIC YARDS
DBH	DIAMETER AT BREAST HEIGHT
EA	EACH
ESC	EROSION AND SEDIMENT CONTROL
' or FT	FOOT
" or IN	INCH
LS	LUMP SUM
LWM	LARGE WOODY MATERIAL
MAX	MAXIMUM
MIN	MINIMUM
MSF	THOUSAND SQUARE FEET
OHW	ORDINARY HIGH WATER
RD	ROAD
STA	STATION
SY	SQUARE YARDS
TBM	TEMPORARY BENCHMARK
TYP	TYPICAL
US	UNITED STATES
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
USFS	UNITED STATES FOREST SERVICE
WDFW	WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

QUANTITIES ESTIMATE

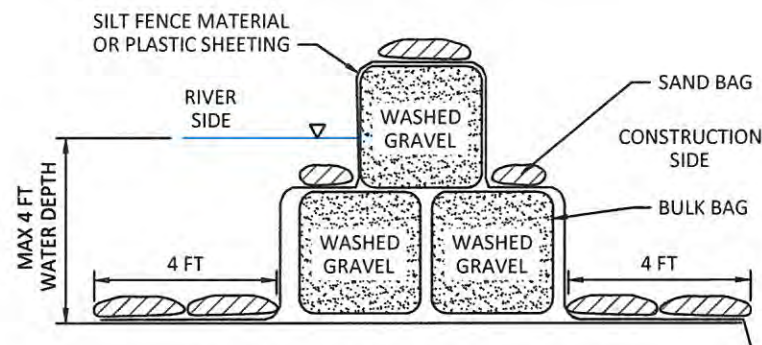
Item	Quantity	Units
Excavation and place in onsite spoils areas	30,550	CY
Log structure at Skinney Creek fill	2	EA
<u>Bank buried LWM structures:</u>		
15-17"DBH x 40' Long large wood with rootwad	54	EA
18-20"DBH x 40' Long large wood with rootwad	22	EA
15-17"DBH x 40' Long large wood without rootwad	33	EA
LWM gravel/cobble backfill	380	CY
Vibratory driven 12-15"DBH x 20' Long vertical log	77	EA
<u>Floodplain wood - salvaged from Skinney Creek spoils area (approx. Qty):</u>		
small-medium conifer: whole tree with rootwad	185	EA
large conifer: whole tree with rootwad	10	EA
small-medium deciduous tree - topped	90	EA
large deciduous tree - topped	10	EA
Buried ballast log (15-17"x40'Long conifer w/ rootwad)	50	EA
Erosion control fabric	54	MSF
Seed and mulch	6.11	Acre
<u>Optional item:</u>		
Streambed substrate Station 2+40 to upstream project limit		
- excavation	600	CY
- substrate placement	600	CY

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

				YAKAMA NATION FISHERIES SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT FINAL DESIGN		 501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 www.interfluve.com	GENERAL NOTES, ABBREVIATIONS AND QUANTITIES ESTIMATE	SHEET 3 OF 22	
NO.	BY	DATE	REVISION DESCRIPTION	NS, DM DRAWN	MB, JP, DM DESIGNED	JP CHECKED			
				DM APPROVED	12/16/2019 DATE	170232 PROJECT			



**TEMPORARY COFFERDAM
DEPTHS LESS THAN 2.5'**

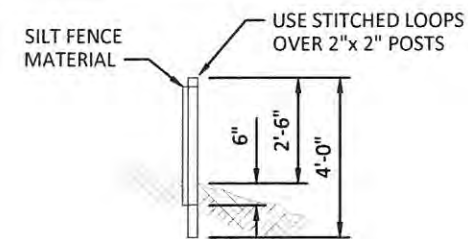


**COFFERDAM SECTION IN WATER
DEPTHS GREATER THAN 2.5'**

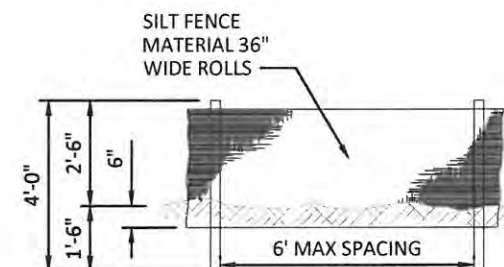
BULK BAG NOTES:

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

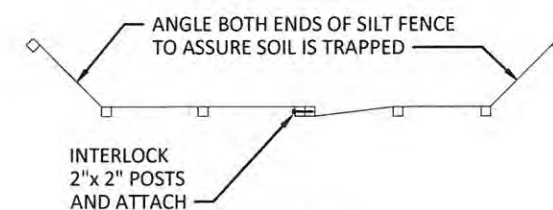
1
4 **TYPICAL DETAIL - TEMPORARY COFFERDAM**
NOT TO SCALE



SIDE VIEW



FRONT VIEW

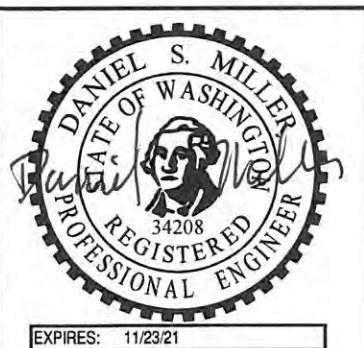


TOP VIEW

SILT FENCES:

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

2
4 **TYPICAL DETAIL - SILT FENCE**
NOT TO SCALE



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DM	12/16/2019	170232
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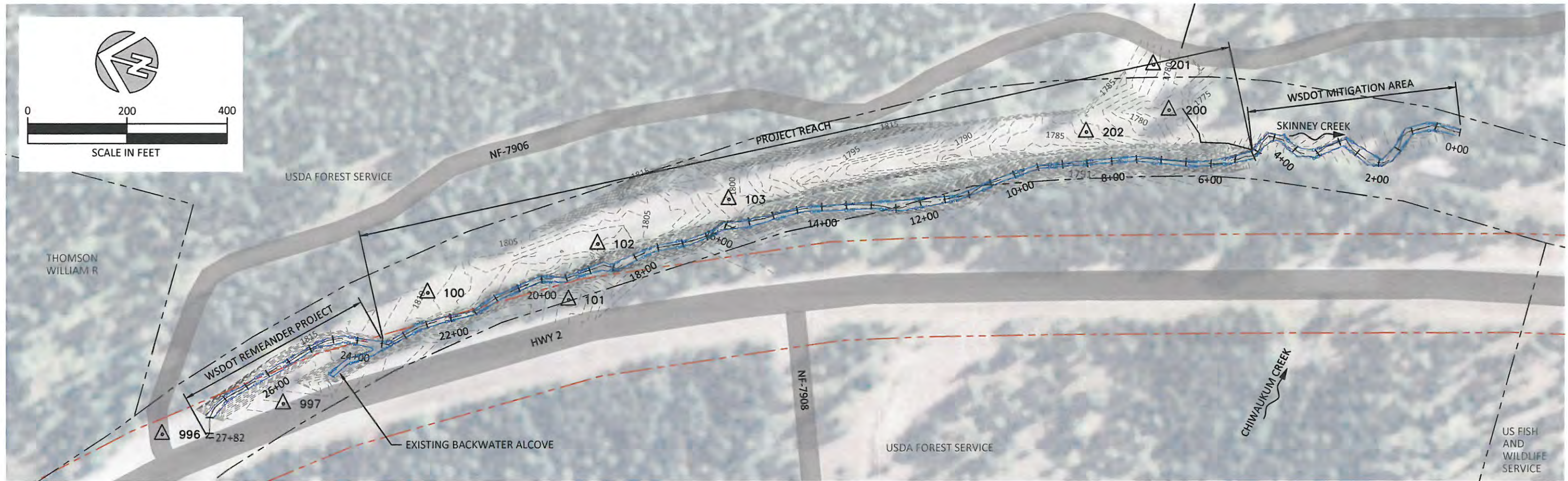
**YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN**

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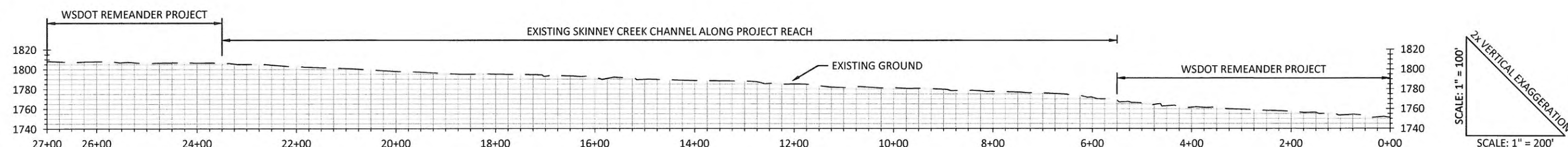
**TYPICAL DETAILS - EROSION
CONTROL**

SHEET
4 OF 22

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PLAN



EXISTING SKINNEY CREEK PROFILE

LEGEND

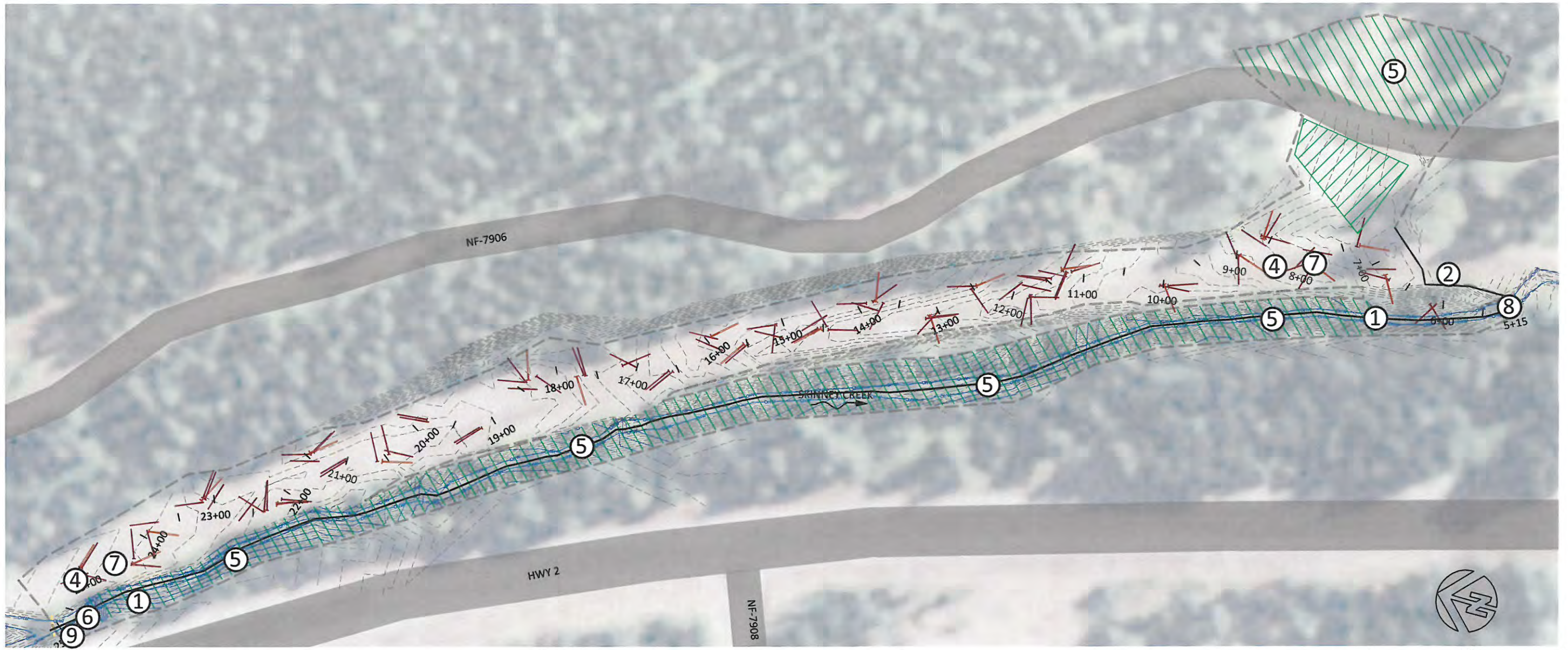
- EXISTING CONTOURS (1FT)
- 5+00 --- EXISTING CHANNEL ALIGNMENT AND STATIONING
- ORDINARY HIGH WATER
- TAXLOTS (CHELAN COUNTY GIS)
- APPROX WSDOT RIGHT OF WAY, FOR REFERENCE ONLY
- △ 100 SURVEY CONTROL POINT

SURVEY CONTROL

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



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LEGEND

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

PLAN

CONSTRUCTION SEQUENCING NOTES:

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



NO.	BY	DATE	REVISION DESCRIPTION

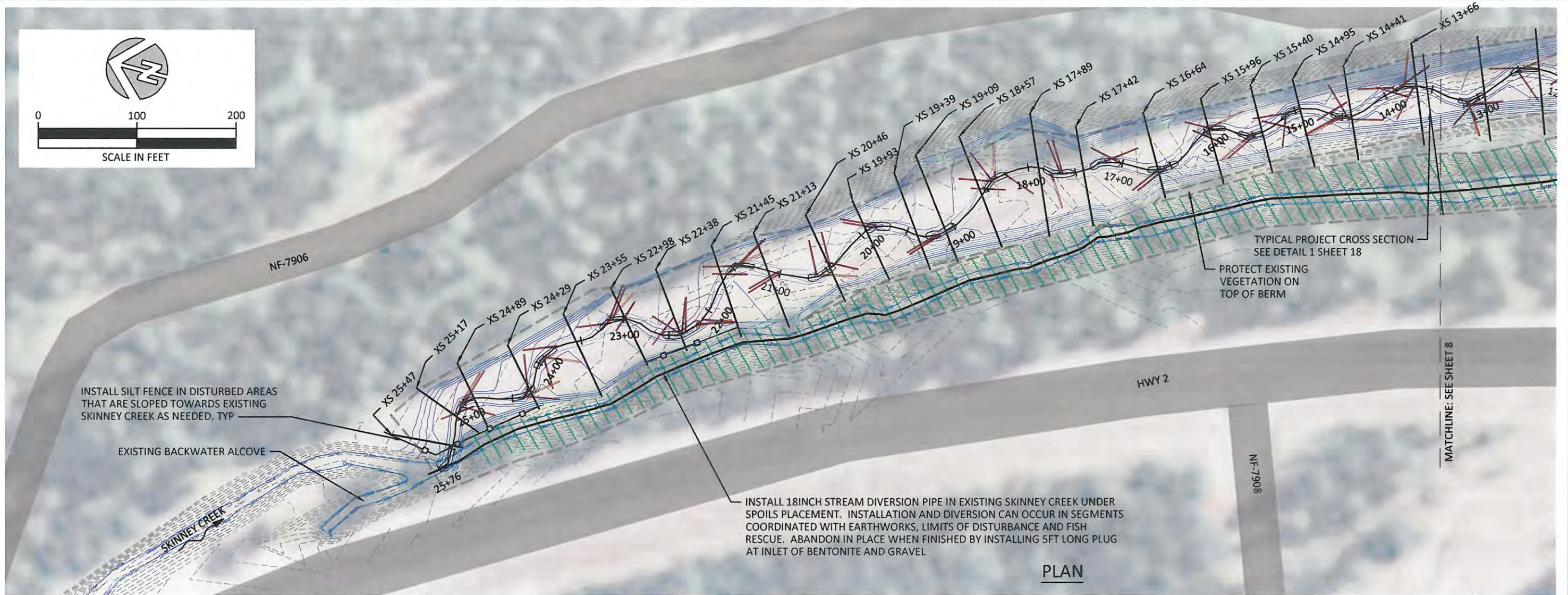
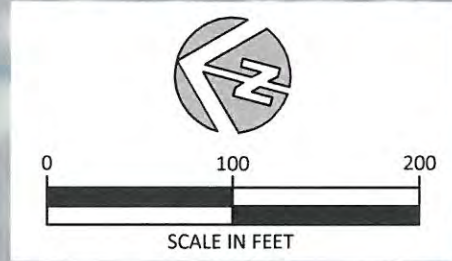
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DM	12/16/2019	170232
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN

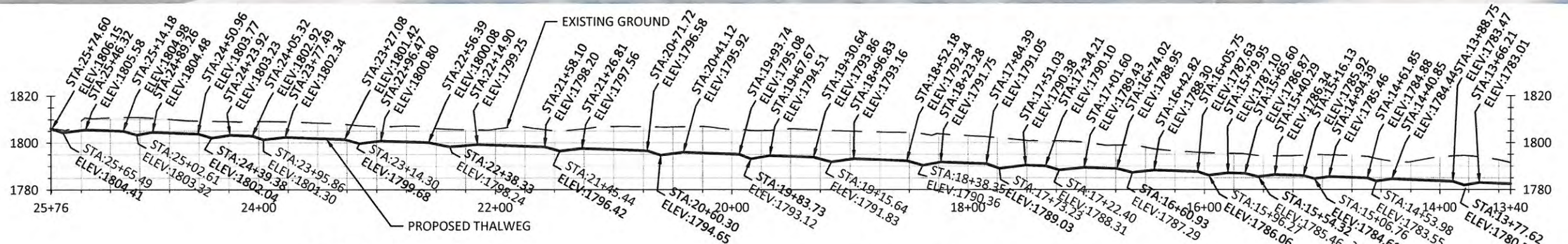
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CONSTRUCTION SEQUENCING
PLAN

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PLAN



PROFILE

LEGEND

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

NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE



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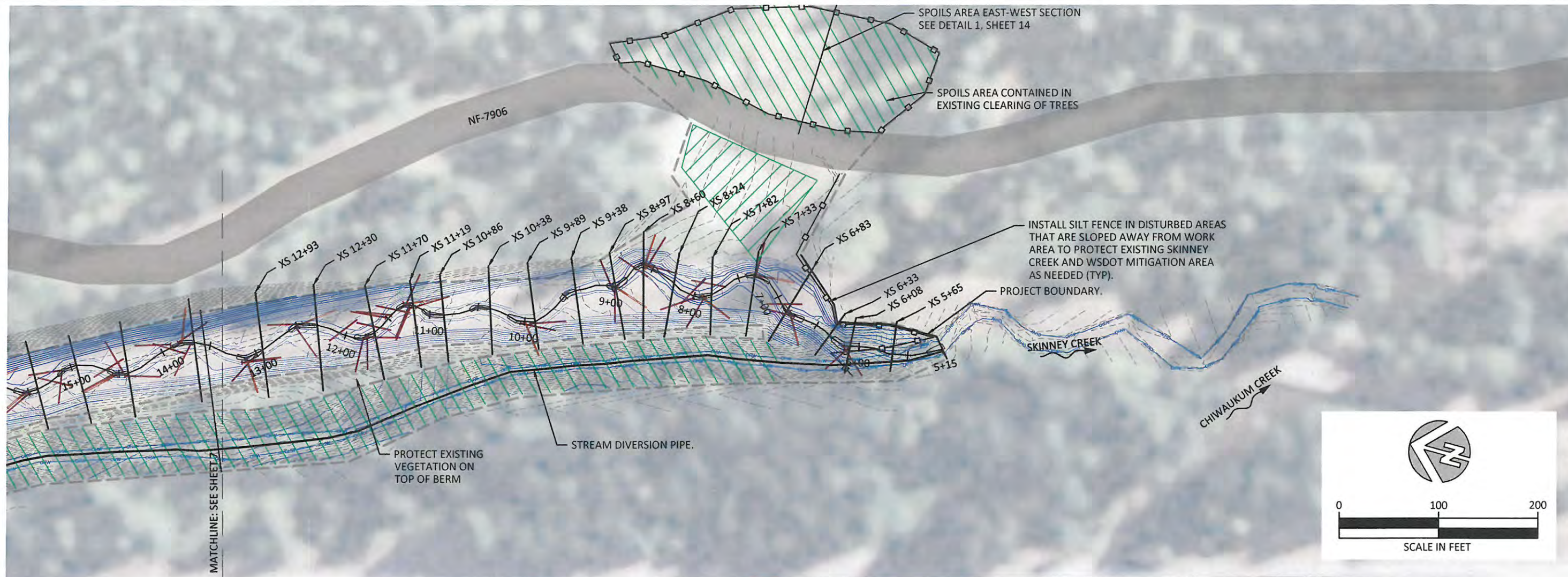


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PROPOSED CONDITIONS
PLAN AND PROFILE (1 OF 2)

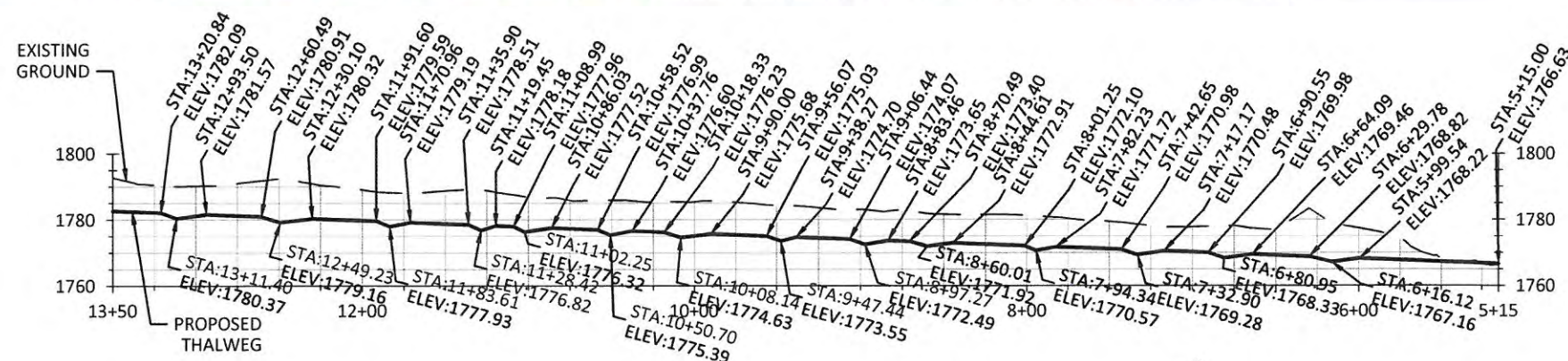
SHEET
7 OF 22

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NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE

PLAN



PROFILE

LEGEND

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

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

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



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PROPOSED CONDITIONS
PLAN AND PROFILE (2 OF 2)

SHEET
8 OF 22

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GRADING CROSS SECTION END POINT COORDINATE TABLE

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



NOTES:
STATION REFERENCES PROPOSED CHANNEL ALIGNMENT

LEFT TO RIGHT ORIENTATION IS LOOKING DOWNSTREAM

GRADING SECTION LOCATIONS SHOWN ON SHEETS 7 & 8

GRADING SECTIONS ARE SHOWN ON SHEETS 10 THROUGH 14

PROPOSED ALIGNMENT N,E COORDINATE TABLE

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

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

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

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



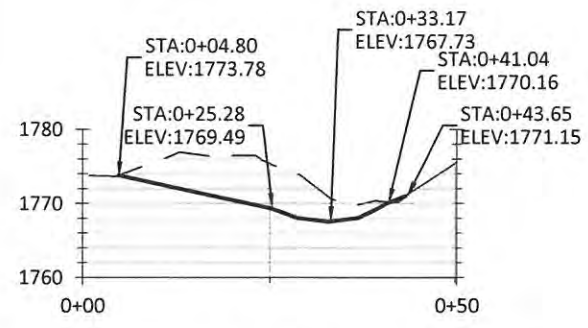
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ALIGNMENT AND
GRADING SECTION
COORDINATE TABLES

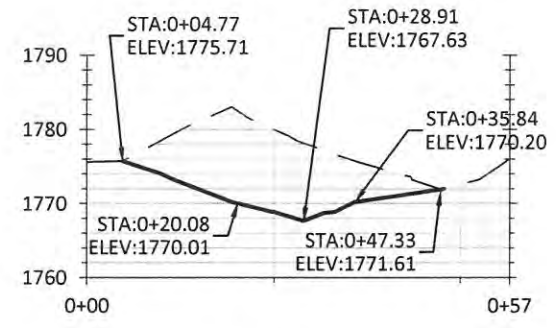
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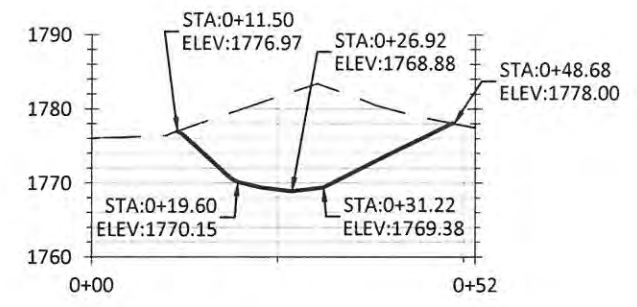
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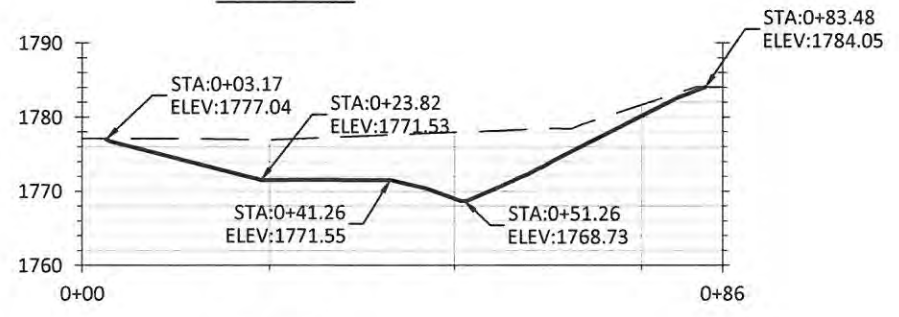
STA 5+65



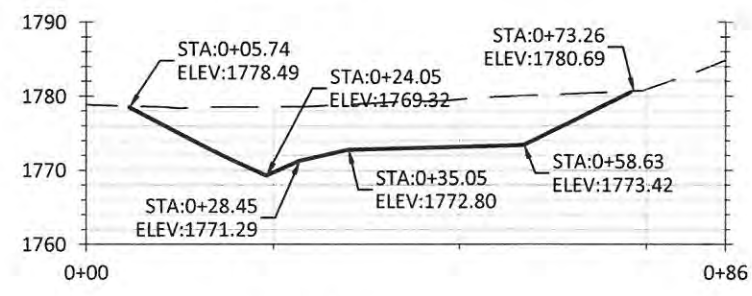
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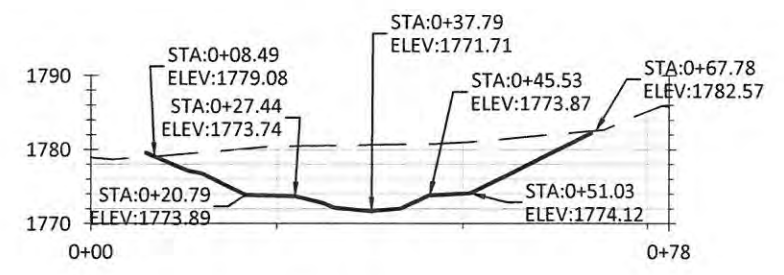
STA 6+33



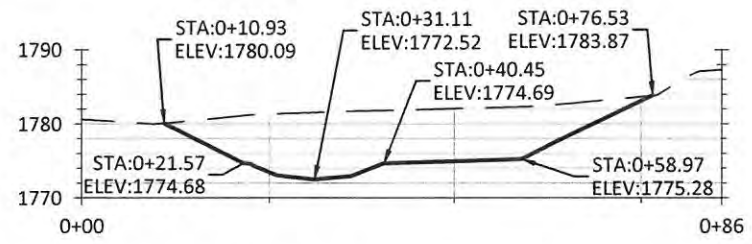
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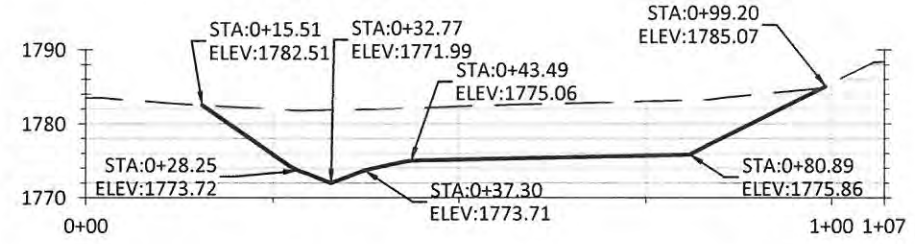
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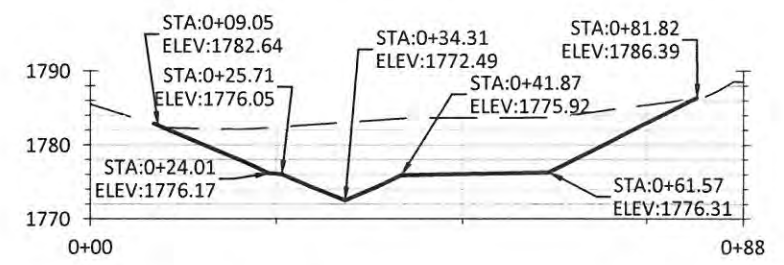
STA 7+82



STA 8+24



STA 8+60



STA 8+97

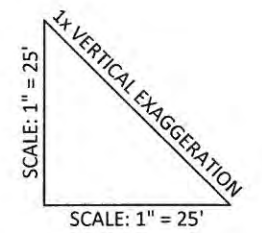


LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



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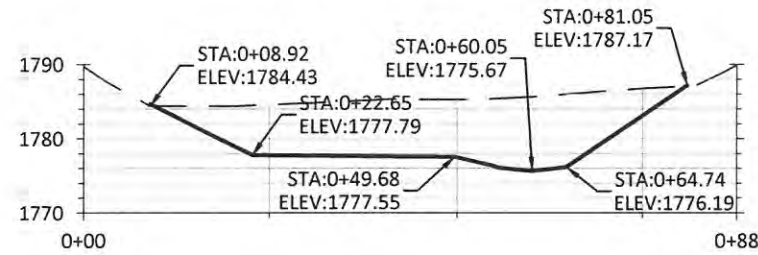
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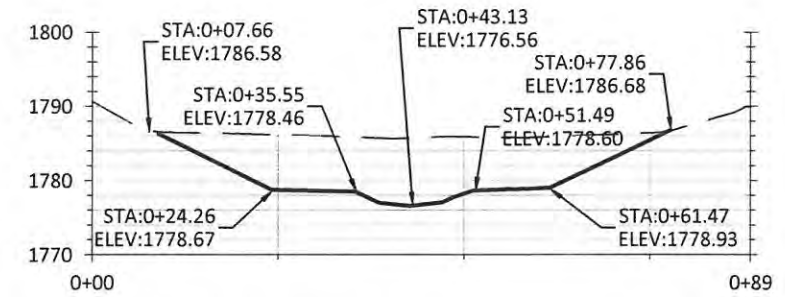
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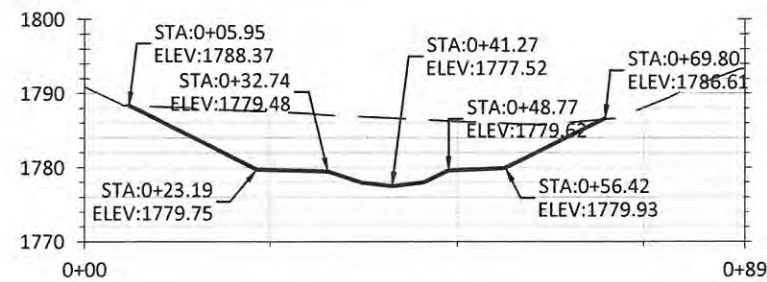
STA 9+38



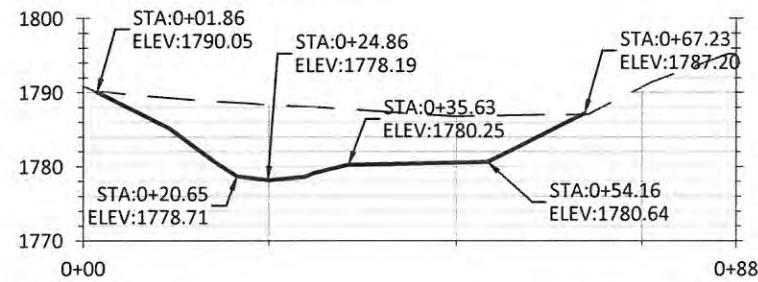
STA 9+89



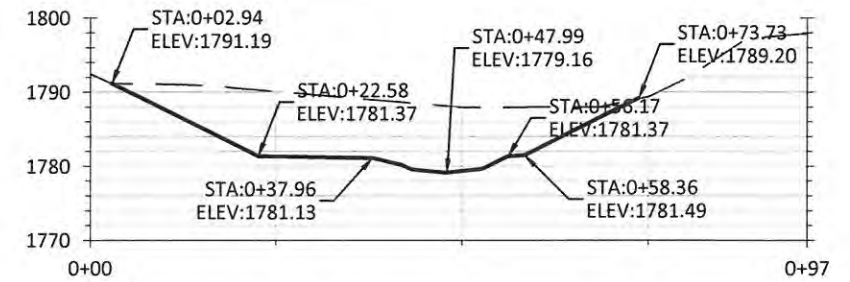
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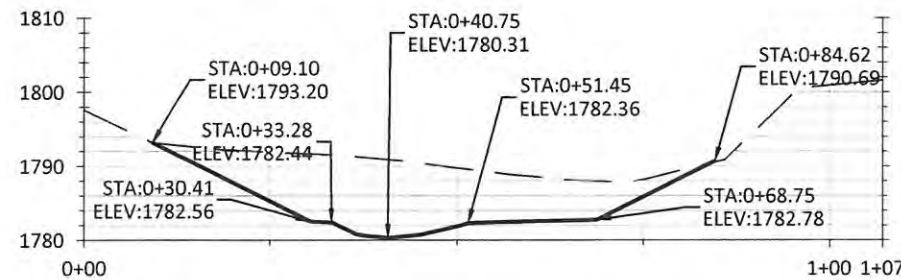
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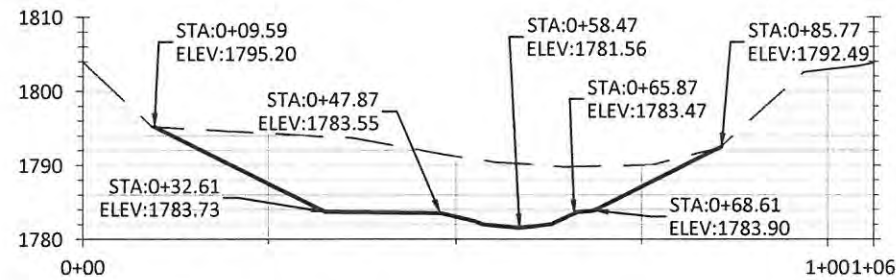
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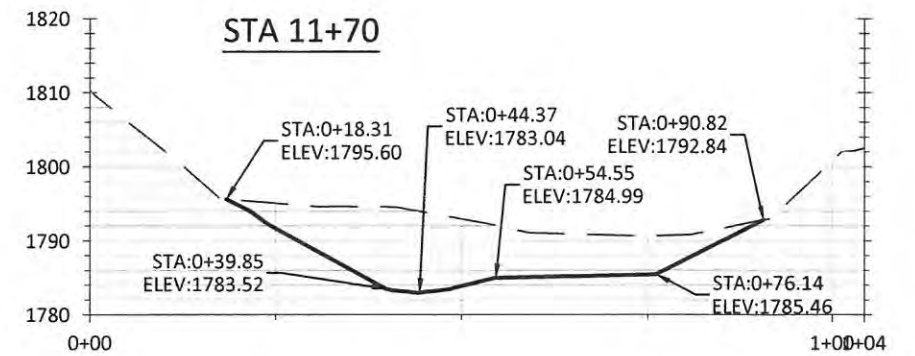
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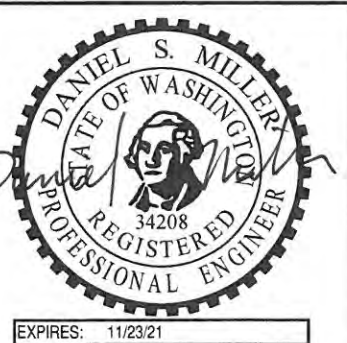
STA 12+30



STA 12+93



STA 13+66

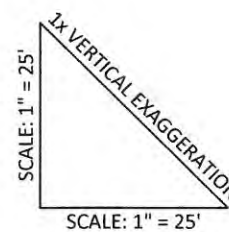


LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



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SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



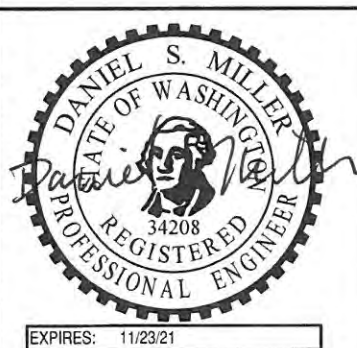
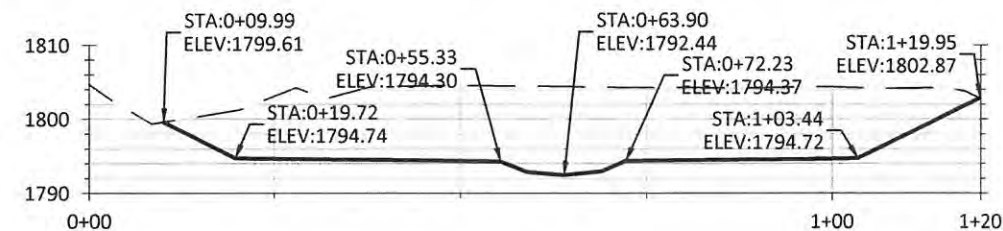
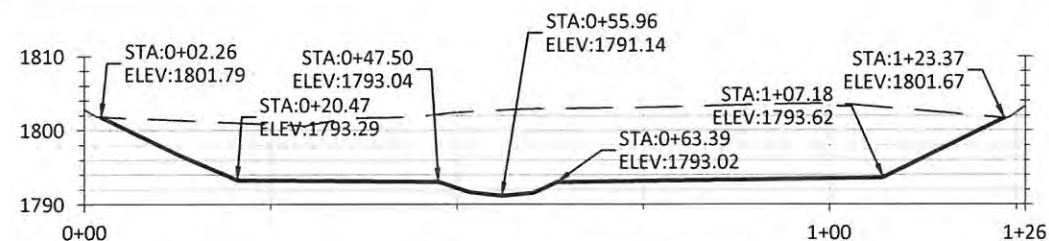
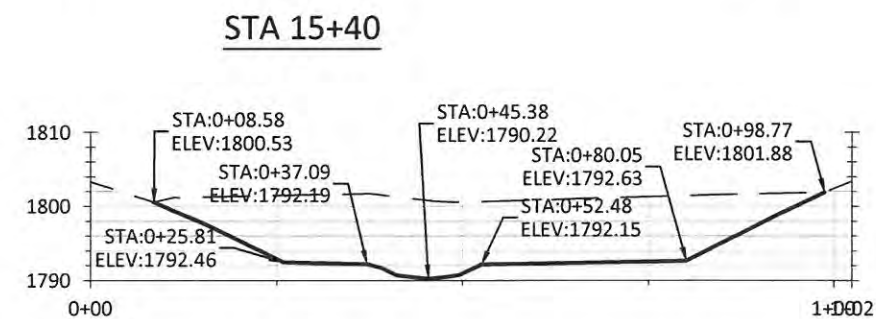
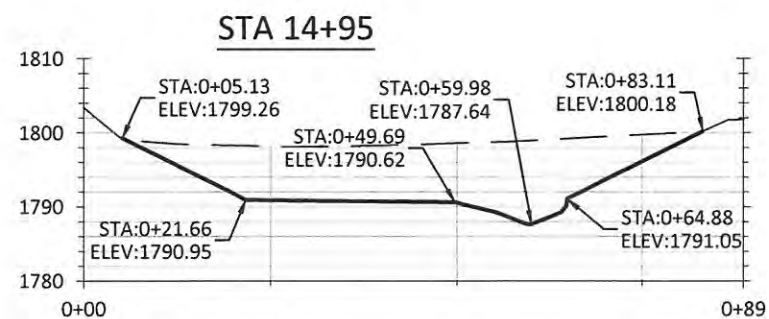
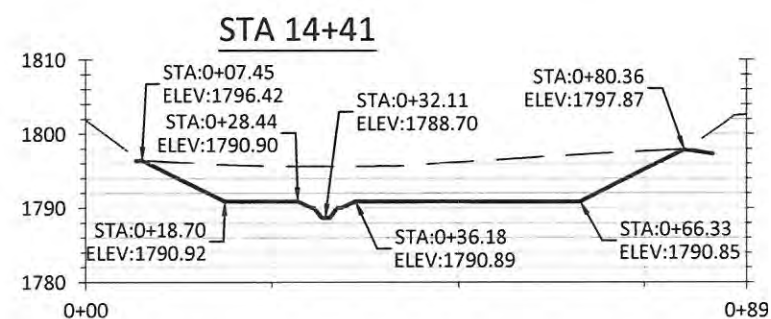
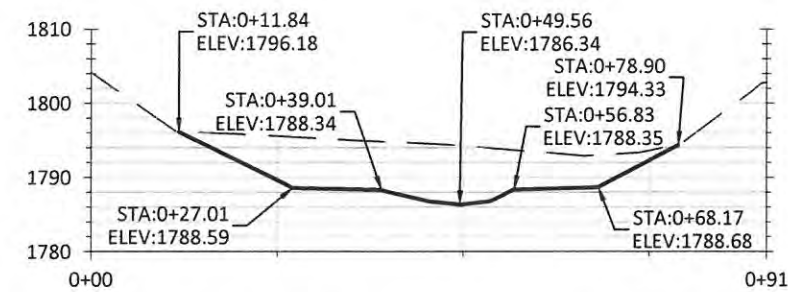
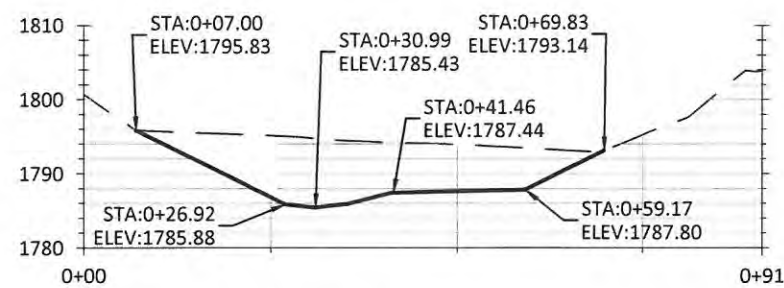
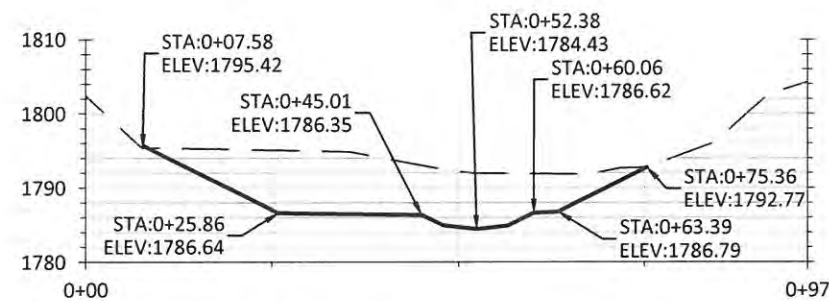
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GRADING CROSS-SECTIONS
(2 OF 5)

SHEET

11 OF 22

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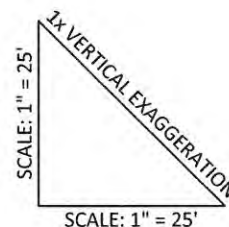


LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



**YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN**



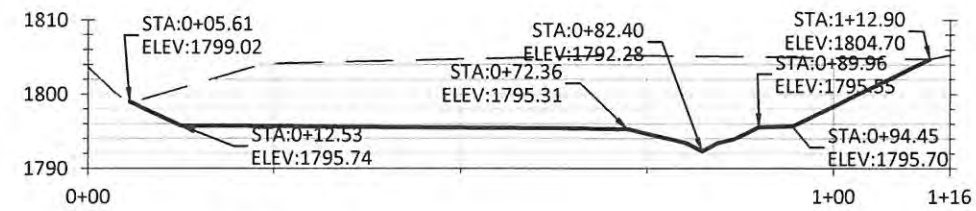
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**GRADING CROSS-SECTIONS
(3 OF 5)**

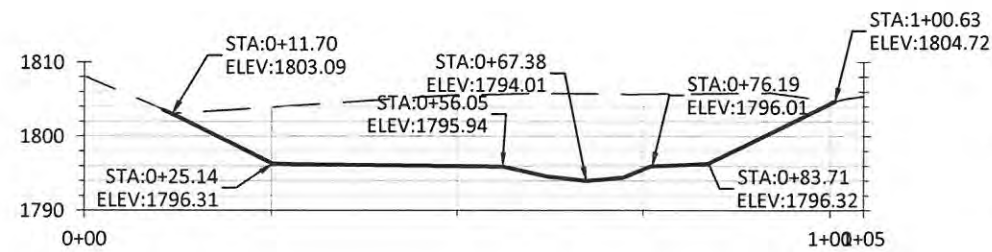
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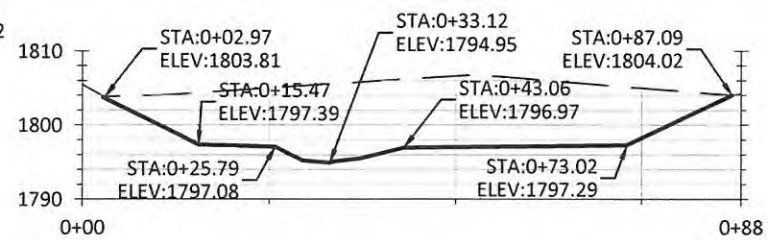
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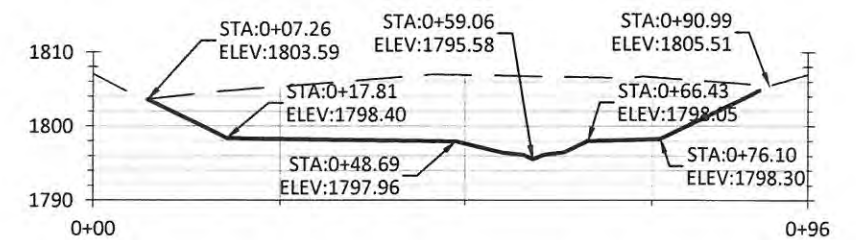
STA 19+09



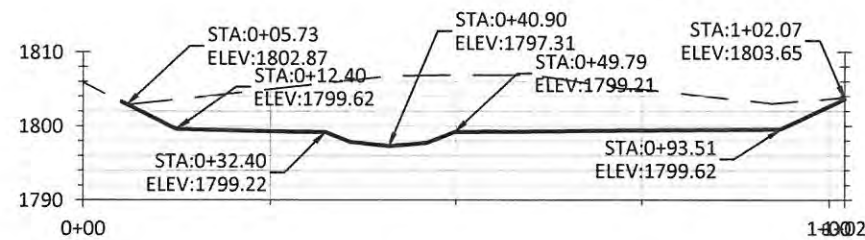
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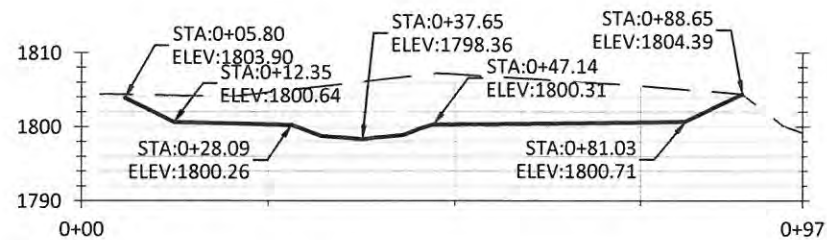
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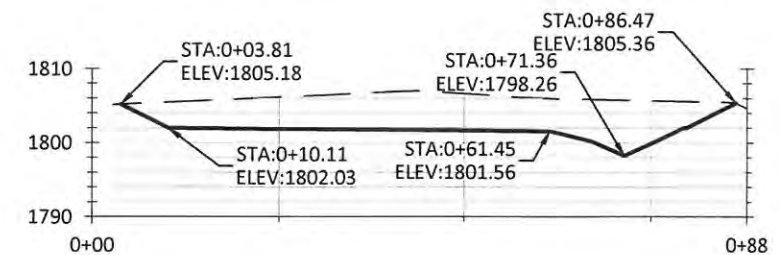
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STA 21+13



STA 21+45



STA 22+38

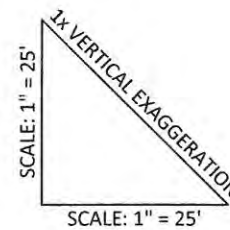


LEGEND

--- EXISTING GROUND
— PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.



NO.	BY	DATE	REVISION DESCRIPTION

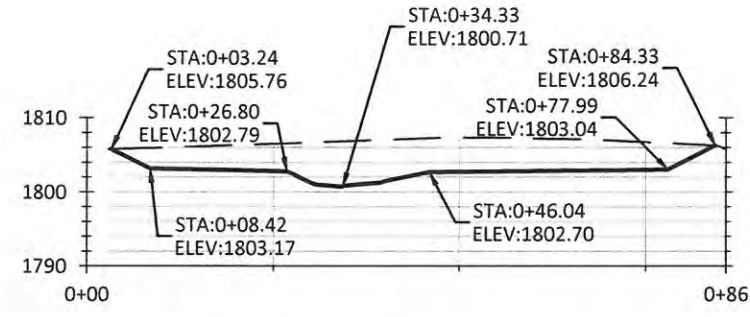
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APPROVED	DATE	PROJECT

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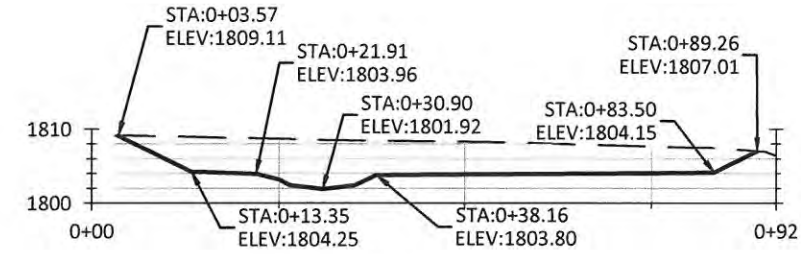
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GRADING CROSS-SECTIONS (4 OF 5)	SHEET 13 OF 22
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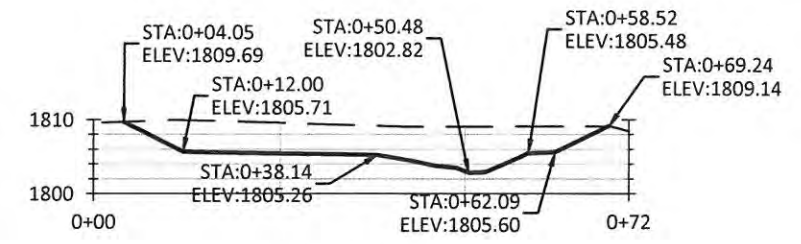
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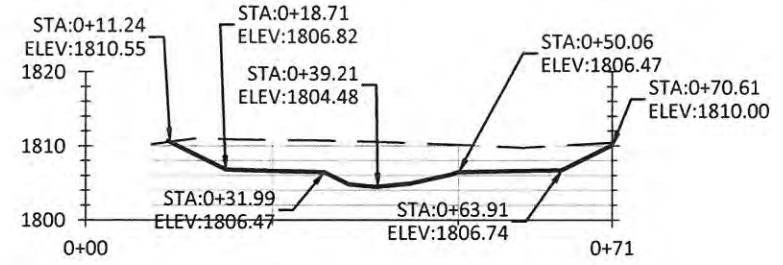
STA 22+98



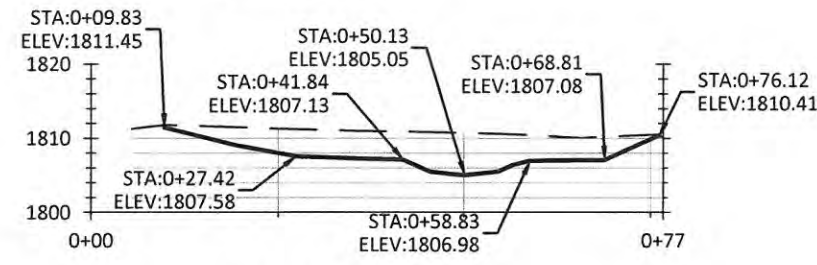
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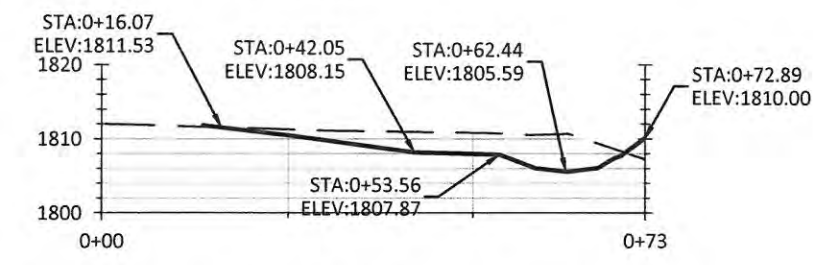
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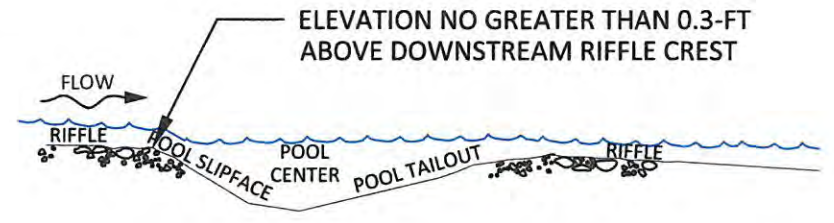
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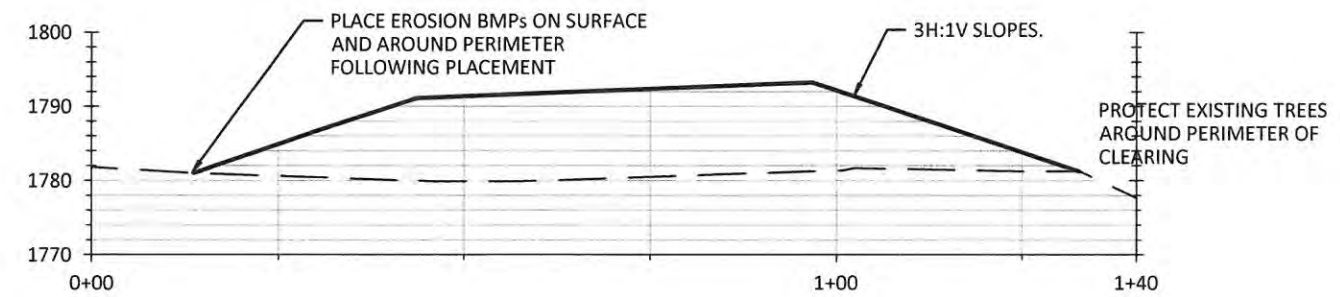
STA 25+17



STA 25+47



TYPICAL PROFILE VIEW THROUGH POOL



1
14 EAST-WEST SECTION - EAST SPOILS AREA
1" = 5'

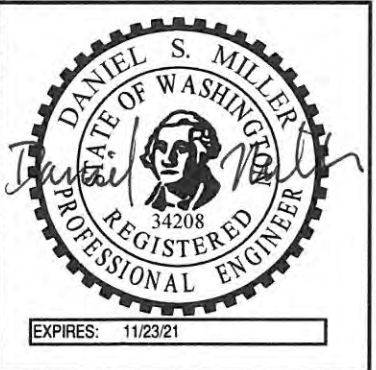
LEGEND

- EXISTING GROUND
- PROPOSED GROUND

NOTE:

ORIENTATION IS LEFT TO RIGHT
LOOKING DOWNSTREAM.

3x VERTICAL EXAGGERATION
SCALE: 1" = 25'



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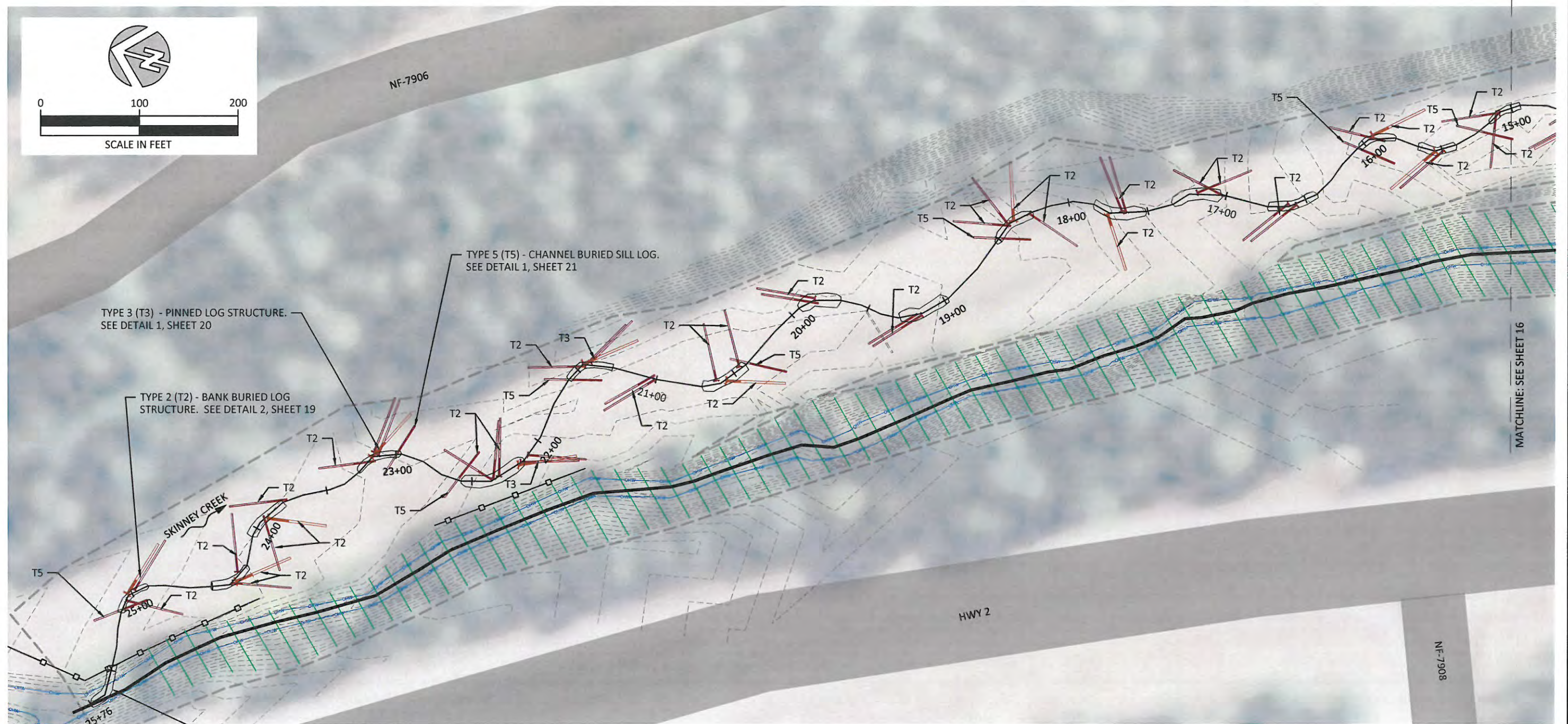
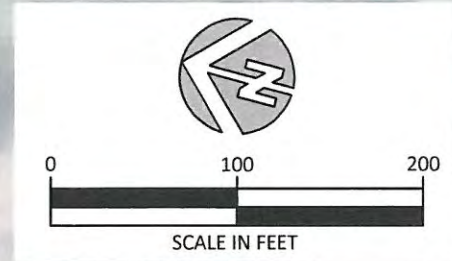
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GRADING CROSS-SECTIONS
(5 OF 5)

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PLAN



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

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

LEGEND

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

NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE

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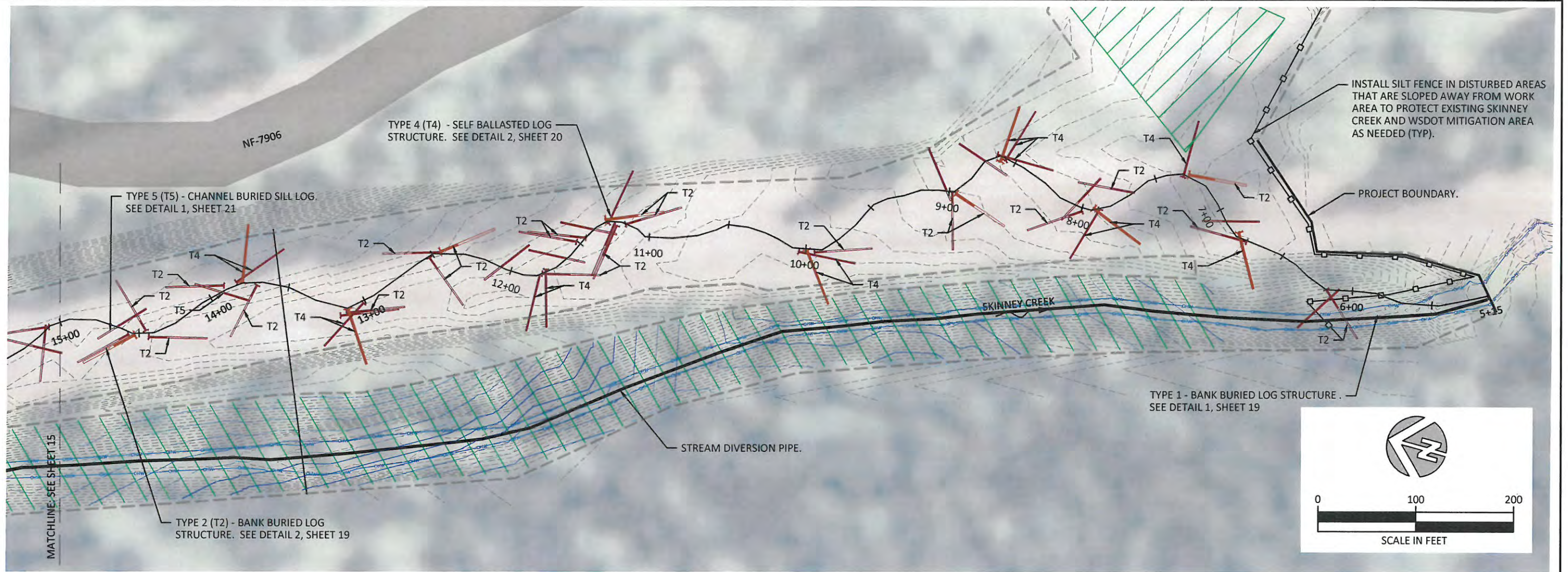
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SHEET
CHANNEL LWM PLACEMENTS (1 OF 2)
15 OF 22

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NOTE:
SALVAGE EXISTING TOPSOIL AND STOCKPILE FOR REUSE

PLAN



LEGEND

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

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

PROFILE

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

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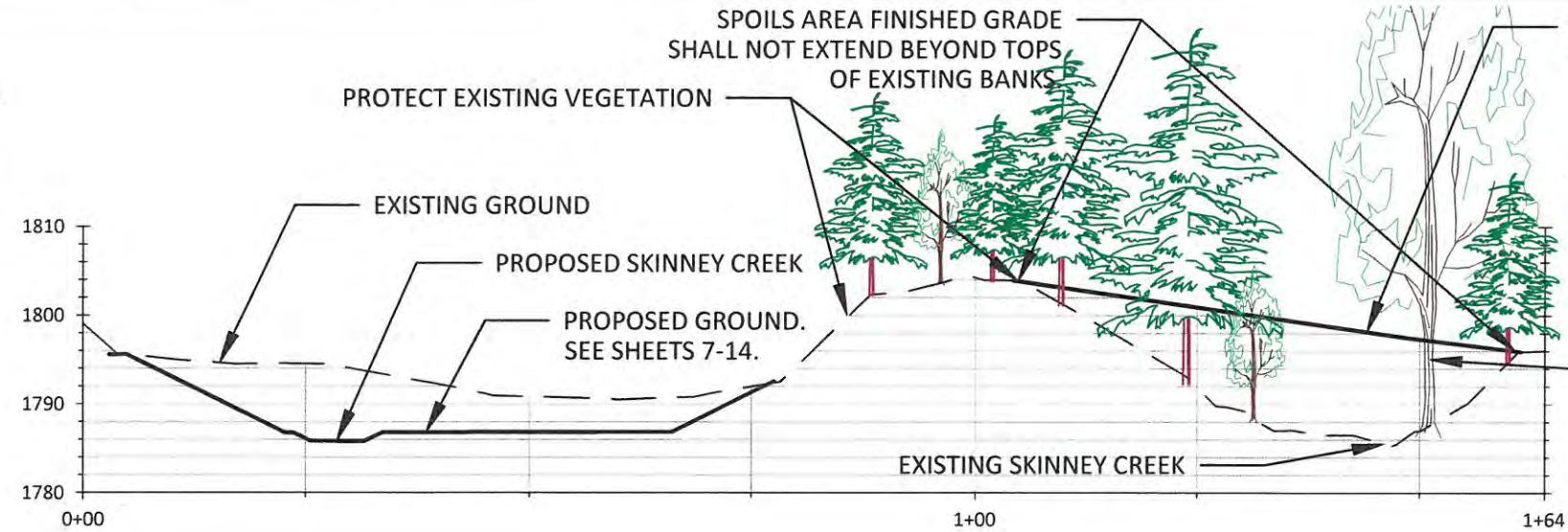
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CHANNEL LWM PLACEMENTS (2 OF 2)	SHEET 16 OF 22
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- NOTE:
- ROUGHEN SLOPES STEEPER THAN 20% BY DRIVING DOZER UP AND DOWNSLOPE LEAVING TRACK CLEAT DEPRESSIONS ORIENTED PARALLEL TO CONTOUR.
 - APPLY EROSION CONTROL BMP REQUIRED BY APPLICABLE PERMITS AND REGULATIONS.
 - CONTRACTOR SHALL PLACE SEED AND FABRIC OR MULCH ON DISTURBED SURFACES. REPLANTING WILL BE COMPLETED BY OTHERS.

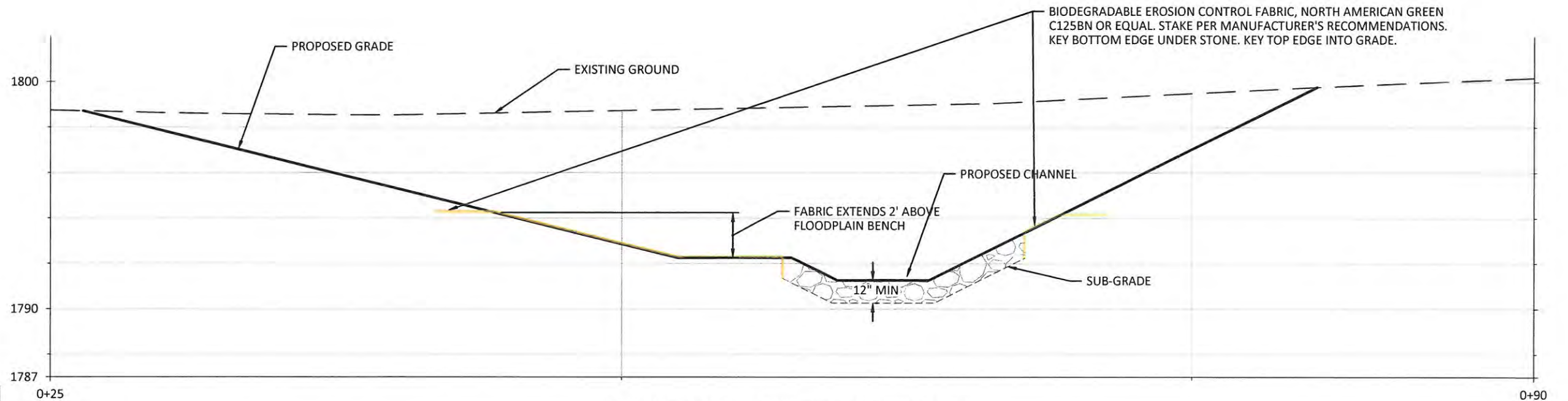


- SPOILS AREA - PROPOSED GROUND:
- FINISHED GRADE SHALL MATCH TO TOPS OF EXISTING SKINNEY CREEK BANKS. FINISHED GRADE MAY BE MOUNDED AT MAX SLOPE OF 3H:1V BETWEEN TOPS OF BANKS.
 - PLACE IN LIFTS NO GREATER THAN 18-INCH THICKNESS. COMPACT WITH CONSTRUCTION TRAFFIC

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

1 PROJECT CROSS SECTION

1" = 20' (TREES NOT TO SCALE)



NOTES:

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

SUBSTRATE GRADATION

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

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

GRADATION SHALL BE COMPRISED OF STONE MEETING WSDOT STANDARD SPECIFICATIONS:

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

2 STREAMBED SUBSTRATE

1" = 5'



EXPIRES: 11/23/21

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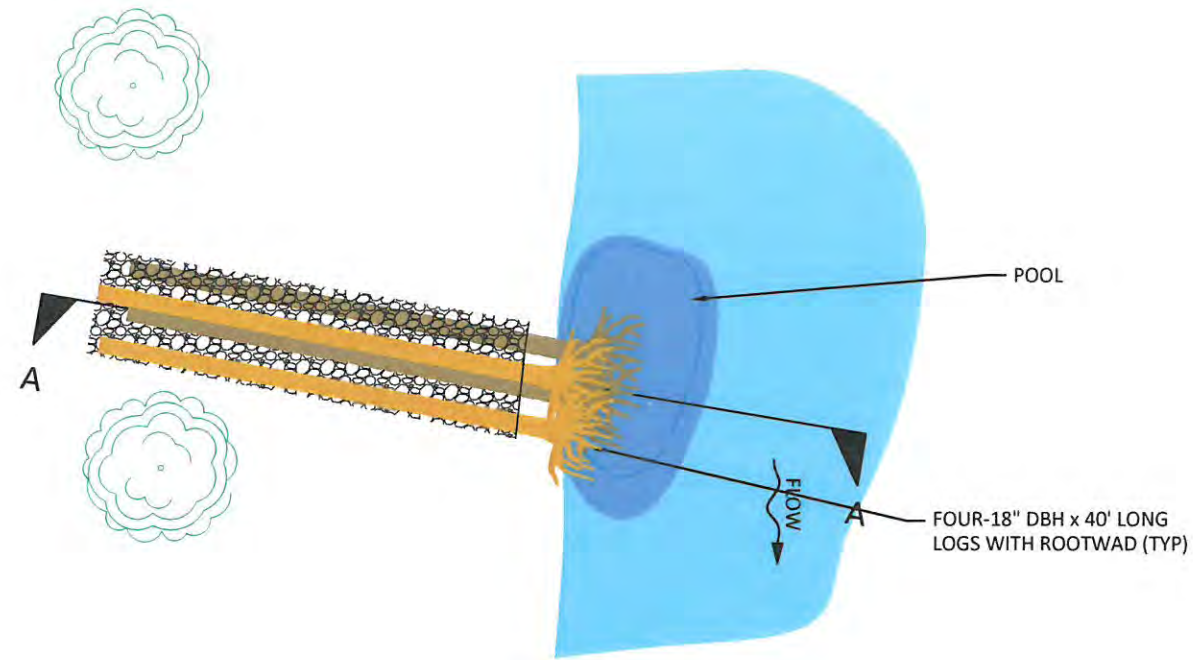


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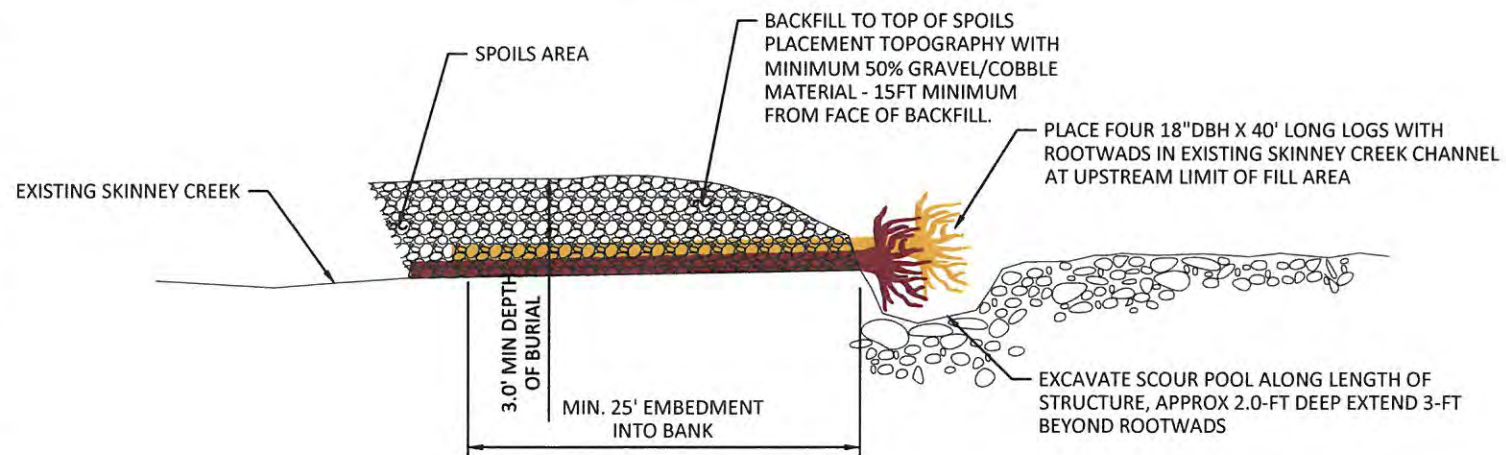
CROSS SECTIONS - CHANNEL AND
SPOILS AREA

SHEET
18 OF 22

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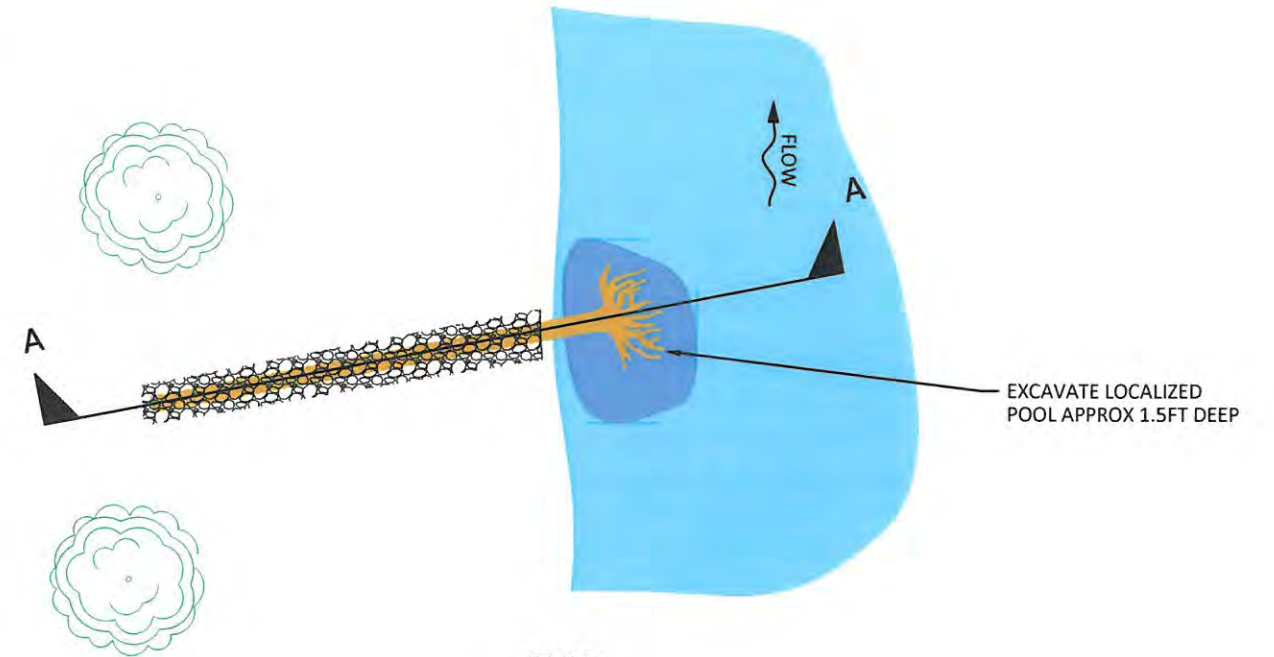


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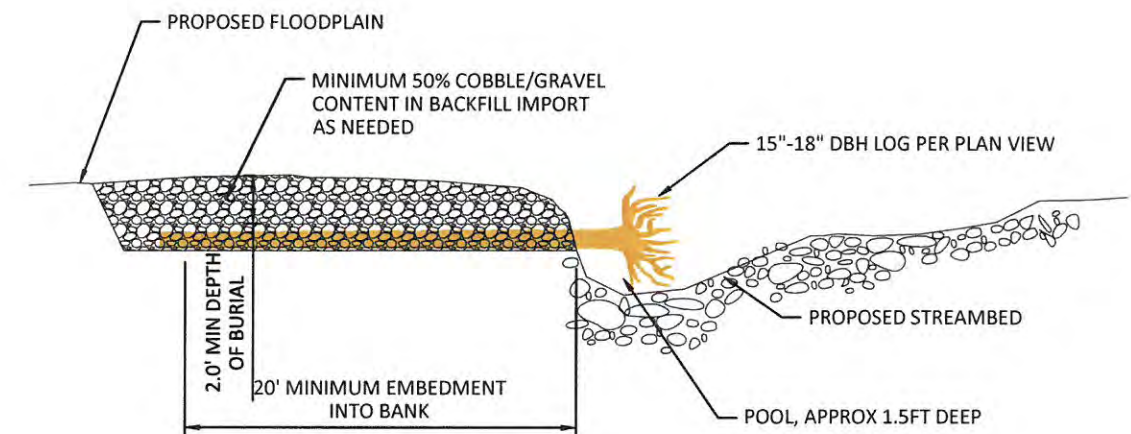


SECTION A-A

1
19 TYPE 1 LWM STRUCTURE DETAIL
NOT TO SCALE



PLAN

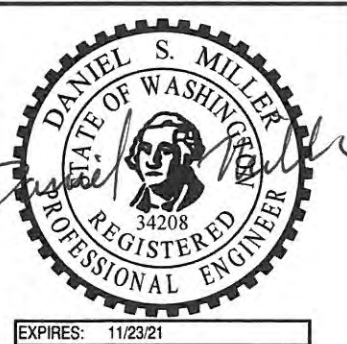


SECTION A-A

2
19 TYPE 2 LWM STRUCTURE DETAIL
NOT TO SCALE

NOTES:

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



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

YAKAMA NATION FISHERIES
SKINNEY CREEK FISH HABITAT ENHANCEMENT PROJECT
FINAL DESIGN



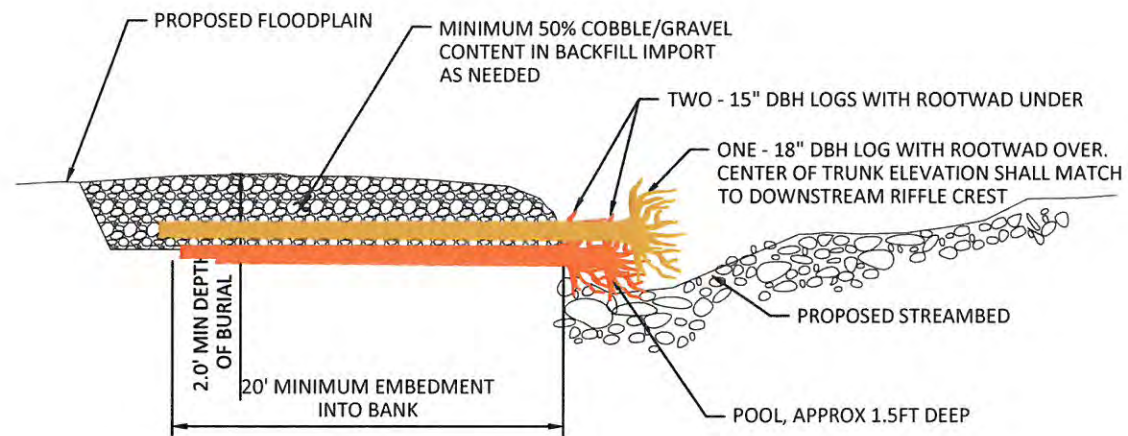
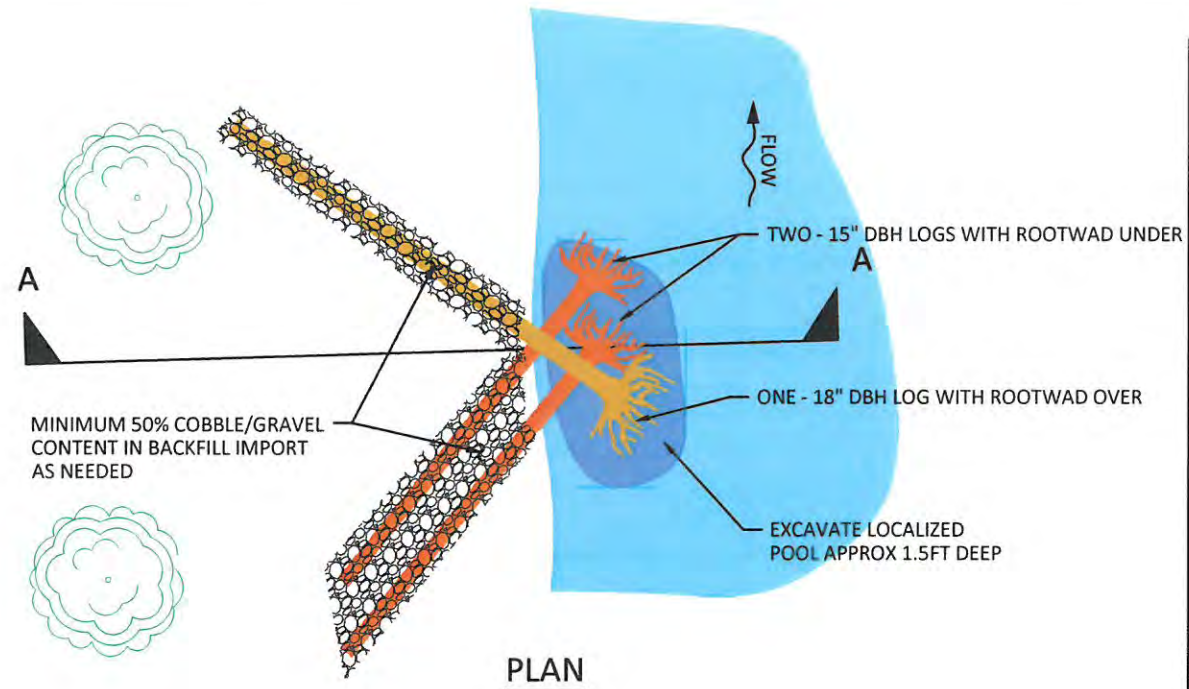
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DETAILS - LWM PLACEMENT

SHEET

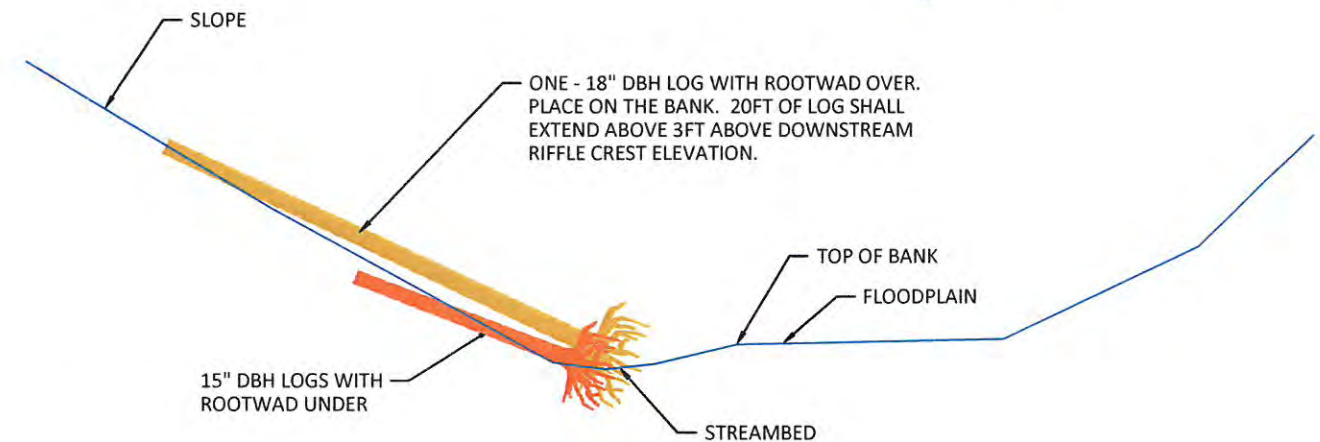
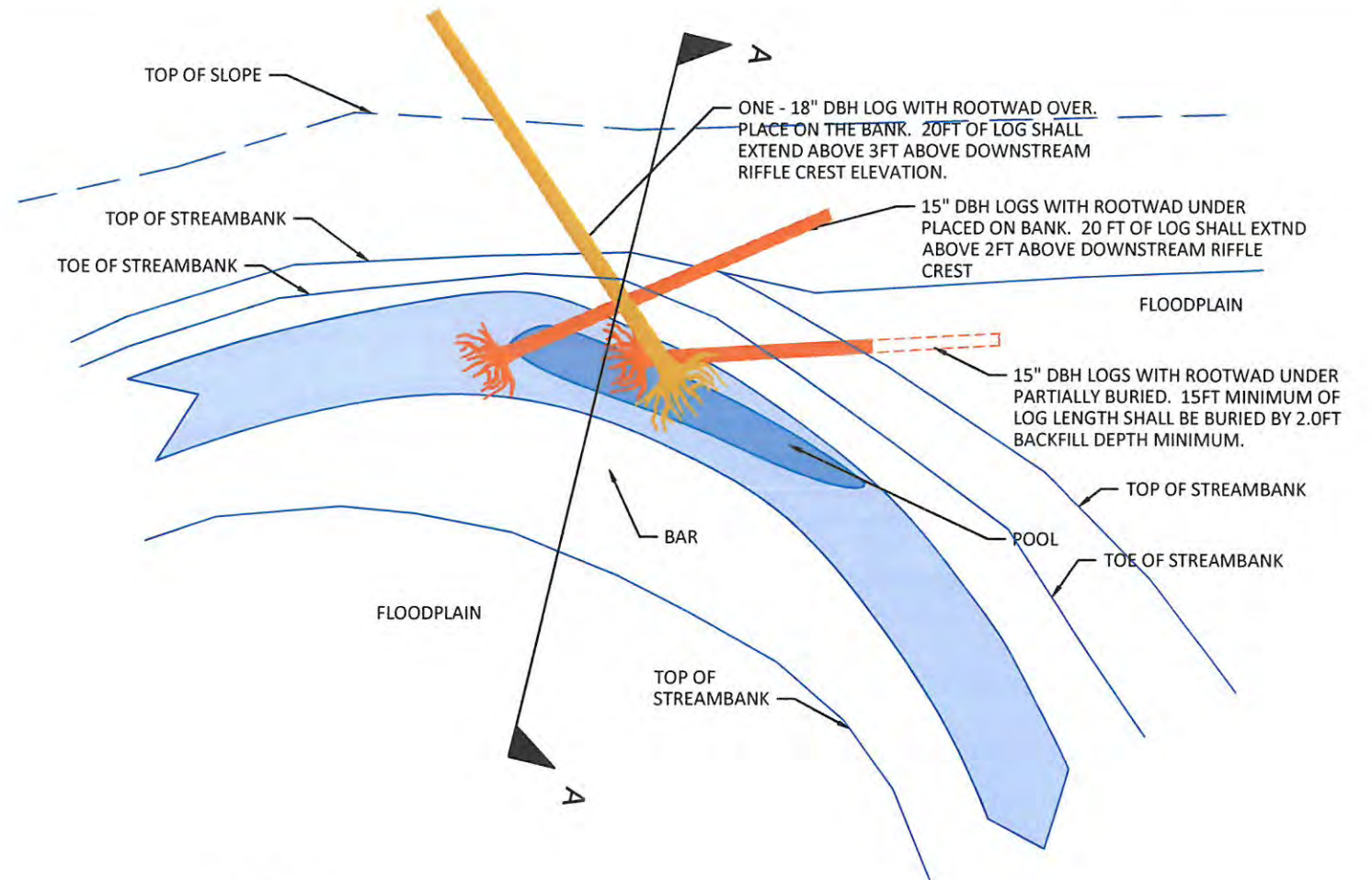
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SECTION A-A

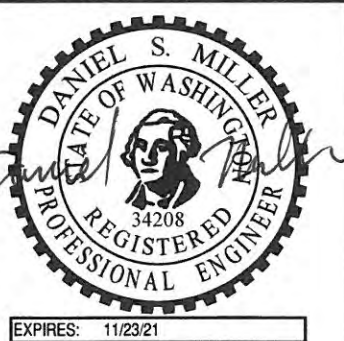
1
20 TYPE 3 LWM STRUCTURE DETAIL
NOT TO SCALE



2
20 TYPE 4 LWM STRUCTURE DETAIL
NOT TO SCALE

NOTES:

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



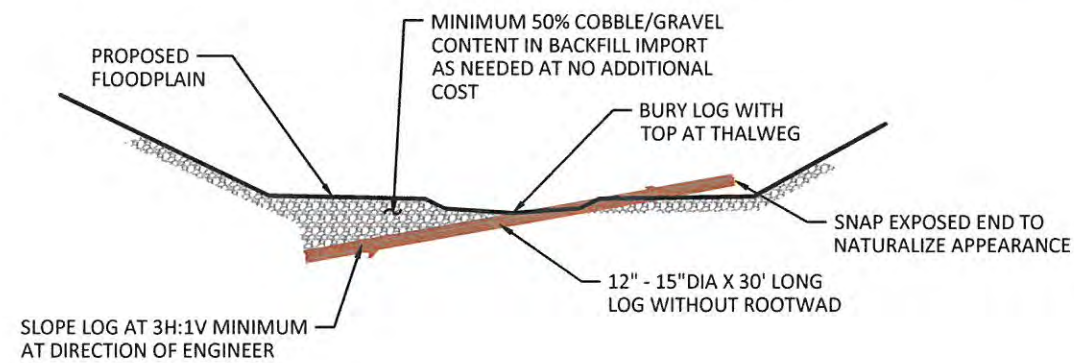
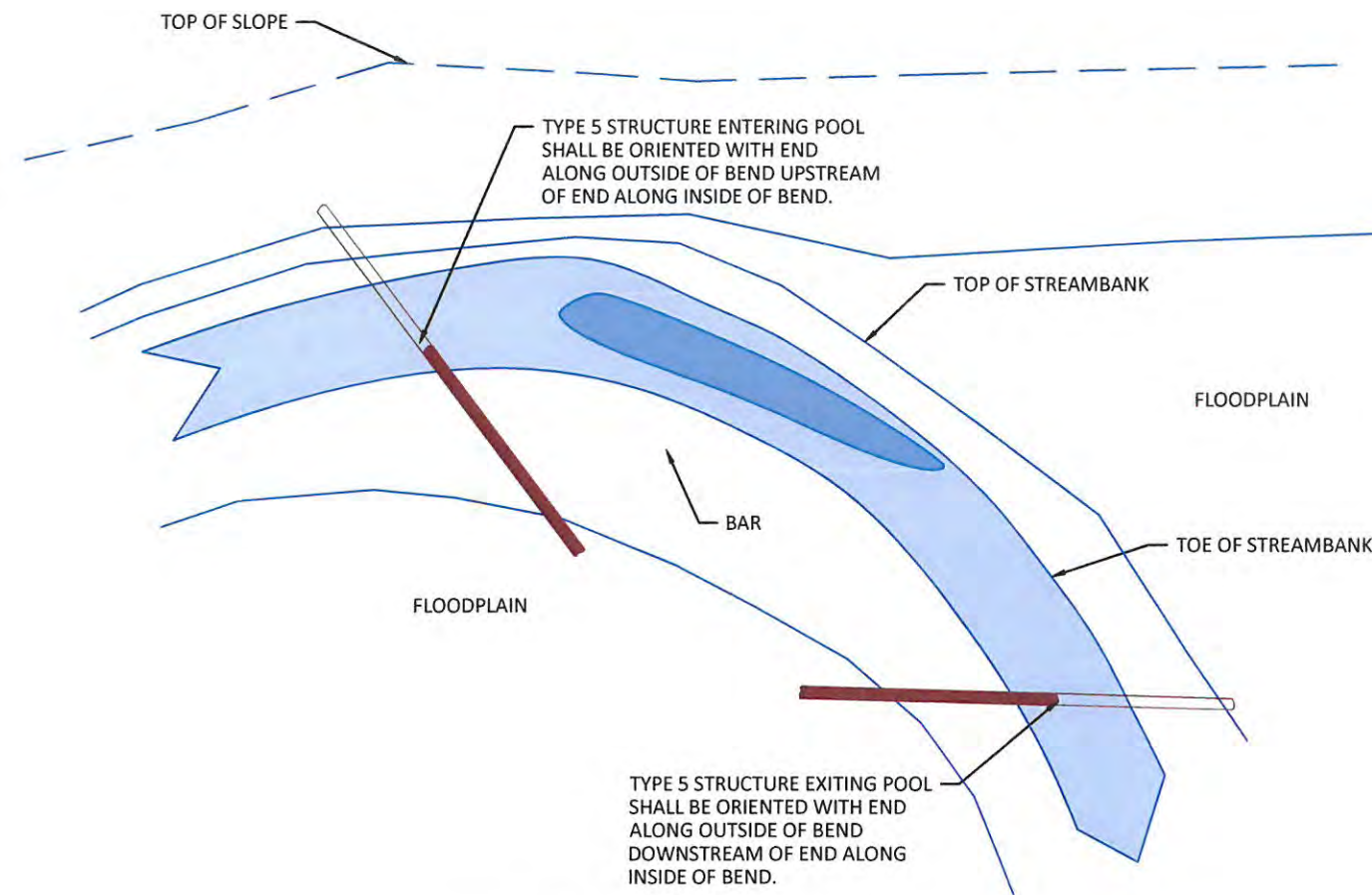
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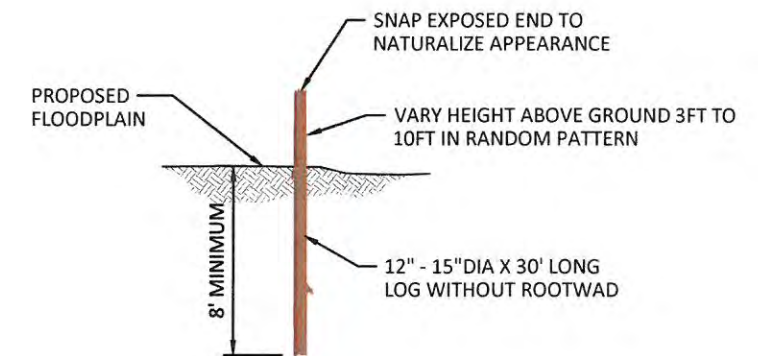
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1
21 TYPE 5 LWM STRUCTURE DETAIL
NOT TO SCALE



2
21 VERTICAL LOG EMBEDMENT DETAIL
NOT TO SCALE



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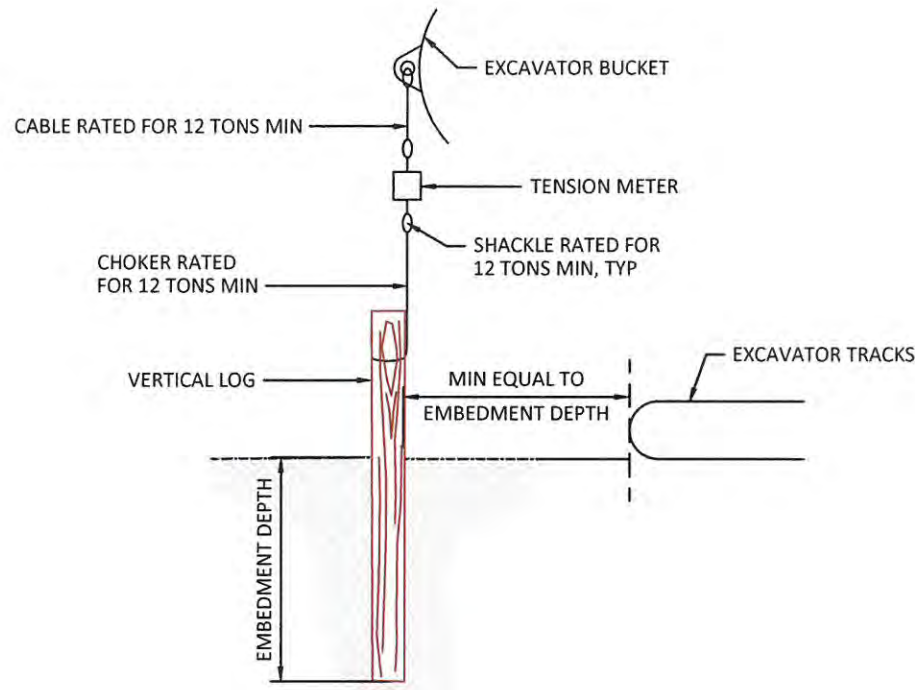


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DETAILS LWM PLACEMENT

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VERTICAL LOGS

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

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

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

RIGGING

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

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

TESTING

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

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

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

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

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

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

1
22

VERTICAL LOG PULLOUT TESTING

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DETAILS - VERTICAL LOG PULLOUT TEST
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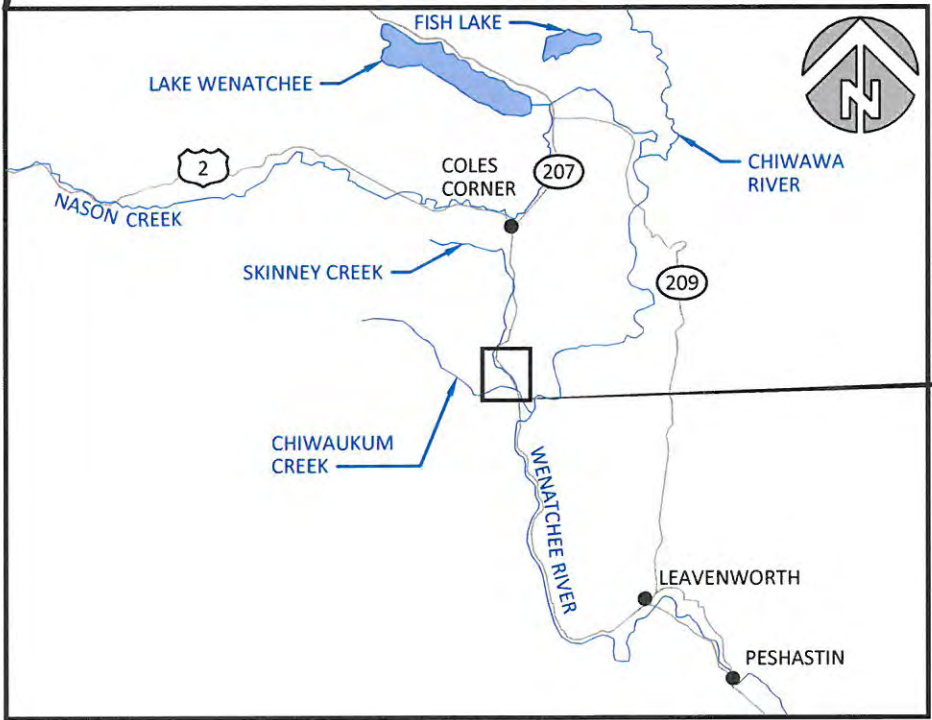
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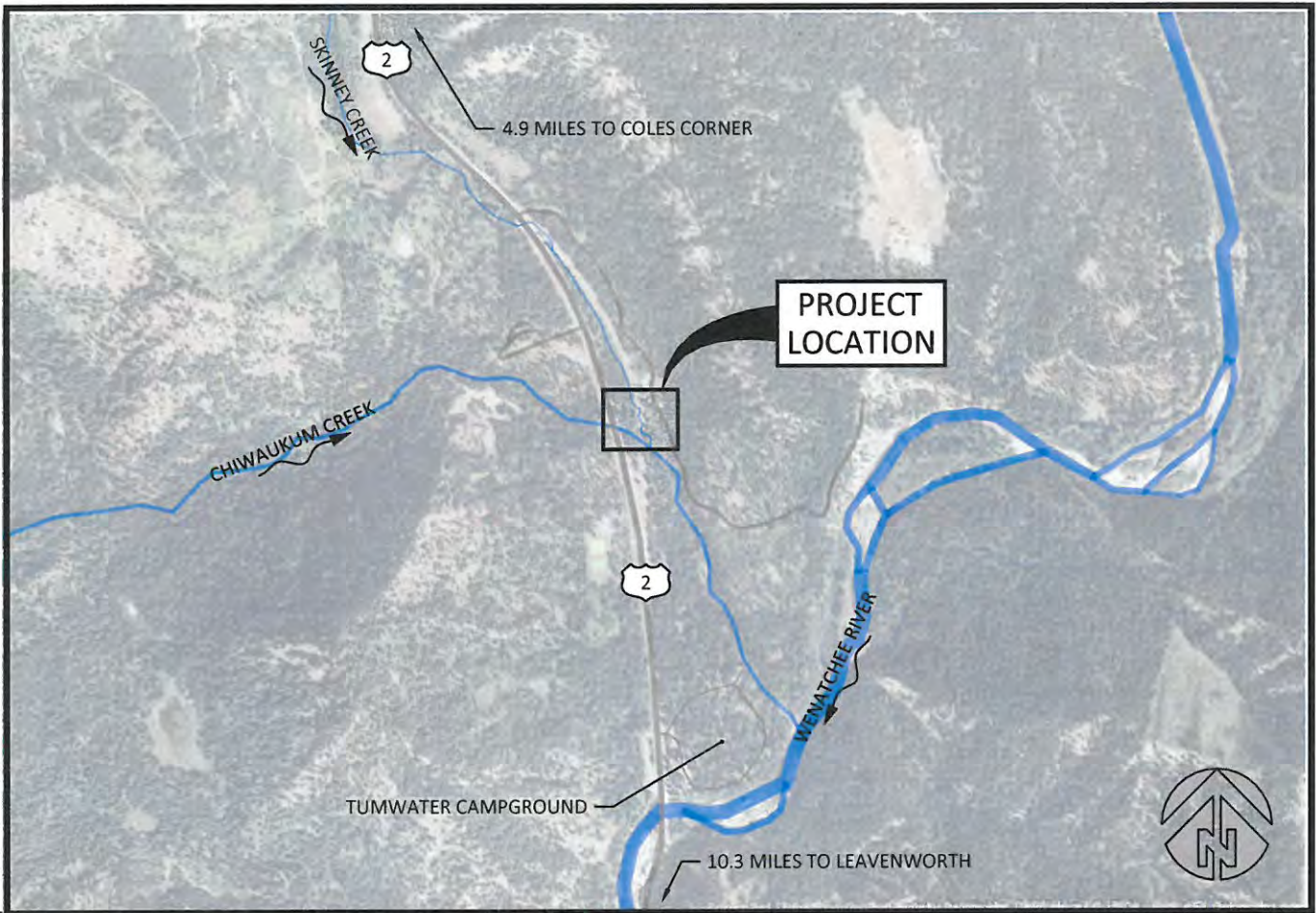
SKINNEY CREEK - WSDOT MITIGATION AREA
FINAL DESIGN
CHELAN COUNTY, WA



LOCATION MAP
STATE OF WASHINGTON
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

Sheet List Table

- 1 COVER, SHEET INDEX AND VICINITY MAP
- 2 GENERAL NOTES
- 3 GENERAL NOTES
- 4 EROSION AND SEDIMENT CONTROL DETAILS
- 5 PROJECT REACH
- 6 EXISTING CONDITIONS - PLAN AND PROFILE
- 7 EXISTING WSDOT LOG WEIR DETAILS
- 8 PROPOSED CONDITIONS - PLAN AND PROFILE
- 9 TYPICAL DETAILS - SECTIONS AND FESL
- 10 TYPICAL DETAILS - ROUGHENED CHANNEL & LWM
- 11 PROPOSED CONNECTION TO UPSTREAM PROJECT

COORDINATES:

LATITUDE: 47°41'13" N
LONGITUDE 120°44'6" W

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

WATERBODY: SKINNEY CREEK
TRIBUTARY OF: CHIWAUKUM CHREEK



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COVER, SHEET INDEX AND VICINITY MAP	SHEET 1 OF 11
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THE OWNER WILL PROVIDE A PRE-BID SITE TOUR. IT IS HIGHLY RECOMMENDED THE CONTRACTOR ATTEND THIS PRE-BID TOUR FOR SITE FAMILIARIZATION AND TO POSE QUESTIONS TO THE OWNER AND OWNER'S REPRESENTATIVE.

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

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

WDFW IN-WATER WORK PERIODS

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

EXISTING DATA

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING TOTAL STATION EQUIPMENT ON NOVEMBER 16, 2018. DATA ARE REFERENCED TO NAD 83, STATE PLANE, WASHINGTON NORTH, NAVD88, US SURVEY FEET.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS 5.0.3.

LANDOWNERSHIP DATA OBTAINED FROM CHELAN COUNTY GIS.

SOILS

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

SOILS AVAILABLE FROM 2008 BOREHOLE DATA COLLECTED BY WSDOT ALONG THE NEW HIGHWAY 2 ALIGNMENT.

SITE IS LOCATED ON OR ADJACENT TO FORMER HIGHWAY ALIGNMENT. PRESENCE OR ABSENCE OF CONTAMINANTS HAS NOT BEEN ESTABLISHED.

CONTRACTOR SHALL CONDUCT OWN SOILS INVESTIGATIONS AS NEEDED.

UTILITIES

SITE IS LOCATED ON OR ADJACENT TO FORMER HIGHWAY ALIGNMENT. ACTIVE OR ABANDONED UTILITIES MAY BE PRESENT.

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

THE CONTRACTOR SHALL CALL (800-424-5555 OR 811) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION

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

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

CONSTRUCTION STAKING

ENGINEER WILL FLAG PROJECT FEATURES AND PLACE GRADE STAKES BASED ON PROJECT ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

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

CONSTRUCTION MATERIALS

OWNER PROVIDED LARGE WOODY MATERIAL WILL BE LOCATED IN A DESIGNATED OFFSITE STOCKPILE/STAGING AREA.

LOCATION, ALIGNMENT, AND ELEVATION OF LARGE WOODY MATERIAL ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS AND MATERIAL SIZE, PER DIRECTION BY OWNER OR OWNER'S REPRESENTATIVE.

EXCAVATED MATERIAL NOT REUSED FOR CONSTRUCTION SHALL BE HAULED TO THE STAGING AREA.

ANY EXCESS CONSTRUCTION MATERIALS SHALL BE NEATLY STORED AT AN APPROVED STAGING LOCATION. UPON COMPLETION OF THE PROJECT ANY EXCESS MATERIALS, WITH THE EXCEPTION OF ANY LARGE WOODY MATERIAL (LWM), WILL BECOME THE PROPERTY OF THE CONTRACTOR AND HAULED OFFSITE IN A TIMELY MANNER AND LEGALLY DISPOSED OF.

UPON PROJECT COMPLETION, THE CONTRACTOR WILL BE RESPONSIBLE FOR HAULING ANY EXCESS LWM OFFSITE TO THE YAKAMA NATION'S APPROVED LONG-TERM WOOD STAGING AREA LOCATED AT YAKAMA NATION'S NATAPOC PROPERTY.

CONSTRUCTION ACCESS/TRAFFIC CONTROL

CONTRACTOR SHALL SUBMIT AN ACCESS, STAGING, AND STOCKPILE PLAN TO THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO MOBILIZATION.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS.

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

THE SITE HAS SOFT SOILS AND MITIGATION PLANTINGS. SPECIAL CARE IS REQUIRED TO MINIMIZE DISTURBANCE AND COMPACTION OF SOILS. MATS SHALL BE USED. LOW GROUND PRESSURE MACHINERY NO BIGGER THAN NEEDED TO EXECUTE WORK SHALL BE USED, SUCH AS JOHN DEERE 135 EXCAVATOR AND MOROOKA MST500 TRACKED DUMP TRUCK OR EQUIVALENT.

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

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

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

CONTRACTOR SHALL IMPLEMENT MEASURES TO CONTROL AND MINIMIZE WIND BLOWN DUST FROM THE SITE AND ACCESS ROUTES.

AT PROJECT COMPLETION, ROADS AND ACCESS ROUTES SHALL BE CLEANED, GRADED, AND RESURFACED TO PRE-PROJECT CONDITION PER WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION OR USFS STANDARDS PER JURISDICTION. WORK SHALL BE INCIDENTAL TO MOBILIZATION/DEMOBILIZATION.

ALL DISTURBED AREAS INCLUDING, BUT NOT LIMITED TO: ROADS, DRIVEWAYS, TEMPORARY ACCESS ROUTES, STAGING AREAS AND STRUCTURE LOCATIONS SHALL BE RESTORED TO PRE-PROJECT CONDITION OR BETTER. THIS WILL INCLUDE, BUT IS NOT LIMITED TO ANY GRADING/BLADING OF DISTURBED AREAS AS WELL AS REMOVAL OF ANY TRASH AND DEBRIS. THE OWNER'S REPRESENTATIVE WILL CONDUCT A FINAL WALK THROUGH WITH THE CONTRACTOR PRIOR TO DEMOBILIZATION.

CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED SURFACES EXCEPT CHANNEL BETWEEN TOPS OF BANK AND EXISTING GRAVEL ROADS.

ALL DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST.

SPILL POLLUTION AND PREVENTION PLAN (SPCC)

THE CONTRACTOR SHALL PREPARE AND IMPLEMENT A PROJECT-SPECIFIC SPILL PREVENTION, CONTROL, AND COUNTER MEASURES PLAN (SPCC PLAN) FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL SUBMIT THE PLAN TO THE OWNER'S REPRESENTATIVE NO LATER THAN THE DATE OF THE PRE-CONSTRUCTION CONFERENCE. NO ON-SITE CONSTRUCTION ACTIVITIES MAY COMMENCE UNTIL THE CONTRACTING AGENCY ACCEPTS AN SPCC PLAN FOR THE PROJECT.

EROSION CONTROL

CONTRACTOR SHALL BE SOLELY RESPONSIBLE, AT OWN EXPENSE, FOR DEVELOPING EROSION AND SEDIMENT CONTROL PLAN, PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES FOR DURATION OF PROJECT.

EROSION/SEDIMENTATION CONTROL PLAN

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

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE A GUIDELINE FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN.

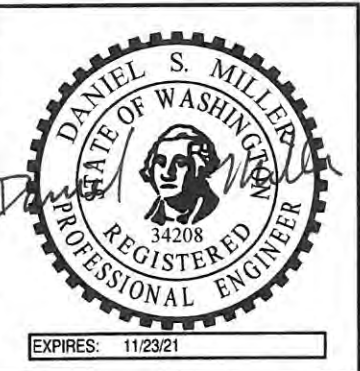
- A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- B. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- C. ESC FACILITIES, AS APPROXIMATELY SHOWN ON THIS PLAN, ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.
- D. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- E. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- F. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.
- G. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT TO ENSURE ALL ACCESS ROADS ARE KEPT CLEAN AT NO ADDITIONAL COST.

CONTRACTOR'S ESC RECORD

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

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

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



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YAKAMA NATION FISHERIES
SKINNEY CREEK - WSDOT MITIGATION AREA
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GENERAL NOTES

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STABILIZE SOILS AND PROTECT SLOPES

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

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

AFTER FINAL SITE STABILIZATION

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

RIVER DIVERSION

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

FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE PERFORMED BY A YAKAMA NATION FISHERIES/AQUATIC BIOLOGIST EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONIDS FROM CONSTRUCTION SITES.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA WILL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF FRESH RIVER WATER.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED DOWNSTREAM OF PROJECT AREA.

TREE SALVAGE

ALL APPROPRIATE TREE SPECIES WITHIN CLEARING LIMITS REMOVED FOR CONSTRUCTION, AS APPROVED BY THE OWNER'S REPRESENTATIVE, SHALL TEMPORARILY BE STOCKPILED WITHIN LIMITS OF DISTURBANCE. STOCKPILED TREE/SLASH SHALL BE REINCORPORATED INTO FINISHED PROJECT.

ANY REMOVED VEGETATION GREATER THAN 6 INCHES DIAMETER AND 15 FEET LONG SHALL BE INCORPORATED INTO LOG STRUCTURES. SMALLER DEBRIS SHALL BE PLACED IN LOG STRUCTURES OR ON DISTURBED SURFACES AS APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOTWAD AND UTILIZED IN THE PROJECT CONSTRUCTION AS DIRECTED BY OWNER'S REPRESENTATIVE.

LIVE TREES

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

KEEP OUT OF DRIP LINE OF EXISTING TREES.

CONSTRUCTION DEWATERING

IF ADDITIONAL PUMPING IS REQUIRED TO DEWATER DURING CONSTRUCTION, PUMPED DISCHARGE SHALL RELEASE SEDIMENT-LADEN WATER AT AN UPLAND DISCHARGE LOCATION IN A MANNER THAT DOES NOT CAUSE EROSION, CONTAMINATION, OR INCREASE TURBIDITY OF SURFACE WATERS.

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

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

CONTRACTOR WILL PROVIDE ANY PUMPS, HOSES AND FITTINGS NEEDED TO PERFORM THE DEWATERING. THE PUMP EQUIPMENT SELECTED BY THE CONTRACTOR SHALL BE SUFFICIENT TO DEWATER THE SITE THOROUGHLY.

CONTRACTOR SHALL PROVIDE VISQUEEN OR GEOTEXTILE LINER, PLYWOOD, OR METAL PLATING AS NECESSARY TO DISSIPATE PUMP DISCHARGE JET TO PREVENT EROSION.

WETLANDS AND WATERS OF THE US

SITE IS ENTIRELY WITHIN A PRIOR WSDOT MITIGATION SITE. INTER-FLUVE DID NOT CONDUCT A WETLANDS DELINEATION.

WITHIN THE STATE OF WASHINGTON, THE ARMY CORPS OF ENGINEERS AND THE DEPARTMENT OF ECOLOGY HAVE THE FINAL AUTHORITY IN DETERMINING WATERS AND WETLAND BOUNDARIES AND REGULATIONS.

ABBREVIATIONS

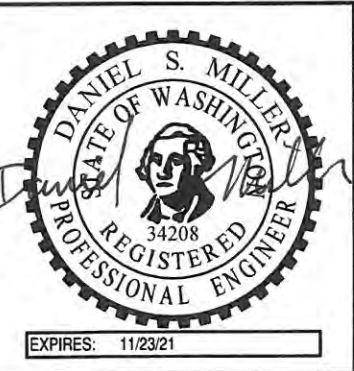
APPROX	APPROXIMATE
BMP	BEST MANAGEMENT PRACTICE
CY	CUBIC YARDS
°	DEGREE
DBH	DIAMETER AT BREAST HEIGHT
EA	EACH
ESC	EROSION AND SEDIMENT CONTROL
' or FT	FOOT
FES LIFT	FABRIC ENCAPSULATED SOIL LIFT
GIS	GEOGRAPHIC INFORMATION SYSTEM
HWY	HIGHWAY
" or IN	INCH
LWM	LARGE WOODY MATERIAL
MAX	MAXIMUM
MIN	MINIMUM
MSF	THOUSAND SQUARE FEET
NAD 83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NRCS	NATURAL RESOURCES CONSERVATION SERVICE
OHW	ORDINARY HIGH WATER
%	PERCENT
LBS	POUNDS
RD	ROAD
RTK GPS	REAL TIME KINEMATIC GLOBAL POSITIONING SYSTEM
STA	STATION
TBM	TEMPORARY BENCHMARK
TYP	TYPICAL
US	UNITED STATES
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
USFS	UNITED STATES FOREST SERVICE
WDFW	WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

QUANTITIES ESTIMATE

Item	Qty	Unit
Remove log weir	6	EA
Excavate to subgrade	250	CY
Install roughened channel	250	CY
Install fabric encapsulated soil lifts	80	LF
Erosion control fabric	100	SY
Place owner provided logs; including ballast	9	EA
Site restoration: seed and mulch	12.0	MSF

ABBREVIATIONS:
CY = CUBIC YARDS
EA = EACH
LF = LINEAL FEET
MSF = 1,000-SQUARE FEET
SY = SQUARE YARDS

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



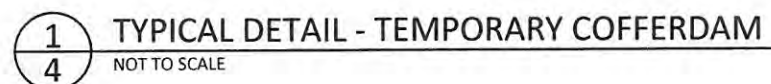
				NS, DM DRAWN	DM DESIGNED	JP CHECKED	YAKAMA NATION FISHERIES SKINNEY CREEK - WSDOT MITIGATION AREA FINAL DESIGN			501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 www.interfluve.com	GENERAL NOTES	SHEET		
				-- APPROVED	12/16/19 DATE	170232 PROJECT						3	OF 11	
NO.	BY	DATE	REVISION DESCRIPTION											



1. FOR LOW FLOW CONDITIONS, SAND BAGS MAY BE USED IN PLACE OF BULK BAGS TO FORM COFFERDAM.
2. COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF SAND BAGS OR BULK BAGS FILLED WITH WDFW APPROVED 3" MINUS WASHED GRAVEL, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.
3. COFFERDAM HEIGHT SHALL CONTAIN WATER TO DEPTH NO GREATER THAN 80% OF THE COFFERDAM HEIGHT. CONTRACTOR SHALL CONSTRUCTION COFFERDAM TO BE STABLE FOR EXPECTED FLOWS.
4. COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH MINIMUM 6-MIL THICKNESS PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS.
5. THE PLASTIC SHEETING SHALL BE DRAPED OVER THE SAND BAGS OR BULK BAG COFFERDAM AND ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING PINNED TO THE CHANNEL BED BY STANDARD SANDBAGS.
6. THE COFFERDAM SHALL BE TIGHTLY SEALED TO THE GROUND BY PLASTIC SHEETING AND STANDARD SANDBAGS. MULTIPLE LAYERS OF SHEETING AND SANDBAGS MAY BE REQUIRED TO FORM A WATERTIGHT SEAL.
7. BULK BAGS SHALL BE CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
8. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH AND WIDTH SHALL COVER THE ENTIRE COFFERDAM WITHOUT SEAMS.
9. COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BAGS, SHEETING AND GRAVEL WILL BE HAULED OFFSITE.
10. MEASUREMENT AND PAYMENT FOR COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED GRAVEL PLACEMENT, MAINTENANCE AND REMOVAL OF ALL MATERIALS SHALL BE INCIDENTAL TO THE LUMP SUM ALL INCLUSIVE COST FOR DIVERSION AND DEWATERING.
11. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.



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



YAKAMA NATION FISHERIES
SKINNEY CREEK - WSDOT MITIGATION AREA
FINAL DESIGN



EROSION AND SEDIMENT CONTROL DETAILS

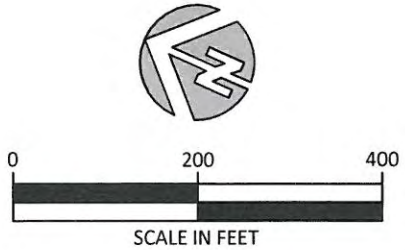
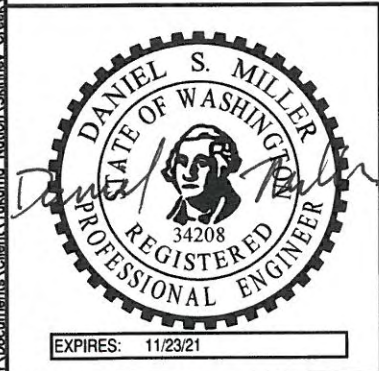
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LEGEND

- ACCESS
- STOCKPILE/STAGING AREA
- 202 SURVEY CONTROL POINT

Point	Northing	Easting	Elevation	Description
100	252,276.02	1,663,869.94	1810.03	TBM
101	251,999.32	1,663,930.29	1811.22	TBM
102	251,972.58	1,664,054.64	1806.87	TBM
103	251,743.16	1,664,210.58	1800.32	TBM
200	250,936.52	1,664,617.76	1779.09	TBM
201	250,991.05	1,664,697.82	1781.71	TBM
202	251,085.75	1,664,531.14	1784.01	TBM
203	250,791.83	1,664,571.62	1775.56	TBM
204	250,524.70	1,664,665.17	1762.31	TBM
205	250,369.00	1,664,739.62	1755.02	TBM



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DRAWN	DESIGNED	CHECKED
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APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
SKINNEY CREEK - WSDOT MITIGATION AREA
FINAL DESIGN



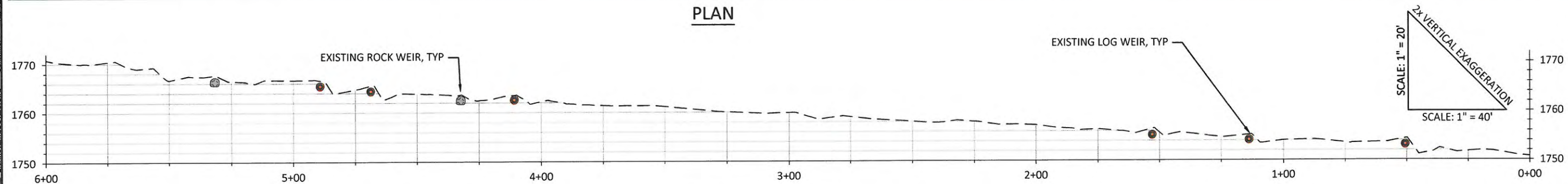
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Hood River, OR 97031
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PROJECT REACH

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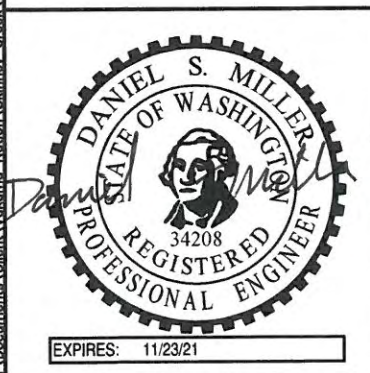
PLAN



PROFILE

LEGEND

- 2+00 --- EXISTING CONTOUR (1 FT)
- 1 — EXISTING ALIGNMENT AND STATIONING
- EXISTING RIPRAP
- EXISTING LOG WEIR
- EXISTING ROCK WEIR
- △ 202 SURVEY CONTROL POINT



TYPICAL EXISTING LOG WEIR



TYPICAL EXISTING ROCK WEIR



TYPICAL EXISTING RIFFLE

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DRAWN	DESIGNED	CHECKED
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APPROVED	DATE	PROJECT

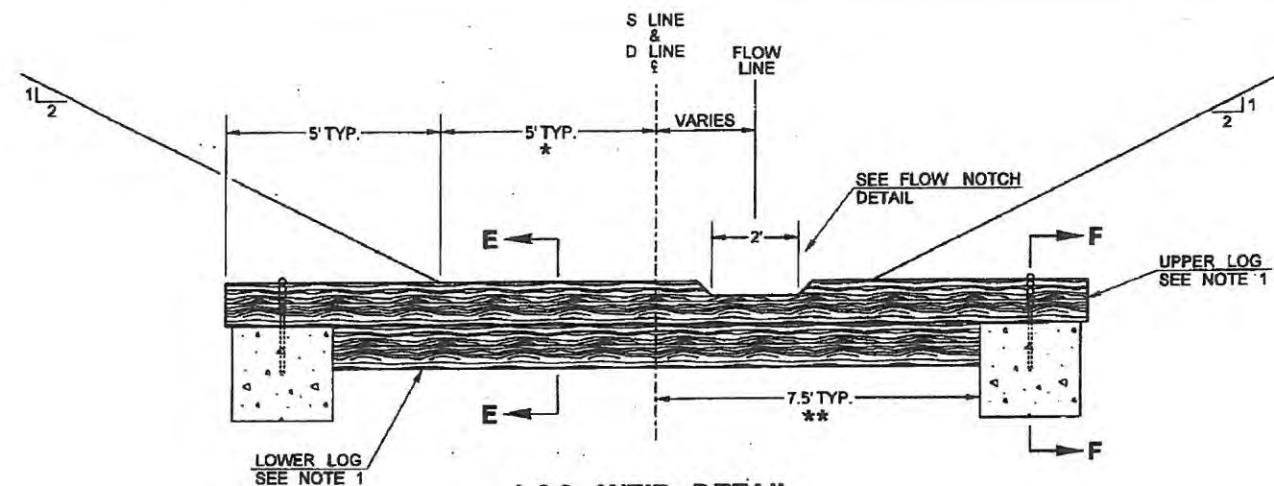
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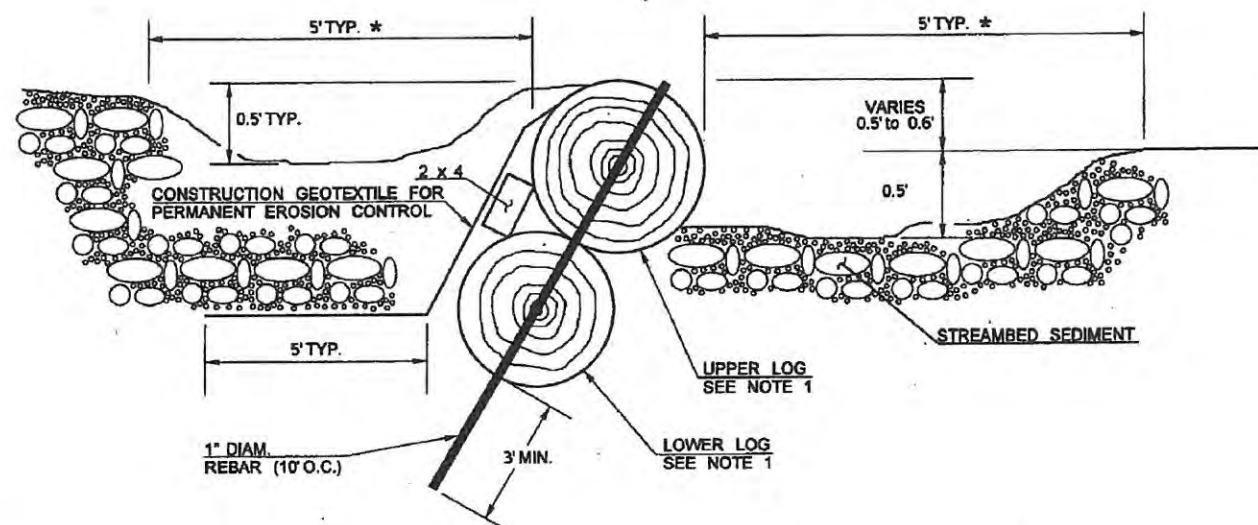
EXISTING CONDITIONS - PLAN
AND PROFILE

SHEET
6 OF 11



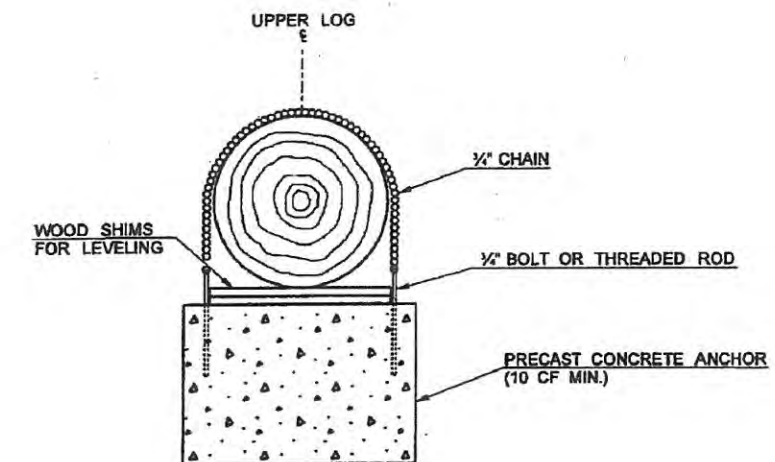
**LOG WEIR DETAIL
SECTION VIEW**

FLOW LINE STATION
 S 65+90 (0' LT.)
 S 66+07 (1' RT.)
 S 66+78 (2' RT.)
 S 67+10 (1' LT.)
 S 67+80 (2' LT.)
 S 70+45 (2' RT.)
 S 70+90 (1' LT.)
 S 71+35 (2' LT.)
 D 2+00 (1' RT.)

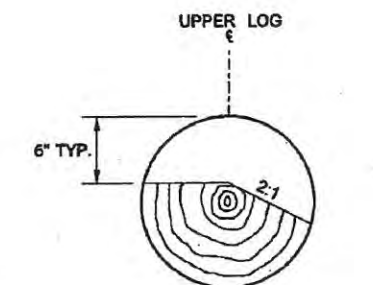


**LOG WEIR DETAIL
SECTION E-E**

NOT TO SCALE



**LOG WEIR DETAIL
SECTION F-F**



FLOW NOTCH DETAIL

NOTES

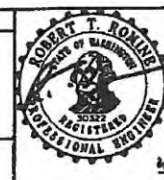
- LOGS SHALL BE PROCURED FROM TREES REMOVED DURING CLEARING AND GRUBBING WITHIN THE PROJECT LIMITS. DIAMETER SHALL BE 1' MIN. AND 1.5' MAX.
- ALL METAL COMPONENTS SHALL BE GALVANIZED STEEL OR STAINLESS STEEL. GALVANIZED COMPONENTS SHALL BE GALVANIZED PRIOR TO INSTALLATION.
- UNLESS SPECIFIED OTHERWISE IN THE PLANS, CONSTRUCTION GEOTEXTILE FOR PERMANENT EROSION CONTROL APPLICATIONS SHALL BE "HIGH SURVIVABILITY" AND "DRAINAGE CLASS C".

* = 3' TYPICAL WIDTH FOR D-LINE

** = 5.5' TYPICAL WIDTH FOR D-LINE

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TIME	2:01:02 PM
DATE	4/11/2011
PLOTTED BY	stacyhe
DESIGNED BY	S. HONEYCUTT
ENTERED BY	M. ROY
CHECKED BY	S. HONEYCUTT
PROJ. ENGR.	R. ROMINE

REGION NO.	STATE	FED.AID PROJ.NO.
10	WASH	
JOB NUMBER		
11B015		
CONTRACT NO.		
LOCATION NO.		
XL2793		



**US 2
TUMWATER CANYON
BRIDGE REPLACEMENTS**

CHANNEL DETAILS

Plot 9
 PLAN REF NO
SDCD1
 SHEET
 64
 OF
 228
 SHEETS

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DRAWN	DESIGNED	CHECKED
---	12/16/19	170232
APPROVED	DATE	PROJECT

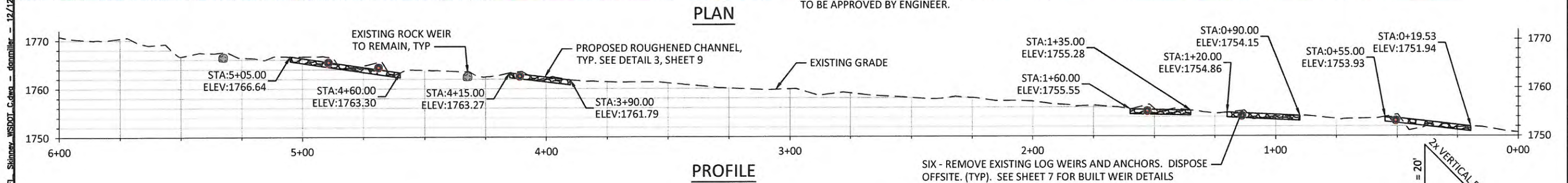
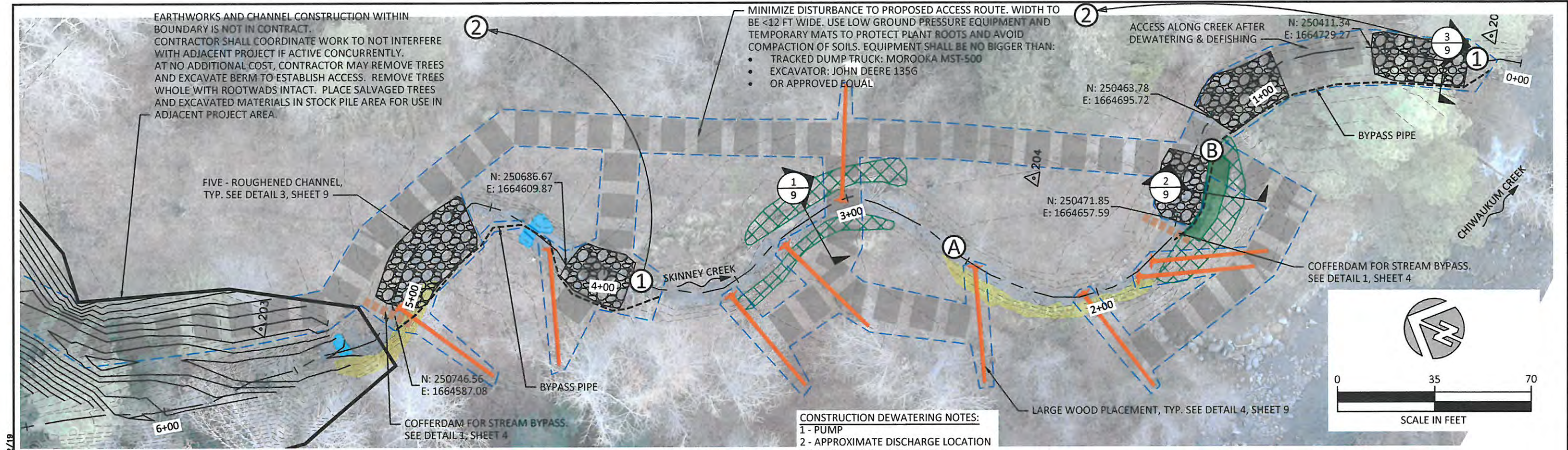
**YAKAMA NATION FISHERIES
SKINNEY CREEK - WSDOT MITIGATION AREA
FINAL DESIGN**



**EXISTING WSDOT LOG WEIR
DETAILS**

SHEET
7 OF 11

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LEGEND

- 2+00 --- EXISTING CONTOUR (1 FT)
- 1 --- EXISTING ALIGNMENT AND STATIONING
- LIMITS OF DISTURBANCE
- ACCESS
- EXISTING RIPRAP
- EXISTING ROCK WEIR
- PROPOSED ROUGHENED CHANNEL
- PROPOSED BANK TREATMENT
- NATIVE RIPARIAN LIVE CUTTING ZONE
- △ 202 SURVEY CONTROL POINT

DANIEL S. MILLER
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
34208
EXPIRES: 11/23/21

A

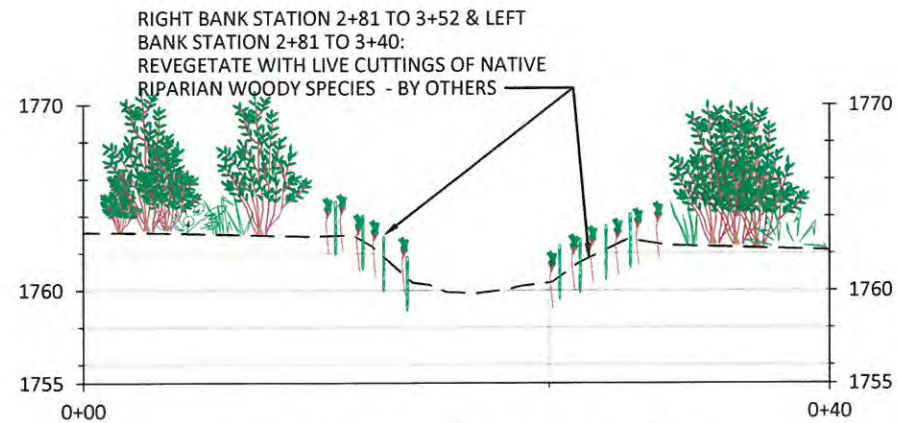
B

ANALOG RIFFLE

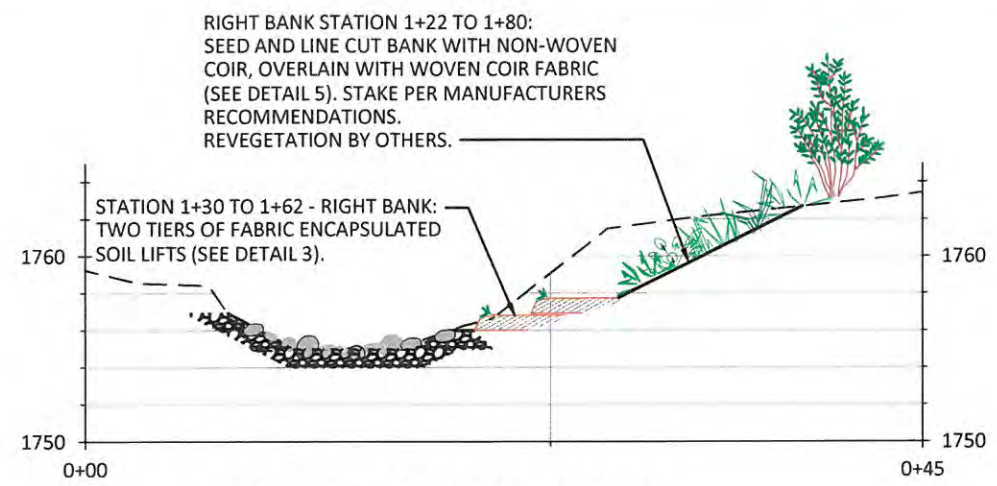
BANK TO BE GRADED AND VEGETATED

				YAKAMA NATION FISHERIES SKINNEY CREEK - WSDOT MITIGATION AREA FINAL DESIGN			 <div>501 Portway Avenue, Suite 101 Hood River, OR 97031 541.386.9003 www.interfluve.com</div>			PROPOSED CONDITIONS - PLAN AND PROFILE		SHEET 8 OF 11	
										</			

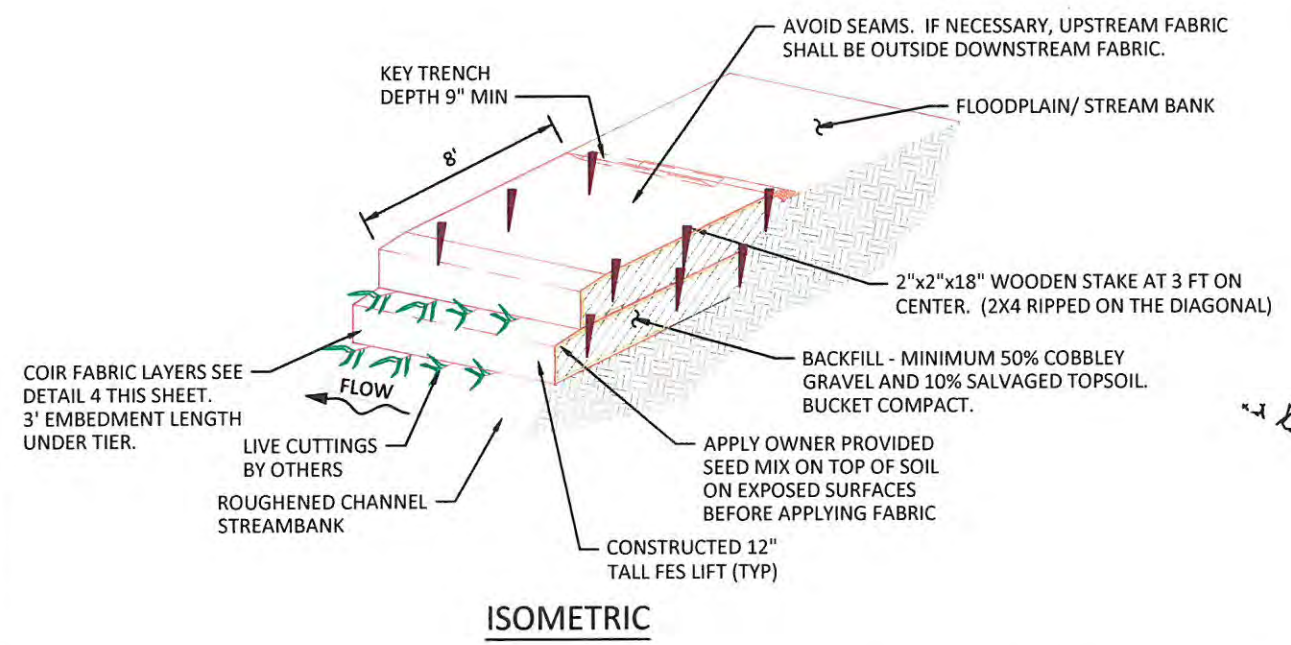
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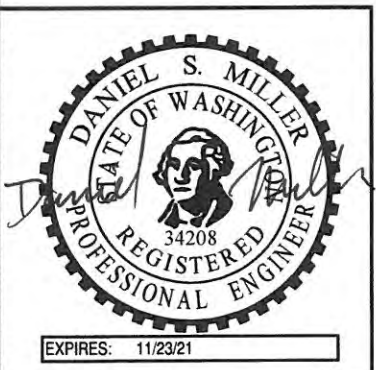
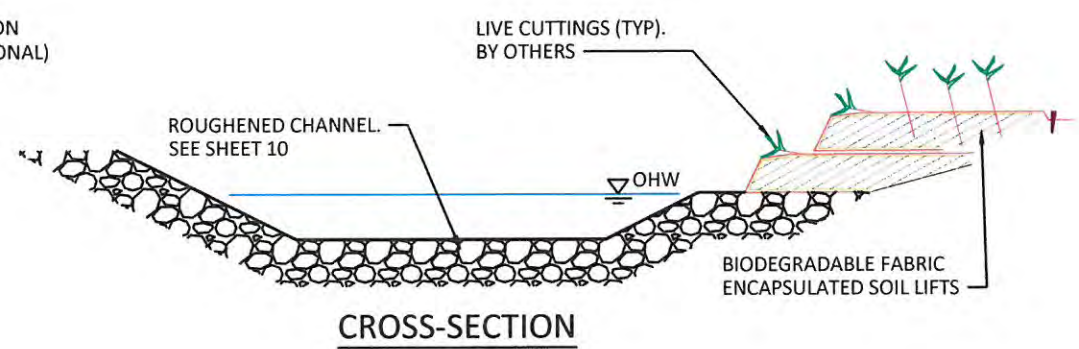
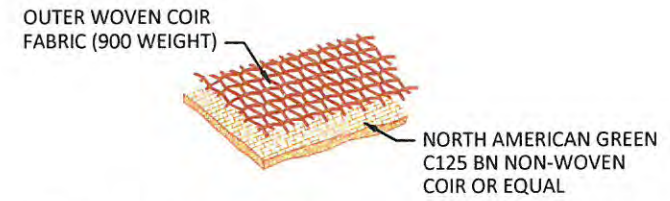
1
9
TYPICAL CROSS-SECTION
1" = 10'



2
9
TYPICAL CROSS-SECTION
1" = 10'



3
9
FABRIC ENCAPSULATED SOIL LIFT (FESLIFT, FESL)
NOT TO SCALE



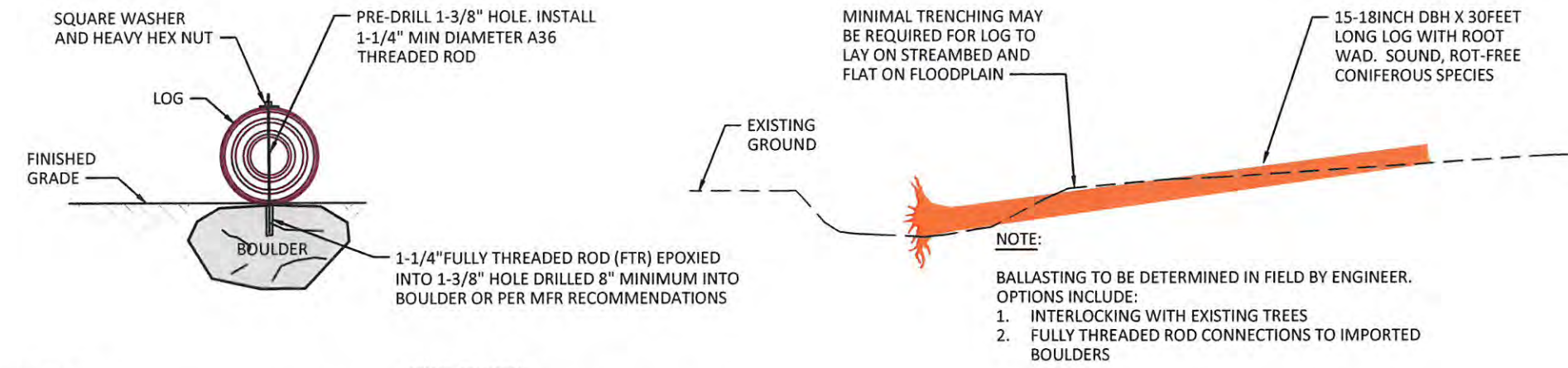
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YAKAMA NATION FISHERIES
SKINNEY CREEK - WSDOT MITIGATION AREA
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TYPICAL DETAILS - SECTIONS AND FESL	SHEET 9 OF 11
--	------------------



MATERIALS
TWO 36IN EQUIVALENT DIAMETER BOULDERS PER LOG.

BOULDERS SHALL BE NON-FRACTURED BASALT WITH A MINIMUM SPECIFIC GRAVITY OF 2.65.

EPOXY FOR ANCHORING SHALL BE HILTI HIT RE 500 ADHESIVE OR APPROVED EQUAL.

CONSTRUCTION
DRILL HOLES IN SOLID ROCK AND AVOID ANY CRACKS OR FRACTURES. CLEAN DRILL HOLES

CLEAN FTR WITH ACETONE. FILL DRILL HOLES WITH EPOXY. FULLY INSERT FTR IN HOLE, ROTATE TO FILL THREADS WITH EPOXY.

INSTALL WASHER AND NUT. CHISEL OR DEFORM THREADS TO CAPTURE NUT. REMOVE SHARP EDGES.

NOTE:
BALLASTING TO BE DETERMINED IN FIELD BY ENGINEER. OPTIONS INCLUDE:
1. INTERLOCKING WITH EXISTING TREES
2. FULLY THREADED ROD CONNECTIONS TO IMPORTED BOULDERS

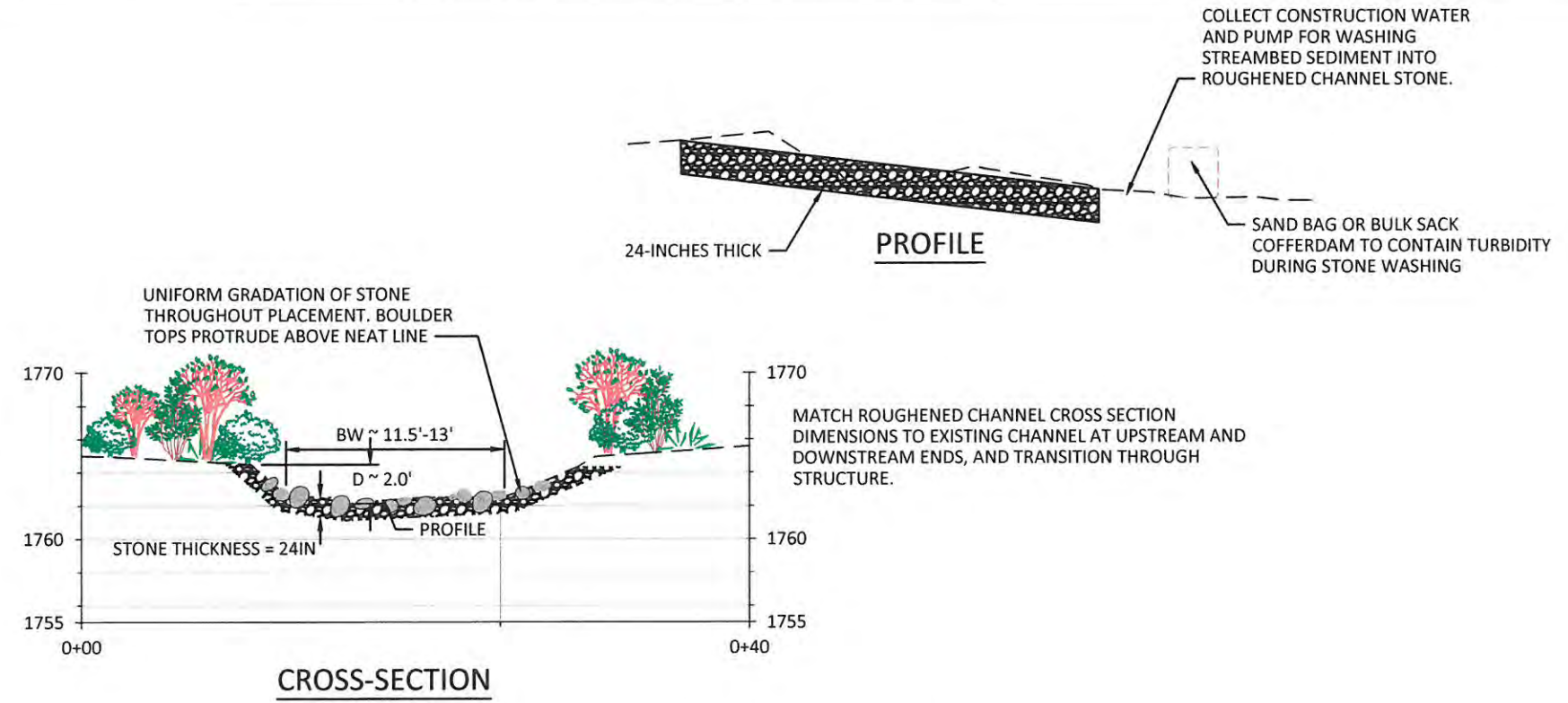
2
10 TYPICAL LARGE WOOD PLACEMENT
1" = 10'

ROUGHENED CHANNEL STONE GRADATION	
PERCENT FINER BY WEIGHT	STONE SIZE (IN)
100	18 - 20
84	15 - 17
50	12 - 14
15	4 - 7

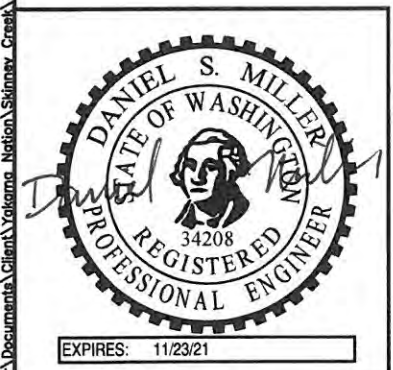
ROUGHENED CHANNEL STONE GRADATION SHALL BE COMPRISED OF WSDOT STANDARD SPECIFICATIONS 9-03.11 STREAMBED AGGREGATES, INCLUDING:
9-03.11(3) STREAMBED BOULDERS
9-03.11(2) 4IN TO 12 IN STREAMBED COBBLES

GRADATION SHALL BE CONTINUOUSLY AMENDED WITH ADDITIONAL INCIDENTAL 30% BY VOLUME WSDOT 9-03.11(1) STREAMBED SEDIMENT. STREAMBED SEDIMENT SHALL BE CONTINUOUSLY WASHED INTO GRADATION WITH 2IN PUMP FOR COMPACT PLACEMENT AND FOR ENGINEER TO EVALUATE PERMEABILITY OF PLACED STONE. ADJUSTMENTS TO STONE MIXTURE MAY BE REQUIRED BY THE ENGINEER

GRADATION AND AMENDMENT SHALL BE PLACED IN HOMOGENEOUS MIXTURE.



1
10 TYPICAL ROUGHENED CHANNEL
NOT TO SCALE



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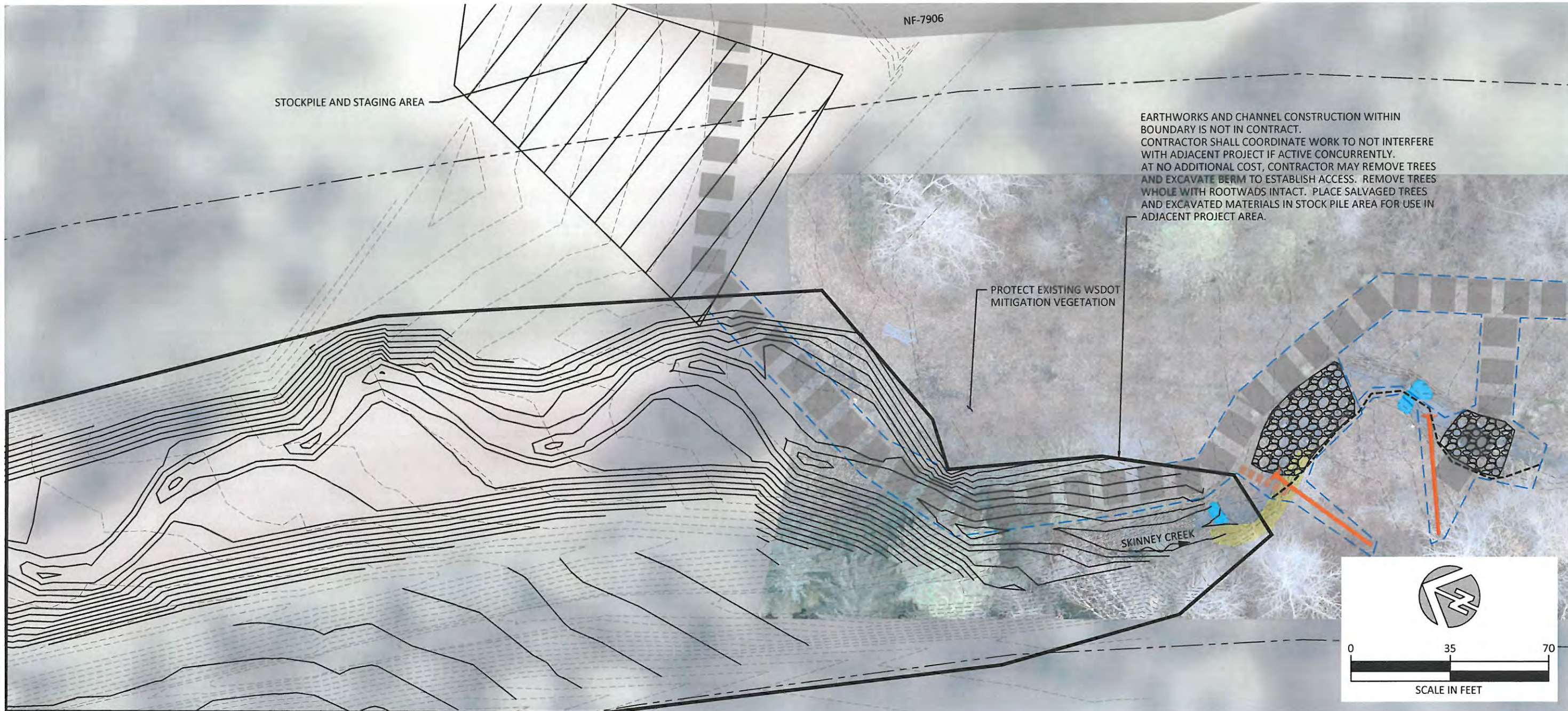
YAKAMA NATION FISHERIES
SKINNEY CREEK - WSDOT MITIGATION AREA
FINAL DESIGN

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PLAN

LEGEND

- | | |
|---|---|
| --- EXISTING CONTOUR (1 FT) | STOCKPILE/STAGING AREA |
| --- 2+00 --- PROPOSED CONTOURS (1 FT) | EXISTING RIPRAP |
| --- 1 --- PROPOSED ALIGNMENT AND STATIONING | EXISTING ROCK WEIR |
| --- LIMITS OF DISTURBANCE | PROPOSED ROUGHENED CHANNEL (SEE DETAIL 3, SHEET 10) |
| --- ACCESS | PROPOSED LARGE WOOD PLACEMENT (SEE DETAIL 4, SHEET 9) |



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YAKAMA NATION FISHERIES
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541.386.9003
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PROPOSED CONNECTION TO
UPSTREAM PROJECT

Skinney Creek

Fish Habitat Enhancement Project

Special Specifications

Prepared for:
Yakama Nation
Upper Columbia Habitat Restoration Project
1885 S Wenatchee Avenue
Wenatchee, WA 98801

Prepared by:
Inter-Fluve, Inc
501 Portway Ave, Suite 101
Hood River, OR 97031



The Washington State Department of Transportation's 2014 Standard Specifications for Road, Bridge and Municipal Construction (WSDOT Standard Specifications) shall apply unless otherwise noted in the following Special Provisions. The "Contracting Agency" or "Owner" shall be the Confederated Tribes and Bands of the Yakama Nation. Additional specifications in the following contract sections are included for items not covered by the WSDOT Standard Specifications or replaced by these special 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.

Survey

Description

Contractor shall provide competent personnel to establish all grade staking and survey of construction lines and grades. Owner will provide CADD drawings with project lines, grades, surfaces and LWM locations for Contractor use.

Contractor shall locate and survey project control points shown in the Plans and provide to Engineer a report of control point coordinates and elevations to verify accuracy. Contractor shall work with Engineer to resolve any discrepancies before commencing work.

Contractor shall meet with Owner and Engineer to flag project limits of disturbance prior to site disturbance.

Contractor shall assist and adjust construction activities to allow Engineer to conduct periodic verification of Contractor's survey and grades as Engineer deems necessary.

Measurement and Payment

Survey shall be incidental Item 008 - Channel Excavation, Haul and Placement and Item 020 – Optional Additive Item Excavation to Subgrade and Placement of Streambed Substrate. No measurement or payment will be made for Survey.

ITEM 001- 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 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 shall 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 existing and proposed creeks.

Measurement

“TESC, SPCC Plan and Implementation,” including the above amendments to the item 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 002 - Mobilization

Description

This item shall consist of preparation work and operations performed by the Contractor in accordance with the WSDOT Standard Specifications and as amended by these Special Provisions.

1. Temporary site access shall be within limits of disturbance (LOD) shown in the Plans. Minor deviations to the LOD may occur as directed by the Owner to preserve sensitive areas or trees, or to avoid damage to other features identified in the field. Deviations from the LOD shown in the Plans shall be approved by Owner prior to use.
2. Along access routes and staging areas, topsoil shall be stripped and stockpiled.
3. Prior to demobilization, staging areas and site access routes shall be ripped to decompact soils to 18” minimum depth.

Measurement and Payment

Measurement and Payment for Mobilization shall be by the lump sum contract price for “Mobilization”, partial payments will be made as in accordance with WSDOT Standard Specifications. Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEM 003 - Traffic Control

Description

Temporary traffic control requirements shall include barricades, construction signage and flaggers at the entrance to the project site and any other measures per WSDOT Standard Specifications Section 1-10 and local regulations. It is the Contractor's responsibility to obtain necessary permits including County and/or USFS permits.

Measurement and Payment

Measurement and Payment for Traffic Control shall be by the lump sum contract price for "Traffic Control". Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEM 004 – Clearing and Grubbing

Description

This item consists of clearing and grubbing for construction as shown in the Plans including those areas required for Temporary Access Routes and in accordance with Section 2-01 of the Standard Specifications, and as amended by these Special Provisions.

1. Areas for Clearing and Grubbing are shown in the Plans. Alignments and limits of disturbance 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 varying in size up to 36" diameter at breast height (dbh). Tree species include coniferous and deciduous. Trees shall be salvaged for installation as large woody material during construction of the Channel and flood plain. For coniferous trees, the Contractor shall excavate to loosen soil around each rootwad and then push over trees in order to salvage logs with intact attached roots. Deciduous trees may be cut at the stump with roots left ungrubbed. Salvaged Trees shall be temporarily stockpiled within project limits of disturbance.
3. Trees and shrubs smaller than 12" dbh that are removed during clearing and grubbing shall be salvaged and used as slash during installation of Channel LWM and Floodplain Roughness LWM. Unused excess slash may remain on site and shall be evenly distributed.
4. Vegetation protection and restoration per Section 1-07.16(2) shall be incidental to Clearing and Grubbing.

Measurement and Payment

Removal and Salvage of trees and shrubs shall be considered incidental to Clearing and Grubbing.

Installation of the salvaged trees is described under "Channel LWM" and "Floodplain Roughness LWM" and shall be incidental to those items. No additional compensation will be allowed.

Measurement and Payment for Clearing and Grubbing shall be by the lump sum contract price for "Clearing and Grubbing". Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEMS 005 & 006 – Cofferdam and Stream Diversion

Description

This item consists of providing and installing, maintaining, and removing measures to bypass the surface waters of the stream around in-channel work areas, and to prevent turbidity from entering the stream.

Cofferdams shall be installed at a minimum at:

1. Upstream of the work area to direct all flows into a bypass pipe.
2. At the outlet of the work area to prevent turbid water from leaving the site and entering Skinney Creek.
3. Additional cofferdams may be placed as needed at Contractor's discretion to aid in sequencing work at no additional cost.

Cofferdam and Bypass Pipe shown in the Plans is one acceptable method. The Contractor may use this method or propose a different method that provides equal or better isolation of the work area from the flow. If a different method is proposed, Contractor shall submit Plan and Drawings showing details of proposed methods for providing temporary isolation of surface water during construction activities. Review and approval of the Cofferdam Plan shall not relieve the Contractor from full responsibility for the adequacy of cofferdam work if the proposed plan is not successful at properly isolating the work area.

Cofferdams shall not interfere with proposed work.

The Contractor shall coordinate with the Owner for Owner provided fish rescue and relocation activities. Excavation, spoils placement or log placement shall not occur until the Owner completes fish salvage.

Bypass pipe shall route all Skinney Creek flows along the existing Skinney Creek alignment designated as spoils area. Spoils will be placed over the bypass pipe. At project completion the bypass pipe will be abandoned in place.

Materials

The Contractor shall provide all required materials for the project. If Bulk Bag Cofferdam is the method to be used, see details for Bulk Bag Cofferdams in the Plans.

Sandbags shall be filled with washed pea gravel or stream gravel.

Bypass pipe shall be minimum 18-inch diameter. Contractor shall perform own hydrology calculations to confirm pipe has sufficient capacity to pass anticipated stream discharges. Pipe shall be water tight and of sufficient strength for anticipated depth of spoils and construction traffic.

Construction Requirements

The Contractor shall isolate the work area from the stream by installing cofferdam per the plans. No turbidity from construction activities shall enter the stream. Cofferdams shown in the Plans are a suggested method. If Contractor elects to use alternate method(s) for temporary cofferdams, Contractor shall provide to the Owner a cofferdam/diversion plan for review prior to implementation.

1. Cofferdam

- a. Construction methods for Bulk Bag Cofferdams are described in the project plans.

2. Coordination with Fish Rescue

- a. The Contractor shall provide minimum 2 days advance notice to the Owner before each cofferdam installation date. The Contractor shall understand that cofferdam installation requires coordination with the Owner and only after the Owner has completed fish rescue can the cofferdams be completed. The Contractor is advised that fish rescue may take up to 2 days per cofferdam.

3. Stream Bypass Pipe

- a. The Contractor shall install Stream Bypass Pipe to convey all Skinney Creek flows. Leaking or crushed stream bypass pipe segments shall be replaced by the Contractor at own cost. Contractor shall provide adequate energy dissipation measures at outlet of pipe to prevent erosion.

Measurement

Cofferdam and Diversion shall be measured as one lump sum to "Cofferdam and Bypass Pipe".

Stream Bypass Pipe shall be measured per lineal feet of installed pipe in pay item "Stream Bypass Pipe"

Payment

Cofferdam and Diversion shall be paid as one lump sum to "Cofferdam and Diversion". Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

Stream Bypass Pipe shall be paid per lineal feet in pay item "Stream Bypass Pipe". Payment shall be considered full compensation for all equipment, labor, tools, materials, repairs/replacements of damaged pipe and incidentals necessary to complete this work as specified.

ITEM 007 - Pumping

Description

This item includes dewatering and controlling turbidity within construction areas isolated from the stream by Cofferdams. The work consists of furnishing, monitoring, operating, maintaining, and removing pumps, coordinating with the Owner for fish salvage relocation activities, and installation of control of water and turbidity BMPs.

Materials

1. One 3" trash pump and 300 feet of discharge hose. Pumps shall have soundproofing. Electric pumps with generators and quiet packs are a preferred and pre-approved method.
2. One or more 2" pump(s) with 300 feet of discharge hose for each pump.
3. Each water intake pumping from live streams shall have a fish screen installed, operated and maintained according to NMFS" fish screen criteria (NMFS 1997; NMFS 2008). No pumping can occur until fish screen has been approved by Owner prior to installation.
4. Pumps shall be placed within rigid or flexible pool to contain fuel or oil spills. Diapers shall be stored at each pump.
5. Environmental Protection Measures such as straw bales, perforated pipe for discharge flow distributors, geotextiles, filter bags, or other means of controlling water and turbidity. No turbidity shall be allowed to enter the stream or wetlands.

Construction Requirements

1. Pumps
 - a. Groundwater may be encountered during excavations. During construction of channel, construction water shall be pumped away from work areas to be infiltrated into the ground and without entering the stream.

Environmental Protection Measures

- a. If observed or measured turbidity downstream of cofferdam or pump discharge is more than 10% above the upstream background visual observation or measurement, the activity must be modified to reduce turbidity. Continue to monitor every 2 hours as long as instream activity continues.
- b. If exceedances occur for more than two consecutive monitoring intervals (after 4 hours), the activity must stop until the turbidity level returns to background, and the EC lead must be notified within 48 hours.
- c. If at any time, monitoring, inspections, or observations/samples show that the turbidity controls are ineffective, immediately mobilize work crews to repair, replace, or reinforce controls as necessary.

Additional and alternative methods, such as pumping into stilling basins or filtration geotextile fabric shall be required at the Contractor's expense.

Measurement and Payment

Measurement and Payment for Pumping shall be paid as one lump sum to "Pumping". Payment for "Pumping" shall be full compensation for all costs incurred for equipment, materials and labor for furnishing, installing, securing, maintaining and removal of pumping equipment and control of discharged water and turbidity as outlined in the Plans or as required by applicable permits. If additional environmental protection measures are required to control turbidity, they shall be considered incidental to pumping and no additional compensation will be made.

ITEM 008 – Excavation, Haul and Placement

Description

Excavation, Haul and Placement shall consist of excavating, loading, hauling, placing in spoils areas, and embankment compacting, or otherwise disposing of the material in accordance with Section 2-03 of the Standard Specifications, and as amended by these Special Provisions.

1. Portions of work may be in water. The Contractor is advised that groundwater may be encountered throughout excavation areas.
2. This item includes hauling of excavated material to two on-site disposal sites noted in the Plans.
3. This item includes detail grading to shape the channel, including creating pools and floodplain and wetland alcoves, as shown in the Plans. Pools shall be over-excavated into the streambank to provide room to install logs with roots and salvaged trees.
4. No work shall occur outside of the limits of disturbance shown in the Plans unless authorized by the Owner.
5. A cultural staff person will be present on site during all excavation activities.

Measurement

"Excavation, Haul and Placement" will be measured by cubic yard. All Excavated material will be measured in the position it occupied before the excavation was performed. Haul and Placement shall be incidental to Excavation. An original ground measurement was taken using digital terrain modeling survey techniques. The original ground will be compared with the finished grade shown in the Plans. Slope/ground intercept points defining the limits of the measurement will be as staked from the proposed topography. No additional compensation will be made for excavated material that is overexcavated or stockpiled, re-excavated, and moved again.

Payment

Payment for Excavation, Haul and Placement 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: "Excavation, Haul and Placement" per cubic yard of in-place volume of material to be excavated. Haul and Placement shall be incidental to Excavation.

ITEM 009 – Channel Large Woody Material (LWM)

Description

Channel LWM includes all work associated with installation of logs with rootwads, logs without rootwads, vertical logs, salvaged trees and slash in the stream channel bed and banks. This item includes movement of materials from stockpiles of Owner supplied wood to installation areas, and installation of LWM including ballasting methods shown in the Plans.

Materials

1. LWM:

LWM will be supplied by the Owner and staged at the Winton Mill. Owner supplied LWM quantities and sizes are shown on Sheet 3 of the plans.

2. Salvaged Trees: Salvaged Trees are whole coniferous trees including roots and deciduous trees without rootwads, salvaged from within the project limits of disturbance.

3. Slash: Slash includes shrubs and small trees removed from within the project limits of disturbance.

Construction Requirements

LWM: Locations and configurations of Logs and Logs with Roots shall generally be as indicated in the Plans. However, final location 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 provided by Vertical Logs or standing trees and/or extending the LWM up slopes above flood levels as shown in the Plans.

Salvaged Trees: Salvaged trees shall be installed as directed by the Owner. Care shall be taken when moving and installing salvaged trees so that branches and roots remain attached to the tree. Salvaged Trees shall be stabilized by partial burial, bracing to Upright Logs or standing trees, or held down by other partially buried logs as shown in the Plans and directed by Owner.

Slash: Slash from clearing shall be incorporated into log structures as directed by the Owner. Intermingle, stack, and rack slash material to the installed logs and piles to emulate natural accumulations of wood material.

Earthwork: Where partial burial of logs is required, excavate trench or pit as shown in the Plans. Stockpile the fill within the designated disturbance area. Backfill the logs with material specified in the

Plans. Selective salvage or import of gravel/cobble material may be required and shall be incidental to LWM.

Measurement and Payment

Measurement and Payment for Channel LWM shall be by the lump sum contract price for "Channel LWM". Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEM 010 – Floodplain Roughness LWM

Description

Floodplain Roughness LWM includes LWM placement on the floodplain as shown on Sheet 17 of the Plans and applies to the entire new floodplain. Item includes all work associated with onsite movement and installation of logs, logs with roots, vertical logs, whole trees, salvaged trees and slash. This item includes movement from stockpiles to installation areas, excavation and backfill, hauling and disposal of excess fill.

Materials

Owner supplied logs will be stockpiled at the Winton Mill staging area. Logs, trees and slash salvaged from onsite shall be used per plans.

Material quantities are shown on Sheets 3 and 17 of the Plans.

Construction Requirements

Logs: Locations of Logs and Logs with Roots shall generally be as indicated on Sheet 17 in the Plans, and applied to the entire floodplain. However, final location will depend upon the size, shape and quantity of material delivered or salvaged. Installation of Logs shall be understood to require a "fit in the field" approach as directed by the Owner. Logs shall be stabilized by partial burial and/or bracing provided by Vertical Logs. The ends of cut logs shall not be left on site, but shall be disposed of offsite at the Contractor's expense.

Vertical Logs: Construction of Vertical Logs shall include on-site movement and installation of logs as shown in the Plans. Vertical Logs shall be per the approximate numbers and quantities indicated in the Plans. Specific locations shall be determined in the field and directed by the Owner. The required embedment depth is indicated in the Plans. Installed Vertical Logs shall also have the following field-directed characteristics:

- c. Vertical Logs shall be installed at various angles and with varying heights above ground to break up a uniform appearance.
- d. Each Vertical Log shall have a broken top unless directed otherwise by the Owner's Representative. The preferred method shall be to break off the top 4-8 feet before installing the log.

Grinding or making multiple plunge cuts with chain saw to provide a roughened top are other acceptable methods.

Vertical Logs shall be installed by vibratory hammer. Vibratory hammer shall have the following characteristics:

- a. Minimum of 800 kN (80 tons) of centrifugal force.
- b. Side grip with minimum 16" space between ends of jaws so that 16" diameter log will fit into the jaws.

At each Vertical Log installation site, a minimum of one log shall be tested for pullout resistance. Each test will require up to four individual pulls, each at a deeper depth. See details in Plans. The Contractor shall provide the tensiometer and associated hardware.

Salvaged Trees: Salvaged trees shall be installed in log structures as shown in the Plans or as directed by the Owner. Care shall be taken when moving and installing salvaged trees so that branches and roots remain attached to the tree. Salvaged Trees shall be stabilized by partial burial, bracing to Vertical Logs or standing trees, or held down by other partially buried logs.

Slash: Slash cleared from within the clearing shall be incorporated into log structures as directed by the Owner.

Intermingle, stack, and rack slash material to the installed logs and vertical logs to emulate natural accumulations of wood material.

Earthwork: Where partial burial of logs is required, excavate to subgrade. Stockpile the fill within the designated disturbance area. Sort materials by general sizes, with separate piles of coarse and fine materials. Selective salvage of coarse material or import of gravel/cobble material may be required and shall be incidental to LWM. Load and haul excess fill to the spoils placement areas.

Measurement and Payment

Measurement and Payment for Floodplain Roughness LWM shall be by the lump sum contract price for "Floodplain Roughness LWM". Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEM 011 – Erosion Control Fabric

Description

Biodegradable erosion control fabric shall be placed on portions of the floodplain as directed by Engineer to minimize risk of channel avulsion across meanders. Location of fabric is shown on Sheet 18 of the Plans.

Materials

Erosion Control Fabric shall be North American Green C125BN or approved equal. Fabric shall be installed per manufacturer's recommendations. Upstream edges of fabric shall be keyed below ground in a 6-inch deep by 6-inch wide trench and backfilled with compacted soil containing minimum 40% gravel material.

Measurement and Payment

Measurement and Payment for Erosion Control Fabric shall be by the square yard of final placed Erosion Control Fabric. Measurement and payment for overlapping edges of fabric shall be per single thickness of fabric. Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEM 012 – Seed and Mulch

Description

All disturbed surfaces shall receive seed and mulch. Mulch will not be applied to stream channels or areas covered by Erosion Control Fabric. Staging areas and access routes shall be ripped to 18-inch minimum depth to decompact soils prior to seeding and mulching.

Materials

Owner shall provide Seed. Contractor shall install seed.

Contractor shall provide and install weed free straw mulch meeting local USFS requirements. Weed free straw mulch shall be applied at a minimum 1-inch thick loose thickness.

Measurement and Payment

Ripping of staging areas and access routes shall be incidental to Item 002 - Mobilization.

Measurement and Payment for Seed and Mulch shall be by the lump sum contract price for "Seed and Mulch. Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.

ITEM 020 – Optional Additive Item Excavation to Subgrade and Installation of Streambed Sediment

Description

The new Skinney Creek stream channel shall be comprised of soils and substrate suitable for stream channel bed. Contractor shall coordinate with Engineer for inspection of soils exposed at finished grade. Contractor shall schedule construction activities as necessary for Engineer to take the time necessary to evaluate soils at finished grade and determine suitability as streambed substrate. If Engineer deems that existing soils at finished grade are unsuitable for streambed substrate, the Owner will be so informed for authorization of Item 020 Optional Additive Item for Excavation to Subgrade and Installation of Streambed Sediment as shown on sheet 18 of the Plans.

Contractor shall not excavate below finished grade until Owner issues written authorization to proceed with Item 020 Optional Additive Item Excavation to Subgrade and Installation of Streambed Sediment. Excavation below finished grade without written authorization shall be repaired to specification of Item 020 Optional Additive Item Excavation to Subgrade and Installation of Streambed Sediment at Contractor's expense.

Materials

Excavation to subgrade shall include haul and placement as incidental items and shall meet provisions of special specification item 008 – Excavation, Haul and Placement.

Streambed sediment materials and gradation shall be as specified on Sheet 18 of the Plans. Contractor shall provide materials and install per Plans.

Execution

Excavation to subgrade shall be below finished grade and of sufficient depth for placement of the thickness of Streambed Substrate noted in the Plans.

Installation of Streambed Substrate shall proceed from upstream to downstream and shall achieve a full thickness placement of stone with homogeneous gradation throughout the stone placement and finished grade concave cross section across the streambed. Stone mixing shall occur at location of placement – haul and end dumping of substrate shall be unacceptable. A 2 inch pump shall be used to continuously wash fine material into coarser material for even mixing of sizes, settling and compacting materials and to test permeability of placed stone. Contractor shall allow Engineer to work directly with Streambed Substrate installation crew as necessary to place stone to specification at Contractor's cost. As new crew are tasked with Streambed Substrate installation, Contractor shall allow Engineer to work directly with new staff as necessary to place stone to specification at Contractor's cost.

Measurement and Payment

Measurement and Payment for Excavation to subgrade and installation of Streambed Sediment shall be per cubic yard as measured in place, defined by difference of finished grade surface and subgrade surface. Haul of excavated material and placement at on-site spoils placement area shall be incidental. In field guidance of the Engineer to Streambed Substrate installation crews shall be allowed at no additional cost. Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified.