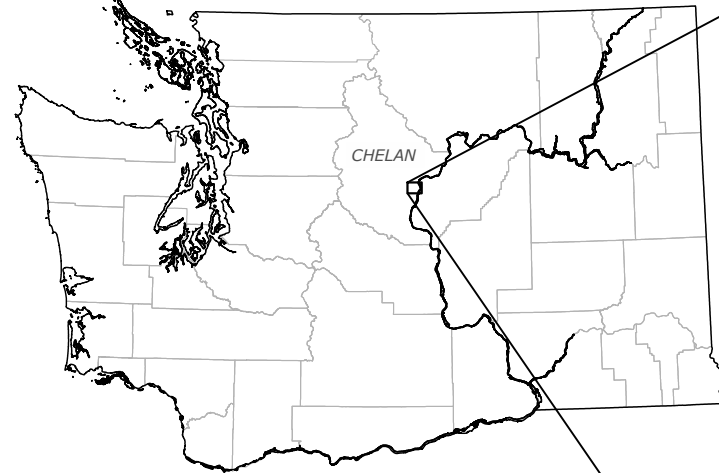
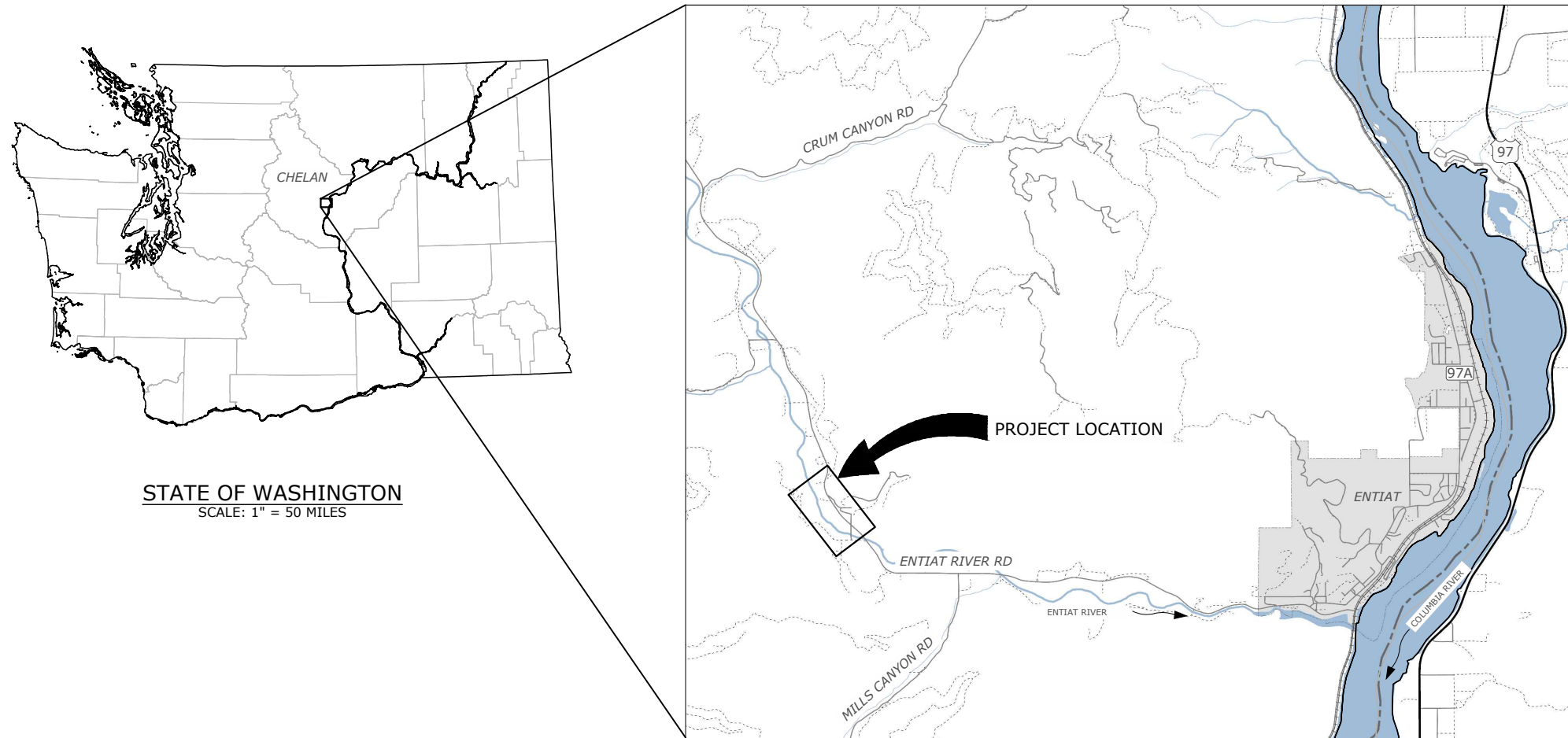


LOWER ENTIAT 1D REACH

RIVER MILE 4.3 - 4.8 HABITAT ENHANCEMENT PROJECT

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT



STATE OF WASHINGTON
SCALE: 1" = 50 MILES



VICINITY MAP
SCALE: 1" = 3000'



SHEET LIST	
SHEET #	TITLE
1	COVER SHEET
2	GENERAL NOTES
3	LEGEND
4	EXISTING CONDITIONS
5	PROPOSED CONDITIONS
6	DEFLECTOR ELJ
7	DEFLECTOR LAYERING PLAN
8	DEFLECTOR LAYERING PLAN
9	SIDE CHANNEL ELJ
10	SIDE CHANNEL ELJ LAYERING PLAN
11	STABILIZE EXISTING LOGJAM
12	ACCESS, STAGING, AND SITE ISOLATION PLAN
13	REVEGETATION PLANS
14	ELJ DETAILS
15	SITE ISOLATION DETAILS
16	TESC DETAILS

CONTACT INFORMATION

ENGINEER: NATURAL SYSTEMS DESIGN, INC
1900 N NORTHLAKE WAY, SUITE 211
SEATTLE, WA 98103
(206) 834-0175

CONTRACTING AGENCY: CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
411 WASHINGTON STREET, SUITE 201
WENATCHEE, WA 98801
(509) 667-6533



CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
COVER SHEET
PRELIMINARY

DATE 12/23/2024
COUNTY CHELAN COUNTY
LATITUDE 47°40'20"N
LONGITUDE 120°18'27"W
TIN/SC/RG T25N/S10/R20E
DESIGN_GB DRAWN_KS
CHECK_NT CHECK_NT

0 1
IF THIS BAR DOES NOT MEASURE
1" THEN DRAWING IS NOT
PLOTTED TO ORIGINAL SCALE.

SHEET
1 of 16

GENERAL NOTES

1. THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF CHELAN COUNTY NATURAL RESOURCE DEPARTMENT (CCNRD), HEREAFTER REFERRED TO AS "OWNER", AND THEIR AUTHORIZED AGENTS.
2. NATURAL SYSTEMS DESIGN, HEREAFTER REFERRED TO AS "ENGINEER" IS RESPONSIBLE FOR THE PREPARATION OF THESE ORIGINAL PLANS AND ASSOCIATED SPECIFICATIONS; AND WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGE, OR USE, OF THESE PLANS WHICH INCLUDES ALTERATION, DELETION, OR EDITING OF THIS DOCUMENT WITHOUT EXPLICIT WRITTEN PERMISSION FROM THE ENGINEER. ANY OTHER UNAUTHORIZED USE OF THIS DOCUMENT IS PROHIBITED.
3. THE LOCATION OF ALL FEATURES SHOWN IS APPROXIMATE. FINAL LOCATIONS SHALL BE FLAGGED IN THE FIELD BY THE ENGINEER PRIOR TO CONSTRUCTION.

PERMIT NOTES

1. THE CONTRACTOR SHALL CONDUCT THE ACTIVITIES SHOWN IN THESE PLANS IN A MANNER THAT MINIMIZES THE ADVERSE IMPACT ON WATER QUALITY, FISH AND WILDLIFE, AND THE NATURAL ENVIRONMENT.
2. ALL WORK SHALL BE IN COMPLIANCE WITH PERMIT CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE COPIES OF ALL PERMITS ON THE JOB SITE, UNDERSTAND AND COMPLY WITH ALL PERMIT CONDITIONS.
3. IF AT ANY TIME FISH ARE OBSERVED IN DISTRESS, A FISH KILL OCCURS, OR WATER QUALITY PROBLEMS DEVELOP (INCLUDING EQUIPMENT LEAKS OR SPILLS), OPERATIONS SHALL CEASE AND THE OWNER SHALL BE NOTIFIED IMMEDIATELY.
4. AVOID AND MINIMIZE ADVERSE IMPACTS TO WATERS OF THE UNITED STATES, INCLUDING MINIMIZING THE NUMBER, DURATION, AND EXTENT OF WORK BELOW ORDINARY HIGH WATER AND EQUIPMENT CROSSINGS OF WETTED CHANNELS.
5. IF, DURING CONSTRUCTION, ARCHAEOLOGICAL REMAINS ARE ENCOUNTERED, CONSTRUCTION IN THE VICINITY SHALL BE HALTED, AND THE STATE OFFICE OF HISTORIC PRESERVATION AND THE OWNER SHALL BE NOTIFIED IMMEDIATELY.

SURVEY NOTES

1. SURVEY/LIDAR FOR THIS PROJECT WAS COLLECTED IN 2022 AND IS REPRESENTATIVE OF 2021 CONDITIONS. THE VERTICAL DATUM IS NAVD88 (FT). THE HORIZONTAL DATUM IS NAD83 WASHINGTON STATE PLANE NORTH AND THE UNIT IS US SURVEY FEET.
2. GATES, FENCELINES, AND UTILITIES WERE NOT SURVEYED. CONTRACTOR TO VERIFY IN FIELD.
3. PARCEL BOUNDARIES ARE FROM CHELAN COUNTY AND ARE NOT SURVEYED.
4. AERIAL IMAGERY WAS COLLECTED IN 2023 (CCNRD).

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.
2. CONSTRUCTION HOURS SHALL BE WEEKDAYS BETWEEN 7:00 A.M. AND 6:30 P.M. UNLESS PRIOR APPROVAL IS RECEIVED FROM THE OWNER.
3. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO PROCEEDING WITH THE WORK.
4. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, VEGETATION, AND IMPROVEMENTS NOT INDICATED FOR REMOVAL.
5. THE CONTRACTOR SHALL KEEP THE JOB SITE CLEAN AND HAZARD FREE.
6. THE CONTRACTOR SHALL DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH GENERATED BY THE WORK. UPON COMPLETION OF WORK, CONTRACTOR SHALL REMOVE ALL MATERIAL AND EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY.
7. NO TREES OR VEGETATION SHALL BE REMOVED UNLESS NOTED ON THE PLANS OR SPECIFIED ON-SITE BY THE OWNER OR THE ENGINEER. NO GRADING SHALL TAKE PLACE WITHIN THE DRIP LINE OF TREES NOT TO BE REMOVED UNLESS OTHERWISE APPROVED.
8. THE CONTRACTOR SHALL MAINTAIN A SET OF PLANS ON THE JOB SHOWING "AS-CONSTRUCTED" CHANGES MADE TO DATE. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL SUPPLY TO OWNER A SET OF PLANS, MARKED UP TO THE SATISFACTION OF THE OWNER, REFLECTING THE AS-CONSTRUCTED MODIFICATIONS.

ELJ NOTES

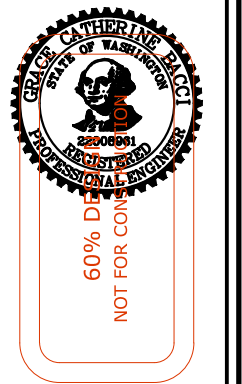
1. ALL LOGS SHALL BE DOUGLAS FIR OR WESTERN RED CEDAR.
2. ALL ROOTWAD POSTS SHALL BE DOUGLAS FIR. POSTS SHALL BE FREE FROM DEFECTS, CRACKS, AND SPLITTING AT THE TIME OF PLACEMENT.
3. LOGS SHALL HAVE SPECIFIED DIAMETERS AS MEASURED AT DBH, DEFINED AS 4.5 FEET ABOVE GROUND WHEN TREE WAS STANDING.
4. EXISTING WOODY MATERIAL AT THE STRUCTURE LOCATION SHALL BE MOVED OR PROTECTED FROM CONSTRUCTION ACTIVITIES AND THEN INCORPORATED INTO THE STRUCTURE AS DIRECTED BY THE CONTRACTING OFFICER.
5. POST EMBEDMENT DEPTH FOR EACH ELJ SHALL BE MEASURED RELATIVE TO THE CHANNEL THALWEG. EXCAVATION DEPTHS AND QUANTITIES IN THE STRUCTURE SCHEDULE ARE BASED ON LIDAR COLLECTED IN 2022, AND EXISTING GRADE ELEVATIONS AND ASSOCIATED EXCAVATION DEPTHS MAY BE OFF BY SEVERAL FEET. ACTUAL EXCAVATION DEPTHS SHALL BE PROVIDED BY THE ENGINEER WHEN THE STRUCTURE LOCATION IS STAKED PRIOR TO CONSTRUCTION.
6. KEY LOGS, FRAMING LOGS, AND PILES SHALL HAVE AN ALUMINUM TAG AFFIXED PER RCW 77.85.050(5E). ALUMINUM TAGS SHALL BE A MINIMUM OF 1 ¼ INCHES IN DIAMETER. AT CONSTRUCTION COMPLETION, A RECORD OF THE TAG NUMBERS BROKEN DOWN BY STRUCTURE ID SHALL BE PROVIDED TO THE OWNER.

SUMMARY OF QUANTITIES			
ITEM #	ITEM DESCRIPTION	QTY	UNIT
1	MOBILIZATION	1	LS
2	TEMPORARY EROSION AND SEDIMENT CONTROL	1	LS
3	ACCESS & STAGING	1	LS
4	SEEDING	1	LS
5	DEFLECTOR ELJ	4	EA
6	SIDE CHANNEL ELJ	5	EA
7	STABILIZE EXISTING LOGJAM	1	EA

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CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAI 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT

GENERAL NOTES


PRELIMINARY

DATE 12/23/2024
COUNTY CHELAN COUNTY
LATITUDE 47°40'20"N
LONGITUDE 120°18'27"W
TN/SC/RG T25N/S10/R20E
DESIGN_GB DRAWN_KS
CHECK_NT CHECK_NT

0 1
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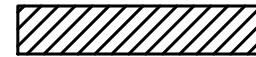
GENERAL LEGEND

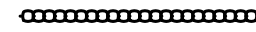
SITE FEATURES

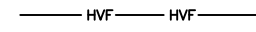
 EXISTING NATURALLY OCCURRING LOGJAM

SITE PREPARATION AND DEWATERING

 TEMPORARY ACCESS ROUTE

 STAGING AREA


 COFFERDAM

 HIGH VISIBILITY FENCE


HABITAT STRUCTURES

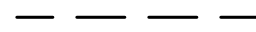
 DEFLECTOR ENGINEERED LOGJAM


 SIDE CHANNEL ENGINEERED LOGJAM

 STABILIZED EXISTING LOGJAM

SURVEY AND LEGAL BOUNDARIES

 EXISTING PROPERTY LINE

 EXISTING RIGHT OF WAY

 EXISTING BUILDING FOOTPRINTS

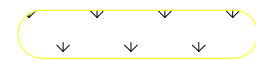
TOPOGRAPHY & GRADING

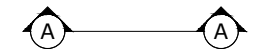
 EXISTING MINOR CONTOUR


 EXISTING MAJOR CONTOUR

VEGETATION & SITE RESTORATION

 PRIMARY RESTORATION AREA


 SEEDING


 SECTION LINE

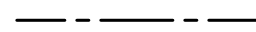
 SECTION LINE WITH SHEET REFERENCE

NATURAL RESOURCES

 LOW FLOW CHANNEL

 ORDINARY HIGH WATER LINE

 EXISTING WETLAND

 EXISTING CHANNEL THALWEG

 RIVER MILE



CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
 LOWER ENTIAIAT 1D REACH (RM 4.3 - 4.8) HABITAT
 ENHANCEMENT PROJECT
LEGEND
 PRELIMINARY

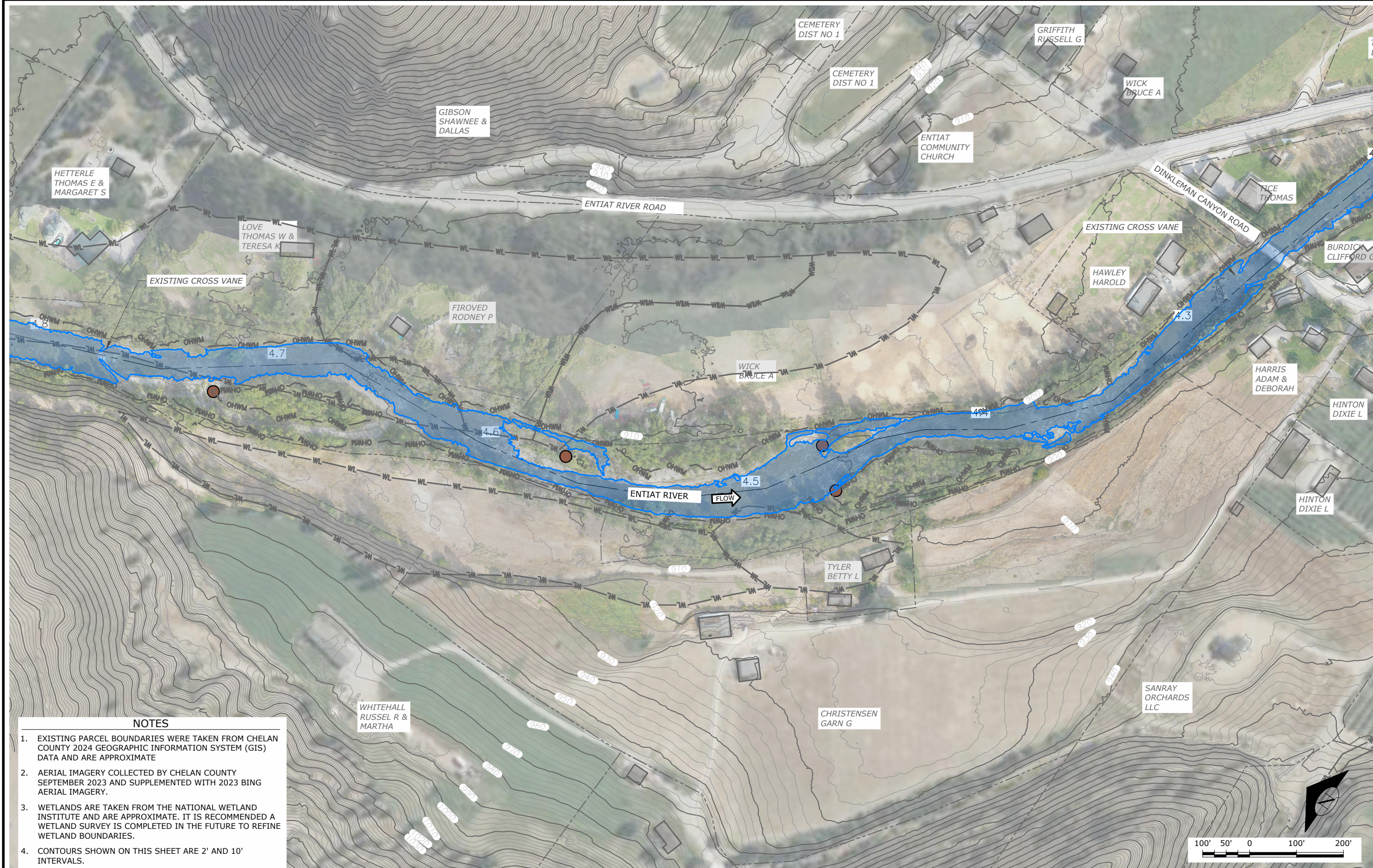
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 LONGITUDE 120°18'27"W
 TN/SC/RG T25N/S10/R20E
 DESIGN_GB DRAWN_KS
 CHECK_NT CHECK_NT

0 1
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SHEET
 3 OF 16

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NOTES

1. EXISTING PARCEL BOUNDARIES WERE TAKEN FROM CHELAN COUNTY 2024 GEOGRAPHIC INFORMATION SYSTEM (GIS) DATA AND ARE APPROXIMATE
2. AERIAL IMAGERY COLLECTED BY CHELAN COUNTY SEPTEMBER 2023 AND SUPPLEMENTED WITH 2023 BING AERIAL IMAGERY.
3. WETLANDS ARE TAKEN FROM THE NATIONAL WETLAND INSTITUTE AND ARE APPROXIMATE. IT IS RECOMMENDED A WETLAND SURVEY IS COMPLETED IN THE FUTURE TO REFINE WETLAND BOUNDARIES.
4. CONTOURS SHOWN ON THIS SHEET ARE 2' AND 10' INTERVALS.



60% DESIGN
NOT FOR CONSTRUCTION

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
 LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
 ENHANCEMENT PROJECT
EXISTING CONDITIONS
 PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN_GB	DRAWN_KS
CHECK_NT	CHECK_NT

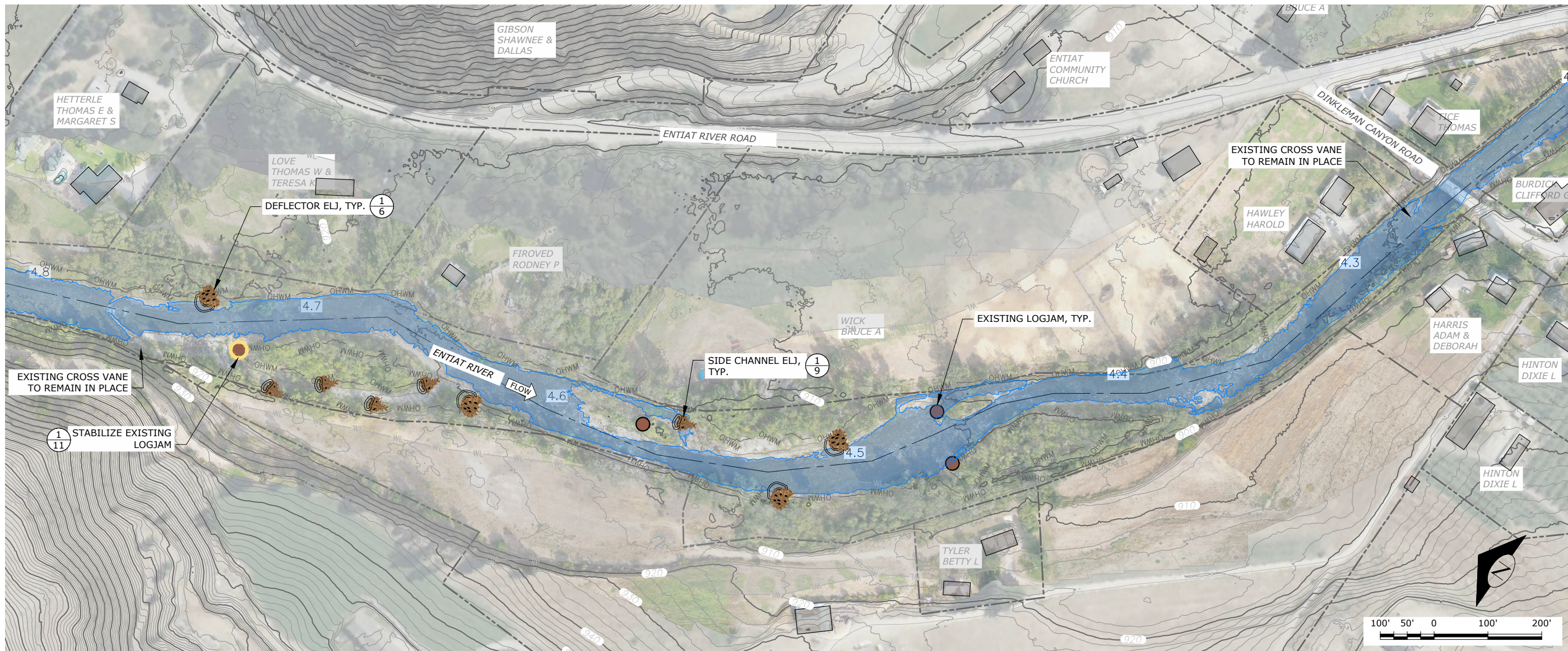
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.



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+ Coastal Geologic Services



60% DESIGN
NOT FOR CONSTRUCTION



PROPOSED CONDITIONS
SCALE: 1" = 100'

NOTES

1. LOCATIONS SHOWN ARE APPROXIMATE AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER.
2. AERIAL IMAGERY COLLECTED BY CHELAN COUNTY SEPTEMBER 2023 AND SUPPLEMENTED WITH 2023 BING AERIAL IMAGERY.
3. WETLANDS ARE TAKEN FROM THE NATIONAL WETLAND INSTITUTE AND ARE APPROXIMATE. IT IS RECOMMENDED A WETLAND SURVEY IS COMPLETED IN THE FUTURE TO REFINE WETLAND BOUNDARIES.
4. CONTOURS SHOWN ON THIS SHEET ARE 2' AND 10' INTERVALS.

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
PROPOSED CONDITIONS
PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN_GB	DRAWN_KS
CHECK_NT	CHECK_NT

0 1
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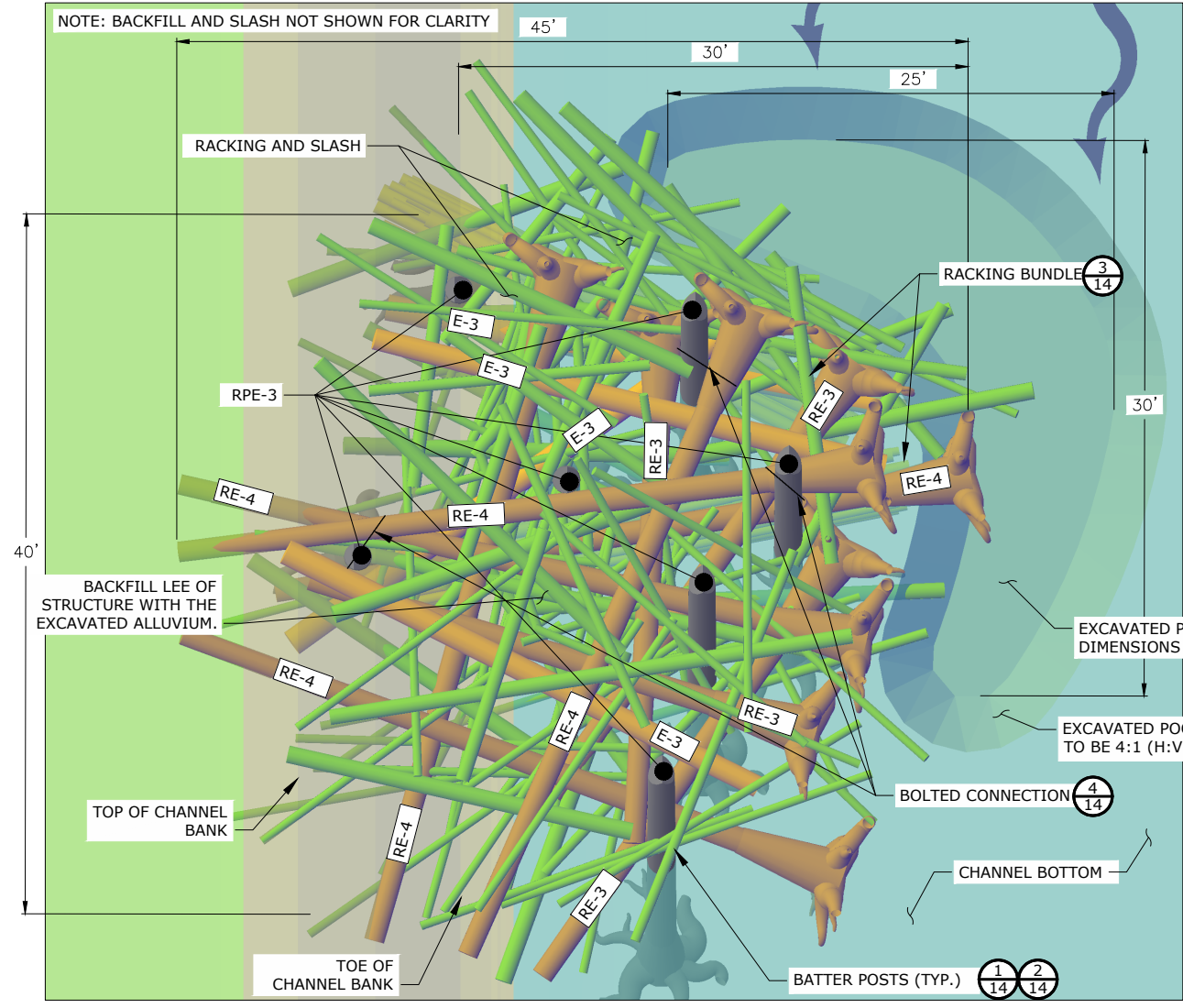


CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
DEFLECTOR ELJ
PRELIMINARY

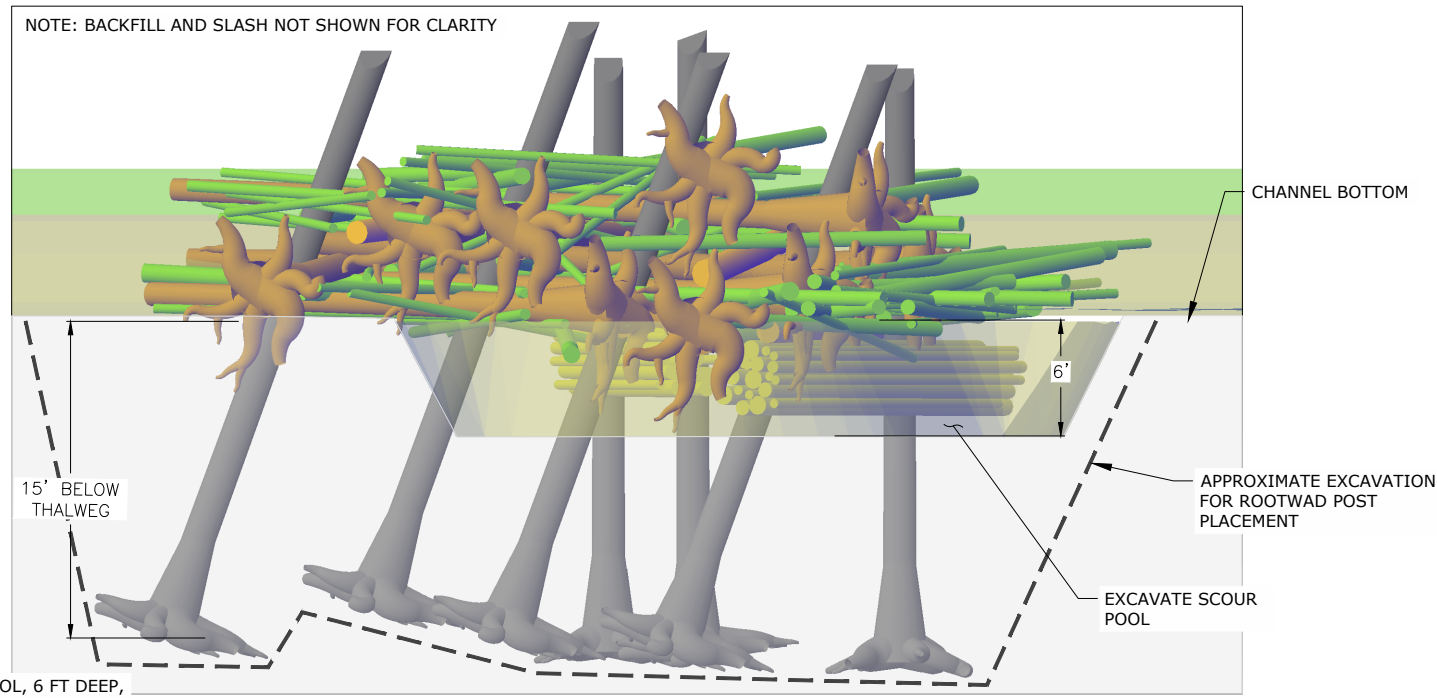
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COUNTY CHELAN COUNTY
LATITUDE 47°40'20"N
LONGITUDE 120°18'27"W
TNS/CRG T25N/S10R20E
DESIGN_GB DRAWN_KS
CHECK_NT CHECK_NT

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SHEET
6 OF 16



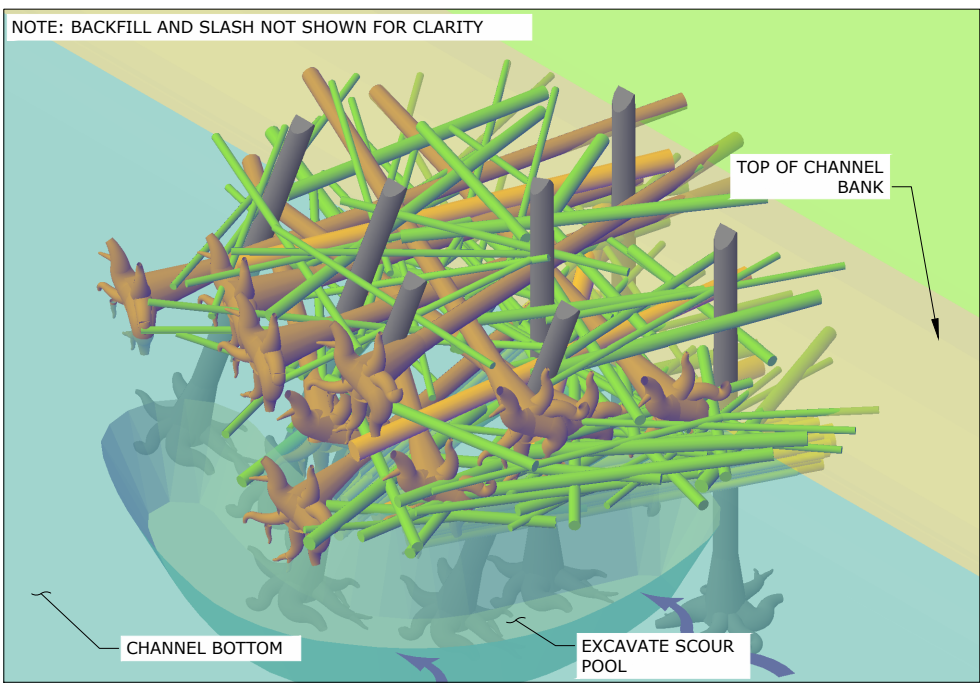
DEFLECTOR ELJ PLAN
SCALE: 1" = 5'



DEFLECTOR ELJ PROFILE
SCALE: 1" = 5'

DEFLECTOR ELJ MATERIALS SCHEDULE				
LOG ID	DIA (INCHES)	LENGTH (FT)	ROOTWAD (Y/N)	QUANTITY PER STRUCTURE
RPE-3	18	30	YES	7
RE-4	18	40	YES	6
RE-3	18	30	YES	4
E-3	18	30	NO	4
RACKING BUNDLE	36	30	NO	2
RACKING	6-12	20-40	NO	100
SLASH	1-3	N/A	NO	50 CY
BOLTED CONNECTION	N/A	N/A	N/A	3

- NOTES**
1. EXTENT AND LOCATION OF SCOUR POOL IS APPROXIMATE.
 2. SOIL EXCAVATED DURING CONSTRUCTION SHALL BE TEMPORARILY STOCKPILED, AND USED AS BACKFILL ON BACKSIDE OF STRUCTURE.
 3. BACKFILL EXTENTS MAY VARY.
 4. ALL LOGS, SLASH MATERIAL, AND RACKING PIECES REQUIRED SHALL BE PROVIDED BY THE CONTRACTING AGENCY AND ARE STOCKPILED AT THE PROJECT SITE.
 5. CAREFULLY HANDLE, TRANSPORT, AND STAGE PROVIDED WOODY MATERIAL FOR ELJ CONSTRUCTION. ANY WOODY MATERIAL DAMAGED AS A DIRECT RESULT OF CONTRACTOR ACTIONS SHALL BE REPLACED IN-KIND AT NO ADDITIONAL COST TO THE CONTRACTING AGENCY.
 6. FINAL LOCATIONS OF EACH ELJ WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. THE CONTRACTING AGENCY WILL INSTALL STAKES AT TWO STAKEOUT POINTS FOR EACH ELJ. THE CONTRACTOR SHALL EXPAND THIS STAKING AS NECESSARY TO DEFINE THE STRUCTURE EXTENTS, POST LOCATIONS, EXCAVATION EXTENTS, AND DESIGN ELEVATIONS.
 7. THE CONTRACTOR SHALL DETERMINE THE EXCAVATION LIMITS TO MAINTAIN A SAFE EXCAVATION DURING ELJ INSTALLATION. TEMPORARY AND PERMANENT EXCAVATION SPOILS SHALL BE PLACED TO MINIMIZE DISTURBANCE TO EXISTING VEGETATION.
 8. NO EXCAVATION WITHIN THE ACTIVELY FLOWING CHANNEL SHALL OCCUR UNTIL THE WORK AREA HAS BEEN ISOLATED AND AQUATIC LIFE HAS BEEN REMOVED FROM THE INTERIOR OF THE ISOLATION.
 9. THE EXCAVATION SHALL BE SUFFICIENTLY DEWATERED TO ALLOW COMPLETION AND INSPECTION OF ELJ INSTALLATION IN A CONTROLLED MANNER.
 10. EXISTING WOODY MATERIAL AT THE STRUCTURE CONSTRUCTION SITE SHALL BE MOVED OR PROTECTED FROM CONSTRUCTION ACTIVITIES AND THEN INCORPORATED INTO THE STRUCTURE AND BACKFILL AS APPROVED BY THE CONTRACTING OFFICER.



DEFLECTOR ELJ PERSPECTIVE
SCALE: 1" = 5'

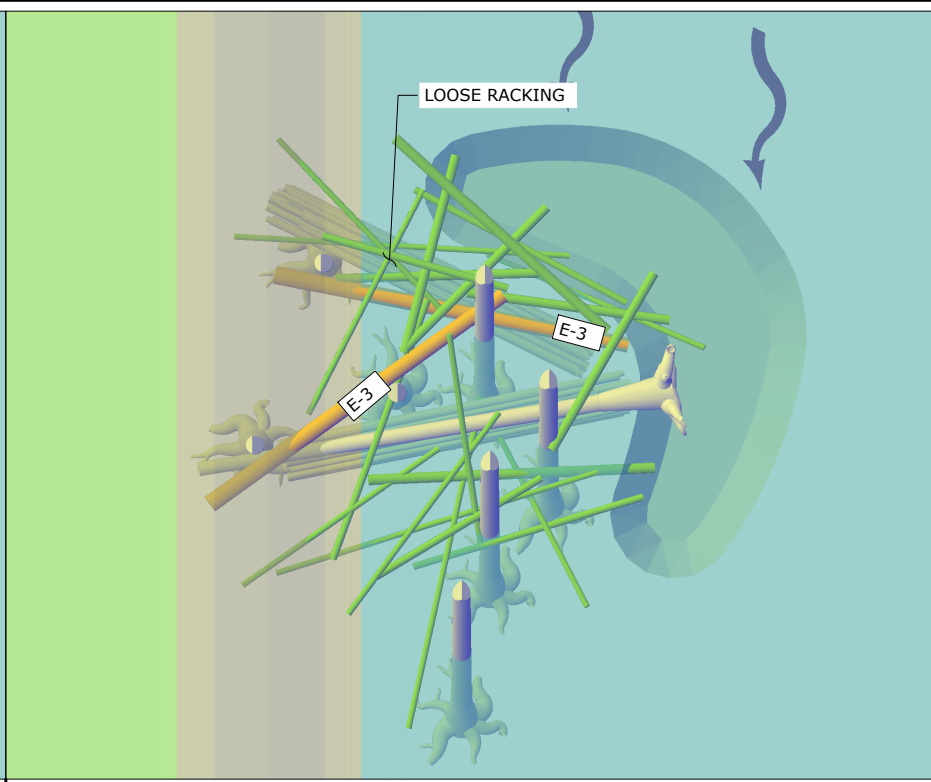
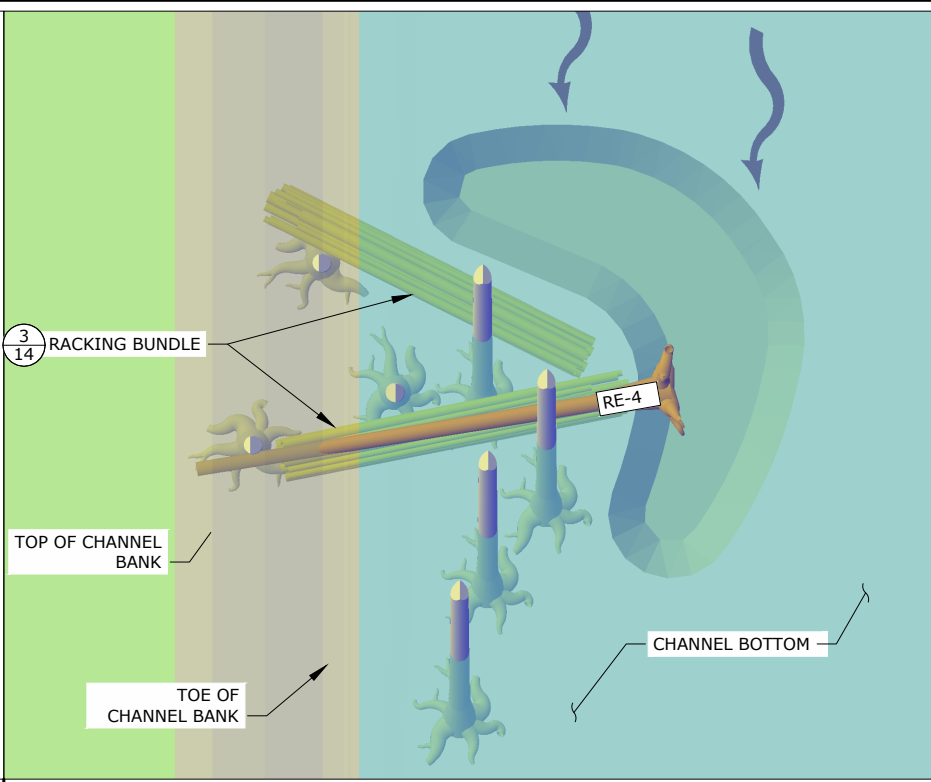
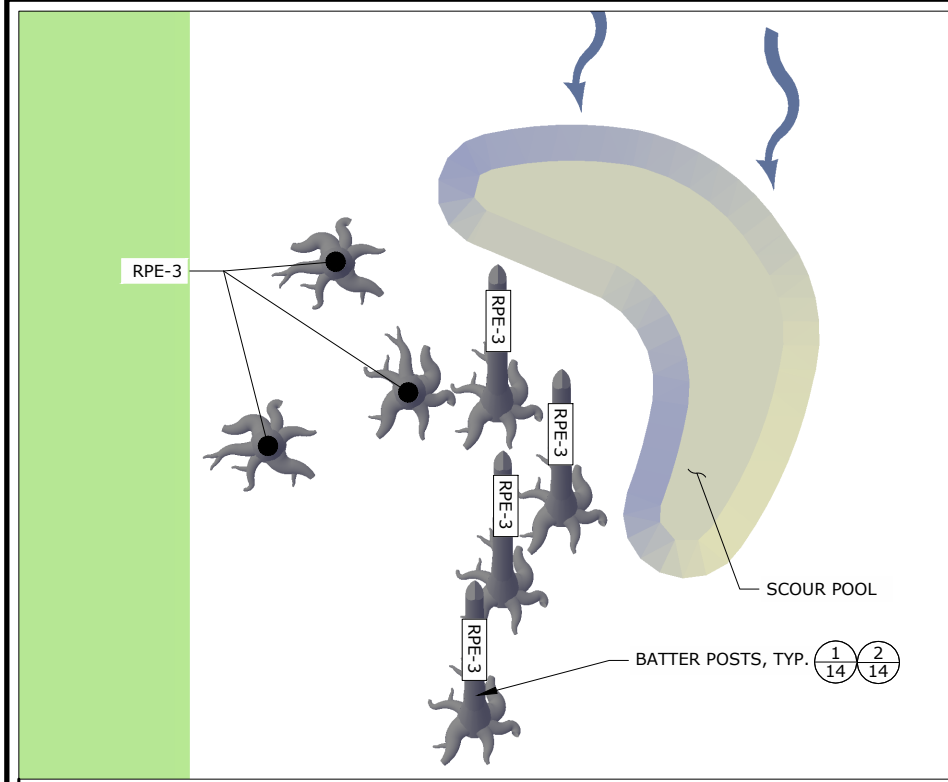


EXAMPLE OF COMPLETED DEFLECTOR ELJ

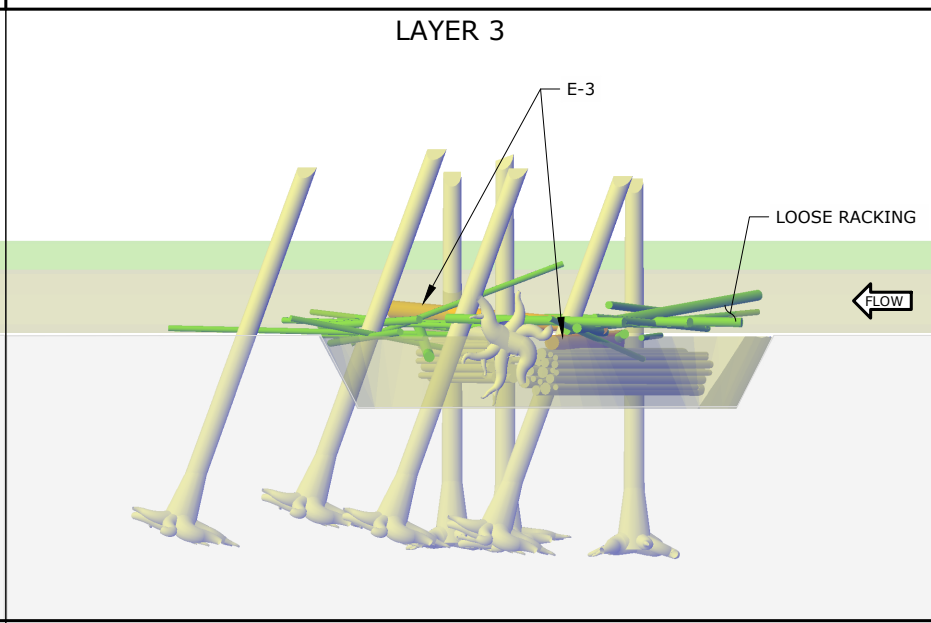
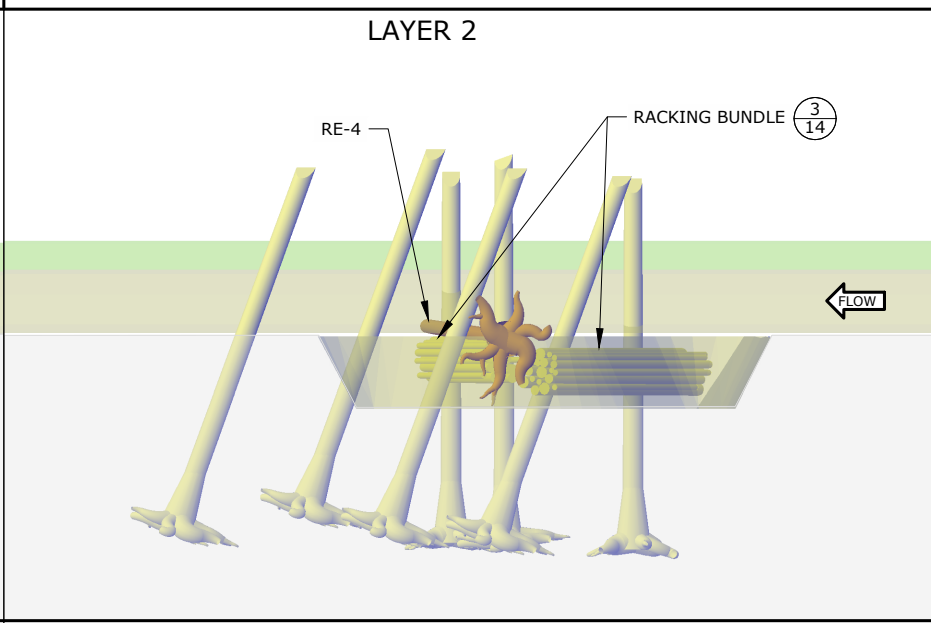
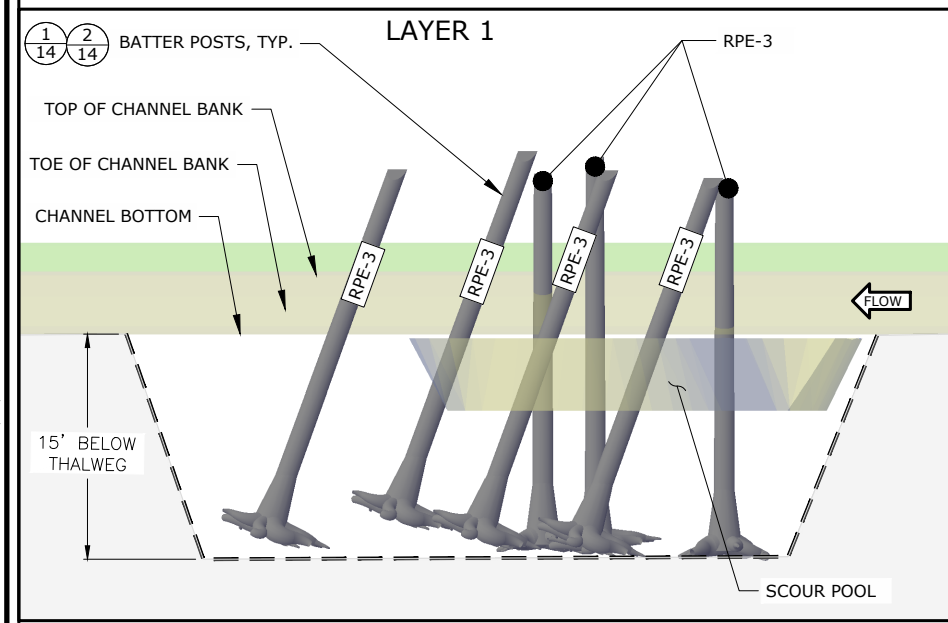
DEFLECTOR ELJ
SCALE: AS NOTED

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PLAN VIEWS



SECTION VIEWS

- EXCAVATE 15 FEET BELOW THALWEG FOR ROOTWAD POST PLACEMENT.
- EXCAVATE SCOUR POOL.
- PLACE SEVEN (7) RPE-3 ROOTWAD POSTS, BATTER FOUR (4) POSTS AS SHOWN.
- BACKFILL TO APPROXIMATELY 4 FEET BELOW GROUND SURFACE.

- PLACE TWO (2) 30-FOOT LONG RACKING BUNDLES.
- PLACE ONE (1) RE-4 ROOTWAD ON TOP OF BUNDLE.

- BACKFILL TO APPROXIMATELY 2 FEET BELOW GROUND SURFACE.
- PLACE TWO (2) E-3 LOGS.
- FILL SPACE IN BETWEEN ROOTWAD POSTS WITH LOOSE RACKING.
- BACKFILL TO GROUND SURFACE.



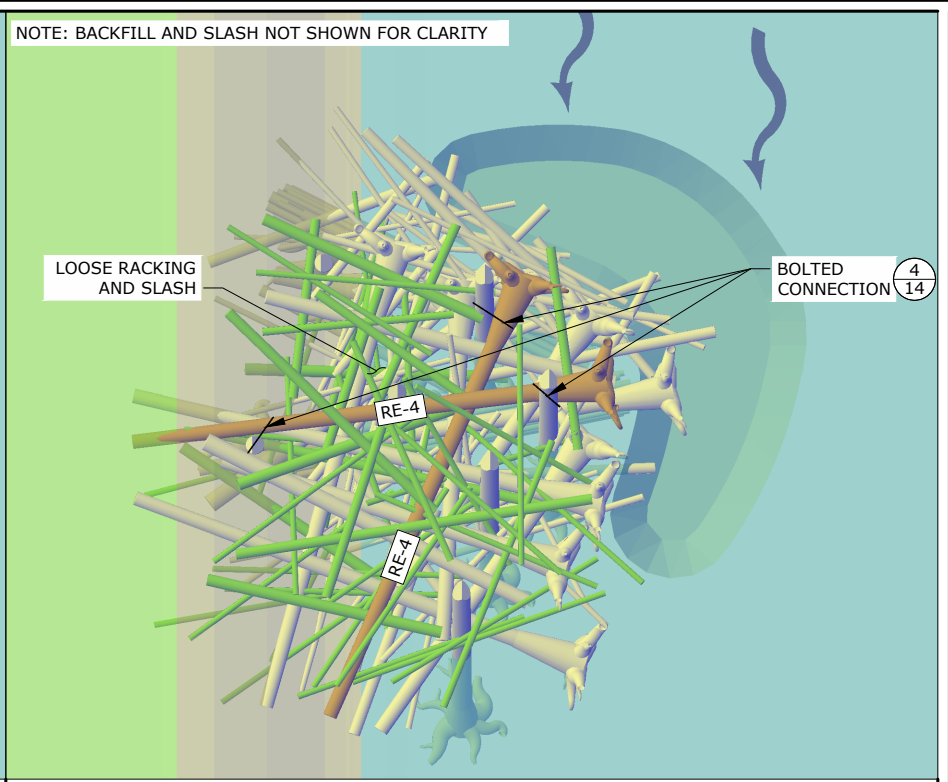
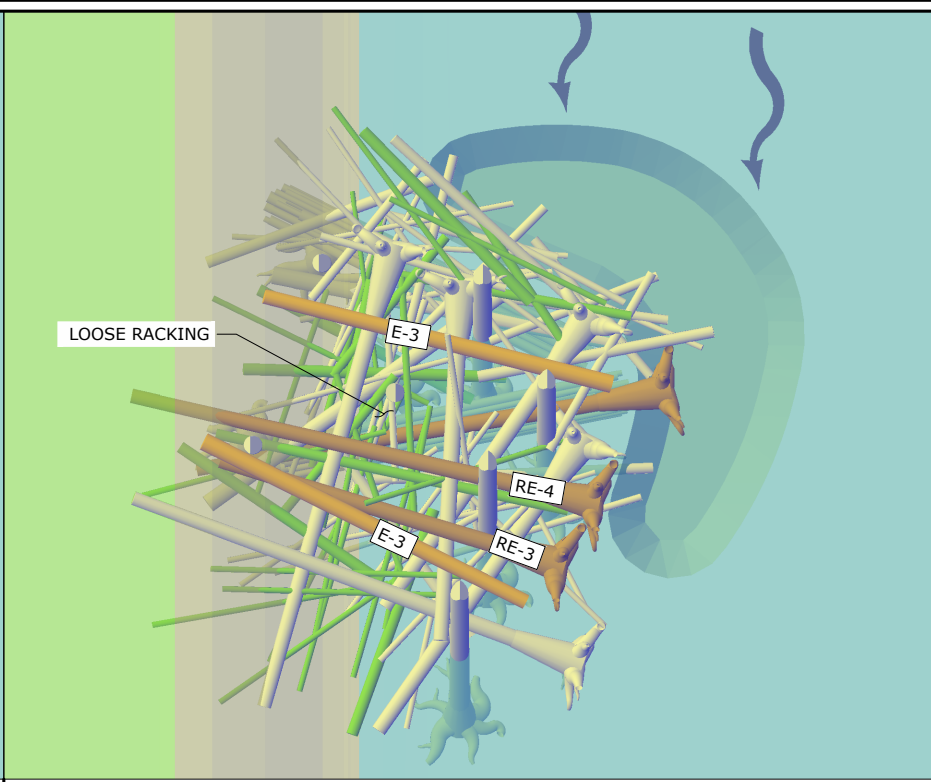
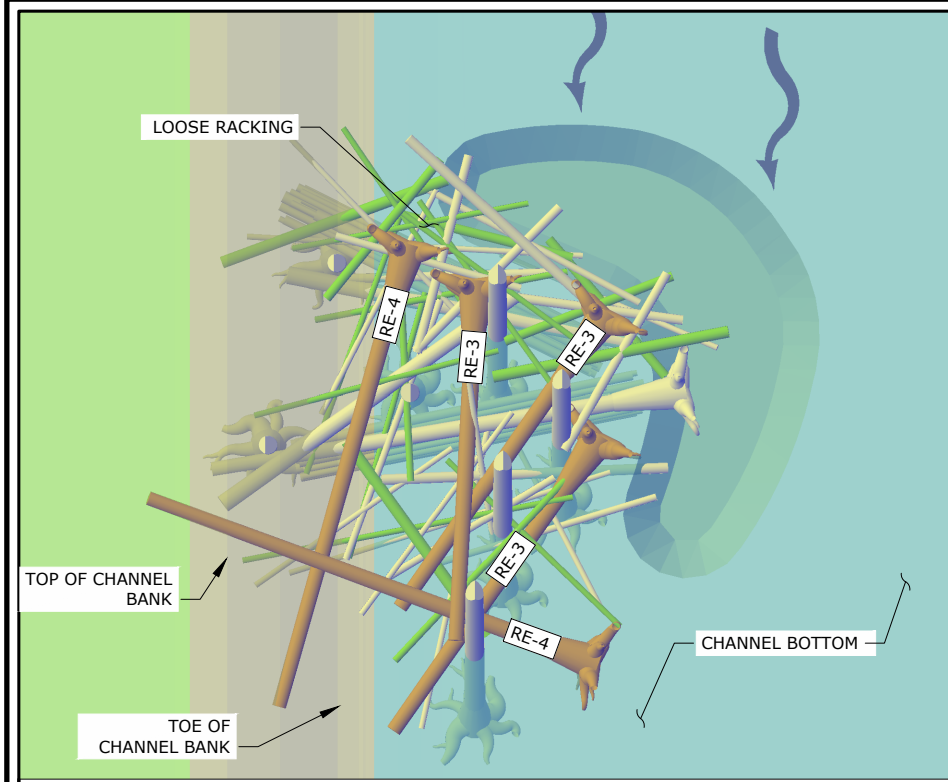
60% DESIGN
NOT FOR CONSTRUCTION

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAAT 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
DEFLECTOR LAYERING PLAN
PRELIMINARY

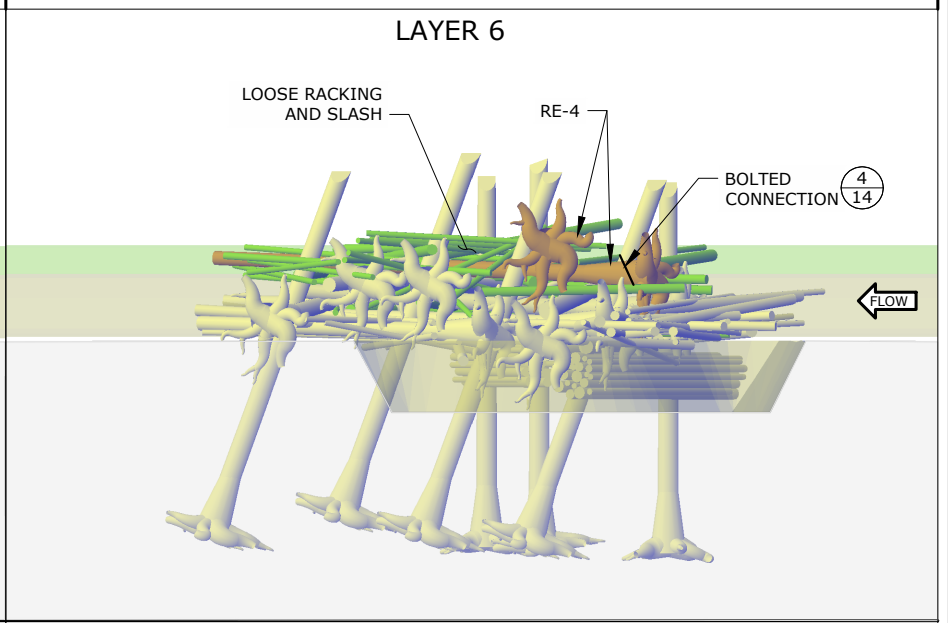
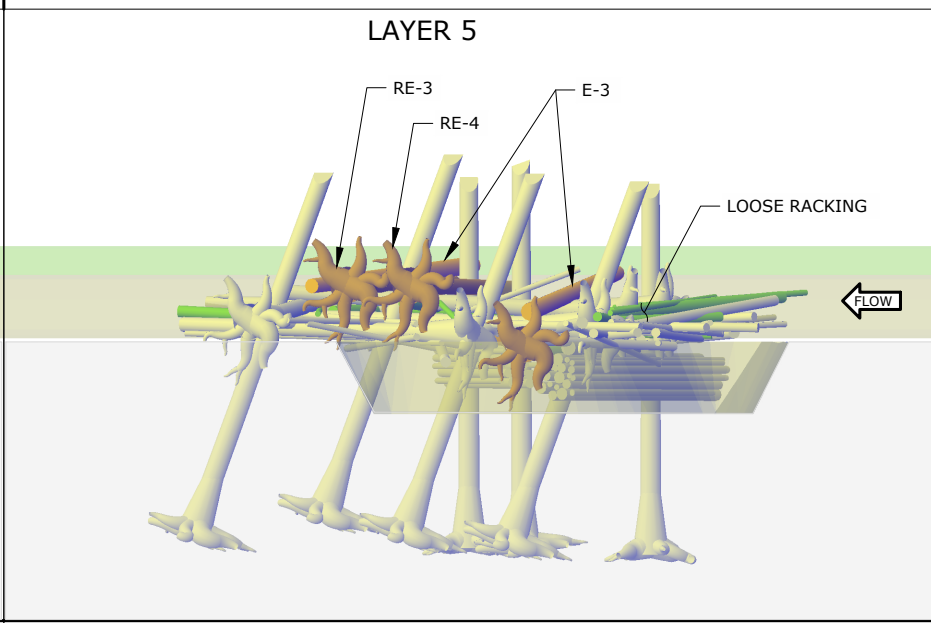
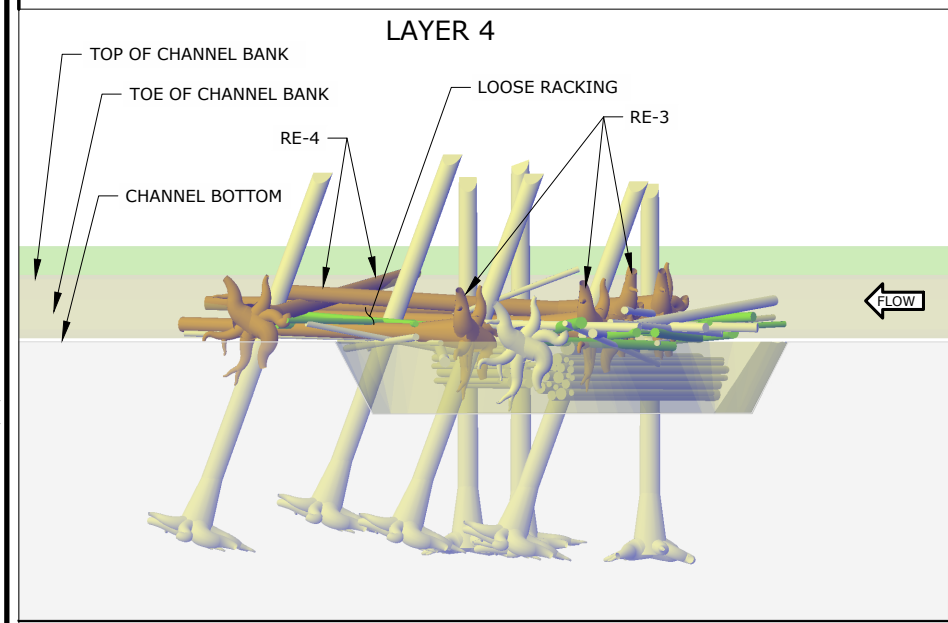
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COUNTY CHELAN COUNTY
LATITUDE 47°40'20"N
LONGITUDE 120°18'27"W
TOWN/SECTION/RANGE T25N/S10/R20E
DESIGNER GB DRAWN KS
CHECKER NT CHECKER NT

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PLAN VIEWS 8' 4' 0 8' 16'



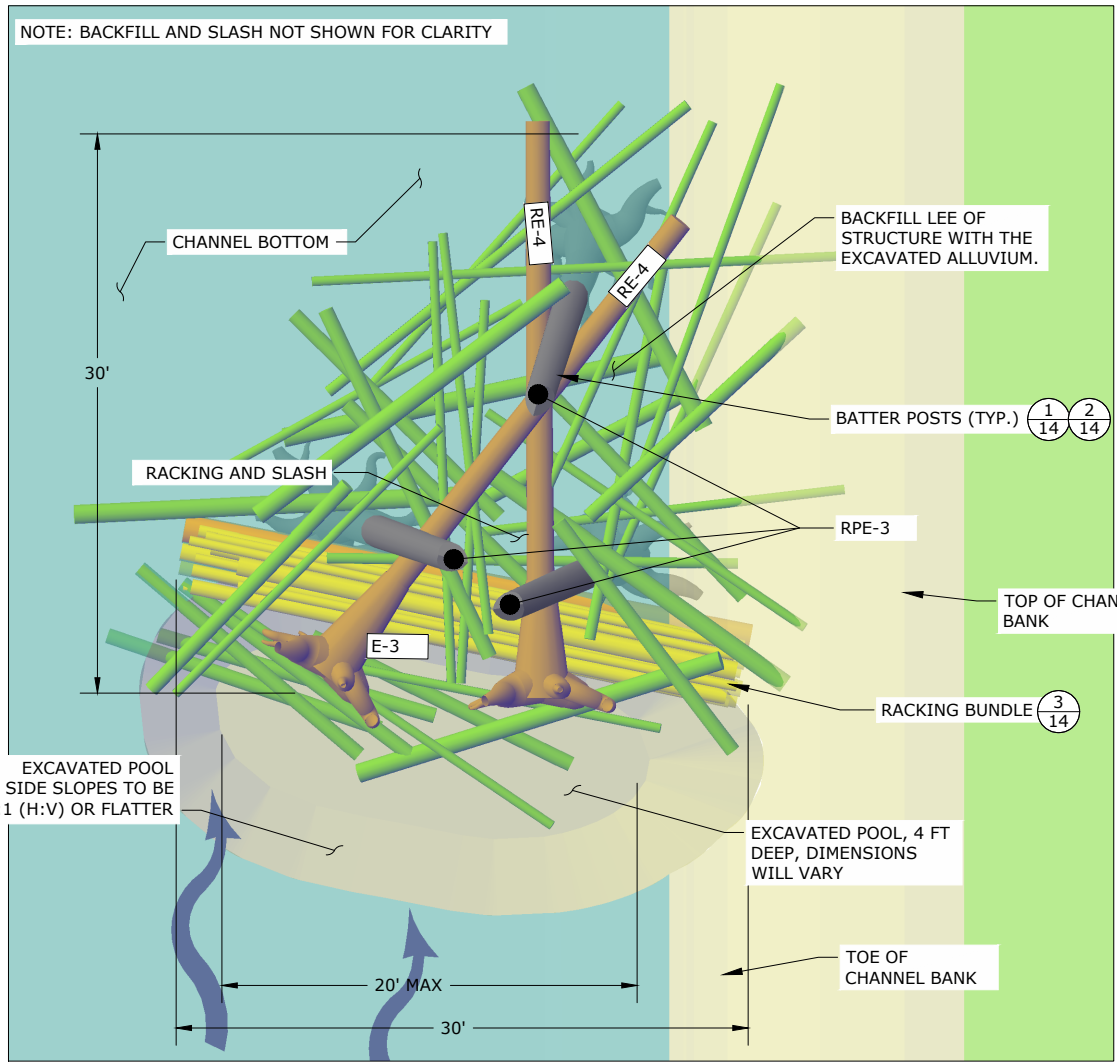
SECTION VIEWS 8' 4' 0 8' 16'

1. WEAVE AND PLACE LOOSE RACKING BETWEEN LOGS.
2. PLACE THREE (3) RE-3 ROOTWADS.
3. PLACE TWO (2) RE-4 ROOTWADS.

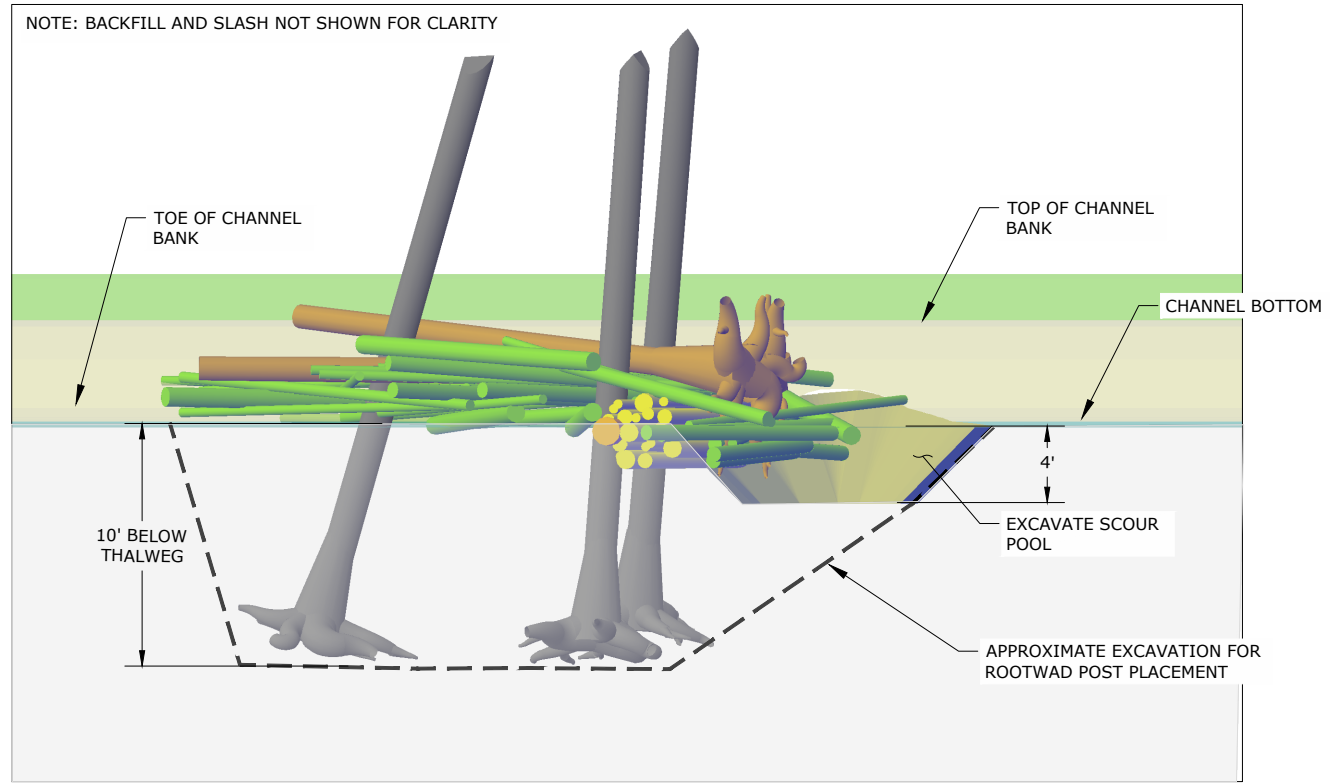
1. WEAVE AND PLACE LOOSE RACKING BETWEEN LOGS.
2. PLACE ONE (1) RE-3 ROOTWAD.
3. PLACE ONE (1) RE-4 ROOTWAD.
4. PLACE TWO (2) E-3 LOGS.

1. PLACE TWO (2) RE-4 ROOTWADS.
2. ADD THREE (3) BOLTED CONNECTIONS BETWEEN BATTER POSTS AND RE-4 ROOTWADS AS SHOWN.
3. PLACE LOOSE RACKING AND SLASH IN GAPS OF ELJ.
4. CUT PILES 5 FEET ABOVE HIGHEST ROOTWAD.
5. BACKFILL APPROXIMATELY 1-FOOT ABOVE HIGHEST ROOTWAD.

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SIDE CHANNEL ELJ PLAN
SCALE: 1" = 5'



SIDE CHANNEL ELJ PROFILE
SCALE: 1" = 5'

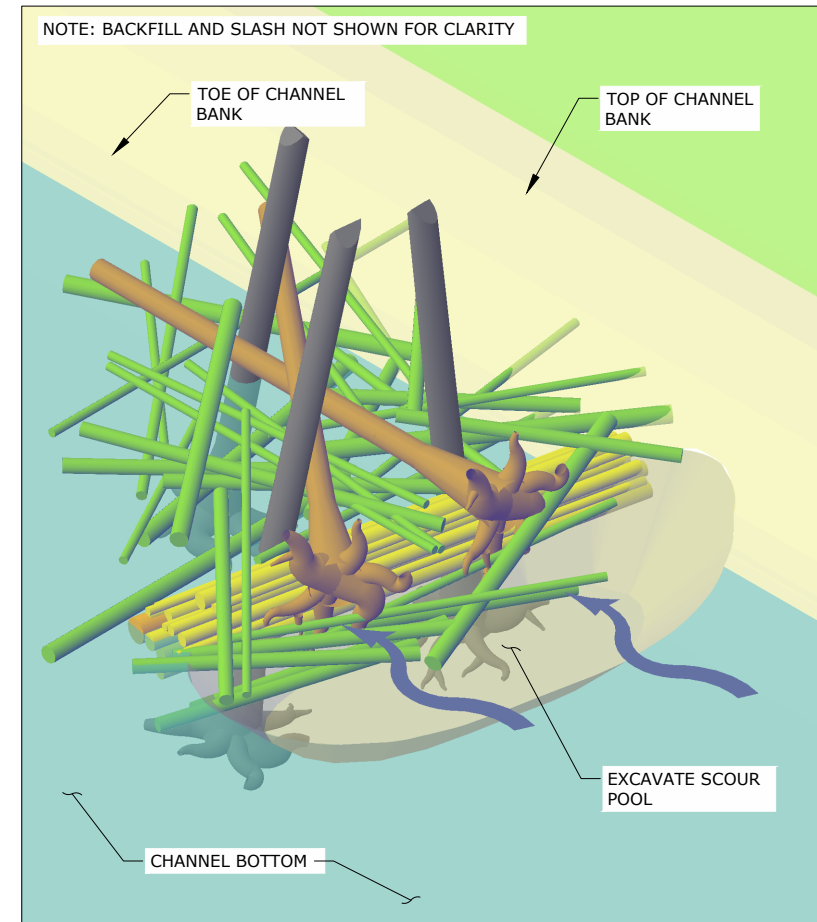


NOTES

1. EXTENT AND LOCATION OF SCOUR POOL IS APPROXIMATE, ELJ SHOULD SPAN ROUGHLY HALF THE WIDTH OF THE SIDE CHANNEL.
2. SOIL EXCAVATED DURING CONSTRUCTION SHALL BE TEMPORARILY STOCKPILED, AND USED AS BACKFILL ON BACKSIDE OF STRUCTURE.
3. BACKFILL EXTENTS MAY VARY.
4. ALL LOGS, SLASH MATERIAL, AND RACKING PIECES REQUIRED SHALL BE PROVIDED BY THE CONTRACTING AGENCY AND ARE STOCKPILED AT THE PROJECT SITE.
5. CAREFULLY HANDLE, TRANSPORT, AND STAGE PROVIDED WOODY MATERIAL FOR ELJ CONSTRUCTION. ANY WOODY MATERIAL DAMAGED AS A DIRECT RESULT OF CONTRACTOR ACTIONS SHALL BE REPLACED IN-KIND AT NO ADDITIONAL COST TO THE CONTRACTING AGENCY.
6. FINAL LOCATIONS OF EACH ELJ WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. THE CONTRACTING AGENCY WILL INSTALL STAKES AT TWO STAKEOUT POINTS FOR EACH ELJ. THE CONTRACTOR SHALL EXPAND THIS STAKING AS NECESSARY TO DEFINE THE STRUCTURE EXTENTS, POST LOCATIONS, EXCAVATION EXTENTS, AND DESIGN ELEVATIONS.
7. THE CONTRACTOR SHALL DETERMINE THE EXCAVATION LIMITS TO MAINTAIN A SAFE EXCAVATION DURING ELJ INSTALLATION. TEMPORARY AND PERMANENT EXCAVATION SPOILS SHALL BE PLACED TO MINIMIZE DISTURBANCE TO EXISTING VEGETATION.
8. NO EXCAVATION WITHIN THE ACTIVELY FLOWING CHANNEL SHALL OCCUR UNTIL THE WORK AREA HAS BEEN ISOLATED AND AQUATIC LIFE HAS BEEN REMOVED FROM THE INTERIOR OF THE ISOLATION.
9. THE EXCAVATION SHALL BE SUFFICIENTLY DEWATERED TO ALLOW COMPLETION AND INSPECTION OF ELJ INSTALLATION IN A CONTROLLED MANNER.
10. EXISTING WOODY MATERIAL AT THE STRUCTURE CONSTRUCTION SITE SHALL BE MOVED OR PROTECTED FROM CONSTRUCTION ACTIVITIES AND THEN INCORPORATED INTO THE STRUCTURE AND BACKFILL AS APPROVED BY THE CONTRACTING OFFICER.

SIDE CHANNEL ELJ MATERIALS SCHEDULE

LOG ID	DIA (INCHES)	LENGTH (FT)	ROOTWAD (Y/N)	QUANTITY PER STRUCTURE
RPE-3	18	30	YES	3
RE-4	18	40	YES	2
E-3	18	30	NO	1
RACKING BUNDLE	36	30	NO	1
RACKING	6-12	20-40	NO	40
SLASH	1-3	N/A	NO	12 CY



SIDE CHANNEL ELJ PERSPECTIVE
NTS

SIDE CHANNEL ELJ
SCALE: AS SHOWN

1
9



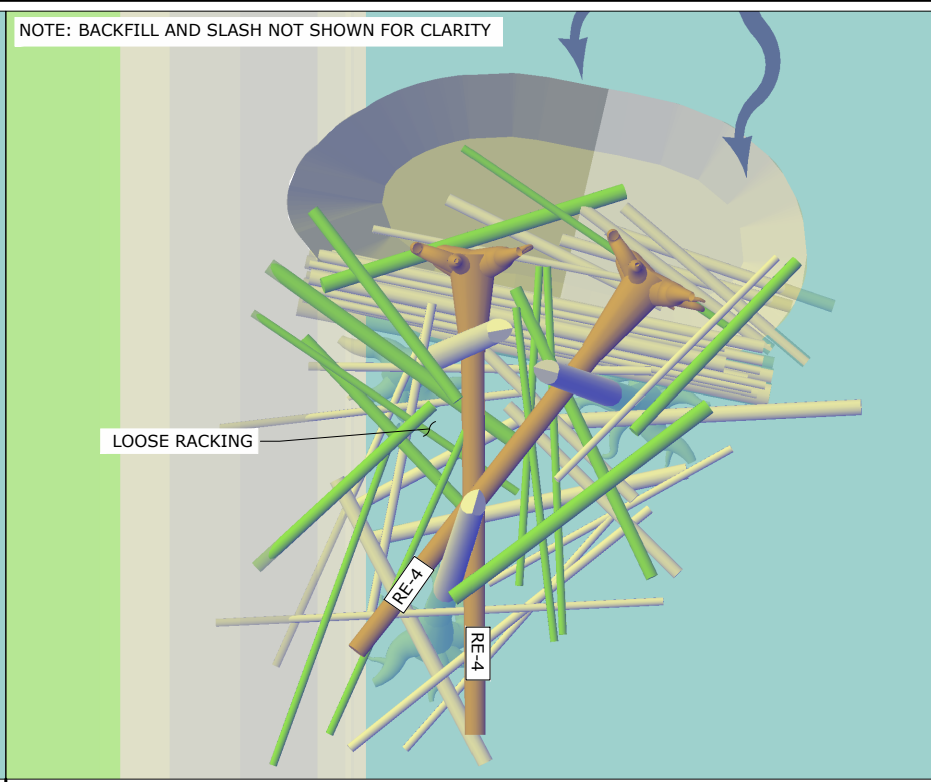
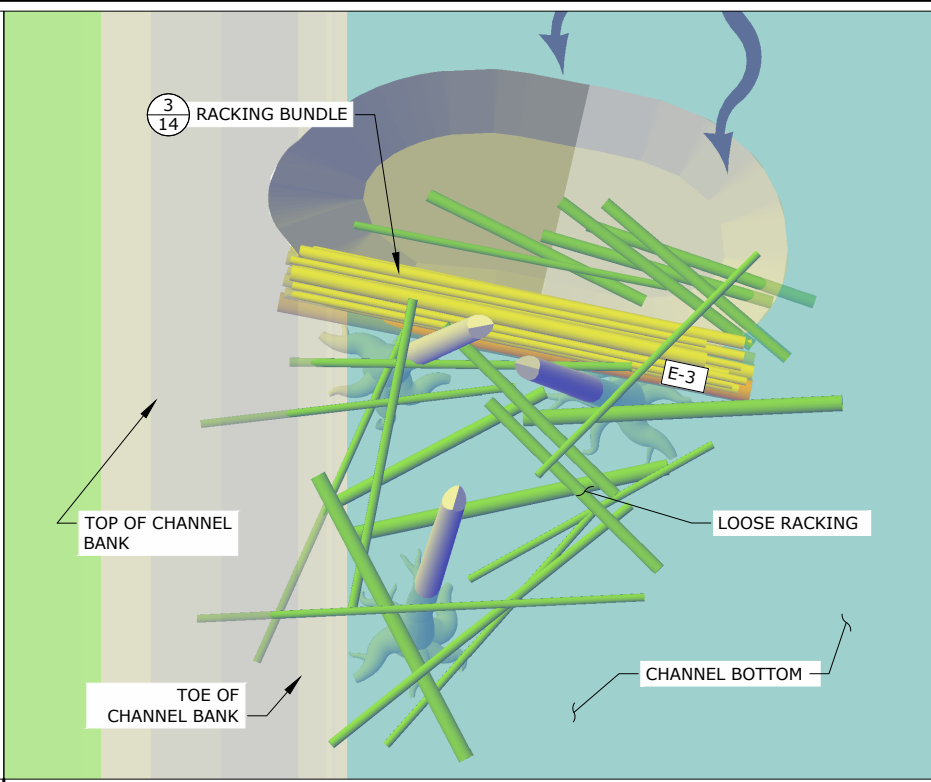
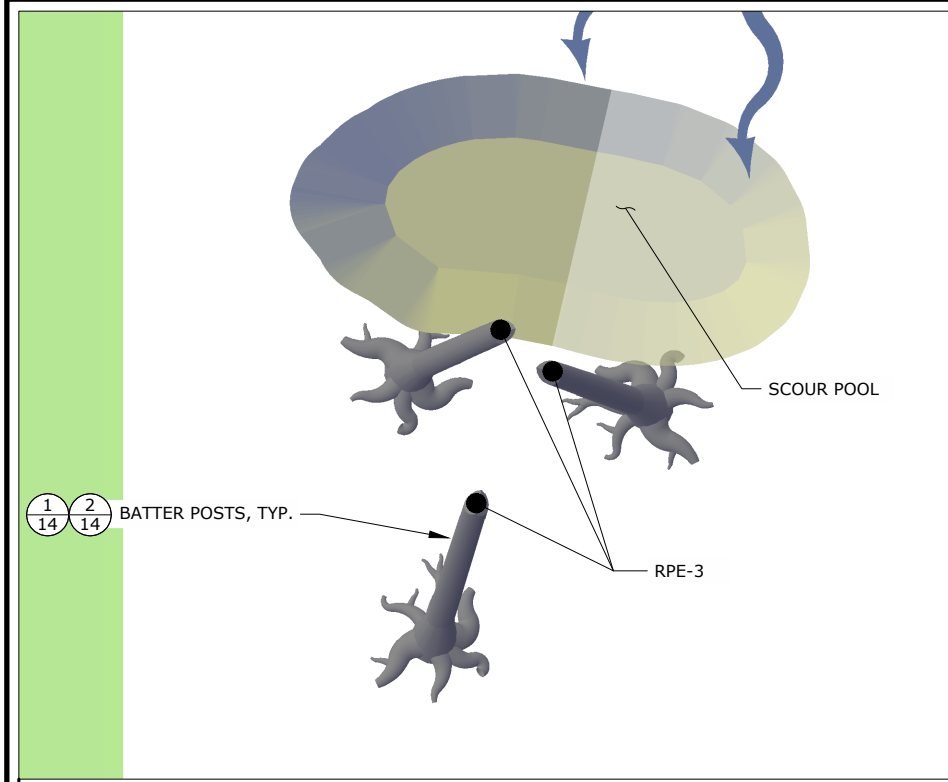
CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIA 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
SIDE CHANNEL ELJ
PRELIMINARY

DATE 12/23/2024
COUNTY CHELAN COUNTY
LATITUDE 47°40'20"N
LONGITUDE 120°18'27"W
TN/SC/RG T25N/S10/R20E
DESIGN_GB DRAWN_KS
CHECK_NT CHECK_NT

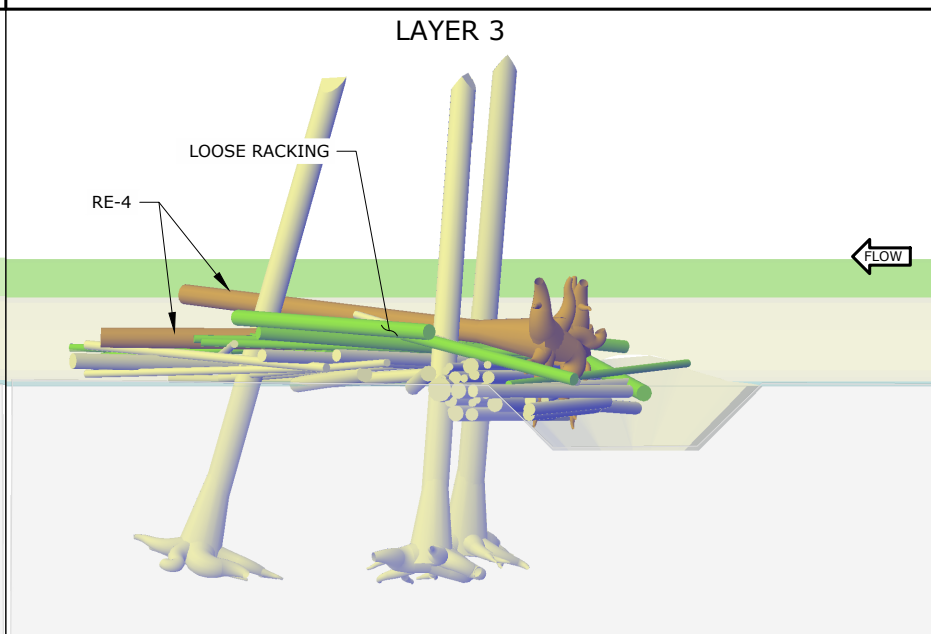
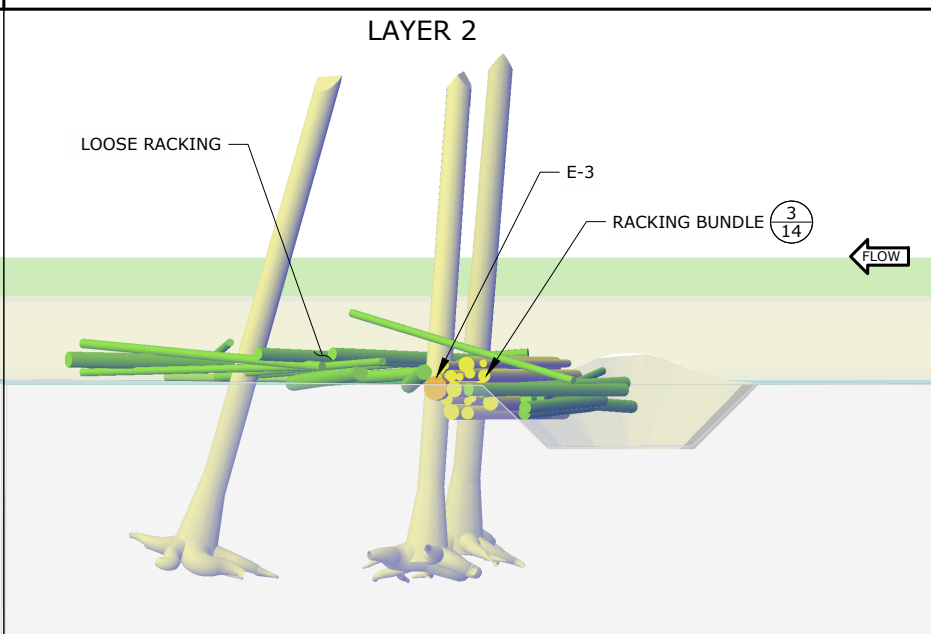
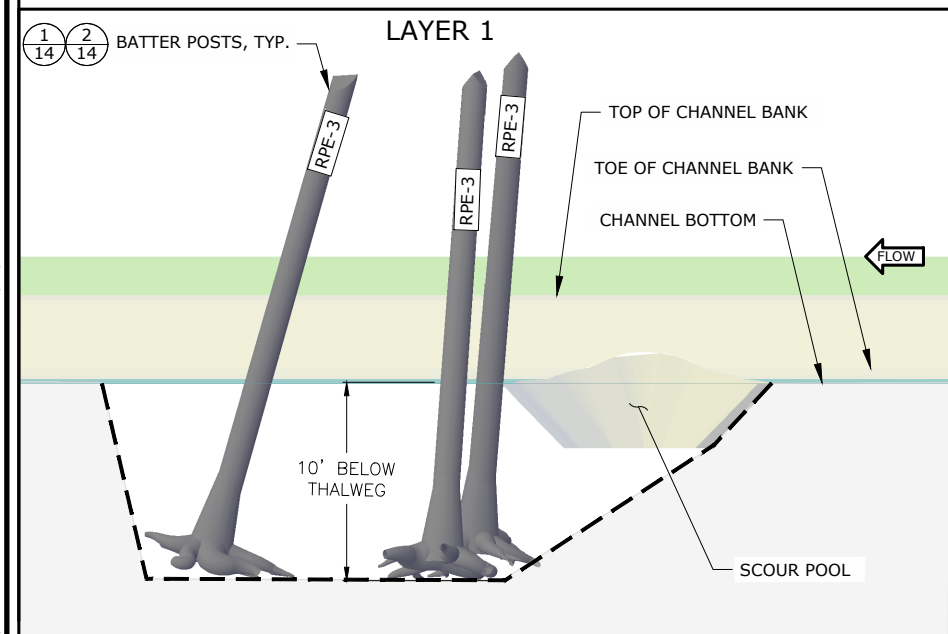
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.

SHEET
9 OF 16

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PLAN VIEWS



SECTION VIEWS

6' 3' 0 6' 12'

NOTE: BACKFILL AND SLASH NOT SHOWN FOR CLARITY

- EXCAVATE 10 FEET BELOW THALWEG FOR ROOTWAD POST PLACEMENT.
- EXCAVATE SCOUR POOL.
- BATTER THREE (3) RPE-3 ROOTWAD POSTS AS SHOWN.
- BACKFILL TO ONE FOOT BELOW GROUND SURFACE.

- PLACE ONE (1) E-3 LOG IN FRONT OF TWO POSTS AT BASE OF SCOUR POOL.
- PLACE ONE (1) 30-FOOT LONG RACKING BUNDLE IN FRONT OF E-3 LOG.
- WEAVE AND PLACE LOOSE RACKING BETWEEN POSTS

- PLACE TWO (2) RE-4 ROOTWADS.
- PLACE LOOSE RACKING AND SLASH IN GAPS OF ELJ.
- CUT PILES 5 FEET ABOVE HIGHEST ROOTWAD.
- BACKFILL APPROXIMATELY 1-FOOT ABOVE HIGHEST ROOTWAD.



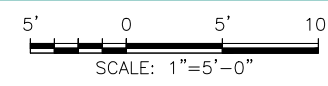
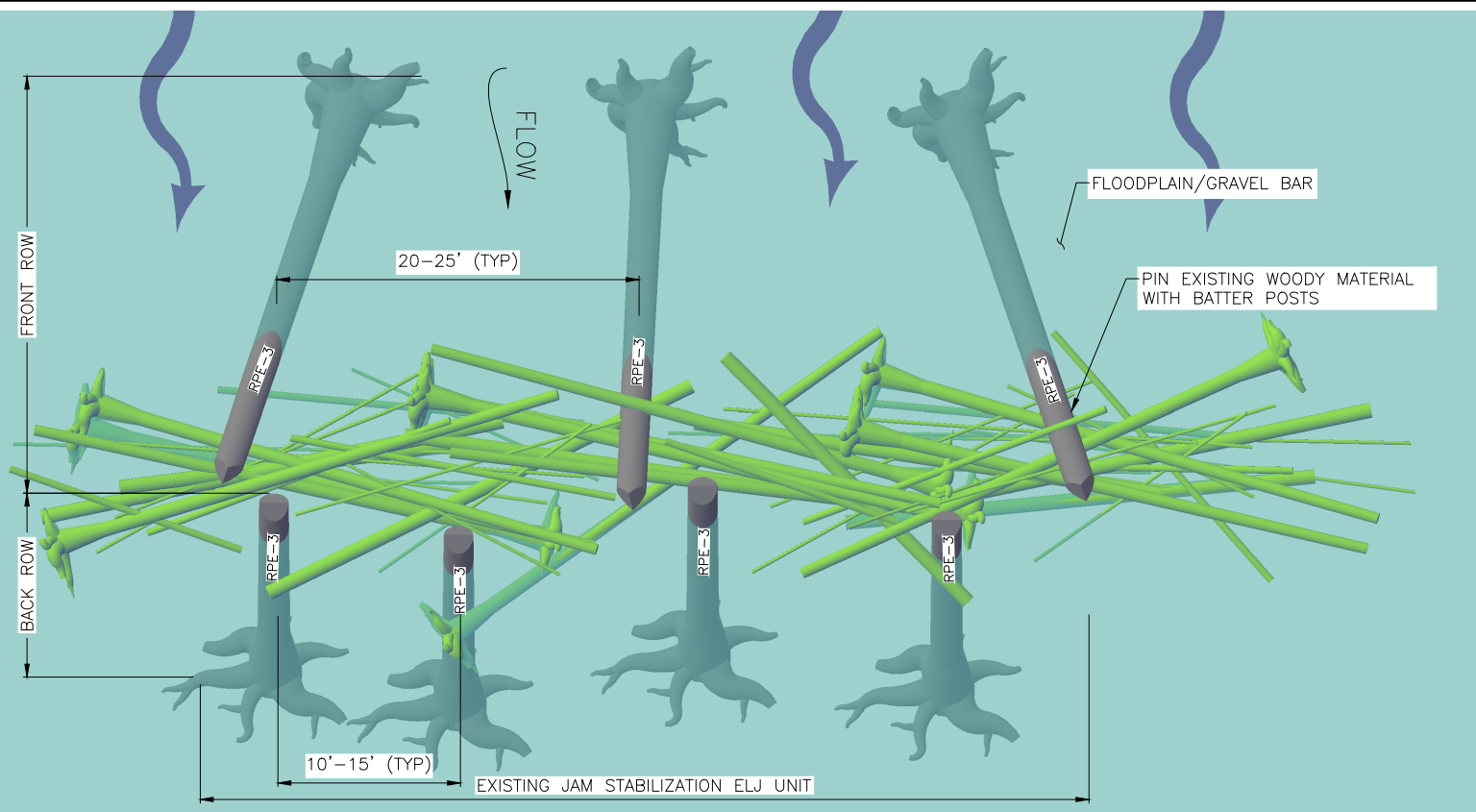
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NOT FOR CONSTRUCTION

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIA T 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
SIDE CHANNEL ELJ LAYERING PLAN
PRELIMINARY

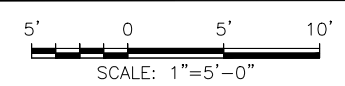
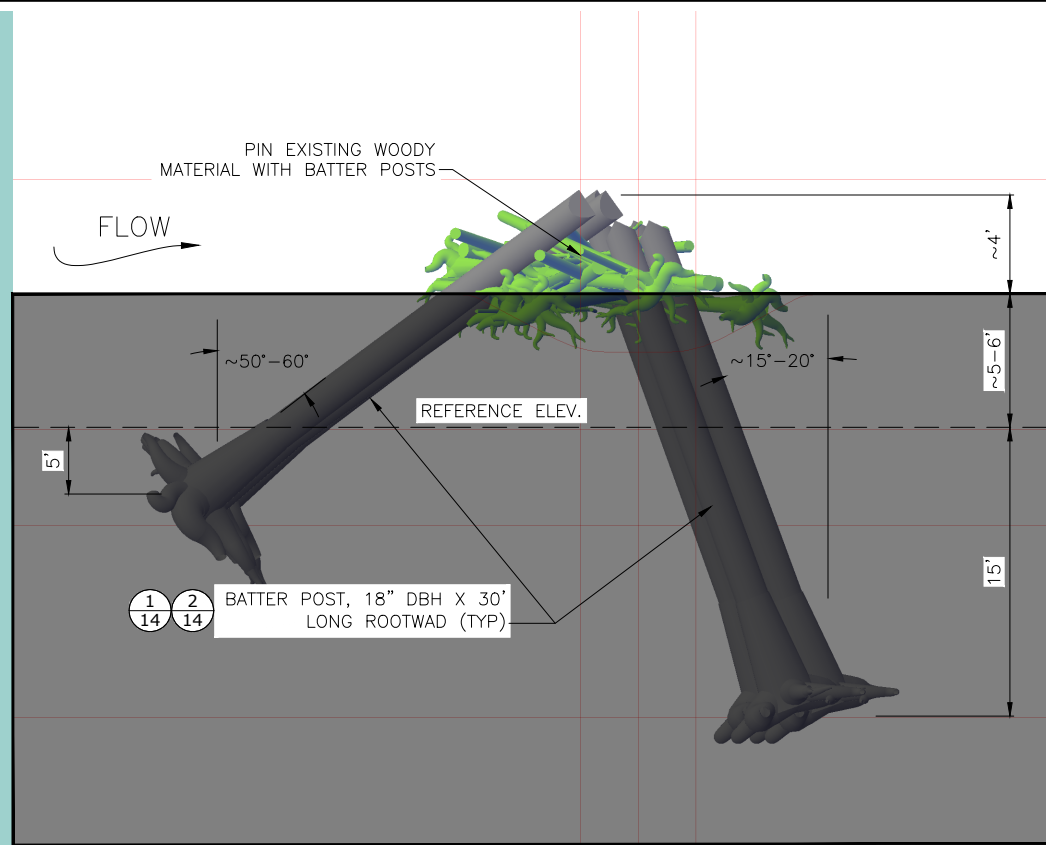
DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN_GB	DRAWN_KS
CHECK_NT	CHECK_NT

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.

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STABILIZE EXISTING LOGJAM PLAN
SCALE: 1" = 5'



STABILIZE EXISTING LOGJAM PROFILE
SCALE: 1" = 5'

NOTES

1. ALL LOGS REQUIRED HAVE BEEN PROVIDED BY THE CONTRACTING AGENCY AND ARE STOCKPILED AT THE PROJECT SITE.
2. CAREFULLY HANDLE, TRANSPORT, AND STAGE PROVIDED WOODY MATERIAL FOR ELJ CONSTRUCTION. ANY WOODY MATERIAL DAMAGED AS A DIRECT RESULT OF CONTRACTOR ACTIONS SHALL BE REPLACED IN-KIND AT NO ADDITIONAL COST TO THE CONTRACTING AGENCY.
3. FINAL LOCATIONS OF EACH ELJ WILL BE DETERMINED IN THE FIELD BY THE ENGINEER. THE CONTRACTING AGENCY WILL INSTALL STAKES AT TWO STAKEOUT POINTS FOR EACH ELJ AT THE START AND END OF THE ELJ. THE CONTRACTOR SHALL EXPAND THIS STAKING AS NECESSARY TO DEFINE THE POST LOCATIONS, EXCAVATION EXTENTS, AND DESIGN ELEVATIONS.
4. POSTS SHALL BE INSTALLED WITH THE TYPICAL SPACING, BATTER, AND EXCAVATION DEPTHS SHOWN ON THIS SHEET. POST LOCATIONS MAY BE FIELD FIT BASED ON CONDITIONS AT THE TIME OF CONSTRUCTION. THE NUMBER OF ELJ UNITS INSTALLED AT EACH LOCATION WILL VARY DEPENDING ON SITE CONDITIONS. THE CONTRACTOR SHALL BE PREPARED TO INSTALL A TOTAL OF 2 UNITS (8 BACK ROW POSTS AND 6 FRONT ROW POSTS) AT THE APPROXIMATE LOCATIONS SHOWN ON THE PLANS.
5. THE CONTRACTOR SHALL DETERMINE THE EXCAVATION LIMITS TO MAINTAIN A SAFE EXCAVATION DURING ELJ INSTALLATION AND ACHIEVE THE DESIGN ELEVATIONS INCLUDED ON THIS SHEET. TEMPORARY AND PERMANENT EXCAVATION SPOILS SHALL BE PLACED TO MINIMIZE DISTURBANCE TO EXISTING VEGETATION.
6. NO EXCAVATION WITHIN THE ACTIVELY FLOWING CHANNEL SHALL OCCUR UNTIL THE WORK AREA HAS BEEN ISOLATED AND AQUATIC LIFE HAS BEEN REMOVED FROM THE INTERIOR OF THE ISOLATION.
7. THE EXCAVATION SHALL BE SUFFICIENTLY DEWATERED TO ALLOW COMPLETION AND INSPECTION OF ELJ INSTALLATION IN A CONTROLLED MANNER.
8. EXISTING WOODY MATERIAL AT THE STRUCTURE CONSTRUCTION SITE SHALL BE MOVED OR PROTECTED FROM CONSTRUCTION ACTIVITIES AND THEN INCORPORATED INTO THE STRUCTURE AND BACKFILL AS APPROVED BY THE CONTRACTING OFFICER.
9. BACKFILL EXCAVATED POSTS TO THE ORIGINAL GROUND LINE, INCORPORATING ANY REMOVED WOODY MATERIAL INTO THE STRUCTURE AS SHOWN, PINNING IT IN PLACE WITH THE INSTALLED POSTS.
10. TRIM POST TOPS FOLLOWING INSTALLATION AND BACKFILL.

STABILIZE EXISTING LOGJAM
SCALE: AS NOTED



60% DESIGN
NOT FOR CONSTRUCTION

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAI 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
STABILIZE EXISTING LOGJAM
PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN	GB
DRAWN	KS
CHECK	NT
CHECK	NT

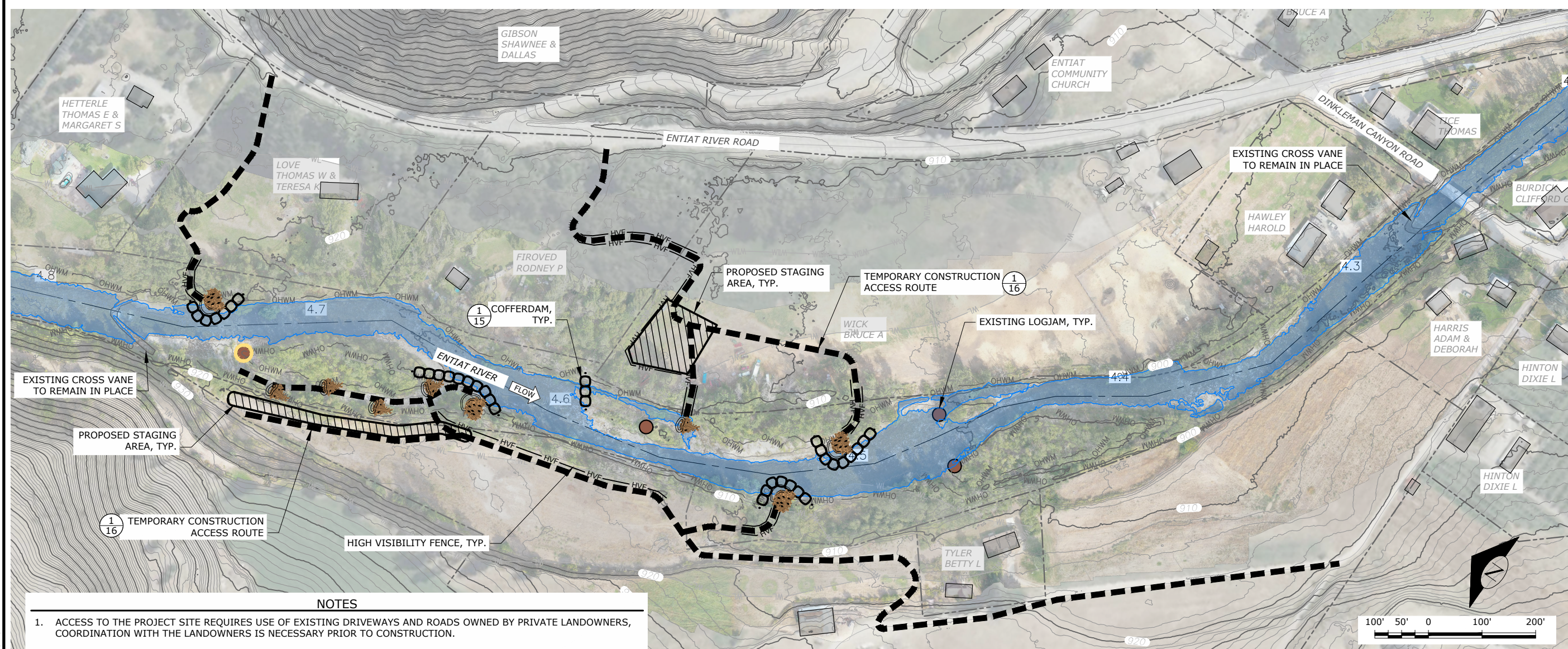
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Natural Systems Design
+ Coastal Geologic Services



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NOTES

1. ACCESS TO THE PROJECT SITE REQUIRES USE OF EXISTING DRIVEWAYS AND ROADS OWNED BY PRIVATE LANDOWNERS, COORDINATION WITH THE LANDOWNERS IS NECESSARY PRIOR TO CONSTRUCTION.
2. THE LOCATIONS OF TEMPORARY ACCESS ROADS, STAGING AREAS ARE APPROXIMATE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXAMINING THE PROJECT SITE AND BECOMING FAMILIAR WITH THE NATURE OF TEMPORARY IMPROVEMENTS REQUIRED TO COMPLETE THE WORK ON THESE PLANS.
4. CONTRACTOR TO VERIFY ALL OVERHEAD AND UNDERGROUND UTILITIES BEFORE CONSTRUCTION.
5. EXISTING ROADS THAT WILL BE USED AS ACCESS SHALL BE STABILIZED AS NEEDED TO ACCOMMODATE EQUIPMENT.
6. PROPOSED STAGING AREAS MAY REQUIRE VEGETATION REMOVAL PRIOR TO STAGING OF MATERIALS. ALL CLEARED NATIVE TREES AND VEGETATION ARE TO BE STOCKPILED AND UTILIZED IN ELJ STRUCTURES AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY ACCESS ROADS AND STAGING AREAS SHALL BE RESTORED AND REVEGETATED FOLLOWING CONSTRUCTION.
8. DEWATERING IN SOME LOCATIONS MAY BE NECESSARY. A DEWATERING PLAN INCLUDING POTENTIAL INFILTRATION LOCATIONS WILL BE DEVELOPED AT A FUTURE PHASE BASED ON SURROUNDING SITE CONDITIONS.
9. SITE ISOLATION MAY BE MODIFIED BASED ON SITE CONDITIONS AT THE TIME OF CONSTRUCTION. COFFERDAMS SHOWN MAY NOT BE NECESSARY.
10. FISH SHALL BE REMOVED AND ISOLATED FROM WORK AREAS FOR THE DURATION OF CONSTRUCTION.
11. AERIAL IMAGERY COLLECTED BY CHELAN COUNTY SEPTEMBER 2023 AND SUPPLEMENTED WITH 2023 BING AERIAL IMAGERY.
12. WETLANDS ARE TAKEN FROM THE NATIONAL WETLAND INSTITUTE AND ARE APPROXIMATE. IT IS RECOMMENDED A WETLAND SURVEY IS COMPLETED IN THE FUTURE TO REFINE WETLAND BOUNDARIES.
13. CONTOURS SHOWN ON THIS SHEET ARE 2' AND 10' INTERVALS.

ACCESS, STAGING, AND SITE ISOLATION PLAN

SCALE: 1" = 100'

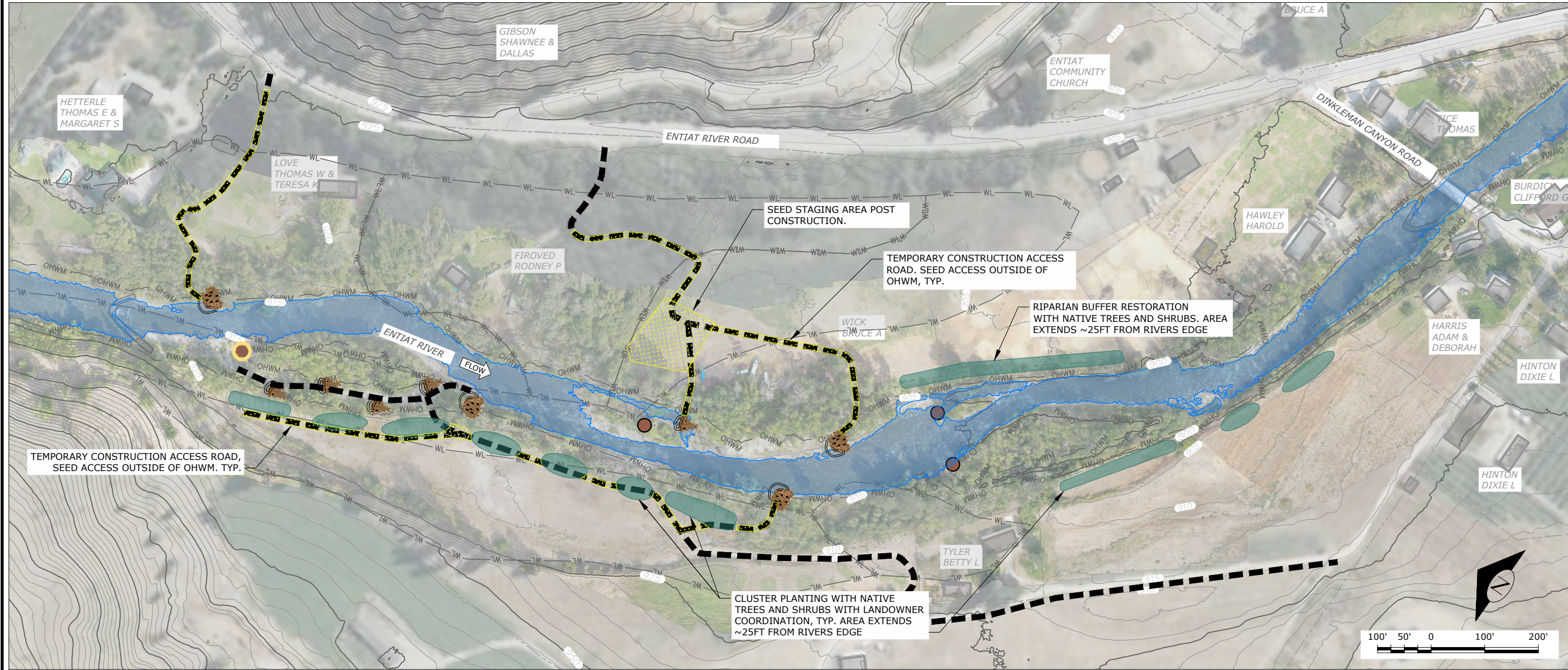


CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
 LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
 ENHANCEMENT PROJECT
**ACCESS, STAGING, AND SITE ISOLATION
 PLAN**
 PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN_GB	DRAWN_KS
CHECK_NT	CHECK_NT

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REVEGETATION PLAN
SCALE: 1" = 100'

NOTES

1. ALL AREAS ABOVE THE ORDINARY HIGH WATER MARK DISTURBED DURING CONSTRUCTION, INCLUDING STAGING AREAS AND TEMPORARY CONSTRUCTION ACCESS ROUTES, SHALL BE SEEDED.
2. REVEGETATION BOUNDARIES ARE THE EXPECTED LIMITS OF DISTURBANCE RESULTING FROM CONSTRUCTION ACTIVITIES. BOUNDARIES MAY VARY AT THE TIME OF PLANT INSTALLATION.
3. REVEGETATION AND SEEDING BOUNDARIES SHALL BE APPROVED BY THE CONTRACTING OFFICER OR REPRESENTATIVE PRIOR TO INSTALLATION.
4. AERIAL IMAGERY COLLECTED BY CHELAN COUNTY SEPTEMBER 2023 AND SUPPLEMENTED WITH 2023 BING AERIAL IMAGERY.
5. WETLANDS ARE TAKEN FROM THE NATIONAL WETLAND INSTITUTE AND ARE APPROXIMATE. IT IS RECOMMENDED A WETLAND SURVEY IS COMPLETED IN THE FUTURE TO REFINE WETLAND BOUNDARIES.
6. CONTOURS SHOWN ON THIS SHEET ARE 2' AND 10' INTERVALS.



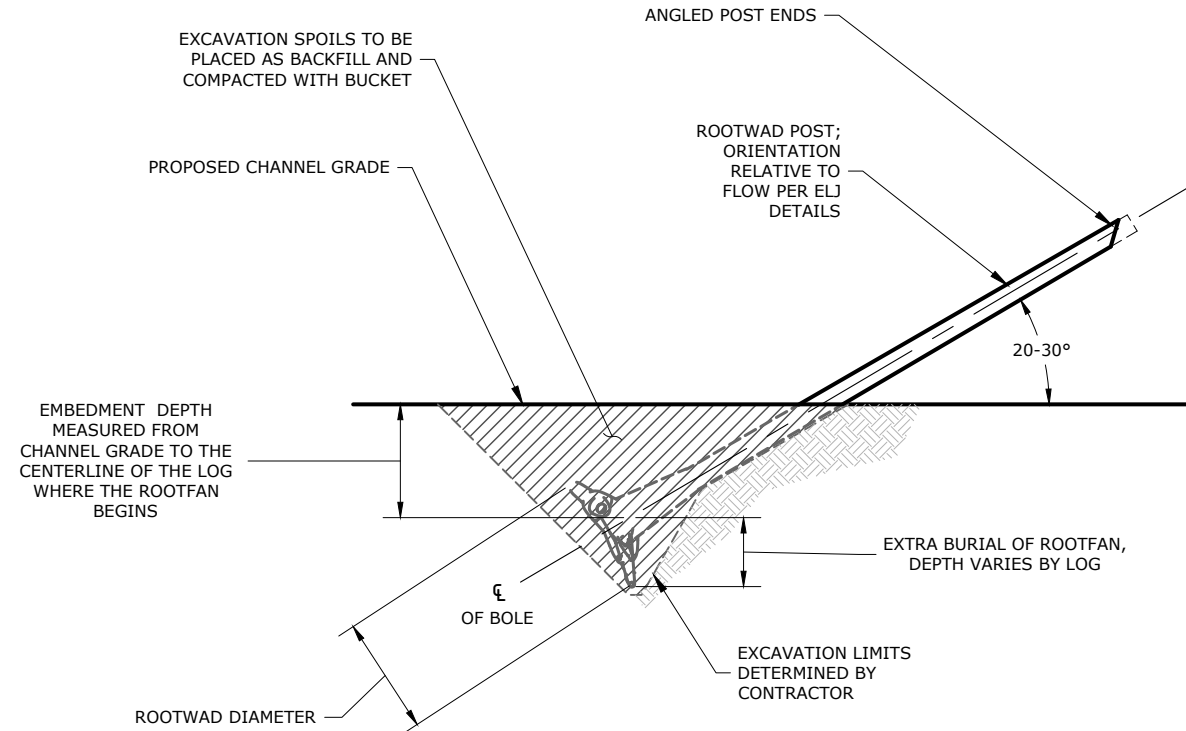
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NOT FOR CONSTRUCTION

CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAI 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
REVEGETATION PLANS
PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN_GB	DRAWN_KS
CHECK_NT	CHECK_NT

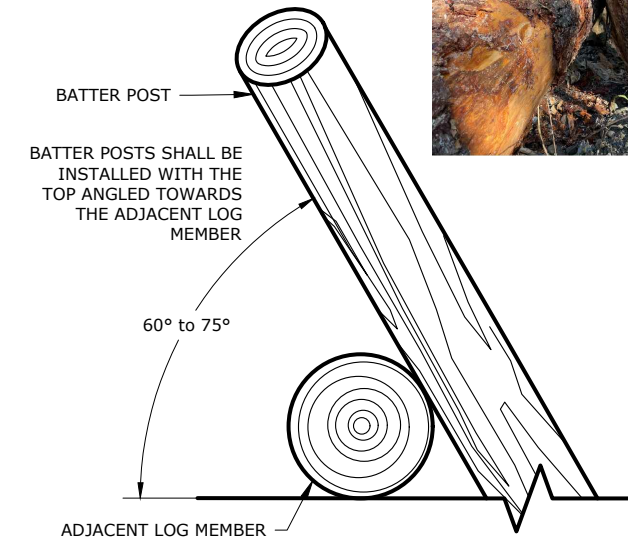
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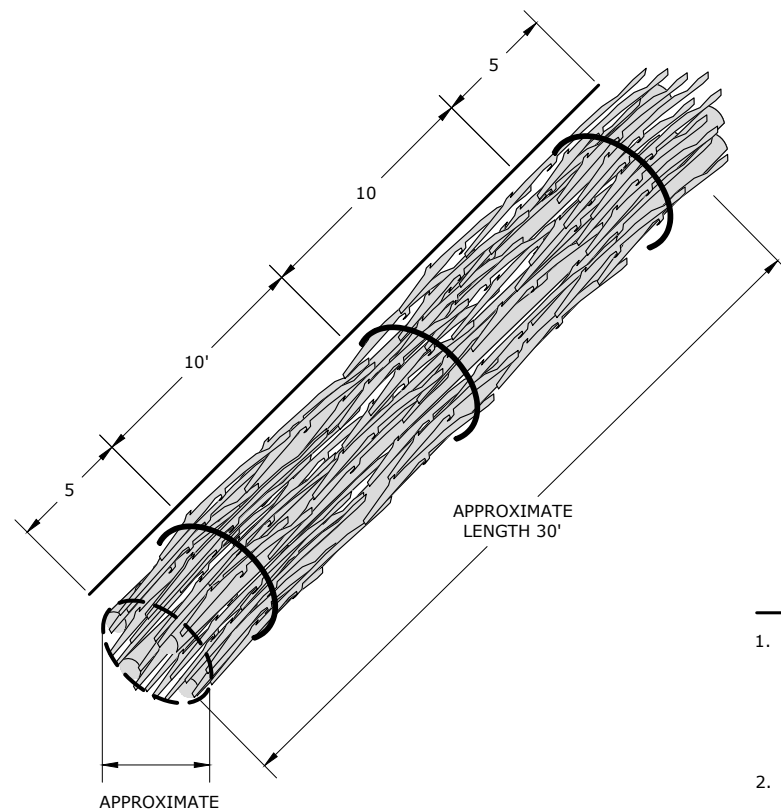
BATTER POST PLACEMENT
SCALE: 1"=6'

1
14



BATTER POST DETAIL
SCALE: 1"=1'

2
14

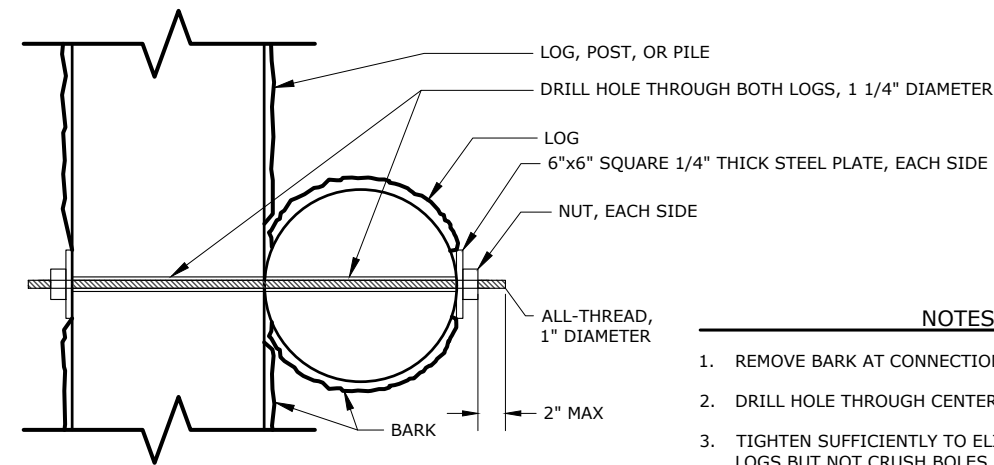


RACKING BUNDLE
SCALE: 1"=4'

NOTES

- RACKING BUNDLES SHALL BE SECURED WITH A MIN 1" DIA MANILA ROPE WRAPPED TWICE AROUND AND SECURED WITH A TRUCKERS HITCH OR COMPARABLE CONSTRICTOR KNOT AT MINIMUM 3 LOCATIONS AS SHOWN. BUNDLES SHALL BE TESTED TO ENSURE PIECES ARE SECURE FOR TRANSPORT.
- SLASH SHALL BE SANDWICHED INTO THE CENTER OF THE BUNDLE.

3
14



BOLTED CONNECTION
SCALE: 1"=1'

4
14

NOTES

- REMOVE BARK AT CONNECTION POINTS.
- DRILL HOLE THROUGH CENTER OF LOGS.
- TIGHTEN SUFFICIENTLY TO ELIMINATE GAP BETWEEN LOGS BUT NOT CRUSH BOLES. PEEN THREADS OR TACK WELD NUT TO ALL-THREAD FOLLOWING TIGHTENING.
- ALL-THREAD TO BE ASTM TYPE A 307, GRADE A. LENGTH VARIES BY CONNECTION.
- MULTIPLE LOG CONNECTIONS AT SAME JOINT WILL USE SINGLE PIECE OF ALL-THREAD TO MINIMIZE HOLES IN POSTS.

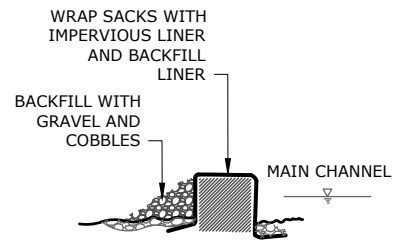
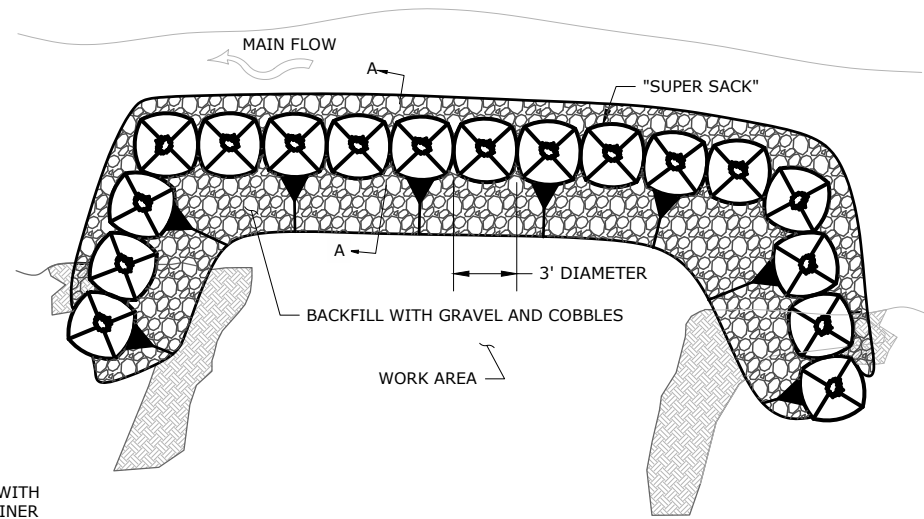


CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
ELJ DETAILS
PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN__GB__	DRAWN_KS
CHECK__NT__	CHECK__NT__

0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.

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SECTION A-A

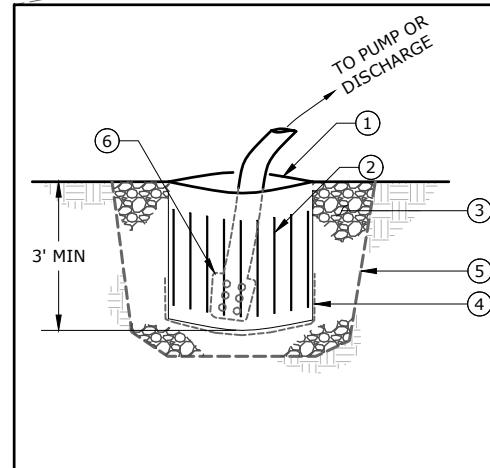
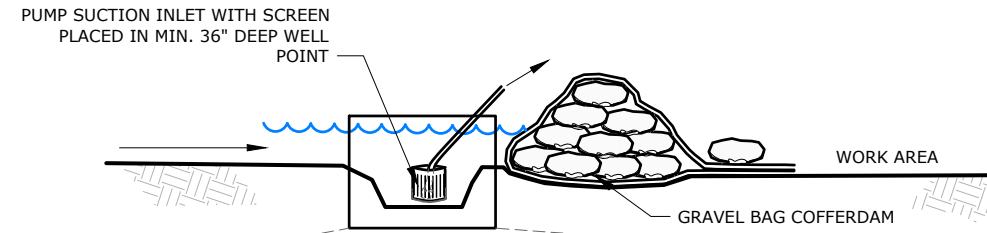
NOTES

1. WRAP "SUPER SACKS" WITH IMPERVIOUS PLASTIC LINER TO PREVENT SEEPAGE.
2. BACKFILL THE DOWNSTREAM SIDE COFFER DAM WITH NATIVE, ADJACENT ALLUVIUM FROM SIDE CHANNEL EXCAVATION.
3. USE "SUPER SACKS" AS BUTTRESSES AS REQUIRED.
4. "SUPER SACKS" MAY BE REPLACED WITH SAND BAGS IF FLOWS ALLOW AND APPROVED BY THE ENGINEER. SAND BAGS MAY BE FILLED WITH EXCAVATION FROM THE SIDE CHANNEL AND FILL MATERIAL MAY BE PLACED IN THE LBSN FOLLOWING USE. REMOVE ALL PLASTIC FROM THE SITE.

COFFERDAM

SCALE: 1":5'

1
15



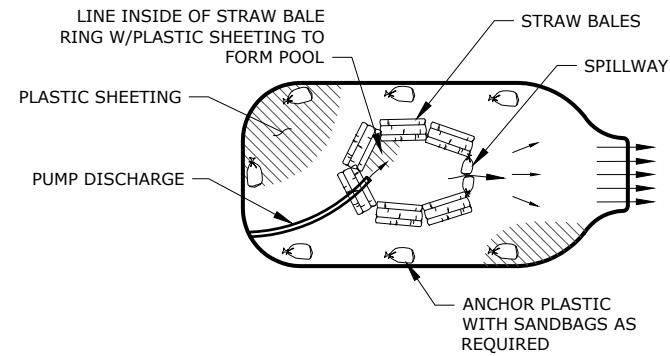
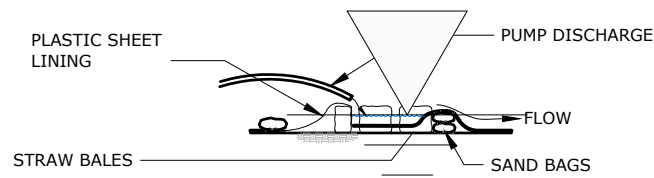
NOTES:

1. CORRUGATED PLASTIC OR METAL PIPE 36" MIN DIAMETER, ONE PER EACH PUMP.
2. ¼" SLOTS 24" LONG AT 4" SPACING ALL THE WAY AROUND PIPE.
3. STREAMBED SEDIMENT
4. WIRE SCREEN ½" MESH COVERING PIPE BOTTOM, ANCHORED TO PIPE.
5. LIMIT OF EXCAVATION. INSTALL PIPE AND BACKFILL WITH STREAMBED SEDIMENT.
6. PUMP SUCTION INTAKE OR ELECTRIC SUBMERSIBLE PUMP WITH 1" SCREEN INSTALLED AT INLET OR PUMP SUCTION FACE, OR OTHER SIZE RECOMMENDED BY PUMP SUPPLIER.
7. PUMP SUCTION SHALL BE OPERATIONAL ONLY WHILE ALL CREEK FLOW IS FULLY FILTERED BY FISH BLOCK NETS AND AFTER FISH EXCLUSION IS COMPLETED. BYPASS PUMPS SHALL BE SHUTDOWN DURING ANY FAILURE OF THE FISH BLOCK NET OR ANY CONDITION THAT CAN ALLOW FISH TO ENTER THE PUMP INTAKE.

PUMP

SCALE: 1":2'

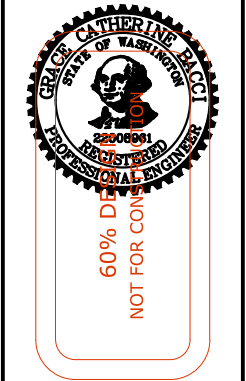
2
15



ENERGY DISSIPATOR

SCALE: 1":10'

3
15



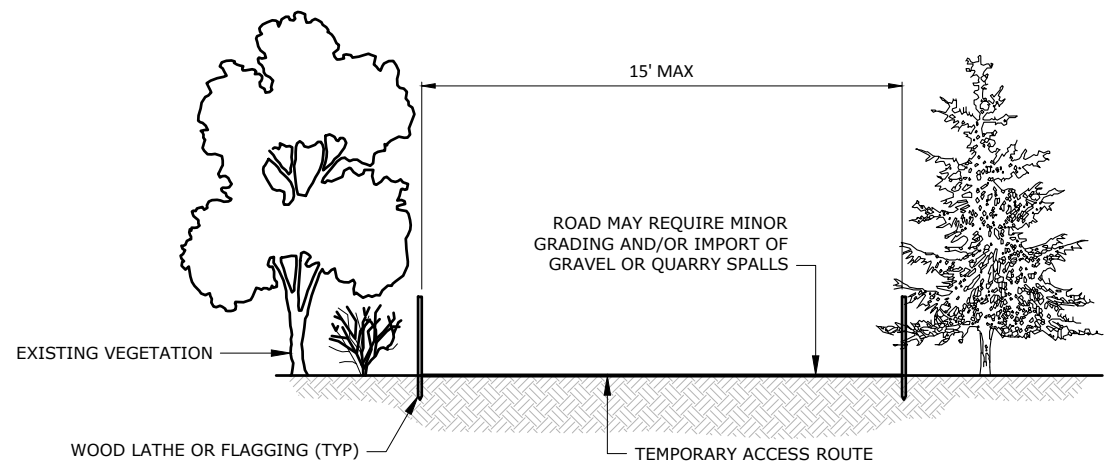
CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
 LOWER ENTIAIT 1D REACH (RM 4.3 - 4.8) HABITAT
 ENHANCEMENT PROJECT
 SITE ISOLATION DETAILS
 PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN	GB
DRAWN	KS
CHECK	NT
CHECK	NT

0 1
 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.

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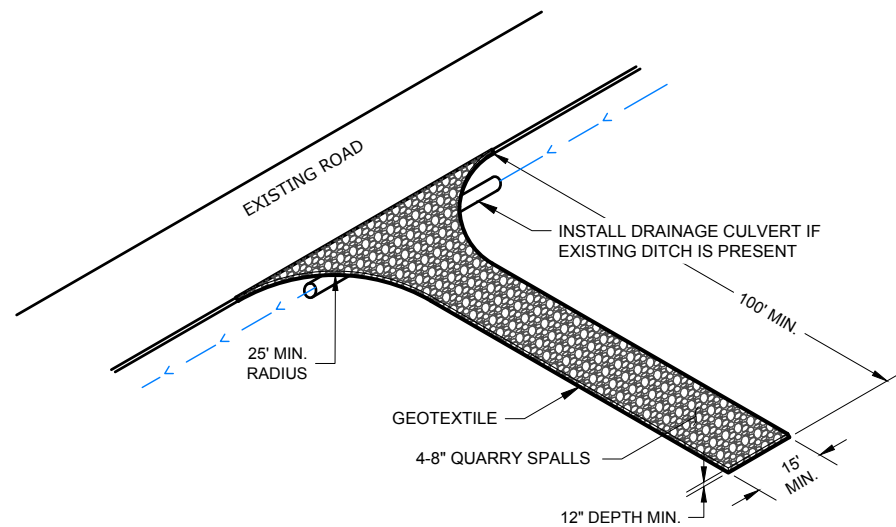


NOTES

1. CLEARED ACCESS TO BE ROUTED TO MINIMIZE VEGETATION DISTURBANCE AND FOREST CLEARING.
2. CONTRACTOR SHALL MARK CLEARING LIMITS WITH FLAGGING. CLEARING LIMITS TO BE APPROVED BY ENGINEER PRIOR TO ANY CLEARING ACTIVITIES.
3. ANY TREES GREATER THAN 12" ϕ SHALL BE REMOVED W/ ROOTWADS INTACT AND STOCKPILED FOR USE IN LOGJAM CONSTRUCTION.
4. TREES AND SHRUBS WITH 2"-12" ϕ SHALL BE STOCKPILED FOR USE AS RACKING MATERIAL IN LOGJAM CONSTRUCTION.
5. REMAINDER OF VEGETATION AND ORGANIC SOIL SHALL BE GRUBBED, STOCKPILED AND BROADCASTED ON ROAD ALIGNMENT FOLLOWING TERMINATION OF WORK.
6. ACCESS SHALL BE MAINTAINED BY MINOR GRADING AND IMPORTATION OF WOOD CHIPS, GRAVEL AND/OR QUARRY SPALLS, OR OTHER APPROVED BMPS.
7. CLEARED ACCESS SHALL BE SCARIFIED AND FULLY DECOMMISSIONED PER DIRECTION OF THE ENGINEER AT THE TERMINATION OF WORK.
8. REVEGETATION OF DISTURBED AREAS OUTSIDE OF THE APPROVED CLEARING AND ACCESS LIMITS SHALL BE PERFORMED BY CONTRACTOR AT NO COST TO THE OWNER.
9. ALL GRAVEL OR QUARRY SPALLS PLACED SHALL BE UNDERLAIN WITH A GEOTEXTILE AND REMOVED AT TERMINATION OF WORK IF UTILIZED.

TEMPORARY ACCESS ROAD
SCALE: 1":3'

1
16



CONSTRUCTION ENTRANCE
SCALE: 1":20'

2
16



CHELAN COUNTY NATURAL RESOURCE DEPARTMENT
LOWER ENTIAT 1D REACH (RM 4.3 - 4.8) HABITAT
ENHANCEMENT PROJECT
TESC DETAILS
PRELIMINARY

DATE	12/23/2024
COUNTY	CHELAN COUNTY
LATITUDE	47°40'20"N
LONGITUDE	120°18'27"W
TN/SC/RG	T25N/S10/R20E
DESIGN__GB__	DRAWN__KS
CHECK__NT__	CHECK__NT__



IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.

SHEET
16 OF 16