



Columbia River
Honor. Protect. Restore.

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Request for Proposals:

Construction Oversight and Monitoring of the Newby Narrows Fish Habitat Restoration Project

January 28, 2016

The Yakama Nation's Upper Columbia Habitat Restoration Project (UCHRP) is requesting proposals from qualified engineering firms for Construction Oversight and Monitoring Services for the Newby Narrows Fish Habitat Restoration Project. The project is located between river mile 10.0 and 11.0 on the Twisp River in the Methow Subbasin. Qualified engineering firms should submit proposals following the directions in the online RFP. See the Scope of Work and completed designs in the RFP materials for complete list of tasks and deliverables.

Please include a detailed Statement of Qualifications describing your firm's ability to meet the Baseline Qualifications and a budget for completion of each

Task as described in the SOW. **Proposals must be received in Toppenish by Close of Business, Wednesday, February 24, 2016.** Please specify in writing that all bid prices are valid for 90 days.

Baseline Qualifications

To be considered competitive each firm's proposal must demonstrate the following:

- Field survey capabilities by in-house and local (Washington/Oregon based) design engineers
- Ability to effectively model hydraulics using HEC-RAS
- Have on staff (not subcontracted) a Geologist, Hydrologist, and a Professional Engineer with at least 10 years experience designing instream restoration projects
- Over 10 years of Construction Management experience on with Fish Habitat Restoration Projects.
- Oversight conducted on at least 40 Engineered Large Wood Structures in the last 10 years
- Experience with the creation of alcove habitat, flow through side channels, roughened channels and constructed riffles.
- Experience supervising installation and removal of Temporary Bridges
- Completed oversight on at least 5 projects using an excavator mounted vibratory pile driver and threaded rod.

Bid Submittal Directions

Each engineering firm seeking to be eligible for award of this contract under this RFP must submit a hard copy of their proposal to:

Yakama Nation Fisheries
Attn: Jackie Olney
PO Box 151
401 Fort Road (shipping service)
Toppenish, WA 98948

Proposals must be received in Toppenish by Close of Business, Wednesday, February 24, 2016.

For additional information contact:

Jarred Johnson (Project Manager)

johj@yakamafish-nsn.gov

509-881-1462

Exhibit A – Scope of Work

Newby Narrows Fish Habitat Restoration Project;
Construction Oversight and Monitoring (Phases 5&6)

Objective

The Yakama Nation's Upper Columbia Habitat Restoration Project (UCHRP) is planning to construct the Newby Narrows Fish Habitat Restoration Project during the summer 2016. The UCHRP works to restore and enhance habitat for ESA-listed salmon and steelhead in accordance with the Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan and the associated Biological Strategy.

The project design was informed by regional guiding documents: the 2014 Biological Strategy, Middle Twisp Reach Assessment and survey data collected in 2015. The construction level design set will be completed by the end of January through a separate contract. A draft design set is attached to this Scope. This scope of work describes the tasks integral in the Construction Oversight and Monitoring Phases of the project as well as deliverable requirements and timeline.

Scope of Work

Contractor Obligations

The Contractor shall furnish all supervision, labor, equipment and tools necessary to complete the work as outlined in the following tasks.

Phase 5 – Construction Management

Task 13 – Assistance during bidding

This task includes assistance to Yakama Nation staff with preparation of the construction bid package and review of contractor bids. The task includes any necessary pre-bid meetings with contractors at the project site or elsewhere.

Task 14 – Engineer's Oversight during Project Construction

This task will complete construction oversight duties for all construction projects related to the restoration designs. Contractor will work closely with selected construction contractors and Yakama Fisheries managers to implement the projects. Inspection and direction of construction activities will occur throughout the project. Any changes or in field adjustments that are required will be under the supervision of the Contractor with the approval of Yakama Nation Fisheries staff. This work includes any pre-construction staking and/or identification of survey control.

A daily observation report will be produced by the Contractor for all days during construction oversight activities.

Phase 6 – Monitoring

Task 15– Produce a Monitoring Plan

Contractor will develop a comprehensive Monitoring Plan for the project which will address each work element under this contract. The Monitoring Plan will document post-construction condition and will outline future monitoring activities that will be completed. Documentation of post-construction conditions will include a description of the completed project, preparation of as-built drawings, and results of initial post-construction monitoring. This information will serve as a baseline for comparison to future monitoring data. The plan will also identify future monitoring activities and schedule; however,

out-year monitoring activities will be conducted under a separate scope of work. Monitoring activities to be described in the Plan may include photos, notes/sketches, measurements, ocular sediment data, and other activities depending on the project type and objectives. The monitoring schedule will describe the plan for regular scheduled monitoring events as well as trigger points for monitoring in response to high water events. The Plan will also include a discussion of site conditions or changes that may intervention or adaptive management. The Monitoring Plan will be submitted to Yakama Fisheries staff for review, comment, and feedback. Revisions will be made as necessary to finalize the plan.

Payment Schedule

Contractors will be allowed to submit a separate bill for each project task after they have been completed and reviewed by the Designated Representative (Brandon Rodgers).

Consistent Satisfactory Progress

Consistent satisfactory progress in execution of this project will be required. Satisfactory progress will be measured by both the quality and quantity of work. If for any reason no work is performed for a period of 10 consecutive regular work days unless authorized by Yakama Nation's Designated Representative, the contractor will be given a notice of contract cancellation. The Yakama Nation's Designated Representative will monitor progress closely.

Location

This contract covers design Phases 5 & 6 for the Newby Narrows Fish Habitat Restoration Project. This project is located between RM 10 and RM 11 on the Twisp River.

Anticipated Schedule

The Yakama Nation is seeking to have this work initiated promptly upon issuance of a Notice to Proceed.

Projected Timeline:

Task 13: February-March 2016

Task 14: July-October 2016

Task 15: November 2016

BID SHEET

Newby Narrows Fish Habitat Restoration Project Phases 5&6

Please provide costs by Project Task as described in the Scope of Work. Use the Cost Assumptions column to further describe the bid price.

Item	Cost	Cost Assumptions
Phase 5: Construction Management		
TASK 13.0— Assistance During Bidding		
TASK 14.0— Engineer’s Oversight during Project Construction		
Phase 6: Monitoring		
Task 15.0—Produce a Monitoring Plan		

CERTIFICATION:

Company Name

Date Prepared

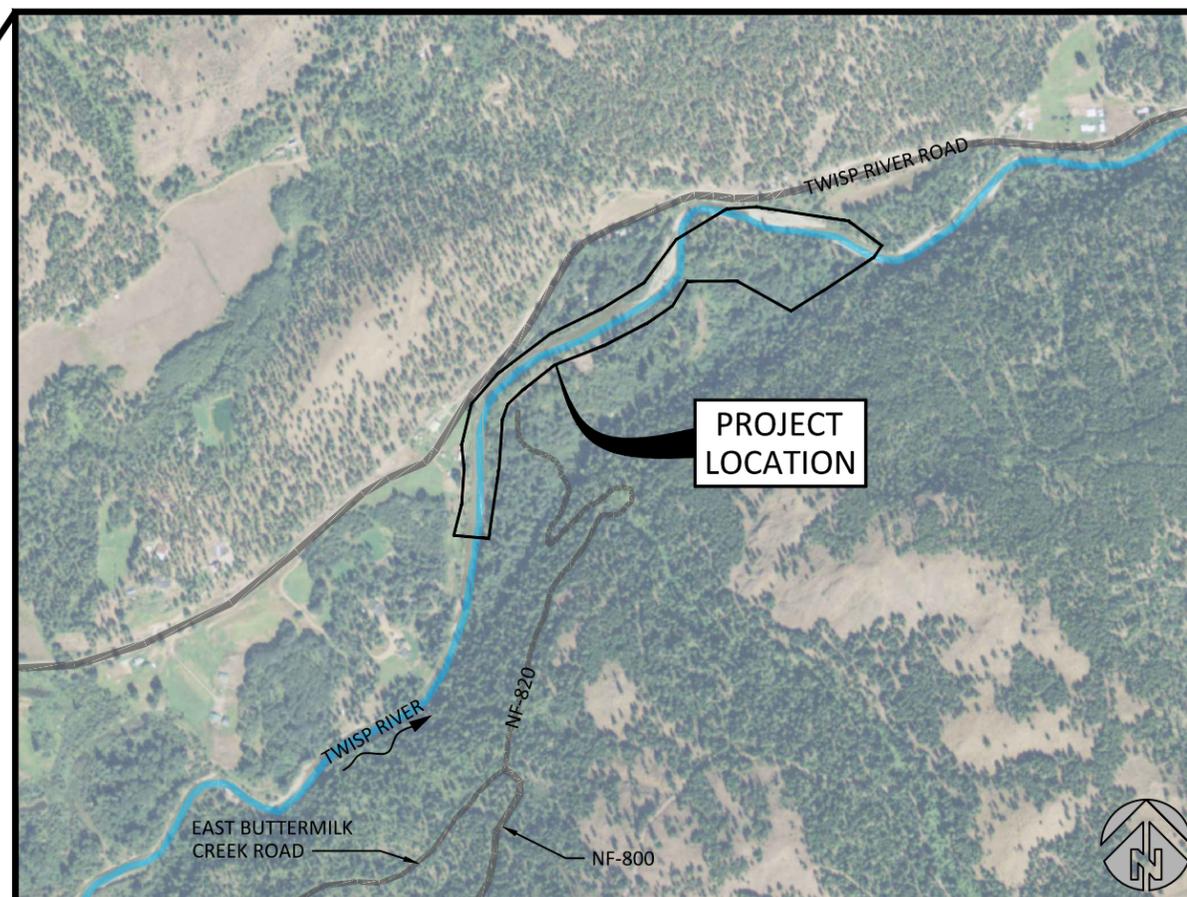
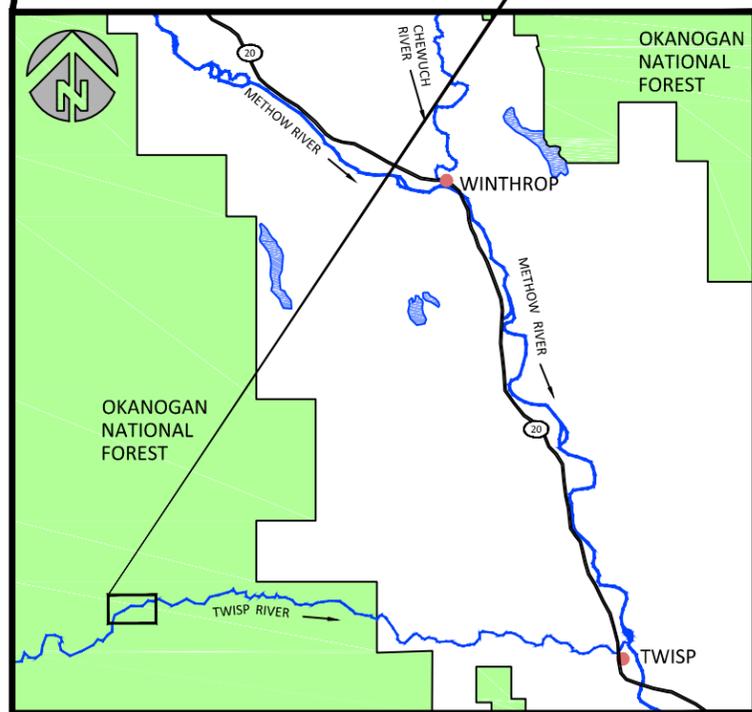
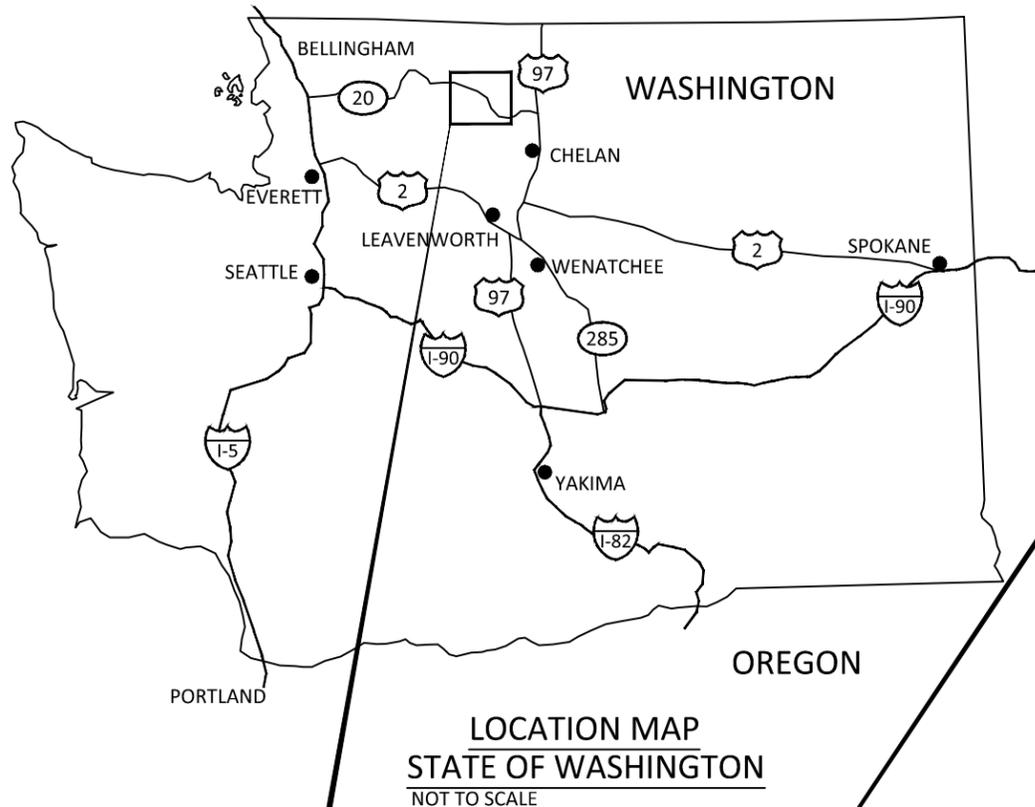
Printed Name and Title

Signature

MIDDLE TWISP RIVER - NEWBY NARROWS PROJECT PRELIMINARY RESTORATION PROJECT DESIGNS

OKANOGAN COUNTY, WASHINGTON

JANUARY, 2016



Preliminary
Not for Construction

SITE LOCATION:

LATITUDE: 48°22'37" NORTH
LONGITUDE: 120°17'49" WEST
SECTION 11 & 12, TOWNSHIP 33N, RANGE 20E
WATERBODY: TWISP RIVER
TRIBUTARY OF: METHOW RIVER

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NO.	BY	DATE	REVISION DESCRIPTION

NS DRAWN	MM, GJ, LH DESIGNED	MM, GJ CHECKED
MM APPROVED	01/27/16 DATE	150224 PROJECT

YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN



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

COVER, SHEET INDEX
AND SITE MAP

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

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

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

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

EXISTING DATA

TOPOGRAPHIC SURVEY COLLECTED BY INTER-FLUVE, INC. BY RTK GPS AND TOTAL STATION IN OCTOBER 2014 AND MAY, JUNE AND JULY 2015. REFERENCED TO NAD83 WASHINGTON STATE PLANE, NORTH ZONE US FEET NAVD 88.

PROPERTY BOUNDARIES PROVIDED BY OKANOGAN COUNTY, 2015. FOREST SERVICE BOUNDARY SURVEYED BY TACKMAN SURVEYING, NOVEMBER 2015.

WETLAND BOUNDARIES DISPLAYED IN THIS SET ARE THE RESULT OF A WETLAND ASSESSMENT PERFORMED BY INTER-FLUVE, INC ON MAY 13-14, 2015.

THE ORDINARY HIGH WATER (OHW) LINES DISPLAYED IN THE DESIGN PACKAGE WERE DELINEATED BY INTER-FLUVE STAFF IN 2016, AND ARE BASED UPON ANALYSIS, MODELING AND BEST PROFESSIONAL JUDGEMENT.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (4.1.0). MODEL CALIBRATED USING SURVEYED WATER SURFACE ELEVATIONS AND EXISTING HIGH WATER MARKS.

SOILS

TWISP RIVER GRAVEL AND FLOODPLAIN SOILS.

UTILITIES

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

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

WDFW IN-WATER WORK PERIODS

WORK SHALL OCCUR DURING THE PERMITTED IN-WATER WORK PERIOD AS STATED IN THE PERMITS ACQUIRED BY THE OWNER. IN-WATER WORK SHALL OCCUR BETWEEN JULY 1- JULY 31, 2016.

FISH RESCUE

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

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

CAPTURED FISHES SHALL BE IMMEDIATELY RELEASED INTO THE RIVER.

TREE SALVAGE

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

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

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

OF WHOLE TREES WILL BE SALVAGED FROM ON-SITE AND UTILIZED IN THE PROJECT AS DESIGNATED. TREES WILL RANGE FROM 40' TO 65', 12" TO 24" DBH. TREES TO BE SALVAGED WILL BE APPROVED AND CLEARLY MARKED BY THE OWNER OR OWNER'S REPRESENTATIVE.

LIVE TREES

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

KEEP OUT OF DRIP LINE OF ALL PRESERVED EXISTING TREES .

CULTURAL RESOURCES

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

CONSTRUCTION ACCESS

THE CONTRACTOR IS ADVISED THAT ACCESS TO THE SITE WILL BE BY RURAL ROADS OF LIMITED WIDTH.

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

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

CONSTRUCTION STAKING

PRIOR TO CONSTRUCTION, THE OWNER WILL FALG EQUIPMENT ENTRY AND EXIT POINTS, STREAM CROSSING ALIGNMENTS, STAGING AND STOCKPILE AREAS, AND SENSITIVE AREAS TO BE AVOIDED. THE OWNER WILL PROVIDE STAKING OF PROJECT LIMITS, GRADE STAKES, AND ELEVATION CONTROL POINTS. 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.

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

CONSTRUCTION MATERIALS

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOTWADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, AND MATERIAL SIZE.

EXCAVATED MATERIALS SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION WITHIN THE STOCKPILE AND STAGING AREA. AT COMPLETION OF WORK, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ANY PERMITS AND FEES REQUIRED FOR LEGAL DISPOSAL.

ABBREVIATIONS

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

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

NS	MM, GJ, LH	MM, GJ
DRAWN	DESIGNED	CHECKED
MM	01/27/16	150224
APPROVED	DATE	PROJECT

**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**



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

**GENERAL NOTES AND
ABBREVIATIONS**

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EROSION CONTROL

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

EROSION/SEDIMENTATION CONTROL (ESC) PLAN

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

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE 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, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER 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.
- G. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.

STABILIZE SOILS AND PROTECT SLOPES

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

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

AFTER FINAL SITE STABILIZATION

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

DUST CONTROL

THE CONTRACTOR SHALL CONTROL DUST FOR THE DURATION OF THE PROJECT. CONTROL MEASURES MAY INCLUDE, BUT ARE NOT LIMITED TO : SPRINKLERS, MULCH, SLOWER VEHICLE OPERATING SPEEDS.

CONSTRUCTION DEWATERING

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF TURBID OR SEDIMENT-LADEN WATER IN ORDER TO PREVENT CONTAMINATION OR INCREASE TURBIDITY OF SURFACE WATERS.

EXCAVATION OF DEWATERING SUMPS BEYOND LIMITS SHOWN SHALL BE AT NO ADDITIONAL COST.

SEDIMENT LADEN WATER MAY BE PUMPED TO AN UPLAND DISCHARGE LOCATION AND ALLOWED TO SHEET FLOW THROUGH EXISTING VEGETATION BEFORE INFILTRATING INTO THE GROUND. IF THIS METHOD IS NOT SUFFICIENT TO PREVENT RETURN OF TURBID WATER TO SURFACE WATERS OR SENSITIVE FLOODPLAIN AREAS, A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST.

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

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

INSPECTION AND MAINTENANCE

ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL ESC FACILITIES SHALL BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

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.

JURISDICTIONAL AREA IMPACTS

Structure	ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
A	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1258 SF; 220 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	57	516 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	11 (8 Logs, 3 whole trees)	650 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	2	44 SF
B	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	890 SF; 80 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	65	643 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	9 (15 Logs)	280 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	25	335 SF
C	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1067 SF; 79 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	78	850 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	8 (6 Logs)	180 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	25	440 SF
D, E, F	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1925 SF; 228 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	125	1287 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	37 (36 logs, 4 whole trees)	1800 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	22	900 SF
G	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1292 SF; 88 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	47	428 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	44 (17 logs)	1000 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	10	600 SF
H	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1430 SF; 115 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	47	428 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	44 (17 logs)	1000 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	10	600 SF
I, J	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1190 SF; 179 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	70	1100 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	30 (16 logs, 3 whole trees)	1022 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	20	400 SF
K	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1795 SF; 133 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	47	483 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	44 (23 logs)	391 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	30	240 SF
Side-Channel	EXCAVATION	WETLAND	WETLAND	PERMANENT	325	3560 SF
Totals	COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	10847 SF; 1122 LF
	EXCAVATION	TWISP RIVER	RIVER	PERMANENT	536 CY	5735 SF
	WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	227 CY (138 logs, 10 whole trees)	6323 SF
	BACKFILL	TWISP RIVER	RIVER	PERMANENT	144 CY	3559 SF
	EXCAVATION	WETLAND	WETLAND	PERMANENT	325 CY	3560 SF

Preliminary
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NO.	BY	DATE	REVISION DESCRIPTION

NS DRAWN	MM, GJ, LH DESIGNED	MM, GJ CHECKED
MM APPROVED	01/27/16 DATE	150224 PROJECT

YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

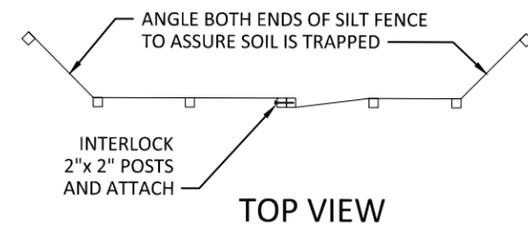
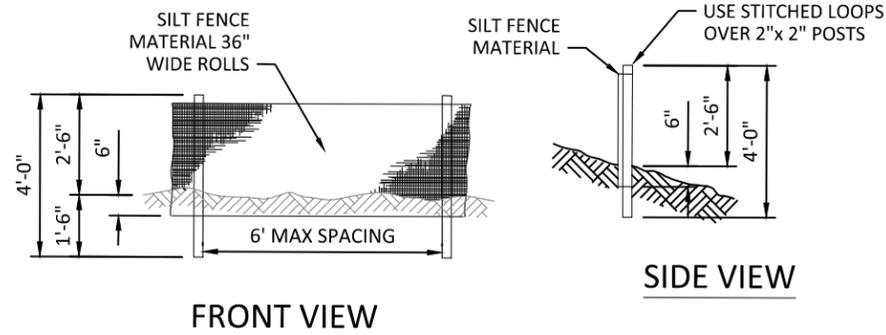


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**EROSION CONTROL NOTES &
JURISDICTIONAL AREA
IMPACTS SUMMARY**

SHEET
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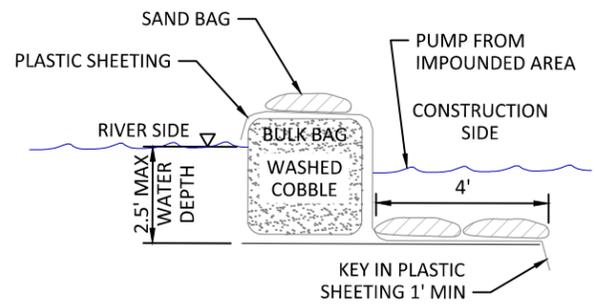


1
4 TYPICAL DETAIL - TEMPORARY SILT FENCE
NOT TO SCALE

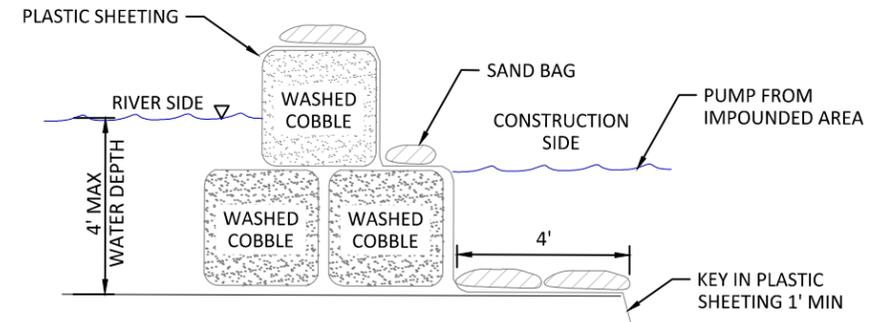
NOTES:

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 AT LOCATIONS SHOWN ON THE PLAN ALONG THE DOWNHILL PERIMETER OF CONSTRUCTION AREAS. 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.

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SECTION - WATER DEPTHS LESS THAN 2.5'



SECTION - WATER DEPTHS GREATER THAN 2.5'

2
4 TYPICAL DETAIL - TEMPORARY COFFERDAM
NOT TO SCALE

BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED COBBLE, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.
2. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM.
3. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON BOTH SIDES OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4- FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS. ALL SANDBAGS SHALL BE FILLED WITH WASHED PEA GRAVEL.
4. THE CONSTRUCTION SIDE EDGE OF PLASTIC SHEETING SHALL BE TOED INTO THE CHANNEL BED MINIMUM 1-FT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
5. THE TERMINAL ENDS OF BULK BAG COFFERDAM, WHERE IT CONNECTS TO CHANNEL BANK OR HIGH GROUND, SHALL BE SEALED WITH PLASTIC SHEETING AND STANDARD SANDBAGS.
6. BULK BAGS SHALL BE CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
7. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. MINIMUM 16-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULK BAG COFFERDAM.
8. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BULK BAG FILL (WASHED COBBLE) AND SANDBAG FILL (WASHED PEA GRAVEL) SHALL BE DISPOSED OF ON SITE. BAGS SHALL BE REMOVED FROM THE SITE ONCE CONSTRUCTION IS COMPLETED.
9. MEASUREMENT AND PAYMENT FOR BULK BAG COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED COBBLE PLACEMENT, MAINTENANCE AND REMOVAL OF ALL MATERIALS SHALL BE INCIDENTAL TO THE LUMP SUM ALL INCLUSIVE COST FOR DIVERSION AND DEWATERING.
10. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.

NO.	BY	DATE	REVISION DESCRIPTION

NS	MM, GJ, LH	MM, GJ
DRAWN	DESIGNED	CHECKED
MM	01/27/16	150224
APPROVED	DATE	PROJECT

**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**

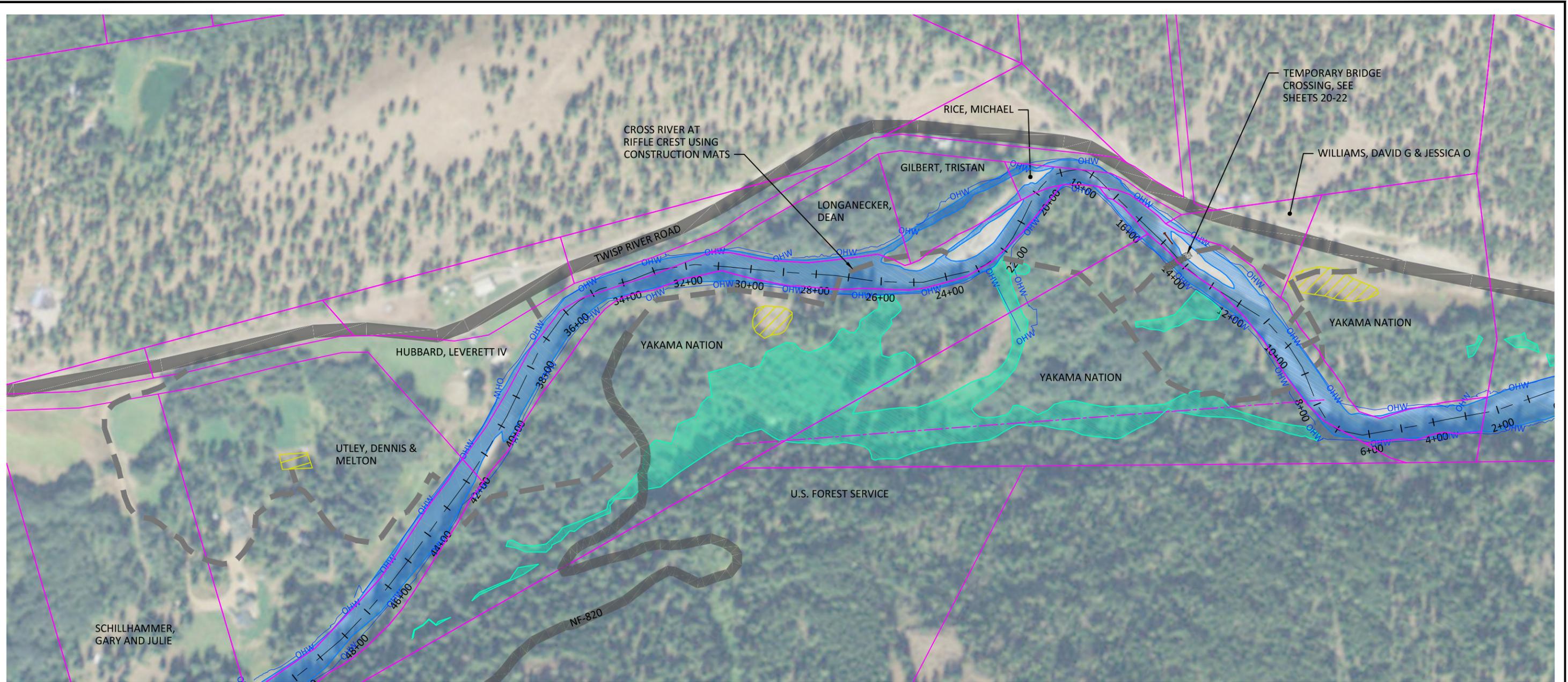


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EROSION CONTROL DETAILS

SHEET
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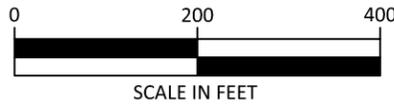
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LEGEND

-  PROPERTY BOUNDARIES (OKANOGAN COUNTY GIS)
-  FOREST SERVICE BOUNDARY (TACKMAN SURVEY)
-  40+00
TWISP RIVER ALIGNMENT AND STATIONING
-  TEMPORARY ACCESS
-  TEMPORARY BRIDGE, SEE SHEETS 20 - 22
-  OHW
ORDINARY HIGH WATER
-  TEMPORARY STAGING AREA
-  TYPICAL LOW WATER
-  EXISTING WETLAND

NOTE:
TEMPORARY ACCESS AND STAGING AREAS WILL BE PLANTED WITH SEED AND MULCH AFTER CONSTRUCTION IS COMPLETE.



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MM APPROVED	01/27/16 DATE	150224 PROJECT

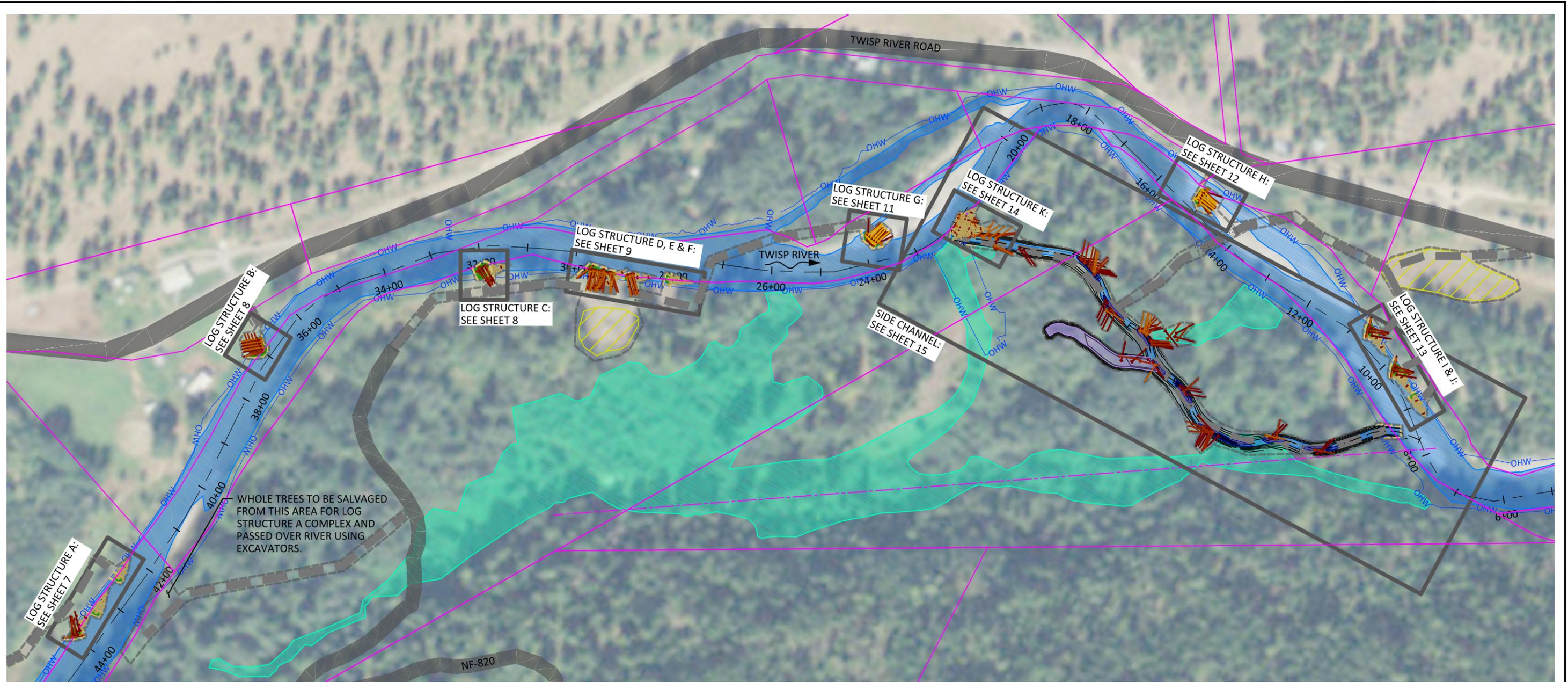
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**EXISTING CONDITIONS,
PROPERTY OWNERSHIP,
ACCESS AND STAGING**

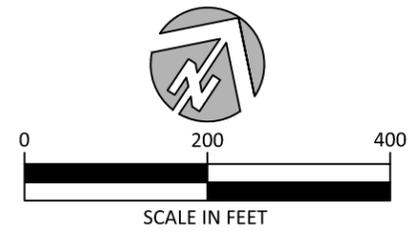
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WHOLE TREES TO BE SALVAGED FROM THIS AREA FOR LOG STRUCTURE A COMPLEX AND PASSED OVER RIVER USING EXCAVATORS.

LEGEND

- PROPOSED CONTOURS (1FT)
- PROPERTY BOUNDARIES (OKANOGAN COUNTY GIS)
- FOREST SERVICE BOUNDARY (TACKMAN SURVEY)
- TWISP RIVER ALIGNMENT AND STATIONING
- SIDE CHANNEL ALIGNMENT AND STATIONING
- LIMITS OF DISTURBANCE
- TEMPORARY ACCESS
- TEMPORARY BRIDGE, SEE SHEETS 20 - 22
- TEMPORARY COFFERDAM, SEE $\frac{2}{4}$
- ORDINARY HIGH WATER
- TEMPORARY STAGING AREA
- TYPICAL LOW WATER
- EXISTING WETLAND
- PROPOSED WETLAND CREATION AREA



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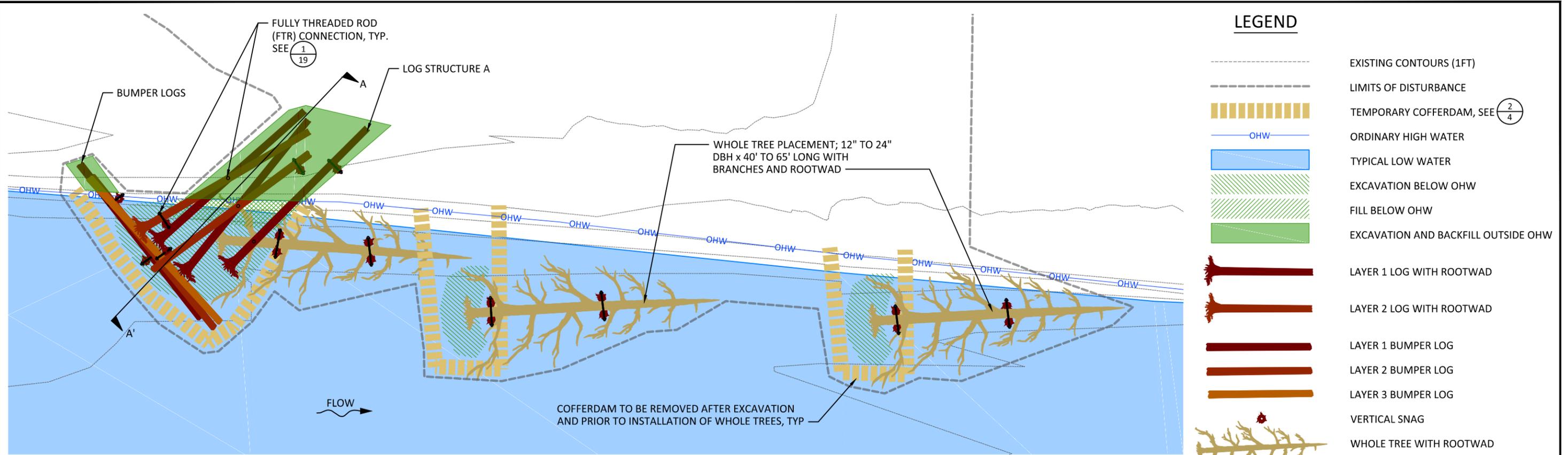
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**PROPOSED CONDITIONS,
SHEET KEY AND EROSION
CONTROL PLAN**

SHEET
6 OF 22

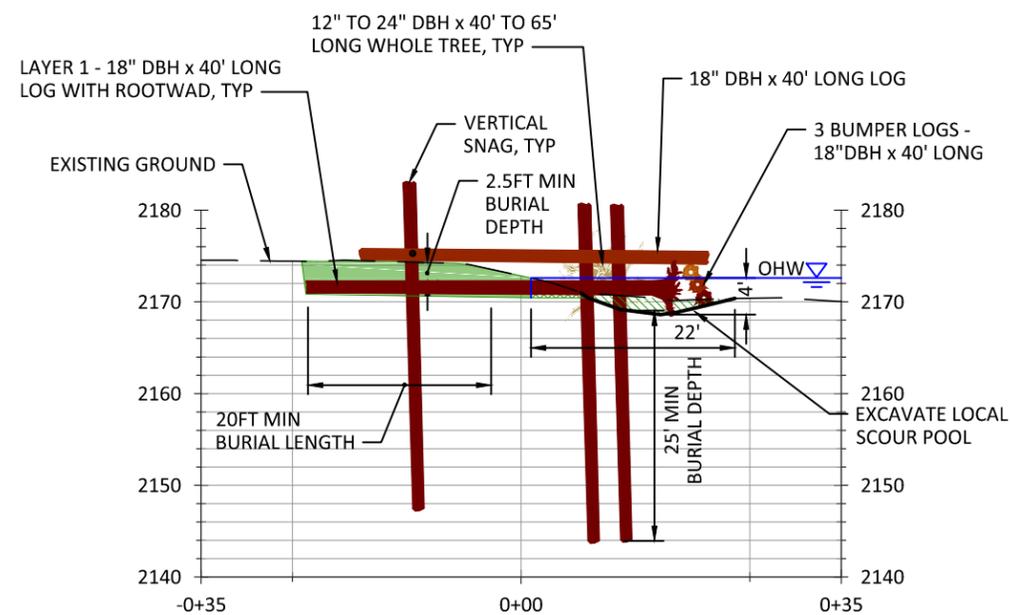
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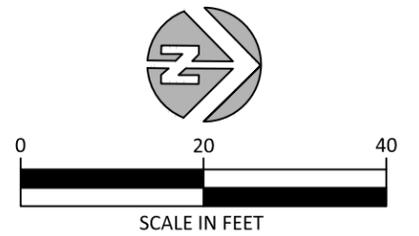
- EXISTING CONTOURS (1FT)
- - - LIMITS OF DISTURBANCE
- ▨ TEMPORARY COFFERDAM, SEE (2/4)
- OHW
- ▒ TYPICAL LOW WATER
- ▨ EXCAVATION BELOW OHW
- ▒ FILL BELOW OHW
- ▒ EXCAVATION AND BACKFILL OUTSIDE OHW
- LAYER 1 LOG WITH ROOTWAD
- LAYER 2 LOG WITH ROOTWAD
- LAYER 1 BUMPER LOG
- LAYER 2 BUMPER LOG
- LAYER 3 BUMPER LOG
- VERTICAL SNAG
- WHOLE TREE WITH ROOTWAD

PLAN



SECTION A-A' LOG STRUCTURE A

IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1258 SF; 220 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	57 CY	516 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	11 CY (8 Logs, 3 whole trees)	650 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT	2 CY	44 SF



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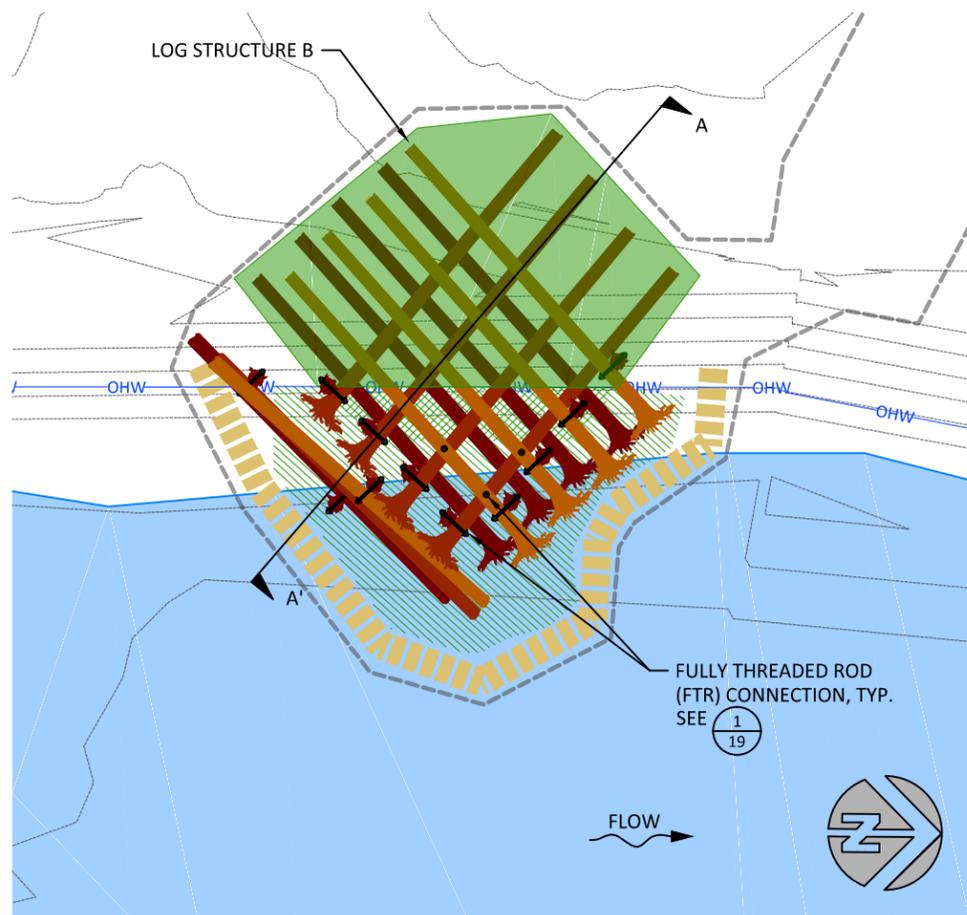
NS	MM, GJ, LH	MM, GJ
DRAWN	DESIGNED	CHECKED
MM	01/27/16	150224
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

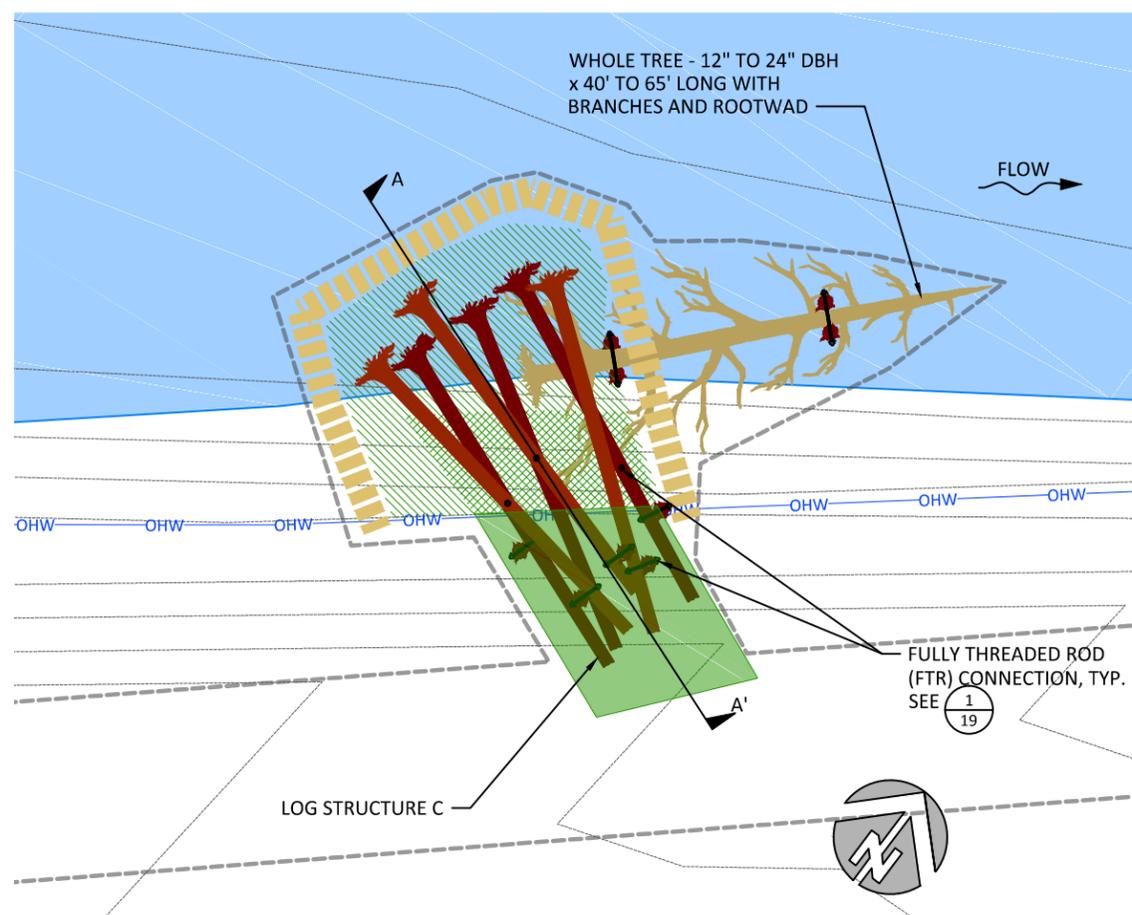
LOG STRUCTURE A - PLAN, PROFILE AND QUANTITIES

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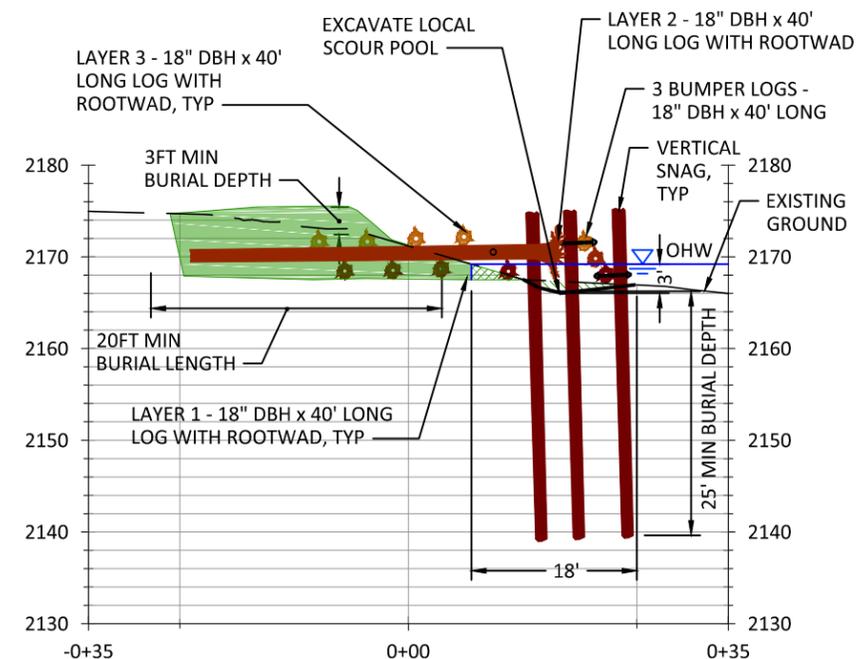
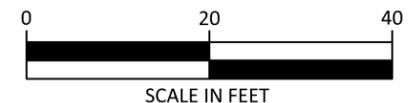
PLAN LOG STRUCTURE B



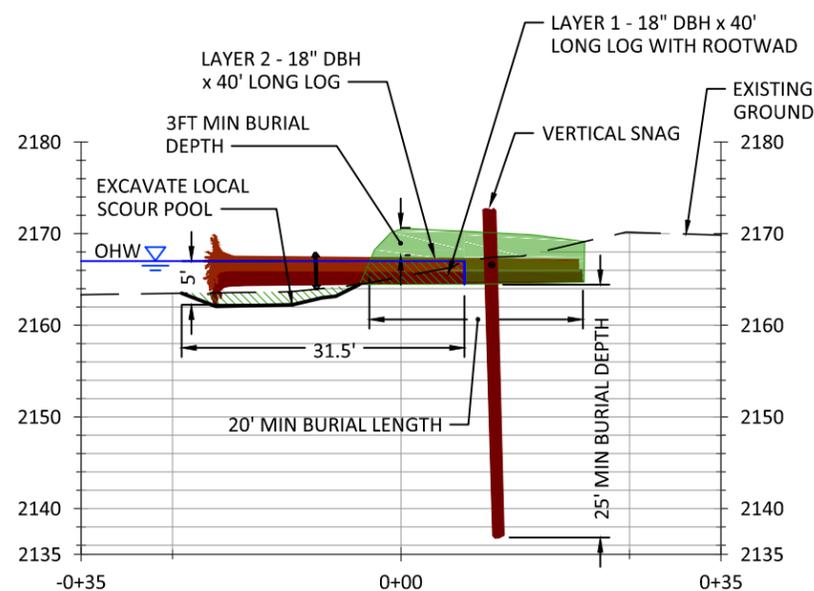
PLAN LOG STRUCTURE C

LEGEND

- EXISTING CONTOURS (1FT)
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE 2/4
- ORDINARY HIGH WATER
- TYPICAL LOW WATER
- EXCAVATION BELOW OHW
- FILL BELOW OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW
- LAYER 1 - LOG WITH ROOTWAD
- LAYER 2 - LOG WITH ROOTWAD
- LAYER 3 - LOG WITH ROOTWAD
- LAYER 1 BUMPER LOG
- LAYER 2 BUMPER LOG
- LAYER 3 BUMPER LOG
- VERTICAL SNAG
- WHOLE TREE WITH ROOTWAD



SECTION A-A' LOG STRUCTURE B



SECTION B-B' LOG STRUCTURE C

IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OF LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1957 SF; 159 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	143 CY	1493 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	17 CY (21 Logs)	460 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT	50 CY	775 SF

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APPROVED	DATE	PROJECT

**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**

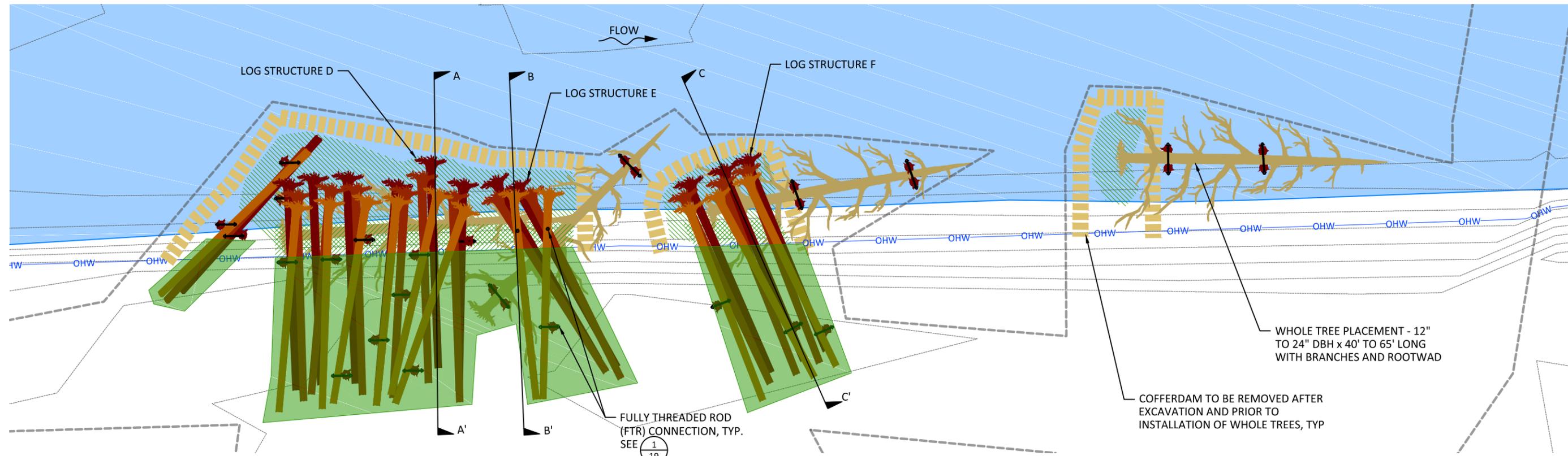


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**LOG STRUCTURE B & C - PLAN,
PROFILE AND QUANTITIES**

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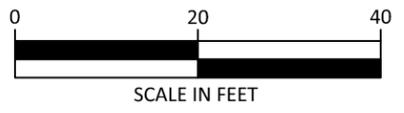
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PLAN

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NOTE:
SEE SHEET 10 FOR SECTION
VIEW OF STRUCTURES.



LEGEND

- EXISTING CONTOURS (1FT)
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE 2/4
- ORDINARY HIGH WATER
- TYPICAL LOW WATER
- EXCAVATION WITHIN OHW
- FILL WITHIN OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW

- LAYER 1 LOG WITH ROOTWAD
- LAYER 2 LOG WITH ROOTWAD
- LAYER 3 LOG WITH ROOTWAD
- LAYER 1 BUMPER LOG
- LAYER 2 BUMPER LOG
- LAYER 3 BUMPER LOG
- VERTICAL SNAG
- WHOLE TREE WITH ROOTWAD

IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1925 SF; 228 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	125 CY	1287 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	37 CY (36 logs, 4 whole trees)	1800 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT		22 CY

NO.	BY	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
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**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**

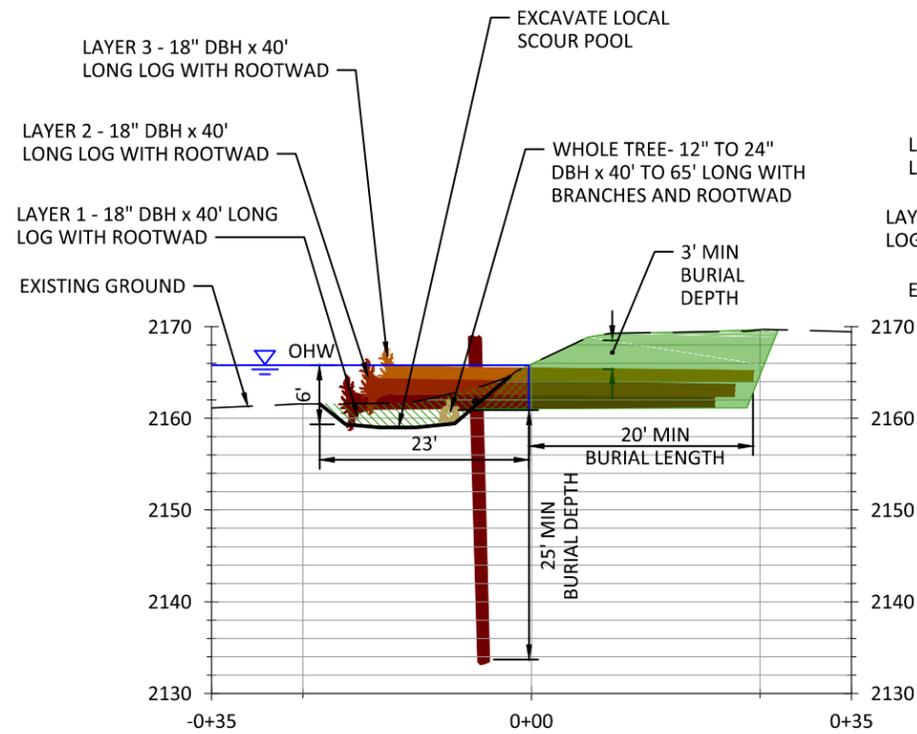


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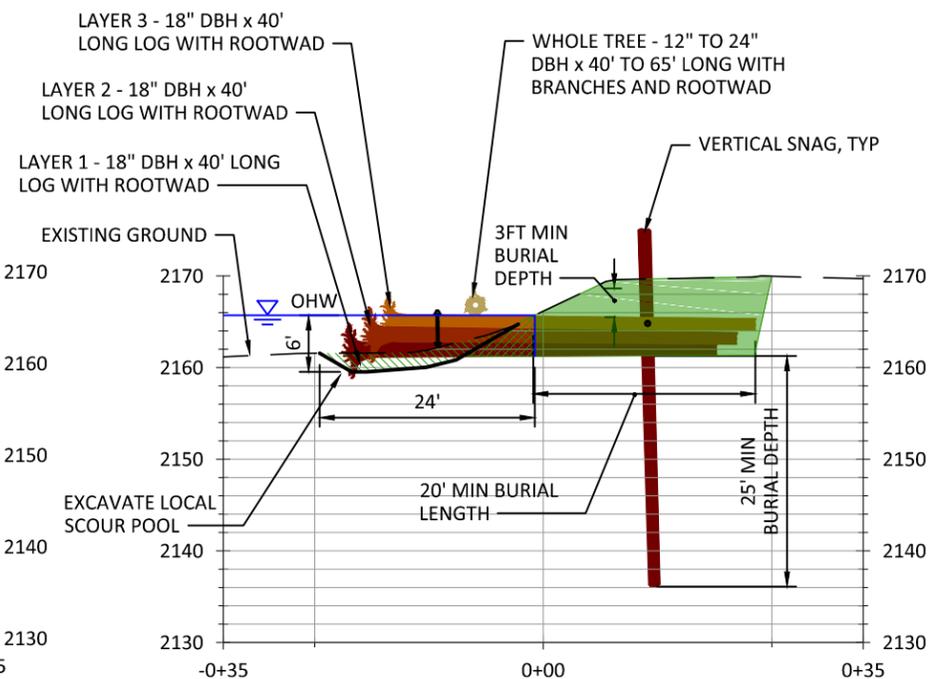
**LOG STRUCTURE D, E & F -
PLAN AND QUANTITIES**

SHEET
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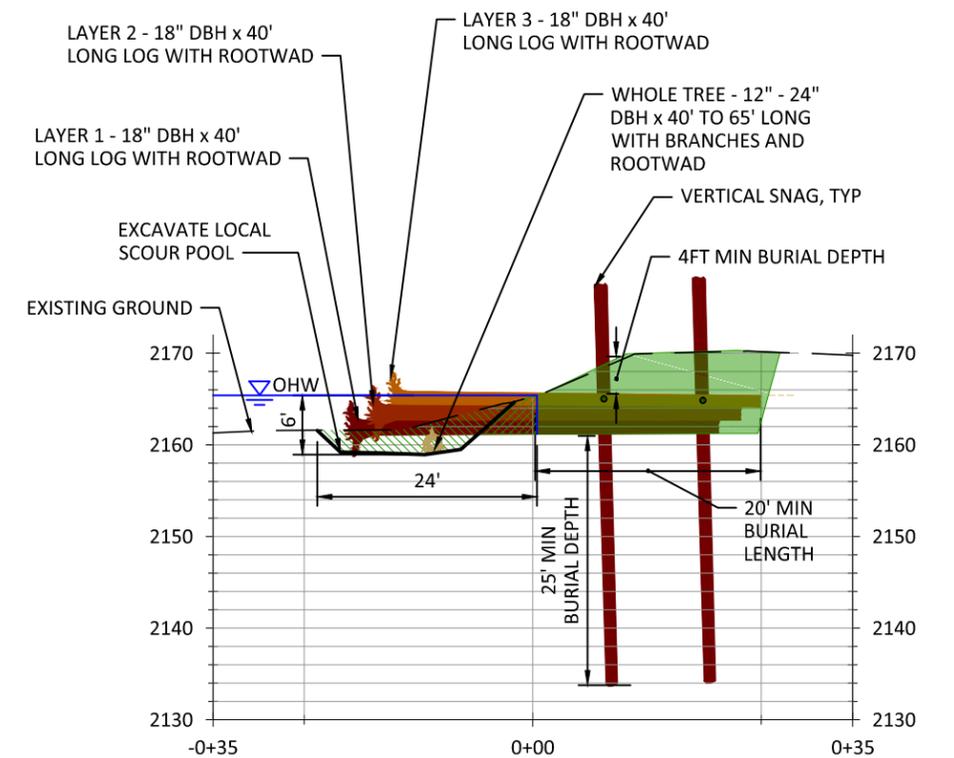
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SECTION A-A' LOG STRUCTURE D



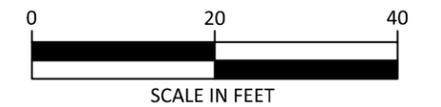
SECTION B-B' LOG STRUCTURE E



SECTION C-C' LOG STRUCTURE F

LEGEND

- EXCAVATION BELOW OHW
- FILL BELOW OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW



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NO.	BY	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
MM	01/27/16	150224
APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

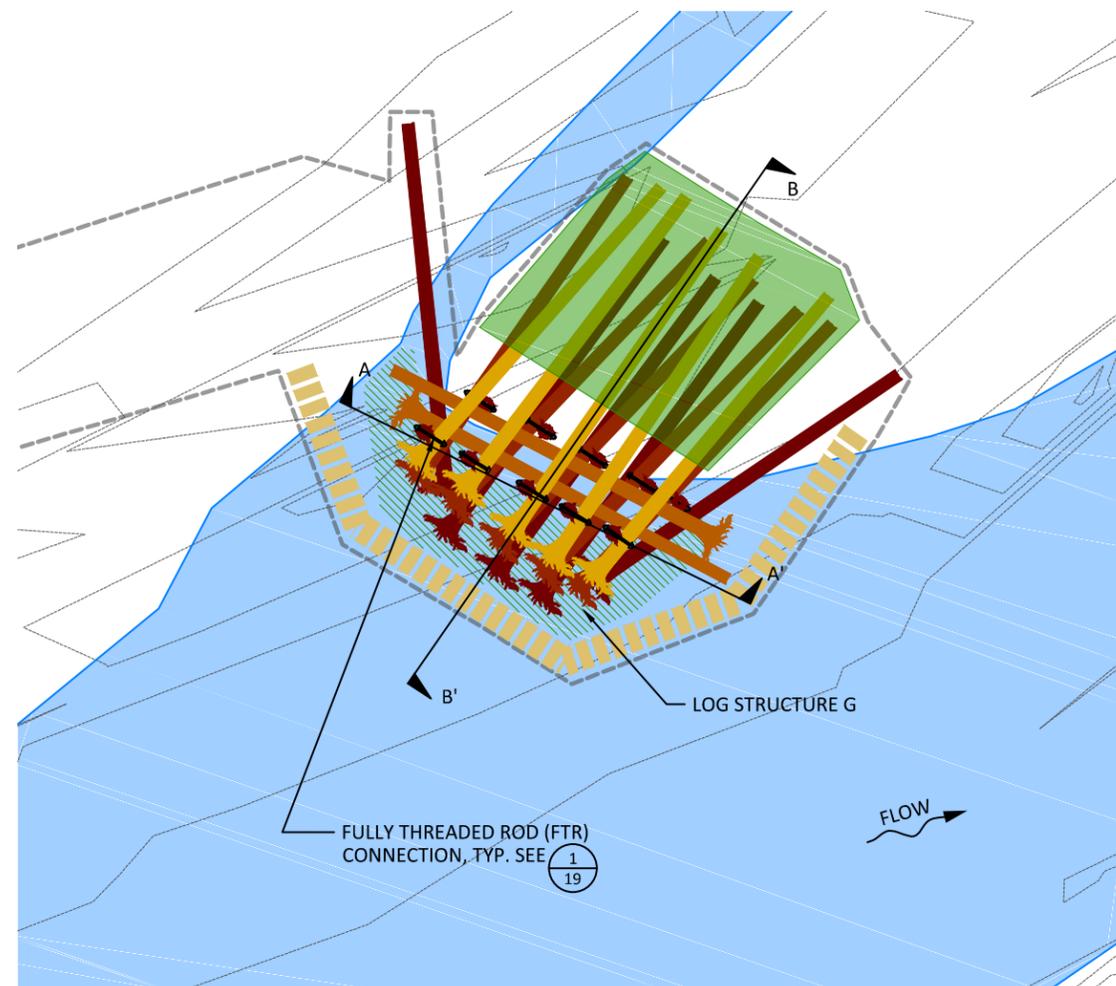


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LOG STRUCTURE D, E & F -
PROFILE

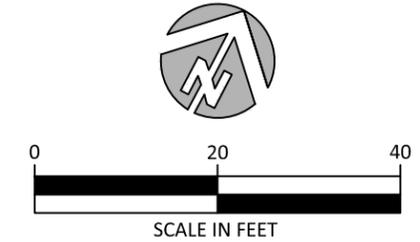
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10 OF 22

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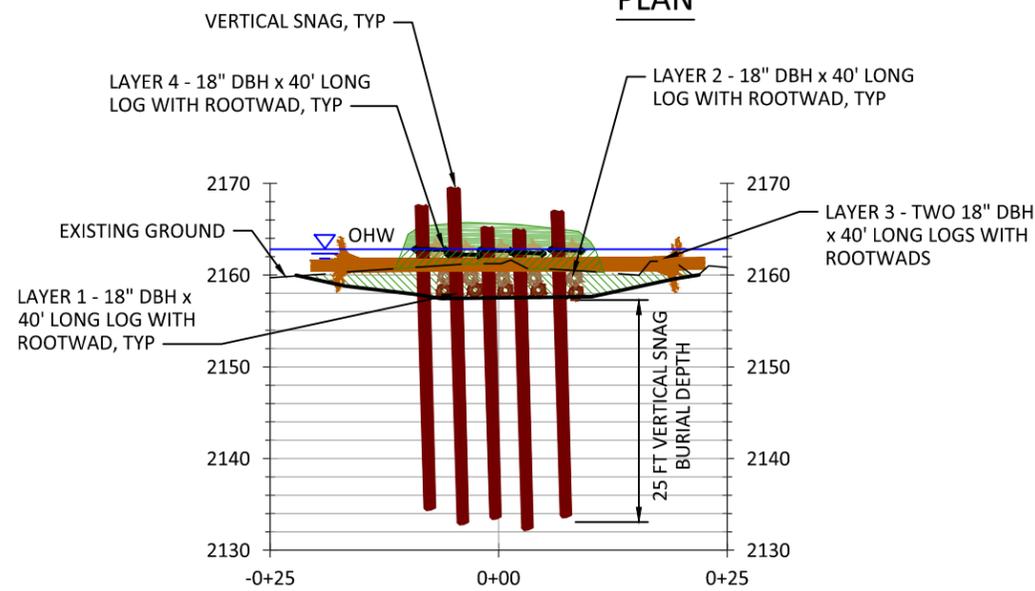
LEGEND

- EXISTING CONTOURS (1FT)
- LIMITS OF DISTURBANCE
- TYPICAL LOW WATER
- EXCAVATION BELOW OHW
- FILL BELOW OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW
- LAYER 1 LOG WITH ROOTWAD
- LAYER 2 LOG WITH ROOTWAD
- LAYER 3 LOG WITH ROOTWAD
- LAYER 4 LOG WITH ROOTWAD
- VERTICAL SNAG

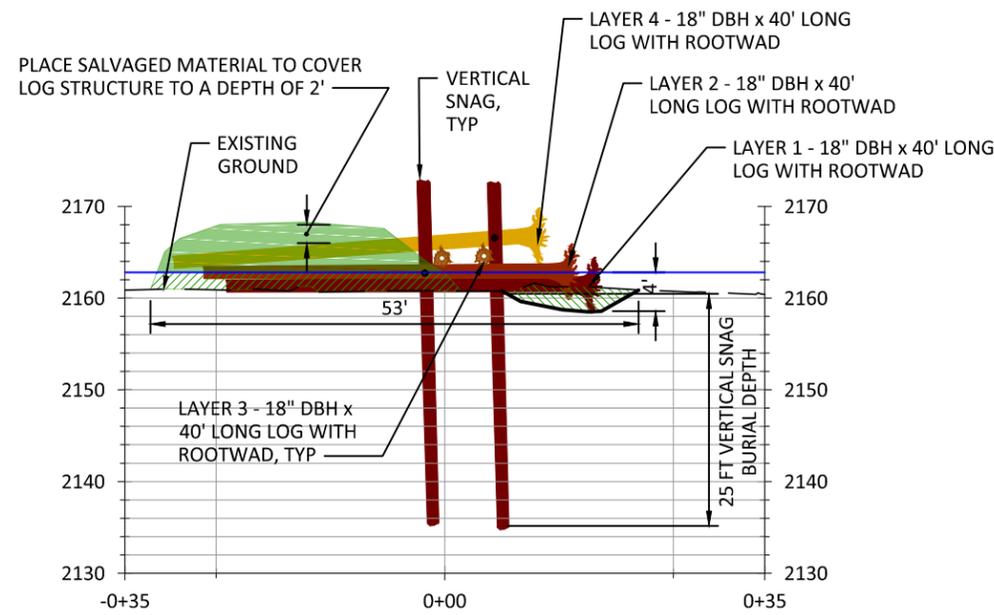


IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1292 SF; 88 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	47 CY	428 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	44 CY (17 logs)	1000 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT	47 CY	600 SF

PLAN



SECTION A-A' LOG STRUCTURE G



SECTION B-B' LOG STRUCTURE G

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Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

NS	MM, GJ, LH	MM, GJ
DRAWN	DESIGNED	CHECKED
MM	01/27/16	150224
APPROVED	DATE	PROJECT

**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**

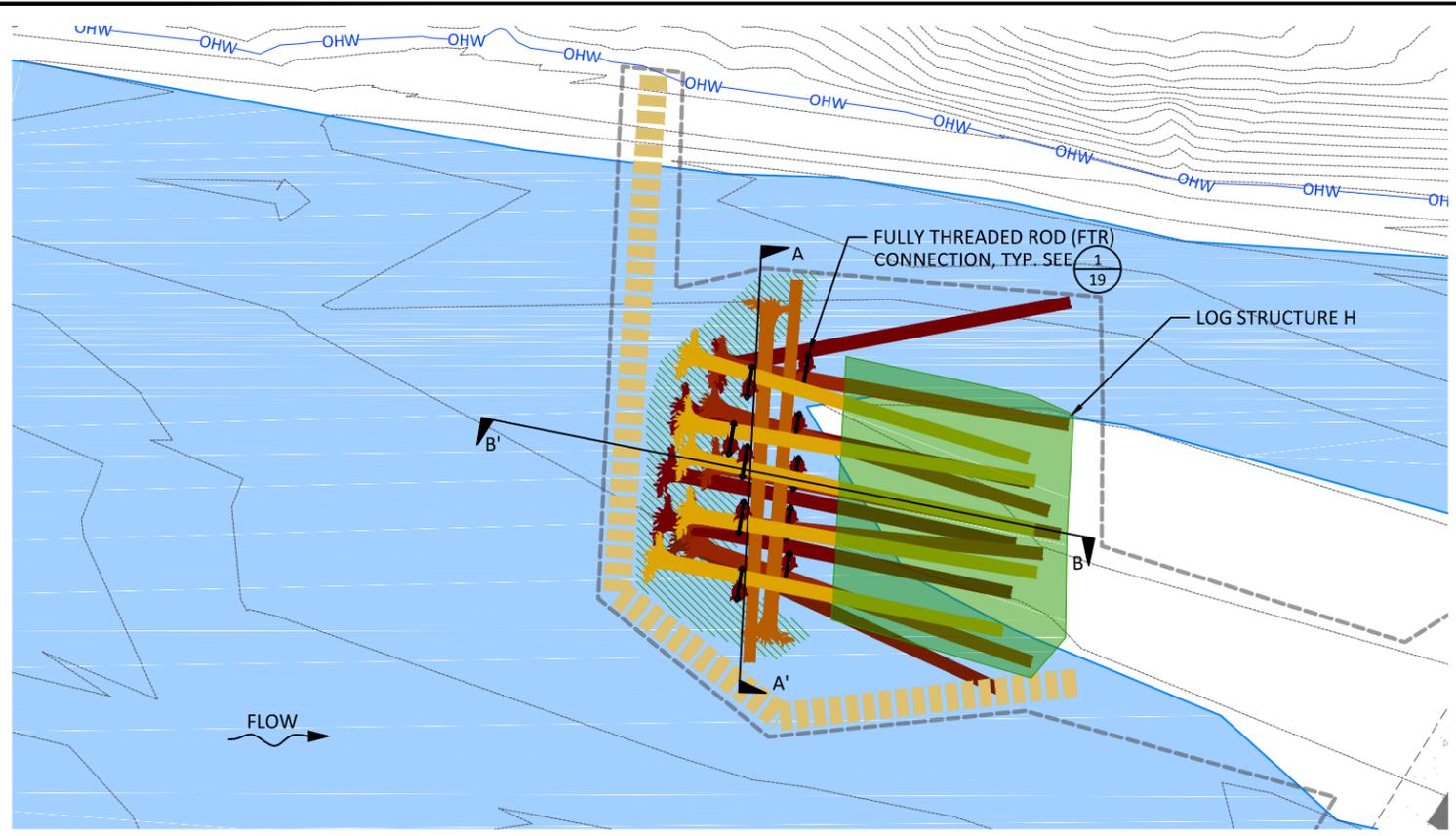


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**LOG STRUCTURE G - PLAN,
PROFILE AND QUANTITIES**

SHEET
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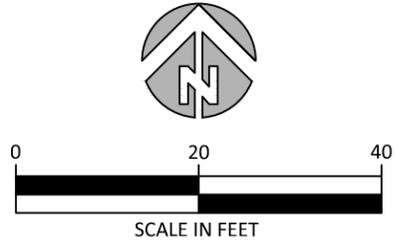
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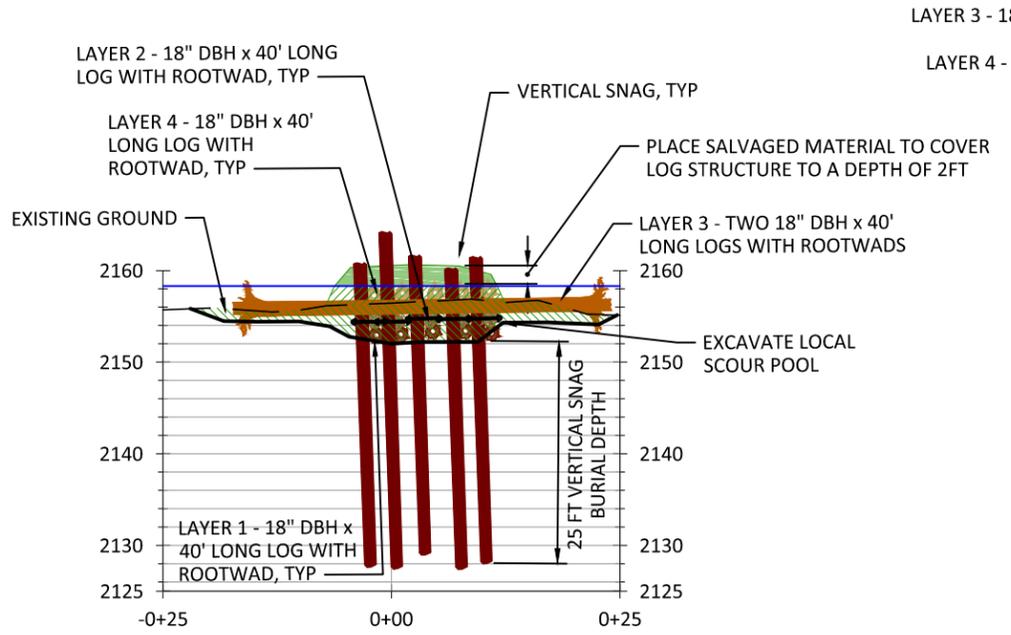
PLAN

LEGEND

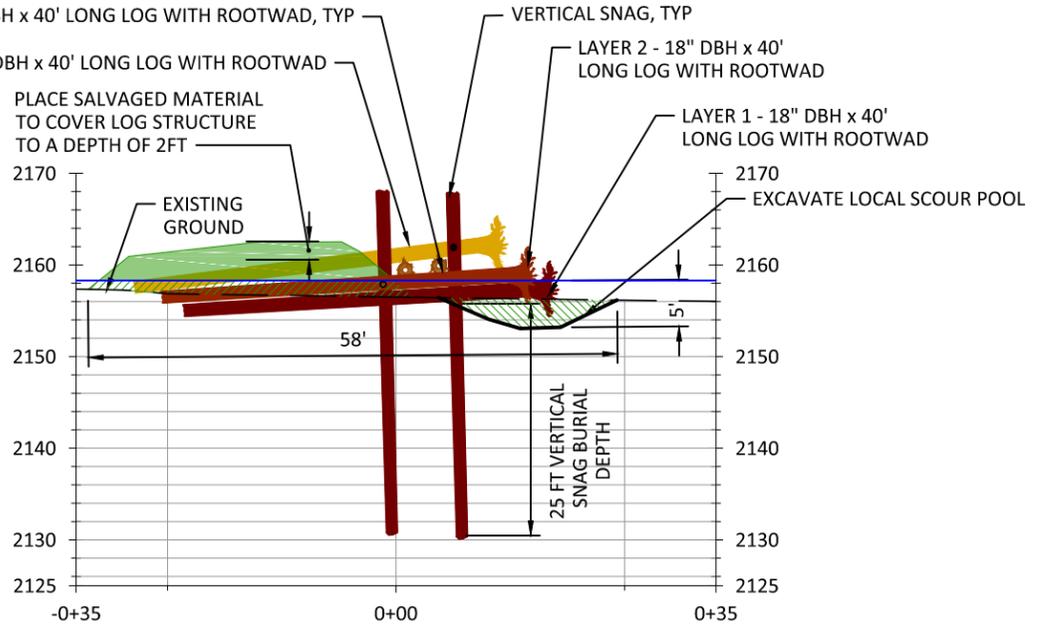
- EXISTING CONTOURS (1FT)
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE 2/4
- OHW
- ORDINARY HIGH WATER
- TYPICAL LOW WATER
- EXCAVATION BELOW OHW
- FILL BELOW OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW
- LAYER 1 LOG WITH ROOTWAD
- LAYER 2 LOG WITH ROOTWAD
- LAYER 3 LOG WITH ROOTWAD
- LAYER 4 LOG WITH ROOTWAD
- VERTICAL SNAG



IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1430 SF; 115 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	47 CY	428 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	44 CY (17 logs)	1000 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT	47 CY	600 SF



SECTION A-A' LOG STRUCTURE H



SECTION B-B' LOG STRUCTURE H

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

NS	MM, GJ, LH	MM, GJ
DRAWN	DESIGNED	CHECKED
MM	01/27/16	150224
APPROVED	DATE	PROJECT

**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**

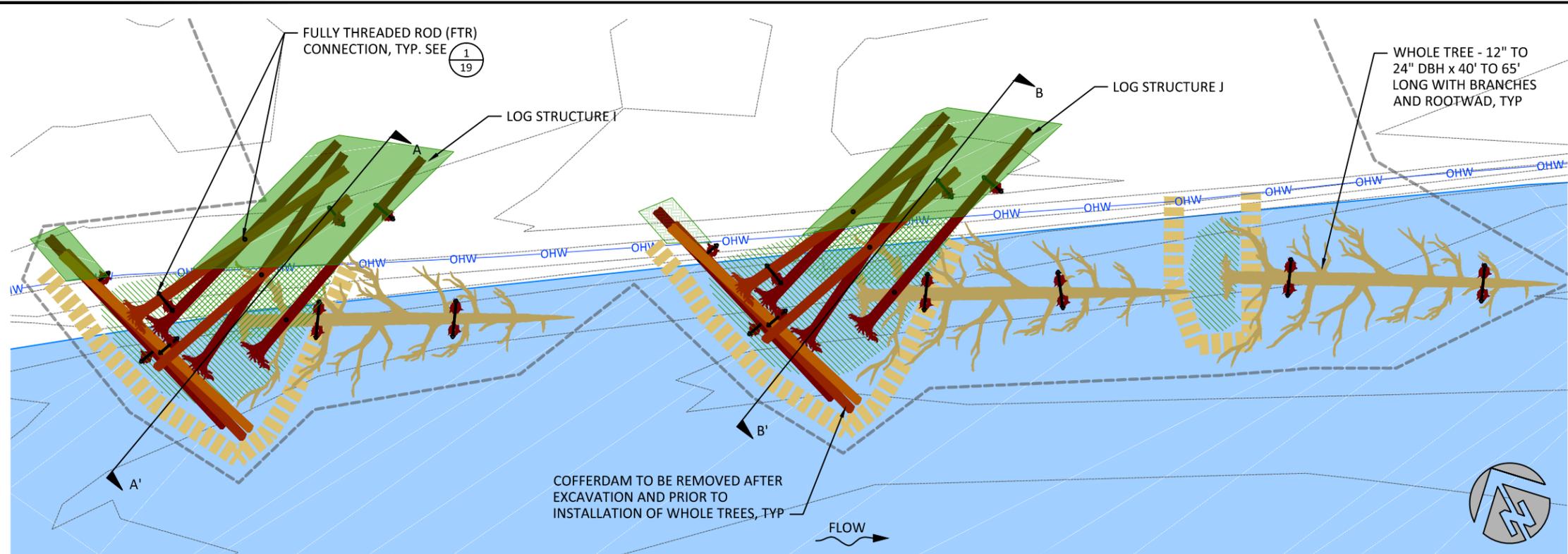


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**LOG STRUCTURE H - PLAN,
PROFILE AND QUANTITIES**

SHEET
12 OF 22

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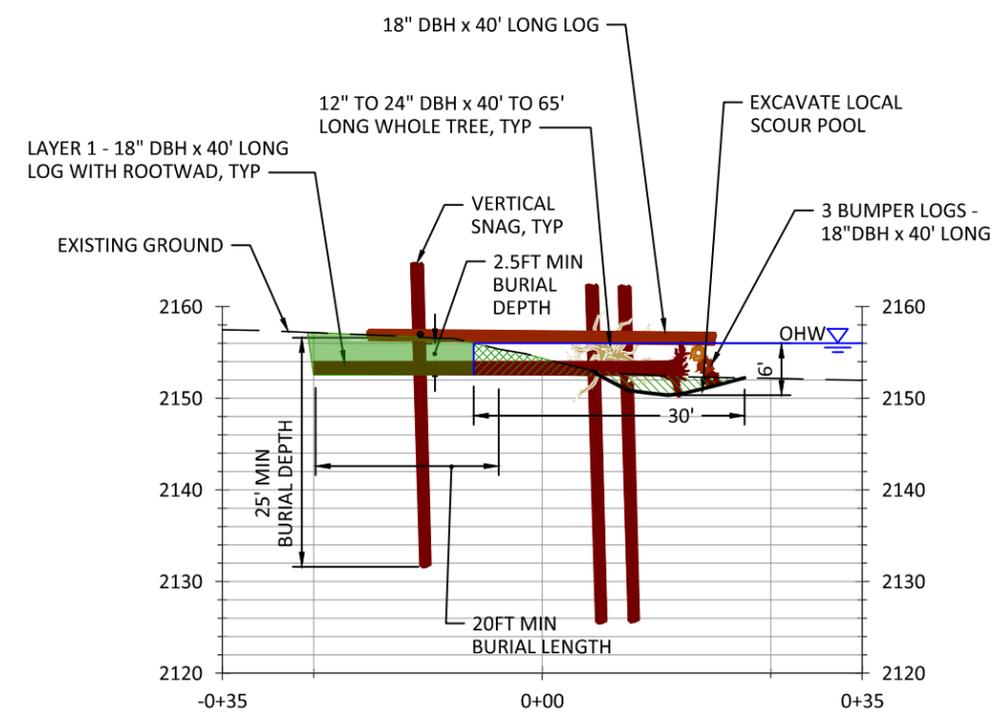


LEGEND

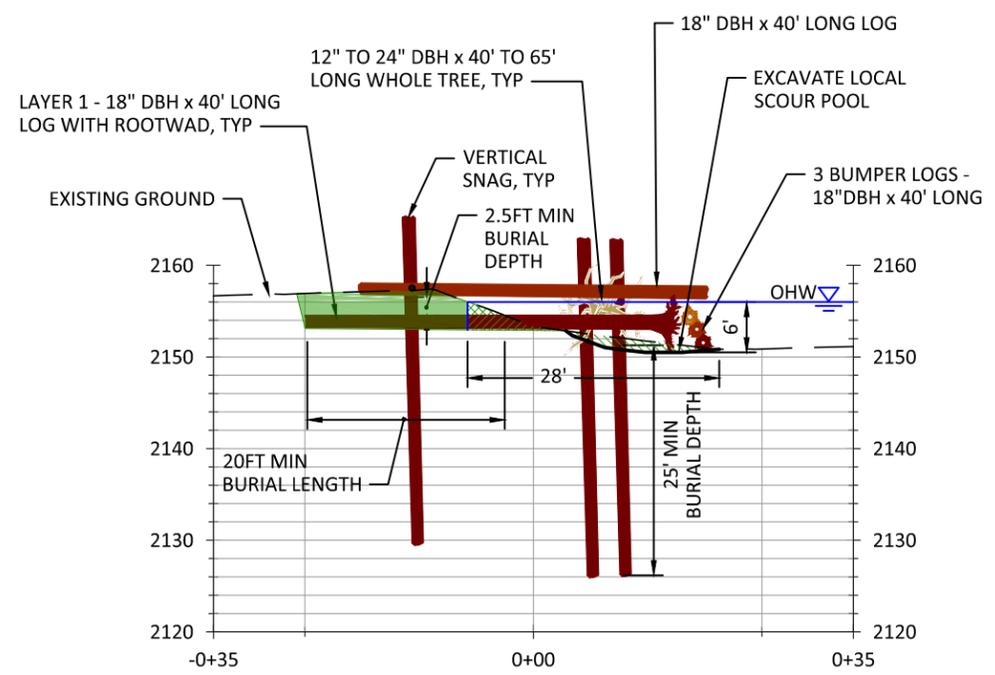
- EXISTING CONTOURS (1FT)
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE 2/4
- ORDINARY HIGH WATER
- TYPICAL LOW WATER
- EXCAVATION BELOW OHW
- FILL BELOW OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW
- LAYER 1 LOG WITH ROOTWAD
- LAYER 2 LOG WITH ROOTWAD
- LAYER 1 BUMPER LOG
- LAYER 2 BUMPER LOG
- LAYER 3 BUMPER LOG
- VERTICAL SNAG
- WHOLE TREE WITH ROOTWAD



PLAN



SECTION A-A' LOG STRUCTURE I



SECTION A-A' LOG STRUCTURE J

IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1190 SF; 179 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	70 CY	1100 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	30 CY (16 logs, 3 whole trees)	1022 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT	20 CY	400 SF

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NO.	BY	DATE	REVISION DESCRIPTION

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MM	01/27/16	150224
APPROVED	DATE	PROJECT

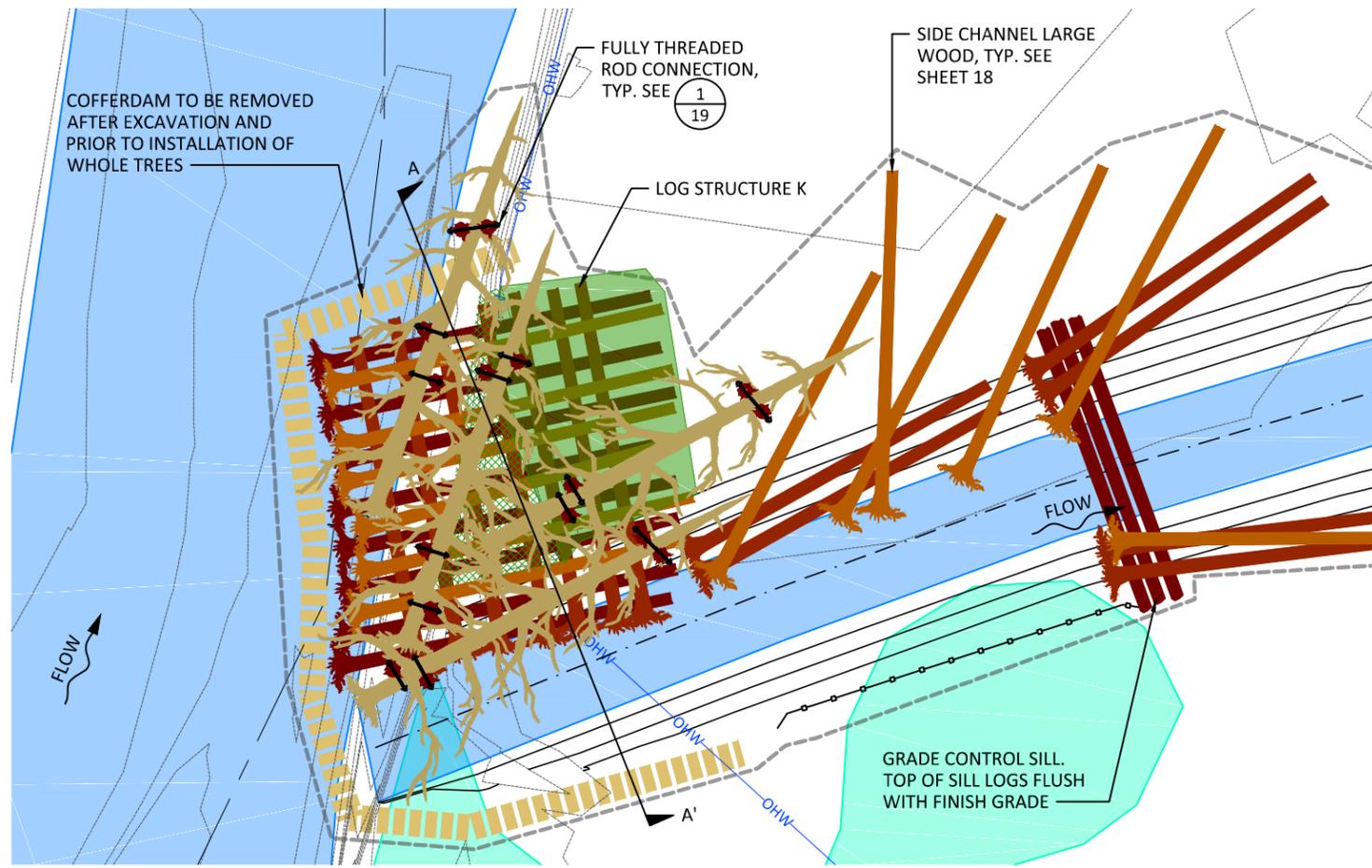
YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

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LOG STRUCTURE I & J - PLAN, PROFILE AND QUANTITIES

SHEET
13 OF 22

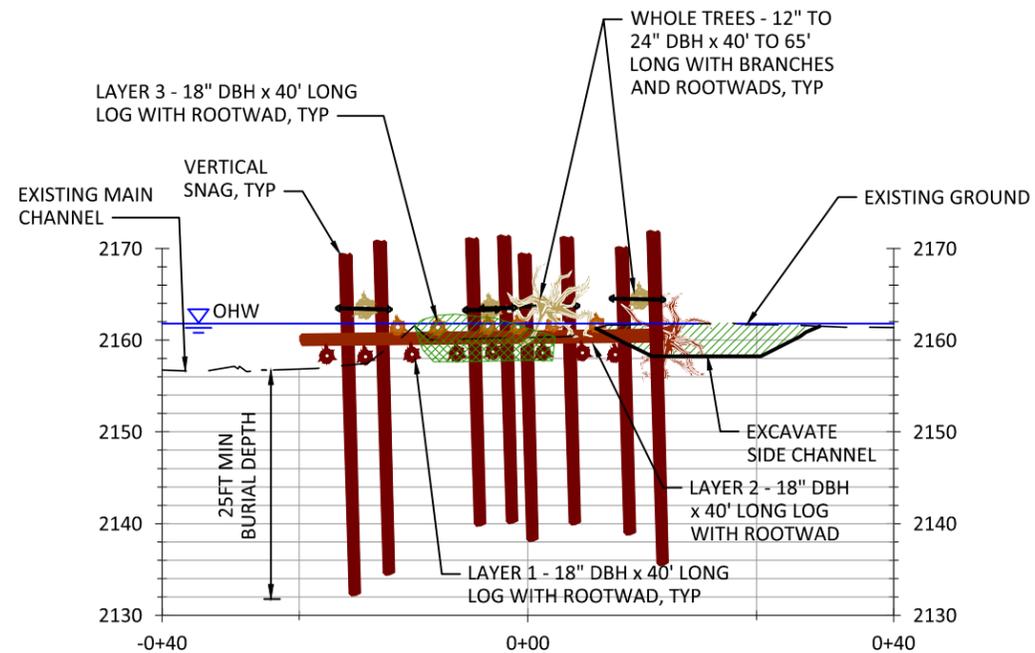
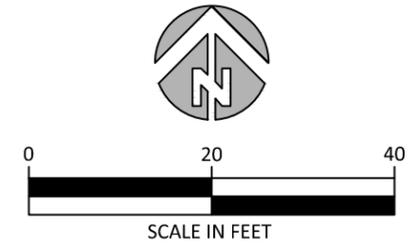
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PLAN

LEGEND

- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- TWISP RIVER ALIGNMENT AND STATIONING
- SIDE CHANNEL ALIGNMENT AND STATIONING
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE $\frac{2}{4}$
- TEMPORARY SILT FENCE, SEE $\frac{1}{4}$
- OHW
- ORDINARY HIGH WATER
- TYPICAL LOW WATER
- EXISTING WETLANDS
- EXCAVATION BELOW OHW
- FILL BELOW OHW
- EXCAVATION AND BACKFILL OUTSIDE OHW
- LAYER 1 LOG WITH ROOTWAD
- LAYER 2 LOG WITH ROOTWAD
- LAYER 3 LOG WITH ROOTWAD
- LAYER 1 LOG
- LAYER 2 LOG
- LAYER 3 LOG
- VERTICAL SNAG
- WHOLE TREE WITH ROOTWAD



SECTION A-A' LOG STRUCTURE K

IMPACTS TO WATERBODIES					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OR LENGTH (LF) OF IMPACT
COFFERDAM IMPOUNDMENT	TWISP RIVER	RIVER	3 DAYS	N/A	1795 SF; 133 LF
EXCAVATION	TWISP RIVER	RIVER	PERMANENT	47 CY	483 SF
WOOD PLACEMENT	TWISP RIVER	RIVER	PERMANENT	44 CY (23 logs)	391 SF
BACKFILL	TWISP RIVER	RIVER	PERMANENT	30 CY	240 SF

NOTE:
SEE SHEET 15 FOR WETLAND IMPACT QUANTITIES

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Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

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APPROVED	DATE	PROJECT

YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

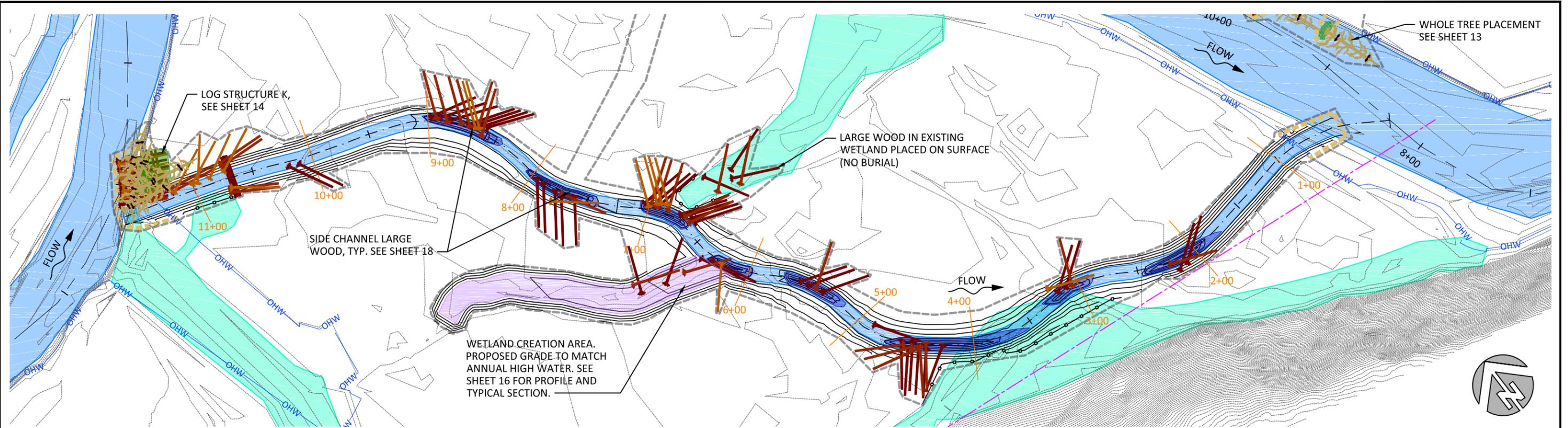


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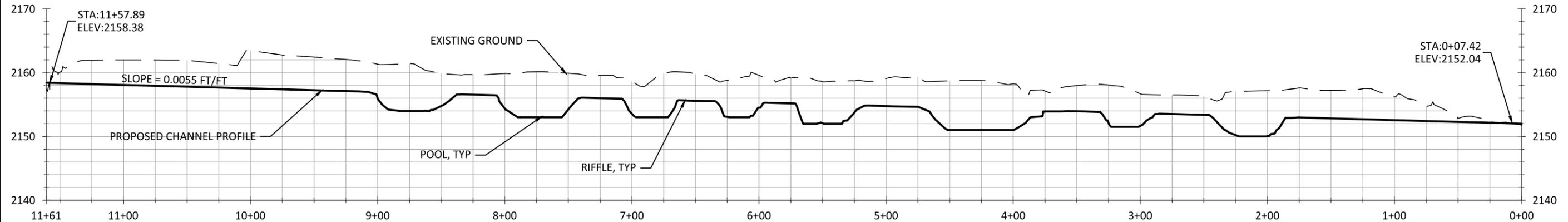
LOG STRUCTURE K - PLAN,
PROFILE AND QUANTITIES

SHEET
14 OF 22

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PLAN



SIDE CHANNEL PROFILE

LEGEND

- EXISTING CONTOURS (1FT)
- PROPOSED CONTOURS (1FT)
- - - FOREST SERVICE BOUNDARY (TACKMAN SURVEY)
- 40+00 + TWISP RIVER ALIGNMENT AND STATIONING
- - - SIDE CHANNEL ALIGNMENT
- - - LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE (2/4)
- TEMPORARY SILT FENCE, SEE (1/4)
- GRADING CROSS-SECTION, SEE SHEET 17
- OHW — ORDINARY HIGH WATER
- EXISTING WETLAND
- TYPICAL LOW WATER
- PROPOSED WETLAND CREATION AREA
- PROPOSED POOLS



NOTE: SEE SHEET 14 FOR IMPACTS TO WATERBODIES OF STRUCTURE K

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IMPACTS TO WETLANDS					
ACTIVITY	WATERBODY NAME	IMPACT LOCATION	DURATION OF IMPACT	VOLUME PLACED OR REMOVED (CY)	AREA (SF) OF IMPACT
EXCAVATION	WETLAND	WETLAND	PERMANENT	325 CY	3560 SF

NO.	BY	DATE	REVISION DESCRIPTION

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MM	01/27/16	150224
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YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

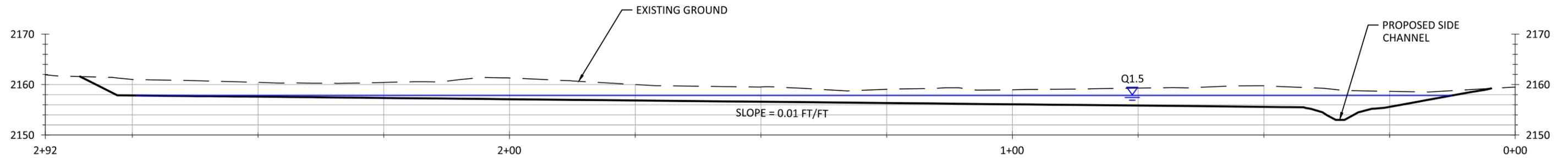


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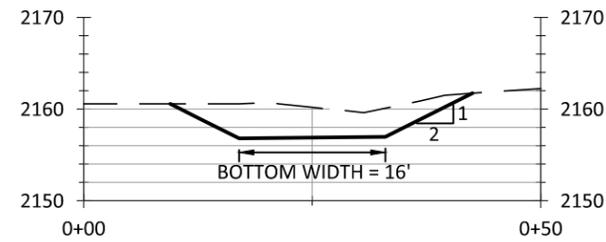
SIDE CHANNEL PLAN AND
PROFILE

SHEET
15 OF 22

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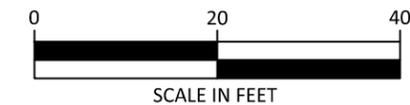


ALCOVE PROFILE



TYPICAL ALCOVE SECTION

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YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN

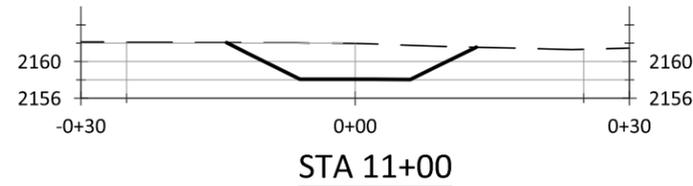
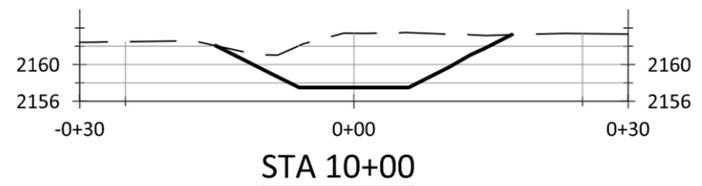
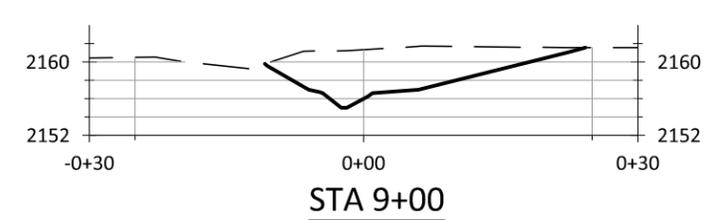
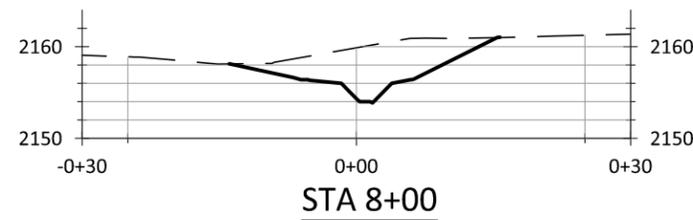
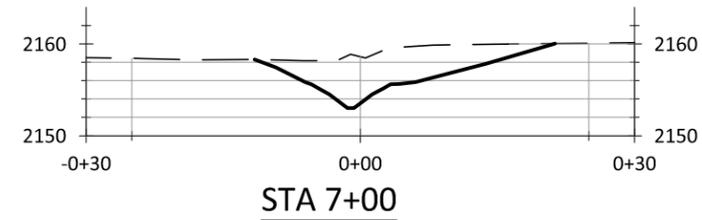
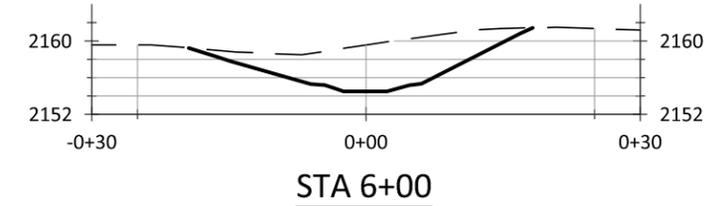
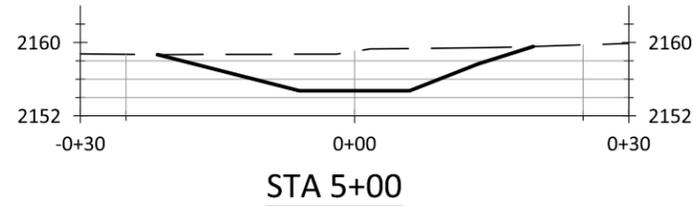
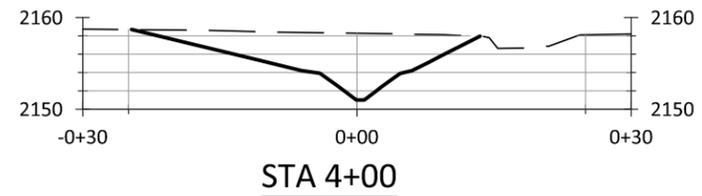
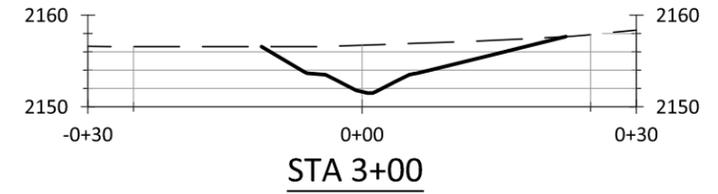
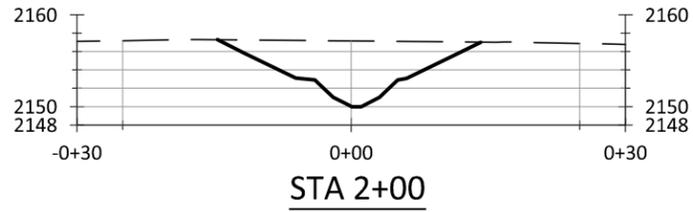
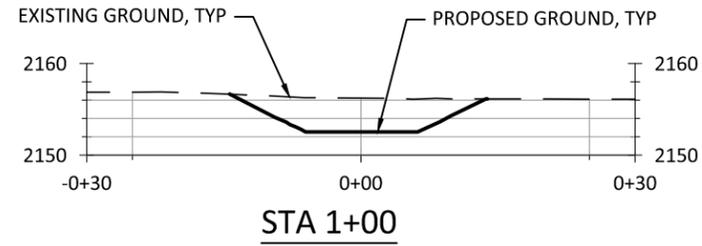


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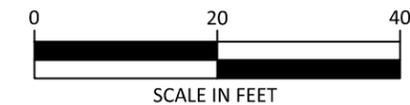
WETLAND ALCOVE PROFILE
AND TYPICAL SECTION

SHEET
16 OF 22

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MM	01/27/16	150224
APPROVED	DATE	PROJECT

**YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN**

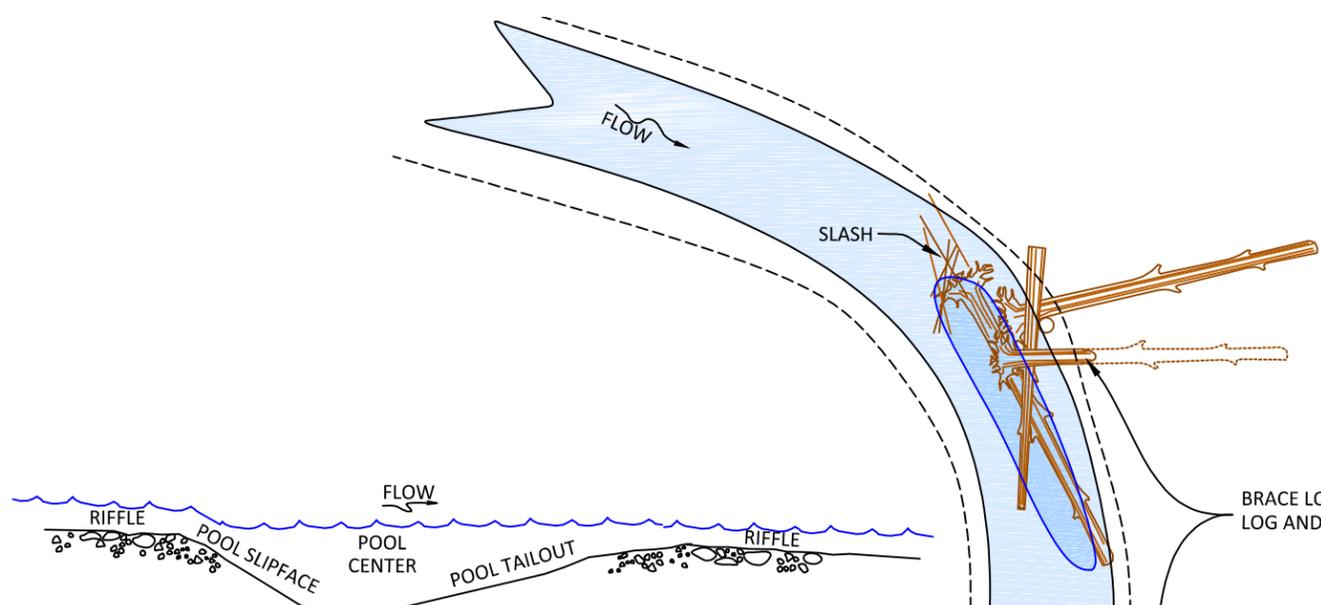


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**SIDE CHANNEL GRADING
SECTIONS**

SHEET
17 OF 22

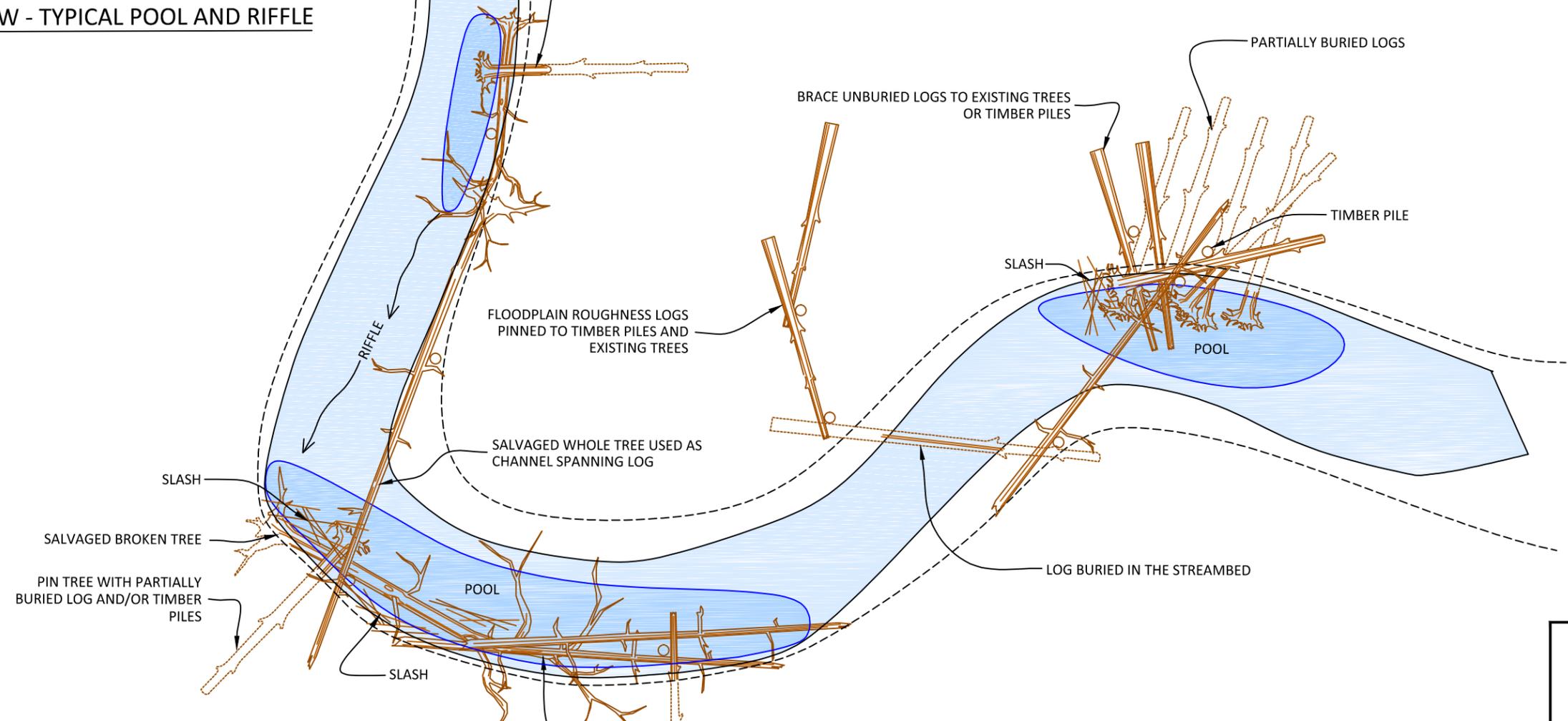
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1
18 PROFILE VIEW - TYPICAL POOL AND RIFFLER
NOT TO SCALE

- NOTES:
1. TREES AND SHRUBS WITHIN CLEARING LIMITS SHALL BE SALVAGED AND REUSED AS LOGS AND SLASH IN HABITAT STRUCTURES. TO THE EXTENT PRACTICABLE, PRESERVE BRANCHES AND ROOTS ON TREES REMOVED DURING CLEARING AND GRUBBING.
 2. WOOD STRUCTURES SHALL BE STABILIZED. STABILIZATION METHODS INCLUDE PARTIAL BURIAL, BRACING AGAINST STANDING TREES, OR TIMBER PILES.

Preliminary
Not for Construction

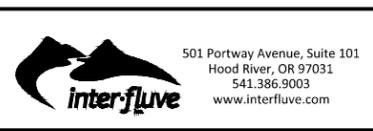


2
18 PLAN VIEW- TYPICAL SIDE CHANNEL LARGE WOOD CONFIGURATIONS
NOT TO SCALE

NO.	BY	DATE	REVISION DESCRIPTION

NS	MM, GJ, LH	MM, GJ
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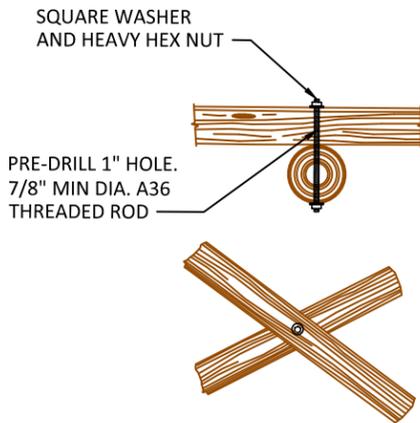
YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN



SIDE CHANNEL LARGE
WOOD DETAILS

SHEET
18 OF 22

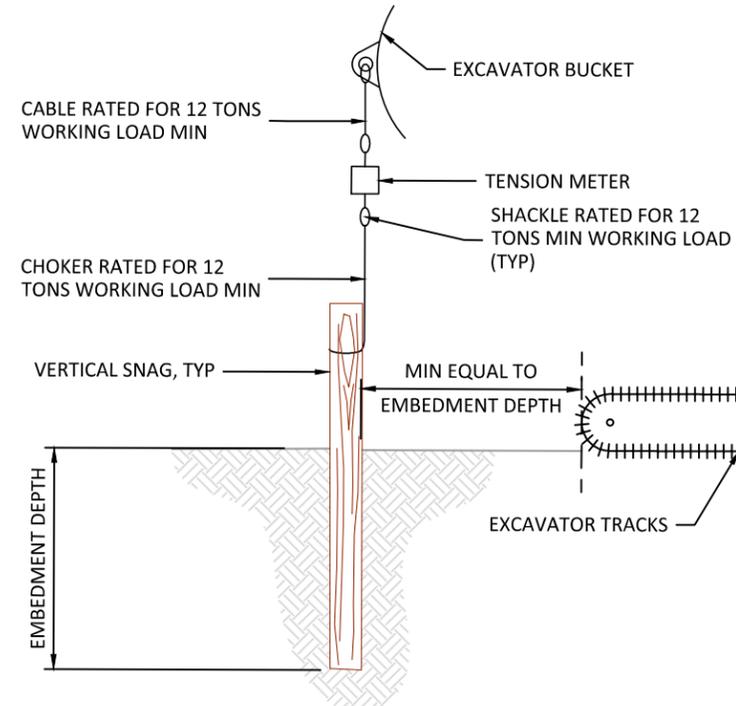
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NOTES:

1. BOLTS SHALL BE MINIMUM 7/8" DIAMETER THREADED ROD. BOLTS SHALL BE GRADE A36 STEEL AND MEET THE REQUIREMENTS OF ASTM F1554. WASHERS SHALL BE SQUARE PLATE, 1/4" x 4" x 4" MIN. NUTS SHALL BE HEAVY HEX. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED.
2. DRILL 1" HOLE THROUGH LOGS.
3. INSERT 7/8" DIA ALL-THREAD REBAR.
4. INSTALL STEEL PLATES AND HEAVY HEX NUTS. SECURE NUTS BY CHISELING THREADS.
5. EXCESS THREADED ROD SHALL BE CUT WITH A MAXIMUM OF 2 INCHES EXTENDING FROM THE TOP OF THE NUT TO THE CUT LOCATION.
6. FILE OR GRIND OFF SHARP EDGES.

1
19 FULLY THREADED ROD (FTR) CONNECTION
NOT TO SCALE



2
19 VERTICAL SNAG PULLOUT TESTING
NOT TO SCALE

VERTICAL SNAGS

ALL VERTICAL SNAGS SHALL BE INSTALLED USING VIBRATORY PILE DRIVING EQUIPMENT. INSTALLATION BY EXCAVATION OR HAMMERING WILL NOT BE ALLOWED.

RIGGING

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

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

TESTING

TESTING OF VERTICAL SNAGS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER OR OTHER QUALIFIED PERSONNEL.

EACH VERTICAL SNAG TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF VERTICAL SNAG AS POSSIBLE. RECORD THE VERTICAL SNAG DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE VERTICAL SNAG . 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 SNAG IF POSSIBLE. IF A CLOSER POSITIONING IS REQUIRED, EXCAVATOR SHALL BE NO CLOSER THAN THAT REQUIRED TO GENERATE DESIRED LOADING WITH DISTANCE FROM VERTICAL SNAG NOTED IN THE TEST RECORD. LOAD MAY BE SPREAD IN THIS SITUATION BY POSITIONING THE EXCAVATOR ACROSS HORIZONTAL LOGS, WITH DISTANCE FROM VERTICAL LOG, LOG NUMBERS AND LENGTH NOTED IN THE TEST RECORD.

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

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

CONSTRUCTED DRIVEN VERTICAL SNAG EMBEDMENT DEPTH SPECIFIED IN THE DRAWINGS MAY BE REDUCED OR INCREASED, PENDING PULL OUT TEST RESULTS, AT THE CONTRACTOR'S EXPENSE.

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

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MM	01/27/16	150224
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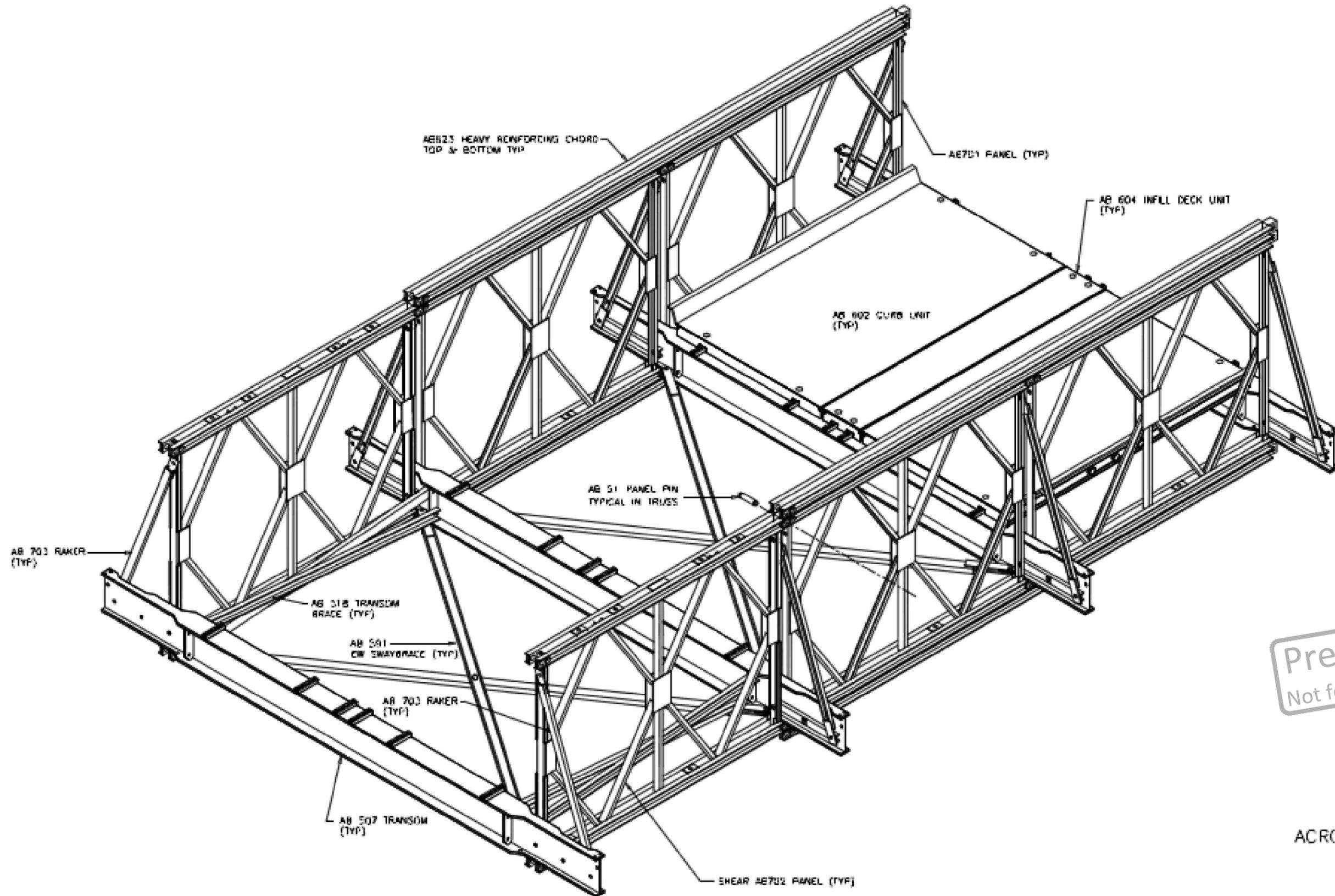
YAKAMA NATION FISHERIES
MIDDLE TWISP RIVER
NEWBY NARROWS PRELIMINARY DESIGN



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LARGE WOOD CONNECTION
DETAILS

SHEET
19 OF 22



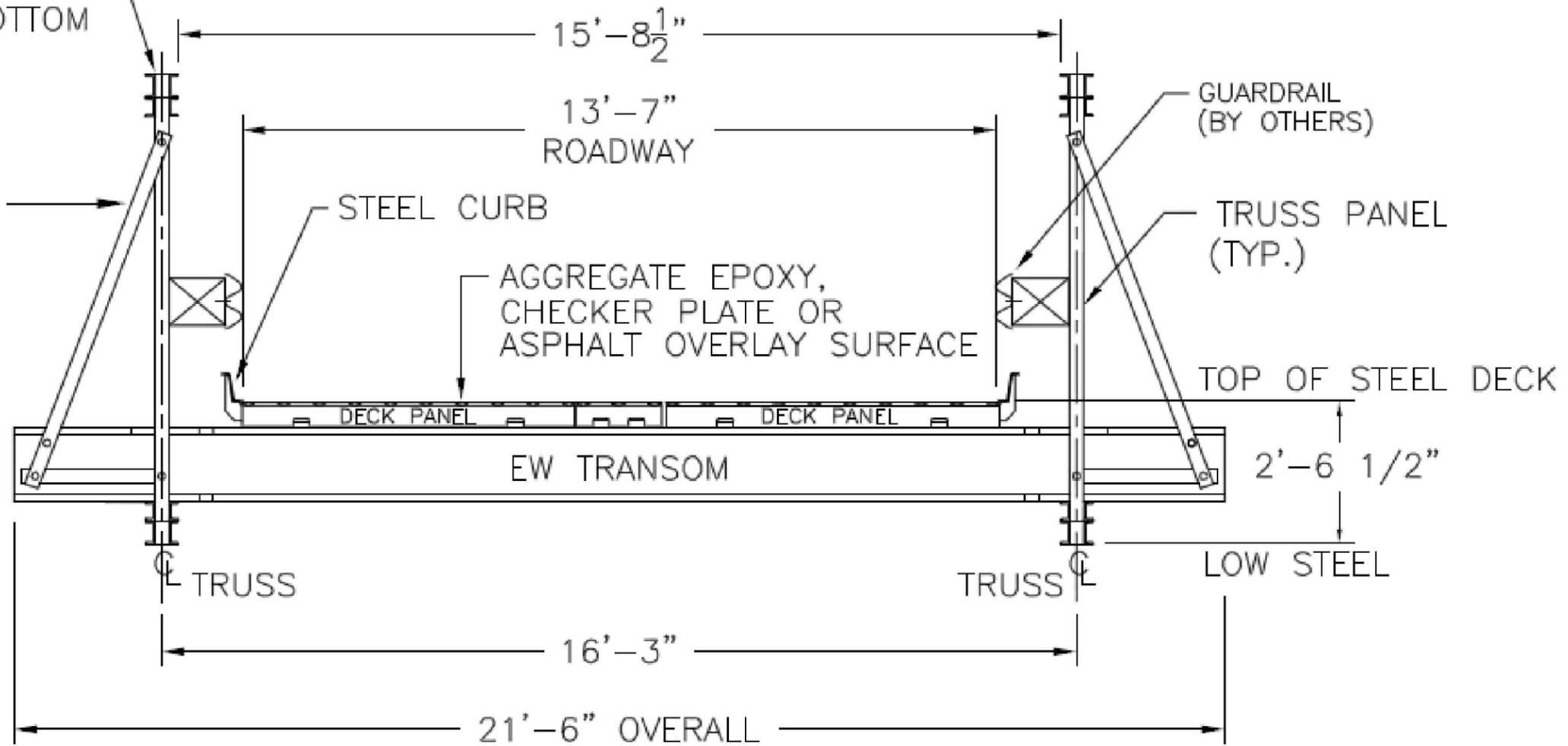
Preliminary
 Not for Construction

ACROW 700XS PANEL BRIDGE
 ISOMETRIC VIEW OF
 SSRH EW BRIDGE

ISOMETRIC VIEW OF FEMALE END OF BRIDGE

AB 623 HEAVY
REINFORCING CHORD
TOP & BOTTOM
(TYP.)

AB 703 RAKER
(TYP.)



EXTRA WIDE BRIDGE

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

Preliminary
Not for Construction

ACROW
BRIDGE

Building Bridges.
Connecting People.
Acrow Bridge
181 New Road, Parsippany, NJ 07054

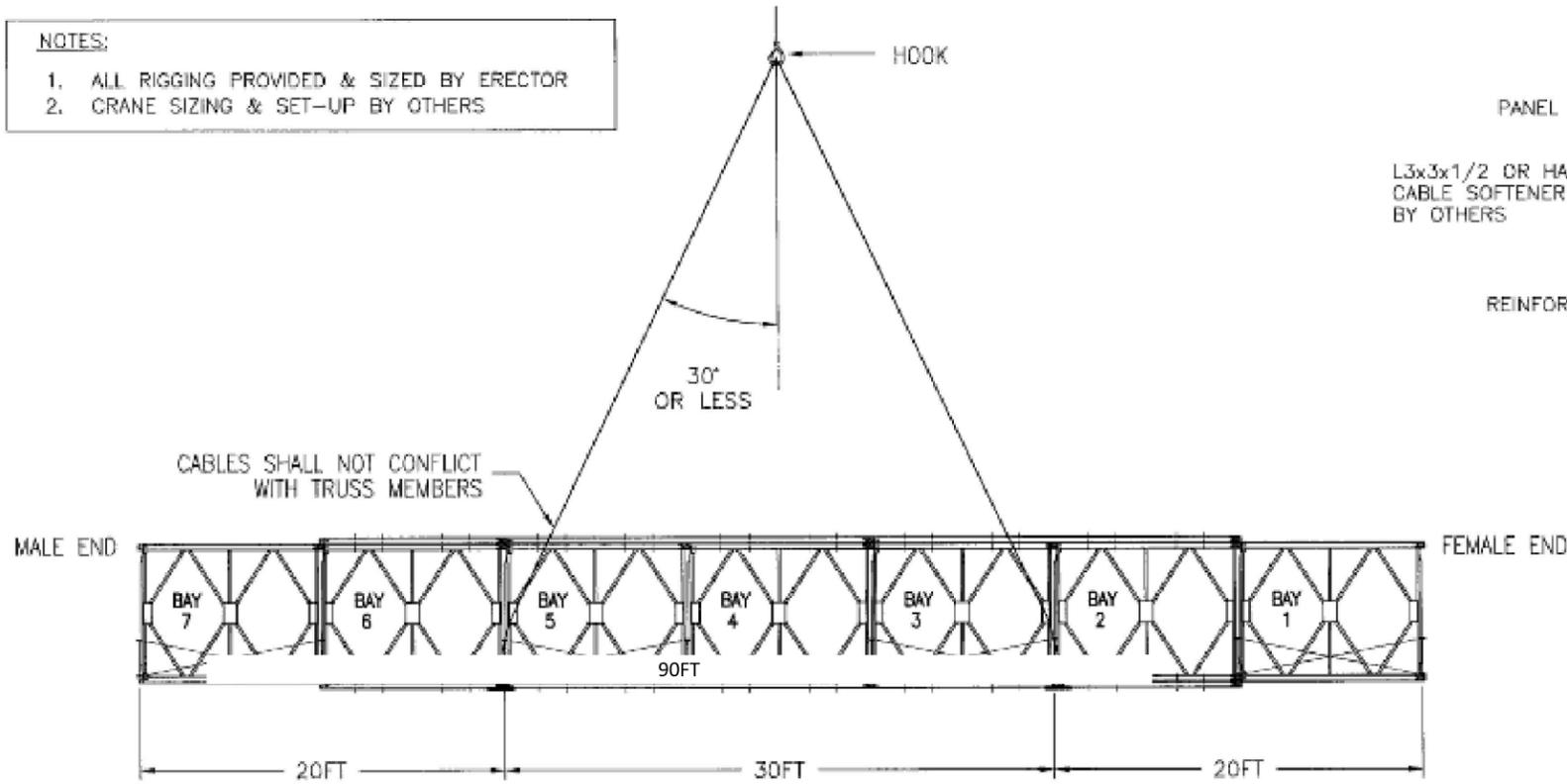
ACROW 700XS BRIDGE
EXTRA WIDE SSRH
CROSS SECTION

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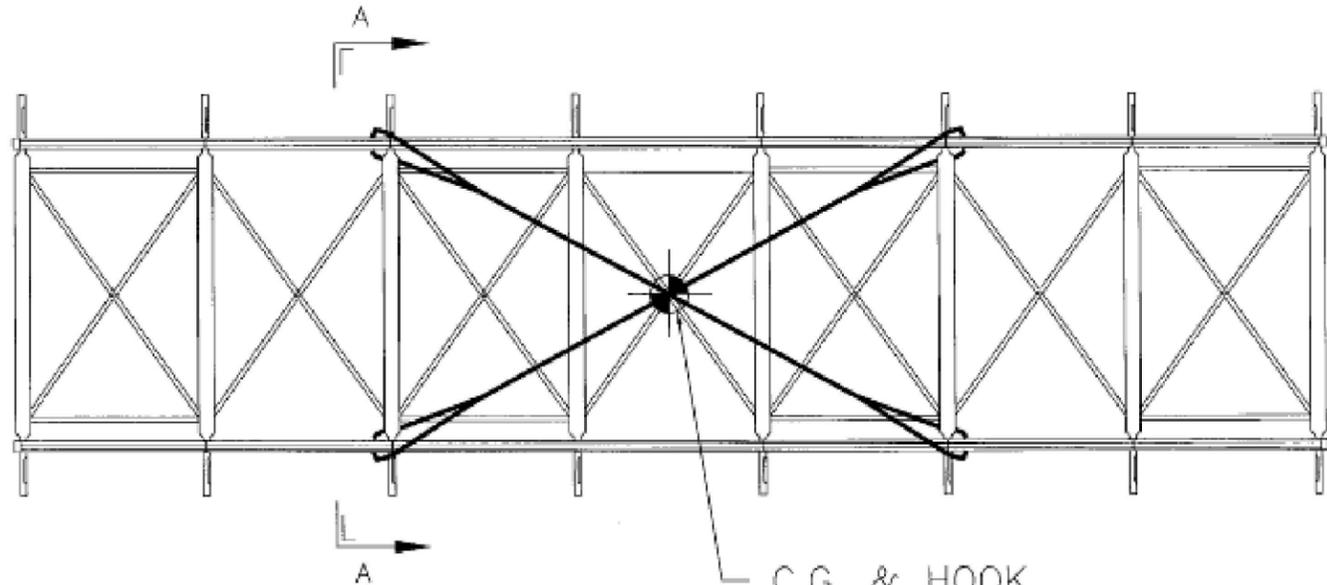
DRAWN BY	RJ	DATE	MAY 22, 2013	CONTRACT NO.
CHECKED BY	SP	SCALE: N.T.S.		
APPROVED BY	SP			

DRAWING NO.	REV.
SHT 1 OF 1	

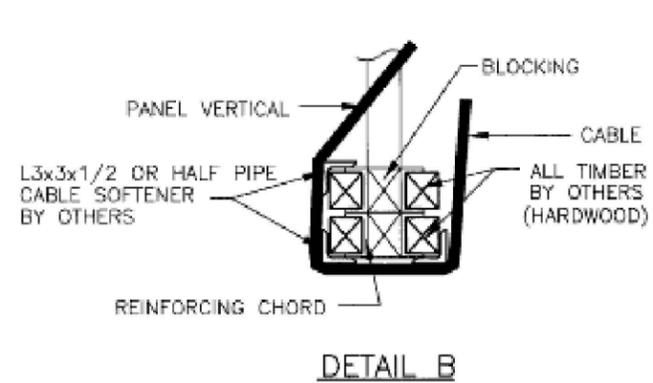
NOTES:
 1. ALL RIGGING PROVIDED & SIZED BY ERECTOR
 2. CRANE SIZING & SET-UP BY OTHERS



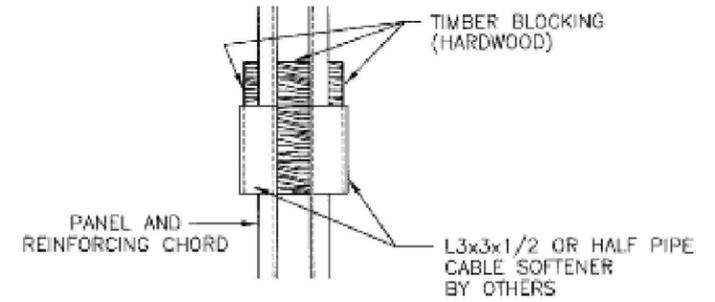
ELEVATION



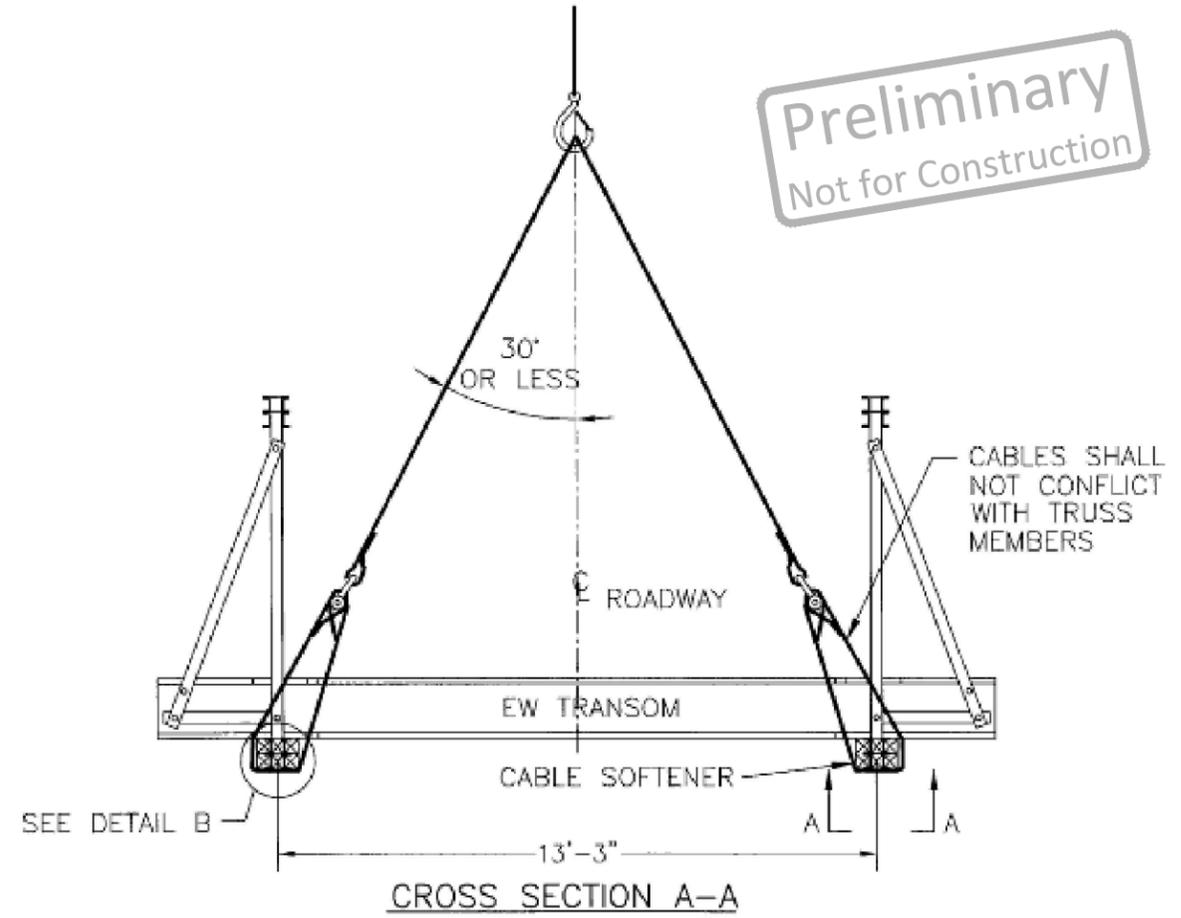
PLAN



DETAIL B



SECTION A-A



CROSS SECTION A-A

Preliminary
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APPROXIMATE WEIGHT WITHOUT DECK = 25 KIPS (12.5 TONS)
APPROXIMATE WEIGHT WITH DECK = 48 KIPS (24 TONS)

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REV.	DATE	DESCRIPTION	BY	APPR.	SEAL

ACROW BRIDGE Building Bridges. Connecting People.
 Acrow Corporation of America
 181 New Road, Parsippany, NJ 07054

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

DRAWN BY: <u>RSJ</u>	DATE: <u>MAY 28, 2018</u>	CONTRACT NO.:
CHECKED BY: <u>TW</u>	SCALE: AS SHOWN	
APPROVED BY: <u>SP</u>		

WEST COMPANY CONSTRUCTION
 AIRWAY HEIGHTS, WA

DRAWING NO. AB1741-LP
 REV. 1 OF 1