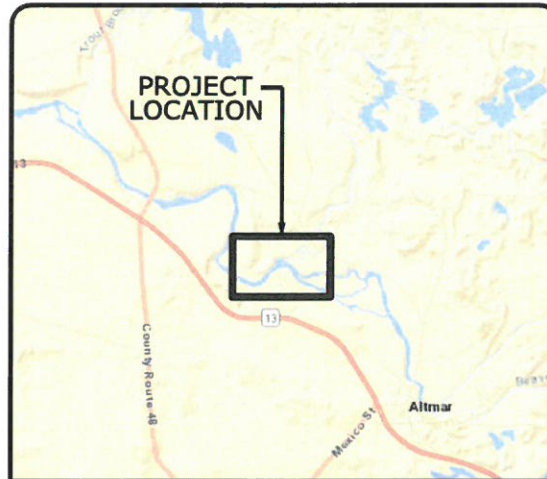


SALMON RIVER HABITAT ENHANCEMENT PLAN

OSWEGO COUNTY

LOCATION: TOWN OF ALTMAR
TYPE OF WORK: HABITAT ENHANCEMENT

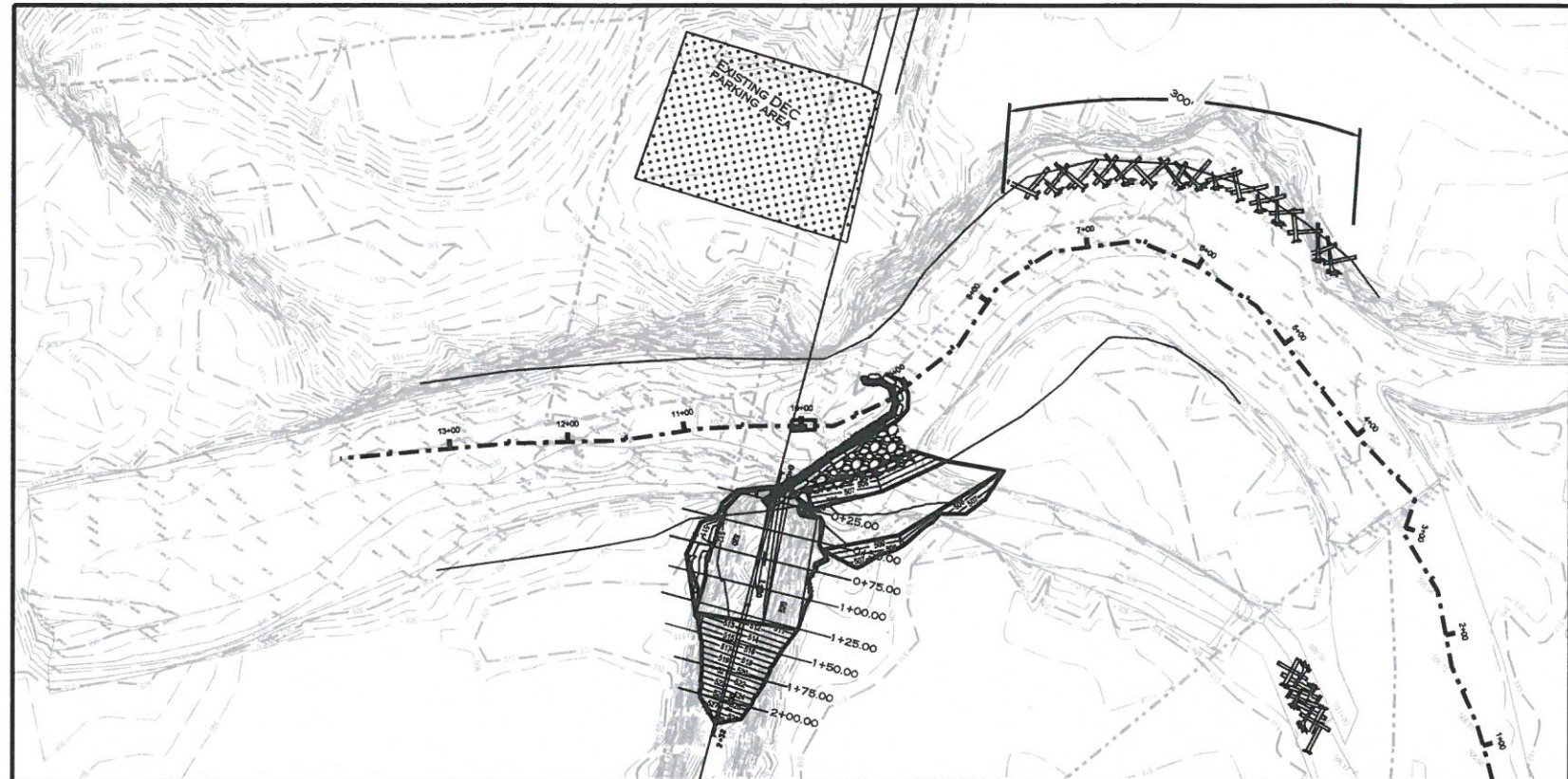
SHEET 5 & 6



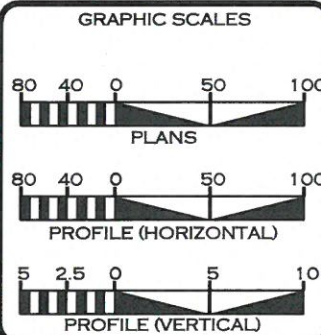
VICINITY MAP

INDEX OF SHEETS

- 1... TITLE SHEET
- 1A... STREAM CONVENTIONAL SYMBOLS
GENERAL NOTES
CONSTRUCTION SEQUENCE
- 2-2D... TYPICAL SECTIONS
- 3-3A... PLANTING DETAILS
PLANTING NOTES
- 4... STRUCTURE TABLE
- 5... DESIGN PLAN
- 5A... RAILROAD EMBANKMENT PROFILE
- 5B-5C... RAILROAD EMBANKMENT CROSS SECTIONS
- 5D... DESIGN PROFILE
- 6... GRADING PLAN
- 7... EROSION CONTROL PLAN
- 8... CROSS SECTION OVERVIEW
- X-1-X-3... CROSS SECTIONS



GEOGRAPHIC COORDINATE SYSTEM:
EPSG: 102716 - NAD 1983 STATE PLANE
NEW YORK CENTRAL FIPS 3102

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PREPARED FOR:

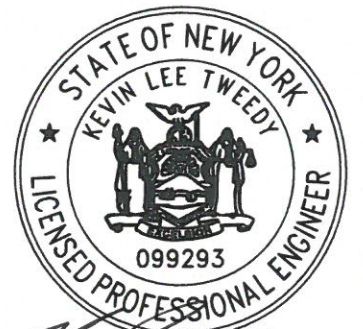
U.S. FISH & WILDLIFE SERVICE
NEW YORK FIELD OFFICE
3817 LUKER ROAD
CORTLAND, NY 13045

GIAN DODICI
PROJECT MANAGER

STATE	PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
NY	BAL0054	1	21

PROJECT LENGTH

EXISTING STREAM LENGTH = 841 LINEAR FEET
PROPOSED DESIGN STREAM LENGTH = 841 LINEAR FEET



PROJECT ENGINEER

PREPARED BY:
ECOSYSTEM ENGINEERING
910 GREENWOOD CIRCLE
CARY, NC 27511
NY LICENSE # = 099293

JULY 7, 2023
LETTING DATE:

KEVIN TWEEDY, PE
PROJECT ENGINEER

SIGNATURE: _____ P.E.

PROJECT: 100% SALMON RIVER DESIGN PLAN

STREAM CONVENTIONAL SYMBOLS



J-HOOK VANE (JH)



CHANNEL BLOCK (CB)



TOEWOOD (TW)



EXISTING MINOR CONTOUR



PROPOSED MAJOR CONTOUR



PROPOSED MINOR CONTOUR



LOD LIMITS OF DISTURBANCE



PROPERTY LINE



FEMA FLOODWAY



RIGHT-OF-WAY



UPPER BANK



LOWER INNER BERM



UPPER INNER BERM



TOE OF CHANNEL



SAFETY FENCE



TREE PROTECTION



SILT FENCE



EXISTING FENCE



CONSERVATION EASEMENT



EXISTING MAJOR CONTOUR



ROAD CENTERLINE



ACCESS ROAD



STREAM THALWEG



STREAM TOP OF BANKS



TEMPORARY STREAM CROSSING



TRANSPLANTED VEGETATION



TREE REMOVAL



GRADE BANK 6:1 OR FLATTER



CHANNEL FILL



SOIL LIFT



EXISTING WETLANDS

**NOTE: ALL ITEMS ABOVE MAY NOT BE USED ON THIS PROJECT

CONSTRUCTION SEQUENCE

- ALL PERMITS ARE IN PLACE FOR THE SALMON RIVER AT TRRESTLE POOL PROJECT.
- CONTACT THE USFWS TO CONDUCT OR CONFIRM SITE LAYOUT AND FLAGGING.
- IDENTIFY AND PREPARE STAGING AREAS AND EQUIPMENT ENTRY AND EXIT AREAS FOR STREAM ACCESS.
- INSTALL SEDIMENT FENCES AS NEEDED TO PROTECT SENSITIVE AREAS AND DIRECT STORMWATER RUN OFF.
- INSTALL E&SC MEASURES AT ANY AREAS USED FOR CONTRACTOR EQUIPMENT STAGING.
- ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE REQUIRED BY THE USFWS OR OWNER IF DEEMED NECESSARY.
- WITHIN 6" OF FINAL GRADE, RE-DISTRIBUTE 6" OF TOPSOIL.
- AFTER SITE IS STABILIZED, REMOVE ALL TEMPORARY MEASURES, FINE GRADE DISTURBED AREAS AND INSTALL PERMANENT VEGETATION ON THE DISTURBED AREAS.
- FINE GRADE, PERMANENTLY SEED AND MULCH ALL LANDSCAPED AREAS.
- REMOVE ALL REMAINING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES UPON COMPLETION AND STABILIZATION OF PROJECT.

WORKING IN WATER

- WORK SHALL TAKE PLACE IN THE WET WITH EXCAVATOR AND OTHER MACHINERY OPERATIONS IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:
 - LIMIT THE NUMBER OF INGRESS AND EGRESS POINTS TO THE RIVER.
 - MOVE MACHINERY ABOVE BANK-FULL, (OR HIGHER AS WEATHER FORECASTS DICTATE) AT THE END OF EACH DAY'S WORK.
 - IN CONSULTATION WITH THE USFWS AND THEIR REPRESENTATIVES, OPERATORS SHALL AT ALL TIMES SEEK TO MINIMIZE DISTURBANCE TO THE SITE.
 - CONTRACTORS, WITH APPROVAL FROM USFWS OR THEIR REPRESENTATIVE MAY USE EXCESS NATURAL MATERIALS TO TEMPORARILY DIVERT FLOWS AWAY FROM CERTAIN ONGOING CONSTRUCTION, (E.G. DURING TOE-WOOD CONSTRUCTION).

PROJECT #
BAL0054

SHEET NO.
1A

SYMBOLGY /
NOTES

GENERAL NOTES

- THE CONTRACTOR WILL COMPLY WITH OSHA AND ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS GOVERNING WORKER HEALTH AND SAFETY. THE USFWS REPRESENTATIVE SHALL NOT BE RESPONSIBLE FOR ENSURING CONSTRUCTION CONTRACTOR COMPLIANCE OR IDENTIFICATION OF HAZARDS ON SITE. COSTS ASSOCIATED WITH THE CONTRACTOR'S HEALTH AND SAFETY COMPLIANCE, INCLUDING BUT NOT LIMITED TO THE REQUIREMENTS OF THIS NOTE, SHALL BE INCLUDED WITHIN THE CONTRACTOR'S BID.
 - THE CONTRACTOR IS REQUIRED TO CALL "DIG SAFE NY" AT LEAST 72 HOURS PRIOR TO WORK. ALL UTILITIES SHALL BE LOCATED PRIOR TO EXCAVATION.
 - SHOULD UTILITIES BE ENCOUNTERED DURING CONSTRUCTION WHICH INTERFERE WITH THE WORK AND FOR WHICH PROVISIONS ARE NOT PROVIDED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE USFWS REPRESENTATIVE OF THEIR EXISTENCE AND EXTENT OF CONFLICT WITH THE WORK.
 - LOCATION OF UTILITIES, PUBLIC AND/OR PRIVATE, INDICATED AS EXISTING AND/OR TO BE CONSTRUCTED AS SHOWN IN THE DRAWINGS, ARE APPROXIMATE ONLY. THEIR EXACT LOCATION SHALL BE DETERMINED IN THE FIELD. ADDITIONAL UTILITY LINES, WHETHER ABANDONED OR IN SERVICE, MAY EXIST AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT THEIR OPERATIONS AND TAKE THE NECESSARY PRECAUTIONS TO PREVENT INTERFERENCE WITH OR DAMAGE TO THESE OR OTHER FACILITIES DURING THE COURSE OF CONSTRUCTION.
 - SPECIAL CARE SHALL BE TAKEN TO AVOID DAMAGING EXISTING UTILITIES. ANY DAMAGE CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE USFWS.
 - THESE DRAWINGS INCLUDE THE TECHNICAL REQUIREMENTS FOR THE PROJECT, AND GENERAL CONTRACT REQUIREMENTS TOGETHER WITH THE USFWS CONTRACT DOCUMENTS.
 - VERIFY ALL EXISTING FIELD CONDITIONS, DIMENSIONS, AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.
- CONSTRUCTION CONTRACTOR IS RESPONSIBLE FOR CONFIRMING DIMENSIONS, ELEVATIONS, QUANTITIES AND EXISTING CONDITIONS.
 - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE TO EXISTING FACILITIES CAUSED BY OPERATIONS WHICH ARE NOT INCLUDED AS PART OF THE INTENDED WORK. ALL DAMAGE TO EXISTING FACILITIES, WHICH IS NOT PART OF THE INTENDED WORK, SHALL BE REPAIRED BY THE CONTRACTOR WITHOUT COST TO THE STATE, AND TO THE SATISFACTION OF THE USFWS REPRESENTATIVE.
 - IN-STREAM WORK IS PERMITTED BETWEEN JUNE 15TH TO AUGUST 31ST.
 - THE CONTRACTOR SHALL BE SUPPLIED WITH A COPY OF GENERAL PERMIT #GP-7-18-003 ISSUED BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC). THE CONTRACTOR SHALL INSURE THAT ALL WORK IS PERFORMED IN COMPLIANCE WITH THE PERMIT. IF THE CONTRACTOR BECOMES AWARE OF ANY WORK REQUIREMENTS NOT IN COMPLIANCE WITH PERMIT CONDITIONS, THE CONTRACTOR SHALL INFORM NRCS SUPERVISOR DANIEL BISHOP IMMEDIATELY.



7-7-23

REVISIONS				
NO.	DESCRIPTION	ENGR.	APPROV.	DATE
1	100% DESIGN PLAN	KLT	KLT	07/07/23

PREPARED FOR:



U.S. FISH & WILDLIFE SERVICE
NEW YORK FIELD OFFICE

3817 LUKER ROAD
CORTLAND, NY 13045

SALMON RIVER HABITAT ENHANCEMENT PLAN
OSWEGO COUNTY, NY

PREPARED BY:

ECOSYSTEM ENGINEERING
910 GREENWOOD CIRCLE
CARY, NC 27511

NY LICENSE # = 099293

PROJECT ENGINEER

7/6/2023
B:\PROJECTS\BAL0054_USFWS_SALMON_RIVER\CADD\PLANS\SALMON_PSH_1A.DGN
ABAU

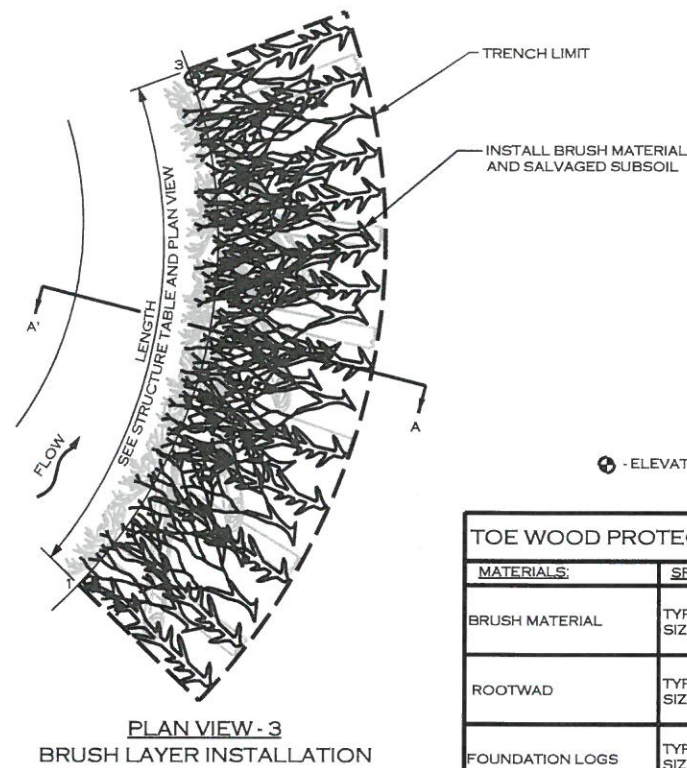
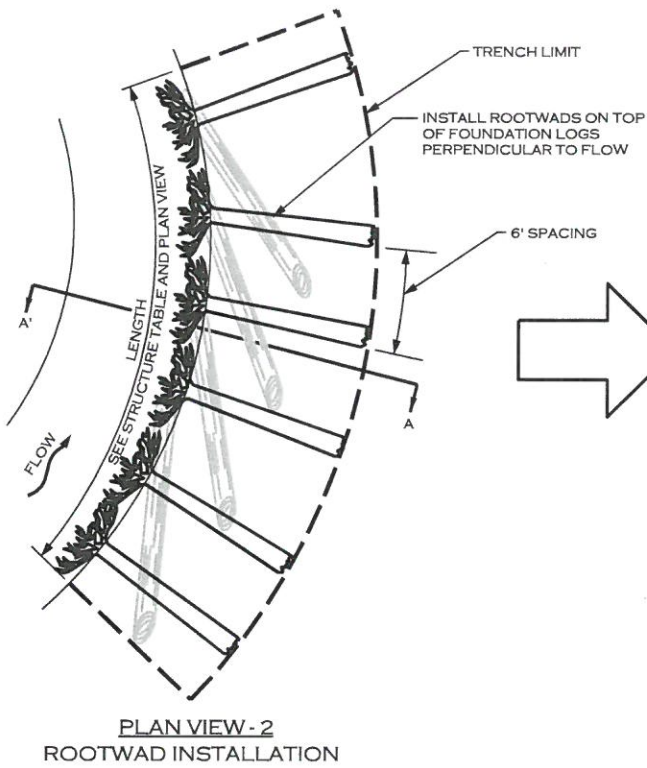
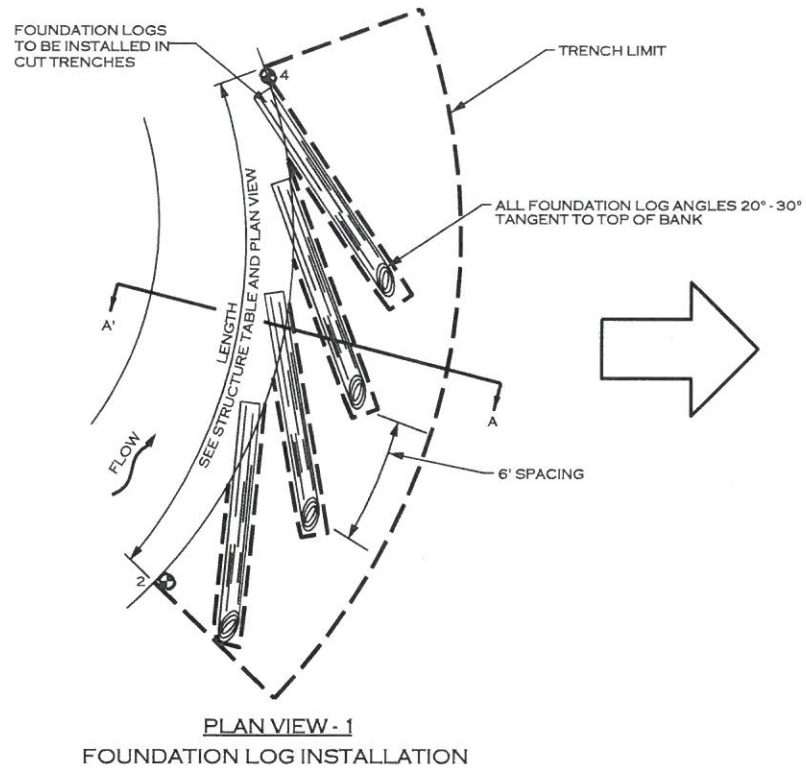
TOE WOOD PROTECTION STRUCTURE

TW

PROJECT #
BAL0054

SHEET NO.
2

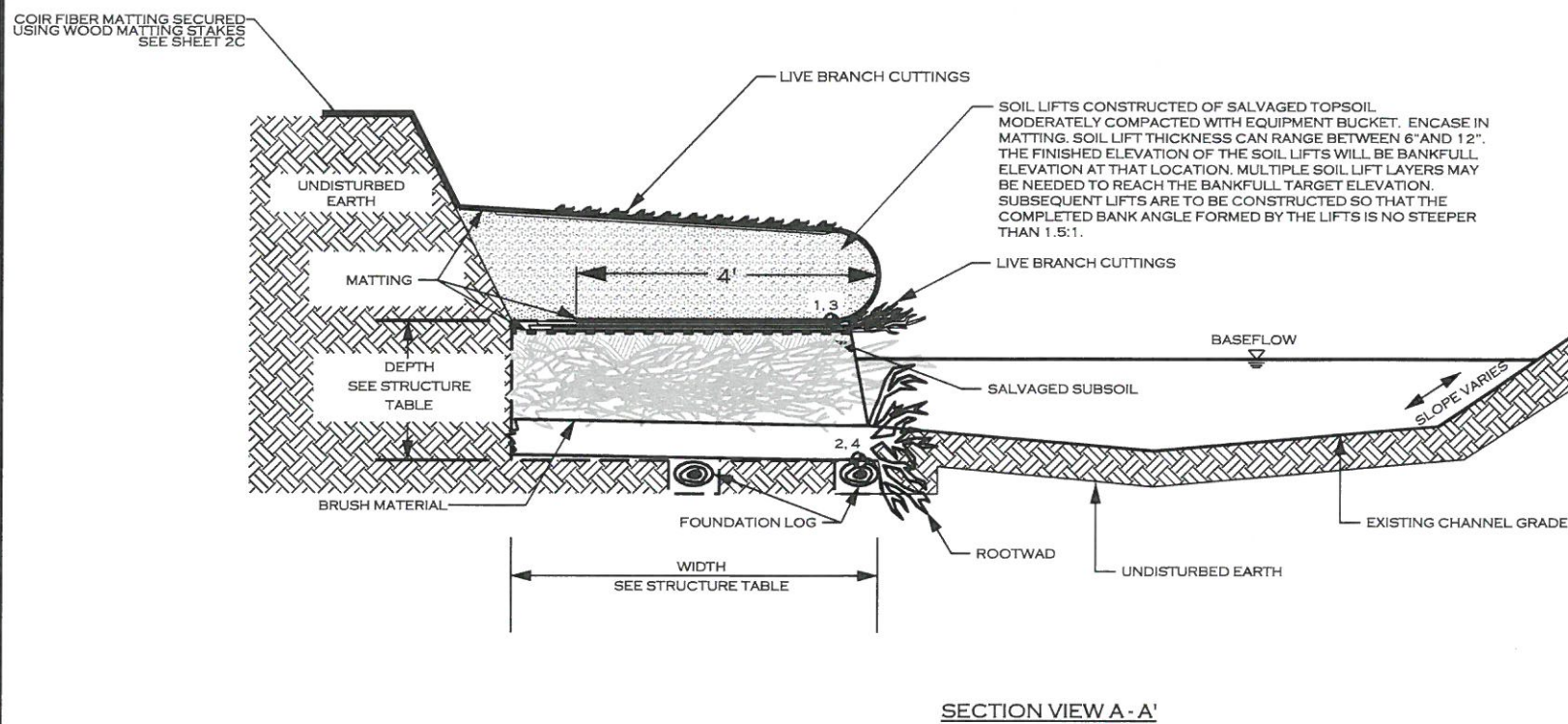
DETAILS



• ELEVATION POINT (SEE STRUCTURE TABLES)

TOE WOOD PROTECTION STRUCTURE SPECIFICATIONS

MATERIALS:	SPECIFICATIONS:
BRUSH MATERIAL	TYPE: LIMBS, BRANCHES AND SMALL LOGS SIZE: 5' - 10' LENGTH, MIN 1" DIAMETER
ROOTWAD	TYPE: HARDWOOD OR SOFTWOOD SIZE: LENGTH = 30"; 18" DIAMETER
FOUNDATION LOGS	TYPE: HARDWOOD OR SOFTWOOD SIZE: LENGTH = 30"; 18" DIAMETER
COIR FIBER MATTING	TYPE: SEE DETAIL
LIVE BRANCH CUTTINGS	TYPE: LIVE STAKE SPECIES IDENTIFIED IN PLANTING NOTES SIZE: 5' - 10' LENGTH, 0.5" - 2.5" DIAMETER



7-7-23

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NEW YORK FIELD OFFICE

3817 LUKER ROAD
CORTLAND, NY 13045

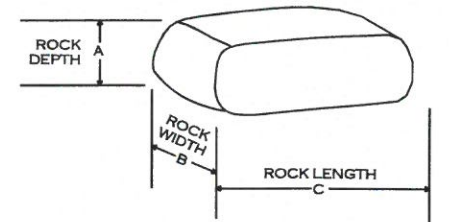
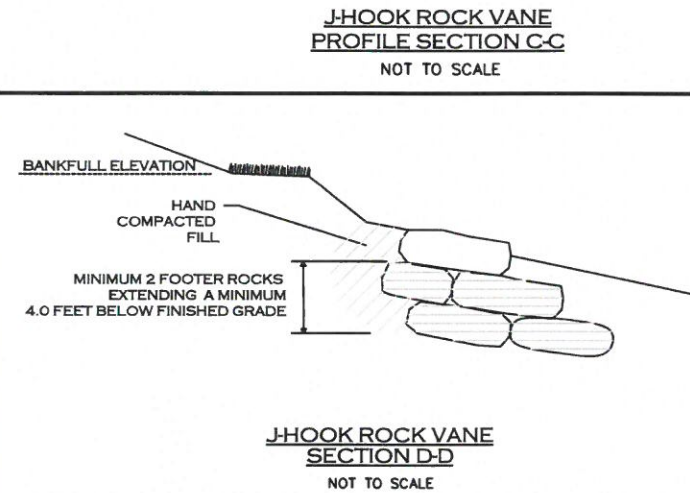
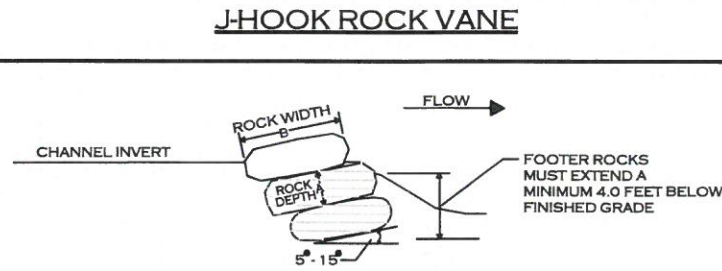
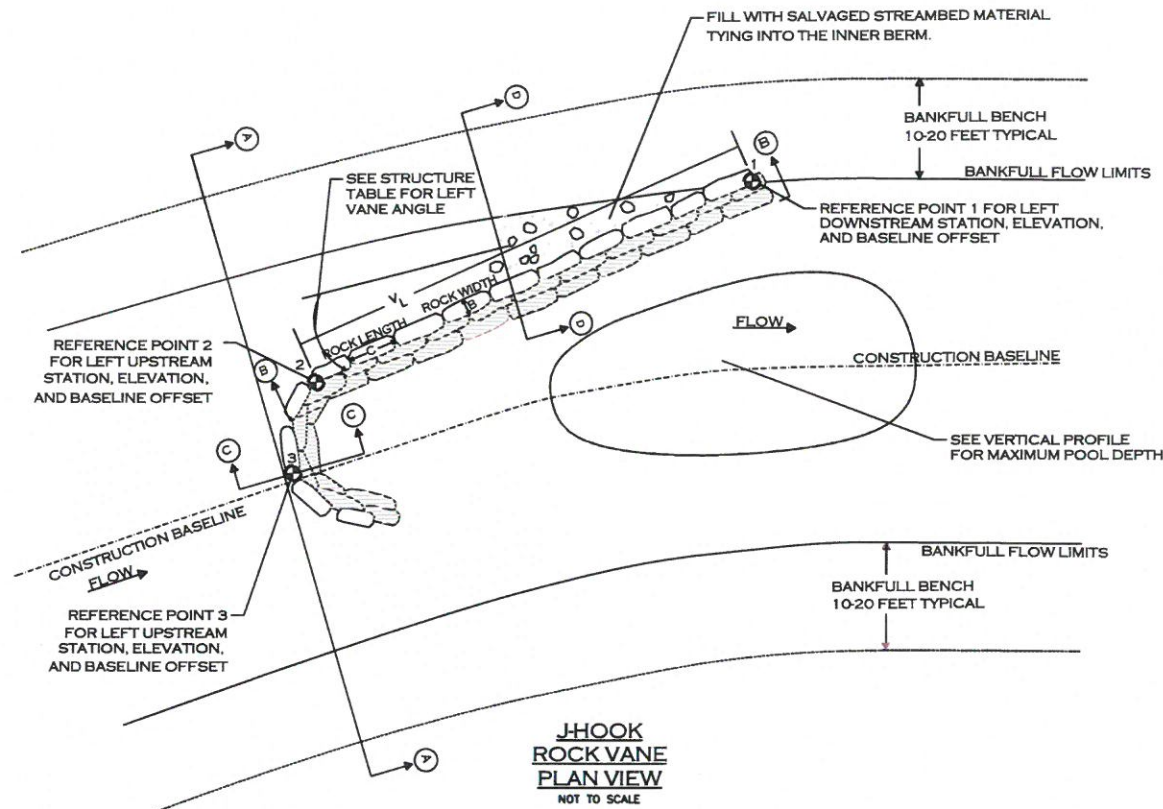
SALMON RIVER HABITAT ENHANCEMENT PLAN
OSWEGO COUNTY, NY

PREPARED BY:

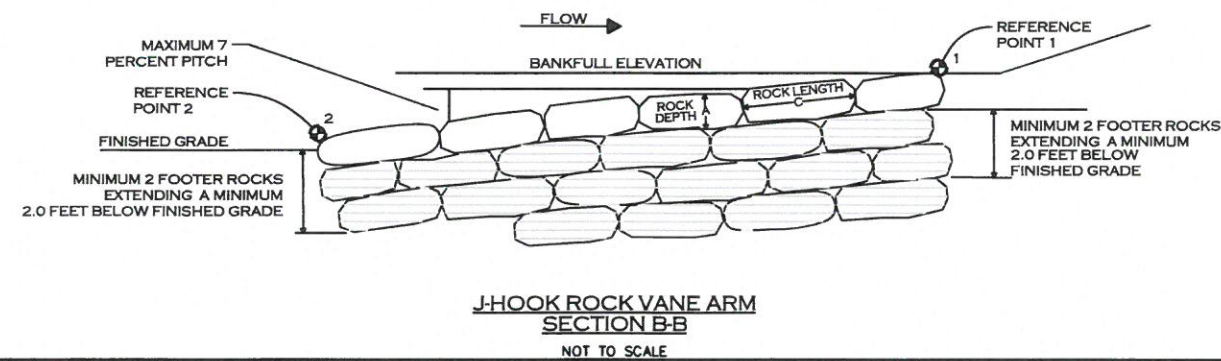
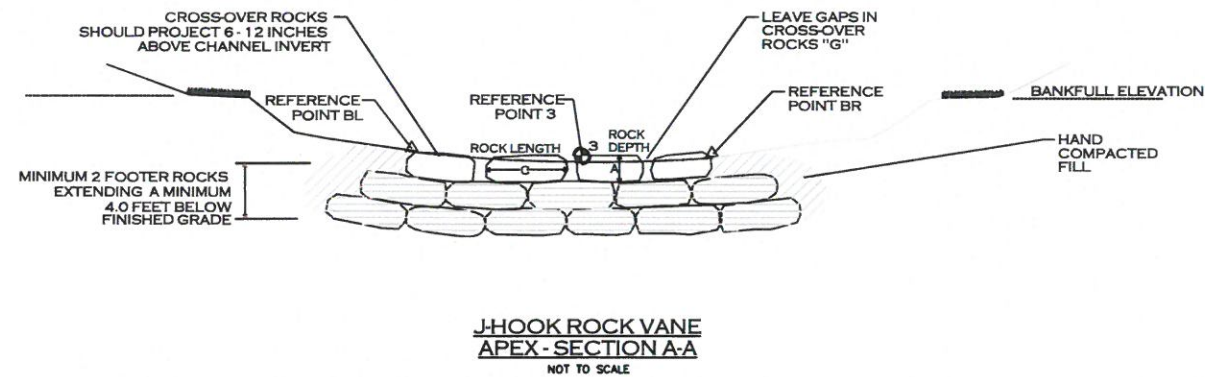
ECOSYSTEM ENGINEERING
910 GREENWOOD CIRCLE
CARY, NC 27511
NY LICENSE # = 099293

PROJECT ENGINEER

DETAILS



ROCK DIMENSIONS			
A	B	C	G GAP AT APEX
3' (MIN.)	3' (MIN.)	5' (MIN.)	18 INCHES



• ELEVATION POINT (SEE STRUCTURE TABLES)

J-HOOK ROCK VANE NOTES:

1. ALL ROCKS (EXCEPT BOTTOM LAYER OF FOOTER ROCKS) SHALL BE SUPPORTED BY A FOOTER ROCK AND SHINGLED UPSTREAM OR INTO STREAM BANK. ALL ROCKS SHALL BE INTERLOCKED AND SHALL NOT ROCK OR ROTATE IN PLACE.
2. ALL ROCKS SHALL BE PLACED WITH THE PARALLEL FACES ORIENTED UP AND DOWN WITH THE TOP FACE TILTING UP FROM THE BED AT 5 TO 15 DEGREES TO THE DIRECTION OF FLOW ON THE CROSSOVER AND VANE ARMS.
3. ALL ROCKS (EXCEPT TOP LAYER OF CROSSOVER) SHALL BE PLACED TO FIRMLY ABUT ADJACENT ROCKS LEAVING NO GAPS BETWEEN ROCKS. GAPS SHALL BE LEFT BETWEEN THE TOP LAYER OF THE CROSSOVER ROCKS AS SHOWN IN PLANS.
4. STRUCTURE SHALL BE CONSTRUCTED SUCH THAT ROCKS FORM A CONTINUOUS, UNIFORM SLOPE WITH A MINIMUM OF STEEP, HIGH, OR LOW SPOTS ALONG THE TOP FINISHED SURFACE.
5. CHANNEL STATION AND ELEVATION REFERENCE MAY NOT ALWAYS FALL ON BASELINE OF CONSTRUCTION, THALWEG, OR CHANNEL INVERT.
6. STREAM BOTTOM AROUND STRUCTURE SHALL BE BACKFILLED WITH SALVAGED STREAMBED MATERIAL TO MEET FINISHED GRADE.
7. SEE STRUCTURE TABLE, PROFILE, AND GEOMETRY SHEET FOR ALL DIMENSIONS AND ELEVATIONS.



7-7-23

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NEW YORK FIELD OFFICE

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CORTLAND, NY 13045

SALMON RIVER HABITAT ENHANCEMENT PLAN
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910 GREENWOOD CIRCLE
CARY, NC 27511

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PROJECT ENGINEER

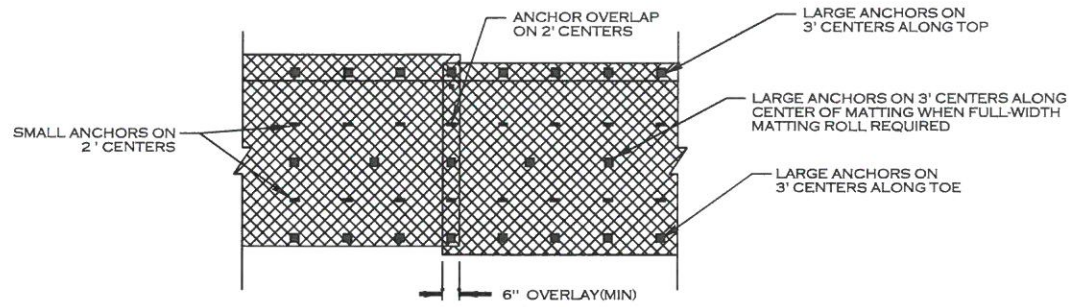
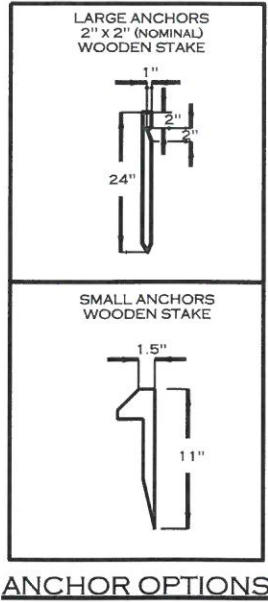
COIR FIBER MATTING

PROJECT #
BAL0054

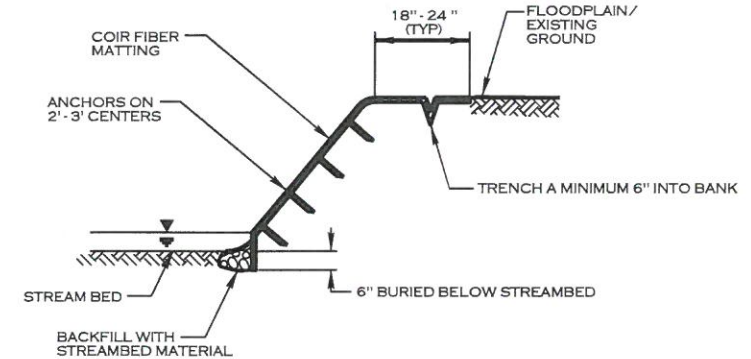
SHEET NO.
2B

DETAILS

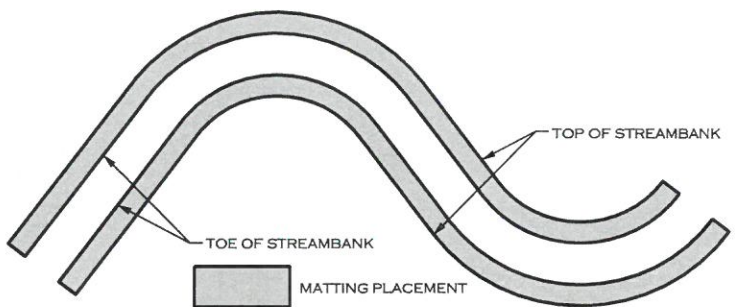
COIR FIBER MATTING SPECIFICATIONS	
MATERIALS:	SPECIFICATIONS:
COIR FIBER MATTING	TYPE: GSM 700
ANCHORS	REFER TO ANCHOR OPTIONS
NOTES:	
1. IN AREAS TO BE MATTED, ALL SEEDING, SOIL AMENDMENTS, AND SOIL PREPARATION MUST BE COMPLETED PRIOR TO PLACEMENT OF COIR FIBER MATTING.	
2. WOODEN STAKES ARE PREFERRED. USE OF STAPLES AS SMALL ANCHORS MUST BE PRE-APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.	



PLAN VIEW

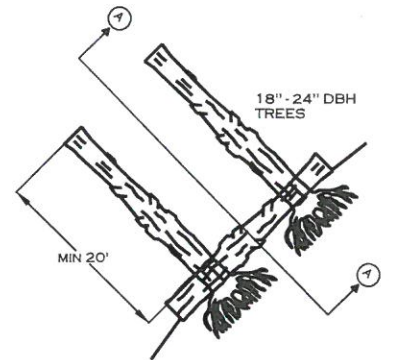


TYPICAL CROSS SECTION

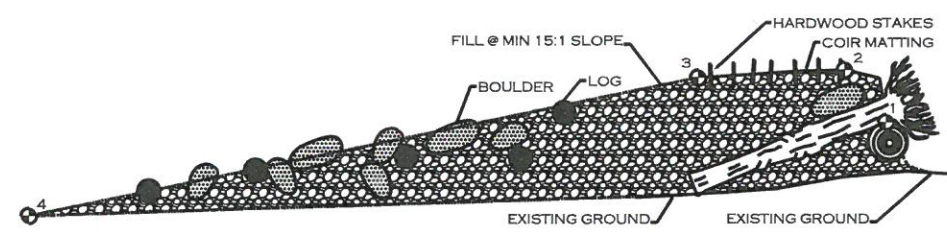


TYPICAL MATTING PLAN VIEW - Bc STREAMS

CHANNEL BLOCK



CHANNEL BLOCK
PLAN VIEW
NOT TO SCALE



CHANNEL BLOCK
SECTION A-A
NOT TO SCALE

⑦ - ELEVATION POINT (SEE STRUCTURE TABLES)

CHANNEL BLOCK SPECIFICATIONS	
MATERIALS:	SPECIFICATIONS:
LOGS	TYPE: HARDWOOD SIZE: 20-30 FT, 18" - 24" DBH
FILL	EXISTING SITE RIVER ALLUVIUM
BOULDERS	NATIVE MATERIAL 2X2X2 OR BIGGER

NOTES:

1. FINAL CHANNEL BLOCK WIDTH WILL VARY DEPENDING UPON EXISTING CHANNEL WIDTH. TIE IN ELEVATIONS LISTED IN THE STRUCTURE TABLES.

REVISIONS				
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1	100% DESIGN PLAN	KLT	KLT	07/07/23



PREPARED FOR:

U.S. FISH & WILDLIFE SERVICE
NEW YORK FIELD OFFICE

3817 LUKER ROAD
CORTLAND, NY 13045

SALMON RIVER HABITAT ENHANCEMENT PLAN
OSWEGO COUNTY, NY

PREPARED BY:

ECOSYSTEM ENGINEERING
910 GREENWOOD CIRCLE
CARY, NC 27511

NY LICENSE # = 099293



7-7-23

PROJECT ENGINEER

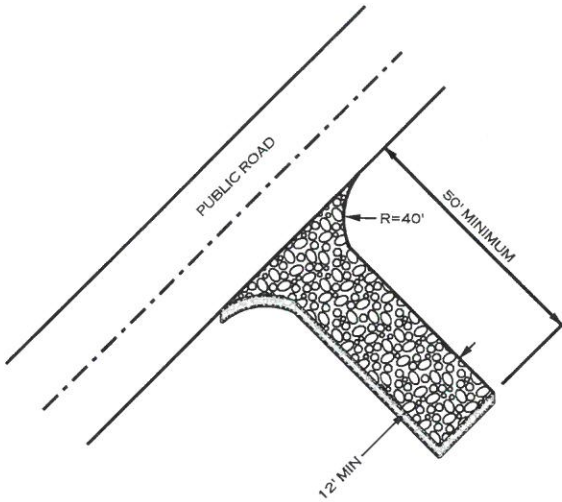
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ALB

GRAVEL CONSTRUCTION ENTRANCE

PROJECT #
BAL0054

SHEET NO.
2C

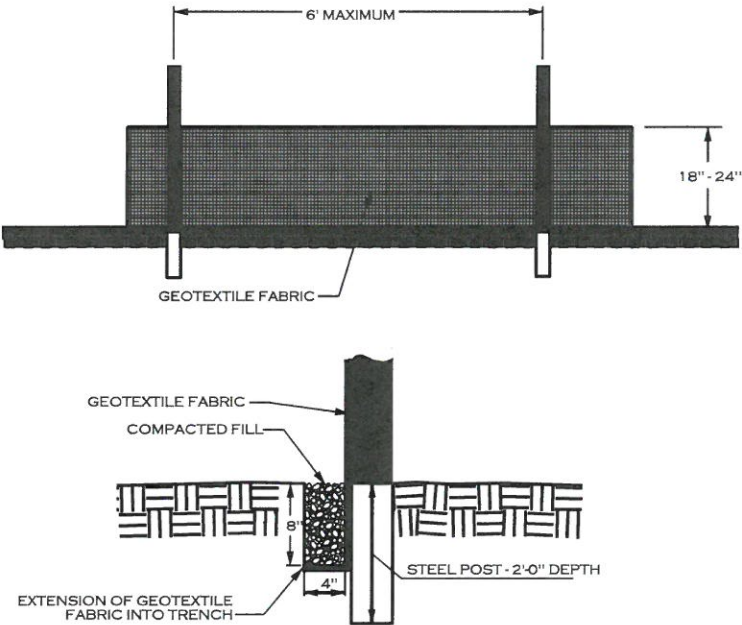
DETAILS



NOTES:

- 1. PROVIDE TURNING RADIUS SUFFICIENT TO ACCOMMODATE EXPECTED EQUIPMENT.
- 2. LOCATE ENTRANCES TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
- 3. PLACE GEOTEXTILE FABRIC FOR DRAINAGE BENEATH STONE.
- 4. MUST BE MAINTAINED IN THE CONDITION WHICH WILL PREVENT TRACKING OR DIRECT MUD INTO STREETS.
- 5. ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
- 6. PROVIDE FREQUENT CHECKS TO THE GRAVEL CONSTRUCTION ENTRANCE AND TIMELY MAINTENANCE.
- 7. NUMBER AND LOCATION OF CONSTRUCTION ENTRANCES AS SHOWN ON PLANS, OR AS DIRECTED BY THE USFWS OR THEIR DESIGNATED REPRESENTATIVE.
- 8. USE LIGHT STONE FILLING OR OTHER COURSE AGGREGATE APPROVED BY THE USFWS OR THEIR DESIGNATED REPRESENTATIVE.
- 9. INSTALL CONSTRUCTION ENTRANCES IN A WAY TO PREVENT VEHICLES LEAVING THE PROJECT SITE FROM BYPASSING CONSTRUCTION ENTRANCES.

TEMPORARY SILT FENCE



NOTES:

- 1. USE GEOTEXTILE FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE STEEL POSTS.
- 2. PROVIDE 5" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.
- 3. REMOVE ONCE AREA IS STABLE.



REVISIONS				
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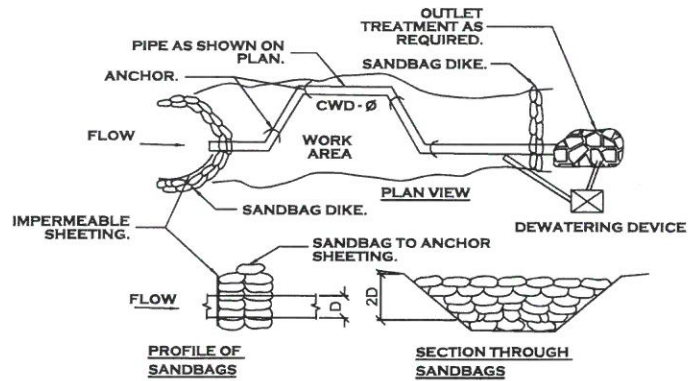
7/5/2023
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A001

CLEAR WATER DIVERSION PIPE DETAIL

PROJECT #
BAL0054

SHEET NO.
2D

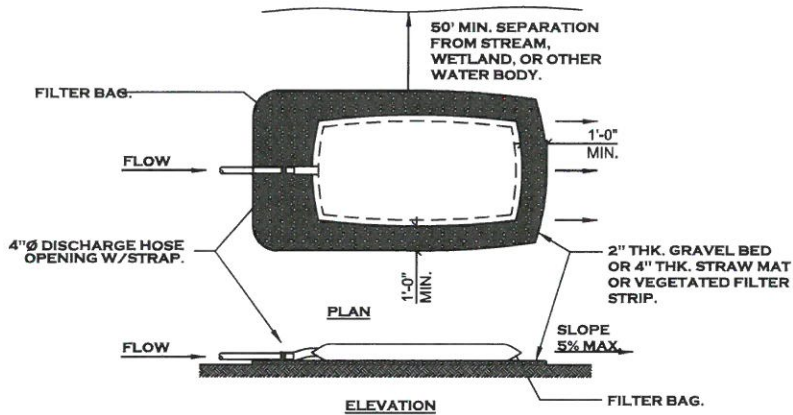
DETAILS



CONSTRUCTION SPECIFICATIONS

1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL. OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

TYPICAL GEOTEXTILE FILTRATION BAG DETAIL



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., GRAVEL, STRAW MAT OR VEGETATED FILTER STRIP) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12" FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATION. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. THE BAG IS CONSIDERED FULL WHEN REMAINING BAG FLOW AREA HAS BEEN REDUCED BY 75%. AT THIS POINT IT SHOULD BE REPLACED WITH A NEW BAG.
5. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
6. USE NONWOVEN GEOTEXTILE WITH A DOUBLE NEEDLE MACHINE USING HIGH STRENGTH THREAD, DOUBLE STITCHED "JOE" TYPE CAPABLE OF MINIMUM ROLL STRENGTH OF 100 LBS./INCH (ASTM D4884). SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4" DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:
 - MIN. GRAB TENSILE 200 LBS.
 - MIN. GRAB TENSILE ELONGATION 50%
 - MIN. TRAPEZOID TEAR STRENGTH 80 LBS.
 - MULLEN BURST STRENGTH 380 PSI
 - MIN. PUNCTURE 130 LBS.
 - APPARENT OPENING SIZE (AOS) 40-80 US SIEVE
 - MIN. UV RESISTANCE 70%
 - MIN. FLOW THRU RATE 70 GPM/FT²
7. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.



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U.S. FISH & WILDLIFE SERVICE
NEW YORK FIELD OFFICE

3817 LUKER ROAD
CORTLAND, NY 13045

SALMON RIVER HABITAT ENHANCEMENT PLAN
OSWEGO COUNTY, NY

PREPARED BY:

ECOSYSTEM ENGINEERING
910 GREENWOOD CIRCLE
CARY, NC 27511
NY LICENSE # = 099293

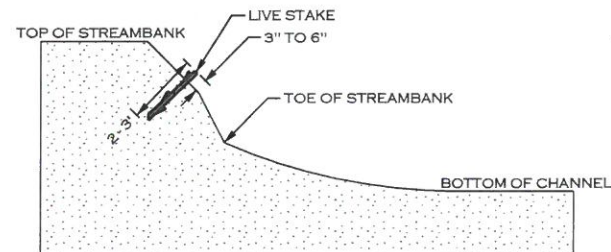
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LIVE STAKING

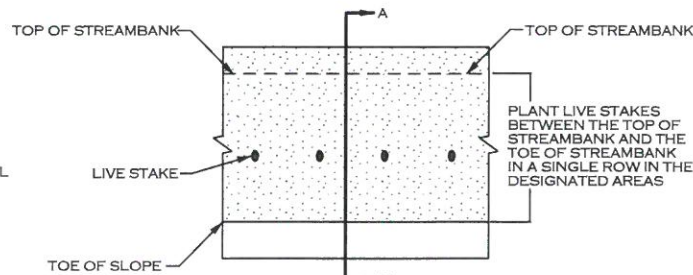
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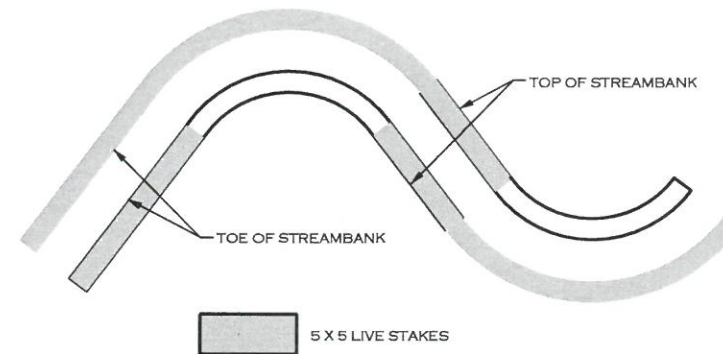
PLANTING
DETAILS



SECTION A-A'

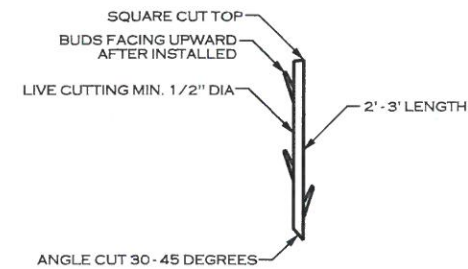


PLAN VIEW



SEE PLAN VIEW SHEET FOR LIVE STAKING LOCATIONS

TYPICAL LIVE STAKING AREA PLAN VIEW

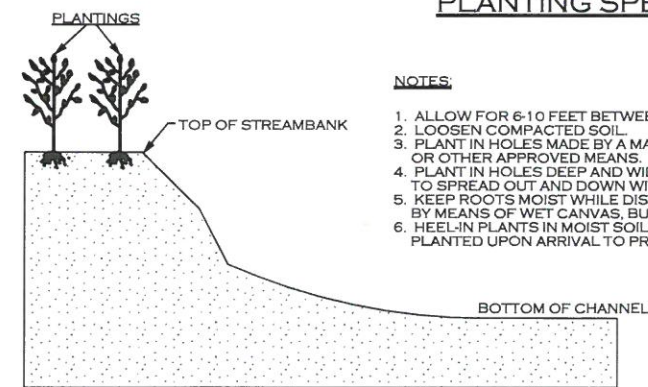


LIVE STAKE DETAIL

NOTES:

1. IF STAKES ARE BEING HARVESTED NEAR THE SITE, STAKES SHOULD BE CUT AND INSTALLED ON THE SAME DAY.
2. KEEP STAKES COOL AND MOIST WHILE ON THE JOB SITE AND PRIOR TO INSTALLATION.
3. DO NOT INSTALL STAKES THAT HAVE BEEN SPLIT.
4. STAKES MUST BE INSTALLED WITH BUDS POINTING UPWARDS.
5. STAKES SHALL BE INSTALLED PERPENDICULAR TO BANK.
6. STAKES SHALL BE 1/2 TO 2 INCHES IN DIAMETER AND 2 TO 3 FT LONG.
7. STAKES SHALL BE INSTALLED LEAVING 1/5 OF STAKE ABOVE GROUND.

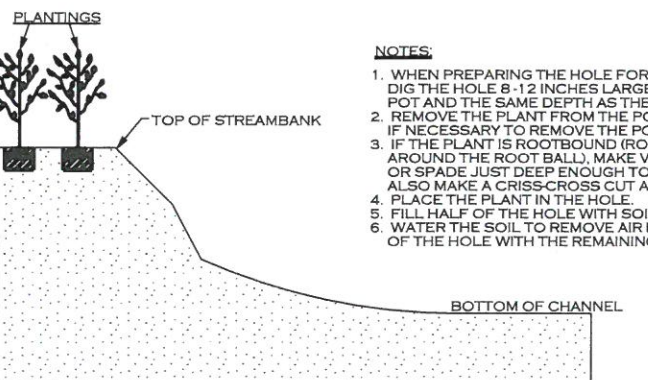
PLANTING SPECIFICATIONS



CROSS SECTION VIEW OF BARE ROOT PLANTING

NOTES:

1. ALLOW FOR 6-10 FEET BETWEEN PLANTINGS, DEPENDING ON SIZE.
2. LOOSEN COMPACTED SOIL.
3. PLANT IN HOLES MADE BY A MATTOCK, DIBBLE, PLANTING BAR, OR OTHER APPROVED MEANS.
4. PLANT IN HOLES DEEP AND WIDE ENOUGH TO ALLOW THE ROOTS TO SPREAD OUT AND DOWN WITHOUT J-ROOTING.
5. KEEP ROOTS MOIST WHILE DISTRIBUTING OR WAITING TO PLANT BY MEANS OF WET CANVAS, BURLAP, OR STRAW.
6. HEEL-IN PLANTS IN MOIST SOIL OR SAWDUST IF NOT PROMPTLY PLANTED UPON ARRIVAL TO PROJECT SITE.

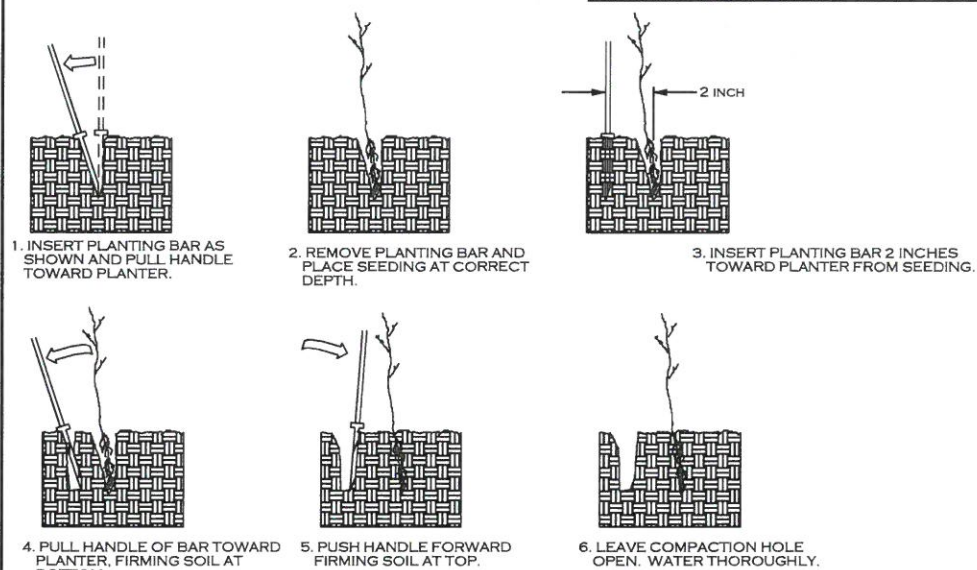


CROSS SECTION VIEW OF CONTAINER PLANTING

NOTES:

1. WHEN PREPARING THE HOLE FOR A POTTED PLANT OR SHRUB DIG THE HOLE 8-12 INCHES LARGER THAN THE DIAMETER OF THE POT AND THE SAME DEPTH AS THE POT.
2. REMOVE THE PLANT FROM THE POT. LAY THE PLANT ON ITS SIDE IF NECESSARY TO REMOVE THE POT.
3. IF THE PLANT IS ROOTBOUND (ROOTS GROWING IN A SPIRAL AROUND THE ROOT BALL), MAKE VERTICAL CUTS WITH A KNIFE OR SPADE JUST DEEP ENOUGH TO CUT THE NET OF ROOTS. ALSO MAKE A CRISS-CROSS CUT ACROSS THE BOTTOM OF THE BALL.
4. PLACE THE PLANT IN THE HOLE.
5. FILL HALF OF THE HOLE WITH SOIL (SAME SOIL REMOVED FOR BACKFILL).
6. WATER THE SOIL TO REMOVE AIR POCKETS AND FILL THE REST OF THE HOLE WITH THE REMAINING SOIL.

DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



PLANTING NOTES:

PLANTING BAG

DURING PLANTING, SEEDLINGS SHALL BE KEPT IN A MOIST CANVAS BAG OR SIMILAR CONTAINER TO PREVENT THE ROOT SYSTEMS FROM DRYING.



KBC PLANTING BAR

PLANTING BAR SHALL HAVE A BLADE WITH A TRIANGULAR CROSS SECTION, AND SHALL BE 12 INCHES LONG, 4 INCHES WIDE AND 1 INCH THICK AT CENTER.



ROOT PRUNING

ALL SEEDLINGS SHALL BE ROOT PRUNED, IF NECESSARY, SO THAT NO ROOTS EXTEND MORE THAN 10 INCHES BELOW THE ROOT COLLAR.

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PLANTING NOTES

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SHEET NO.
3A

PLANTING
NOTES

PLANTING & SEEDING GENERAL NOTES

1. ONLY NATIVE SPECIES SHALL BE USE FOR PERMANENT PLANTING AND SEEDING.
2. SEEDING OF TOE WOOD BENCHES MUST TAKE PLACE AS PART OF CONSTRUCTION.
3. ALL OTHER SEEDING AND PLANTING SHALL TAKE PLACE WHEN TARGET PLANTING AREAS WILL NO LONGER BE DISTURBED, NO SOONER THAN SEPTEMBER 1, NO LATER THAN NOVEMBER 1.
4. PLANTS SHOULD BE PLANTED WITHIN 72 HOURS OF DELIVERY FROM NURSERY SUPPLIER.
5. PRIOR TO PLANTING, PROTECT PLANTS FROM ADVERSE WEATHER CONDITIONS, KEEPING ROOTS OF BAREROOT SPECIES FROM DRYING OUT.
6. INSTALL PLANTS ACCORDING TO PLAN SPECIFICATIONS ON SHEET 3 AND NURSERY RECOMMENDATIONS.
7. MULCH PLANTS WITH APPROPRIATE WEED AND ADDITIVE FREE MULCH.
8. WATER PLANTS THOROUGHLY AFTER PLANTING.
9. USFWS WILL MONITOR THE PLANTING SITE FOR SUCCESS AND WILL FOLLOW UP IN SUBSEQUENT YEAR WITH ADDITIONAL PLANTINGS AS INDICATED.

SEEDING

MATERIALS: GRASS SEED: USFWS CONSERVATION MIX

TO BE BROADCAST OR HAND APPLIED ON TOE WOOD BENCHES AND ALL OTHER DISTURBED AREAS WITHIN THE LIMITS OF DISTURBANCE (LOD). ENSURE SUB-SPECIES AND ECOTYPE SPECIFICITY IN ALL PURCHASES.

MIX COMPOSITION INCLUDES 6 SPECIES AT INDICATED PERCENTAGE OF 100%:

- RYEGRASS, ANNUAL CENTURION – *LOLIUM MULTIFLORUM* – 40%
- TIMOTHY, CLIMAX – *PHLEUM PRATENSE* – 20%
- ORCHARD GRASS, EXTEND – *DACTYLIS GLOMERATA* - 20%
- RED TOP – *AGROSTIS GIGANTEA* – 10%
- CLOVER, DUTCH WHITE – *TRIFOLIUM REPENS* – 5%
- TREFOIL, NORCEN – *LOTUS CORNICULATUS* – 5%

APPLICATION RATE = 1 LB/ 1,000 SQUARE FOOT.

SEEDING ON TOE WOOD BENCHES:

SEED MUST BE APPLIED AS PART OF THE TOE WOOD CONSTRUCTION PROCESS. AS EACH SECTION OF TOE WOOD COIR WRAPPING IS COMPLETED, APPLY SEED DIRECTLY TO SOIL OF THE TOPMOST COIR WRAPPED LIFT PRIOR TO PULLING OVER THE TOP FABRIC LAYER. APPLY BY HAND SEEDING OR BROADCAST AT THE SPECIFIED RATE OF 1 LB/ 1,000 SF. LIGHTLY TAMP OR ROLL SEEDED AREA BEFORE WRAPPING FINAL COIR LAYER OVER. LIGHT WATERING OF TOEWOOD BENCH ON COMPLETION IS RECOMMENDED.

SEEDING IN ALL OTHER AREAS:

ON ALL OTHER AREAS – DISTURBED BANKS, UPLAND AREAS, STAGING AREAS – APPLY SEED BY HAND OR WITH A BROADCAST SPREADER AT A SPECIFIED RATE. SOME SEED MAY HAVE DIFFICULTY MOVING THROUGH THE BROADCAST HOPPER REGULATOR. IN THESE CASES, A FLOW ENHANCING REGULATOR (SUCH AS WOOD-BASED KITTY LITTER) MIXED WITH THE SEED WILL AID IN UNIFORMITY.

BROADCAST HALF THE SEED HORIZONTALLY AND THE REMAINDER VERTICALLY. IF THE SOIL IS DRY, ROLLING OR TRACKING THE SEED WILL AID IN GOOD SOIL TO SEED CONTACT. DRY AREAS SHALL BE LIGHTLY WATERED EVERY 3 DAYS UNTIL PROJECT END. DRY STRAW MULCH, WITH NO ROT, UN-CHOPPED, FREE OF WEEDS SHALL BE APPLIED IMMEDIATELY OVER SEEDED AREAS AS A LIGHT COVER – 1/2 TO 1 INCH.

TEMPORARY SEEDING

IF TEMPORARY SEEDING IS REQUIRED, CLEAN, WEED FREE ANNUAL RYE MAY BE APPLIED AT 1 LB. PER 1000 SQ. FT.

PLANTING

MATERIALS:

SHRUB SPECIES:

ON ALL OTHER AREAS - ABOVE TOE WOOD ON BANKS AND TERRACES AT AND ABOVE BANKFULL, AND ALL OTHER DISTURBED AREAS, INSTALL 15", #1 CONTAINER SHRUBS. SHRUB SPECIES MUST INCLUDE AT LEAST 4 OF THE FOLLOWING. SUBSTITUTIONS CAN BE AUTHORIZED PRIOR TO INSTALLATION. SHRUBS SHALL BE 18 INCHES TO 2 FEET IN HEIGHT. PLANT SHRUBS AT 30" O.C. ENSURE SUB-SPECIES SPECIFICITY IN ALL PURCHASES. CONTACT THE USFWS, NEW YORK OFFICE IF ANY SPECIFIC SPECIES HAS LIMITED AVAILABILITY.

PLANT LIST:

- A) ALTERNATE LEAF DOGWOOD (*CORNUS ALTERNIFOLIA*)
- B) BLACK CHOKEBERRY (*ARONIA MELANOCARPA*)
- C) BUTTONBUSH (*CEPHALANTHUS OCCIDENTALIS*)
- D) CANADIAN ELDERBERRY (*SAMBUCUS CANADENSIS*)
- E) PEACH-LEAVED WILLOW (*SALIX AMYGDALOIDES*)
- F) RED-OSIER DOGWOOD (*C. STOLONIFERA*)
- G) ROUNDEAF DOGWOOD (*C. RUGOSA*)
- H) SILKY DOGWOOD (*C. AMOMUM*)
- I) SPICEBUSH (*LINDERA BENZOIN*)

LIVE STAKES:

LIVE STAKES ARE TO BE PLANTED ON ALL STREAM BANKS WITHIN THE LOD AND TOE WOOD BENCHES. PLANTINGS ON TOE WOOD BENCHES ARE TO BE LIVE STAKES **ONLY**. TWO FOOT LIVE STAKES SHOULD BE INSERTED OR GENTLY TAPPED 1- TO 1.5- FEET INTO THE TOEWOOD.

PLANT LIVE STAKE PLANTS IN THE FOLLOWING MIX FOR EVERY 1000 SQ. FT. SPACING AT 4-6'.

- 12 RED-OSIER DOGWOOD
- 12 SILKY DOGWOOD

TREE SPECIES:

ON ALL OTHER AREAS - ABOVE TOE WOOD ON BANKS AND TERRACES AT AND ABOVE BANKFULL, AND ALL OTHER DISTURBED AREAS, INSTALL BAREROOT PLANTS USING THE DIBBLE OR SIMILAR METHOD ENSURING THE HOLE IS DEEP ENOUGH FOR ROOTS. KEEP THE BULB AREA AT THE BASE OF THE STEM, JUST ABOVE THE POINT OF ROOT SPREAD, AT OR JUST ABOVE GROUND. PLANT THE FOLLOWING TREE SPECIES 4', CONTAINERIZED PLANTED RANDOMLY AT 10' O.C.

- AMERICAN SYCAMORE (*PLATANUS OCCIDENTALIS*)
- RED MAPLE (*ACER RUBRUM*)
- SLIPPERY ELM (*ULMUS RUBRA*)
- COMMON HACKBERRY (*CELTIS OCCIDENTALIS*)

MULCH ALL PLANTS AND WATER EVERY 3-4 DAYS (IF IT DOES NOT RAIN) UNTIL PROJECT COMPLETION.

TOPSOIL

TOPSOIL IS REQUIRED AS A MIX IN SOIL LIFTS ALONG THE BANKS OF THE SALMON RIVER AND MAY BE USED TO DRESS/FILL/SMOOTH STAGING AREAS POST CONSTRUCTION. ALL TOPSOIL SHALL BE CLEAN, DRAWN FROM LOCAL SOURCES, AND BE FREE OF INVASIVE SPECIES.



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PROJECT ENGINEER

7/6/2023
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ABAU

STRUCTURE TABLE

STRUCTURE
TABLE

Channel Block Structures (Side Channel)

Structure #	Begin Station (ft)	End Station (ft)	Elevation (ft)			
			Pt 1	Pt 2	Pt 3	Pt 4
CB-1	100+91.50	101+71.50	508.00	509.75	509.75	505.88

J-Hook Structures

Structure #	Sill Length (ft)	Arm			Station (ft) At Pt 3	Elevation (ft)		
		Length (ft)	Angle (deg)	Slope (%)		Pt 1	Pt 2	Pt 3
JH-1	0.00	130.00	25	3.1%	9+10.00	506.50	502.50	502.00

Toe-Wood Protection Structures

Structure #	Toe Wood Dimensions						Elevation (ft)					
	STA Length (ft)	Bank Length (ft)	Width (ft)	Depth (ft)	Begin Station (ft)	End Station (ft)	Pt 1	Pt 2	Bench Top	Pt 3	Pt 4	Bench Top
TW-1	216	300	15.0	2.5	5+23.00	7+39.00	507.00	504.50	509.00	505.40	502.90	510.00



7-1-23

[Signature]

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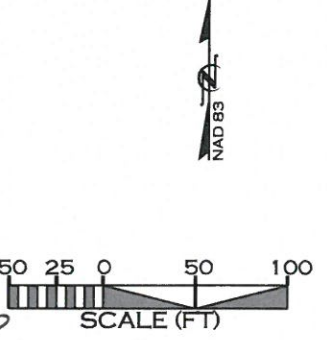
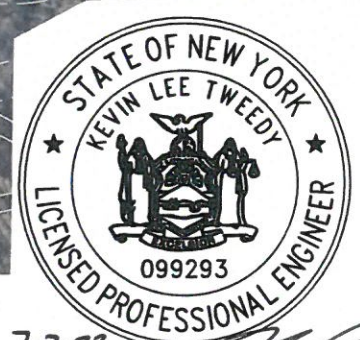
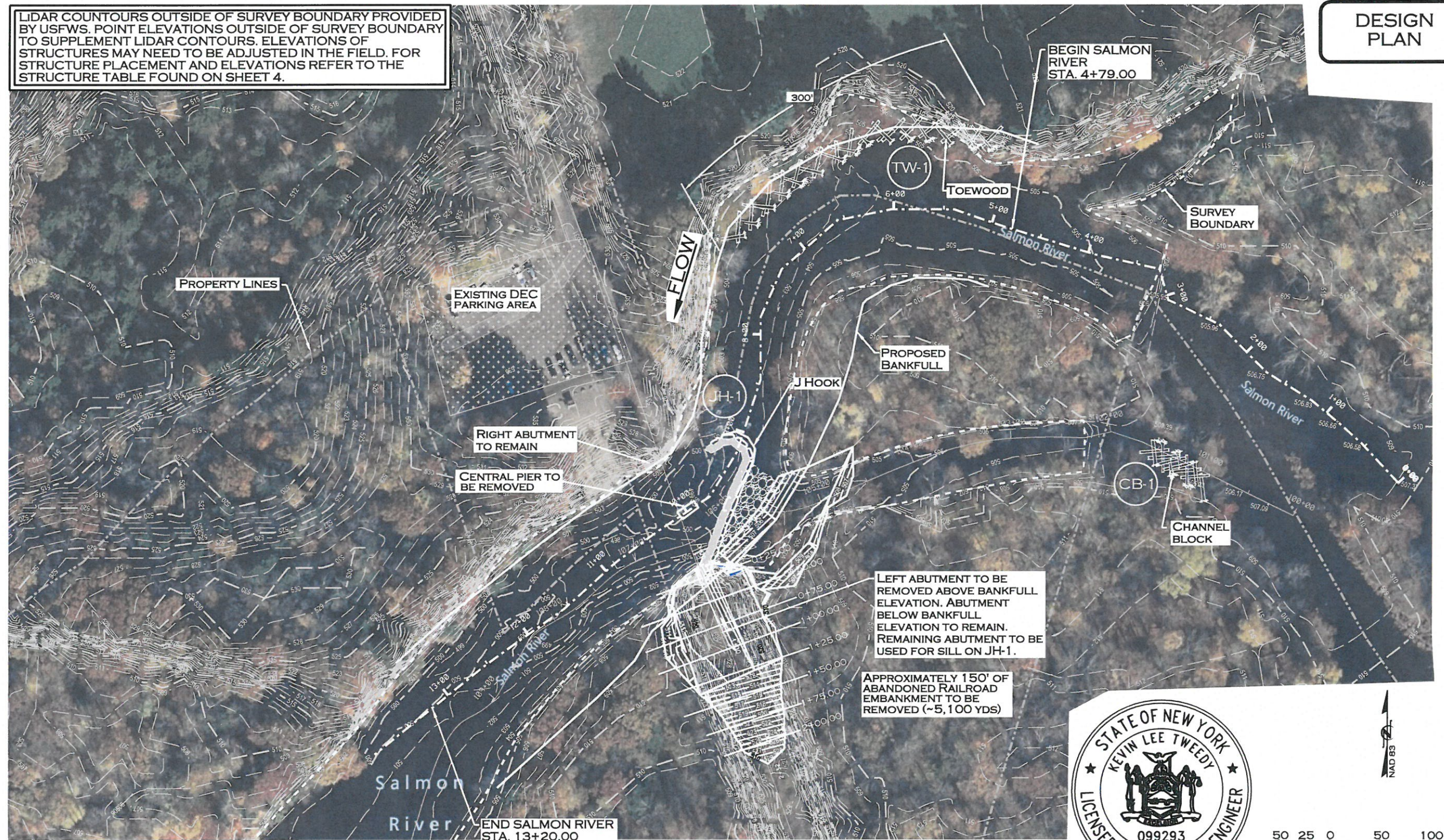
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DESIGN
PLAN

LIDAR COUNTOURS OUTSIDE OF SURVEY BOUNDARY PROVIDED BY USFWS. POINT ELEVATIONS OUTSIDE OF SURVEY BOUNDARY TO SUPPLEMENT LIDAR CONTOURS. ELEVATIONS OF STRUCTURES MAY NEED TO BE ADJUSTED IN THE FIELD. FOR STRUCTURE PLACEMENT AND ELEVATIONS REFER TO THE STRUCTURE TABLE FOUND ON SHEET 4.



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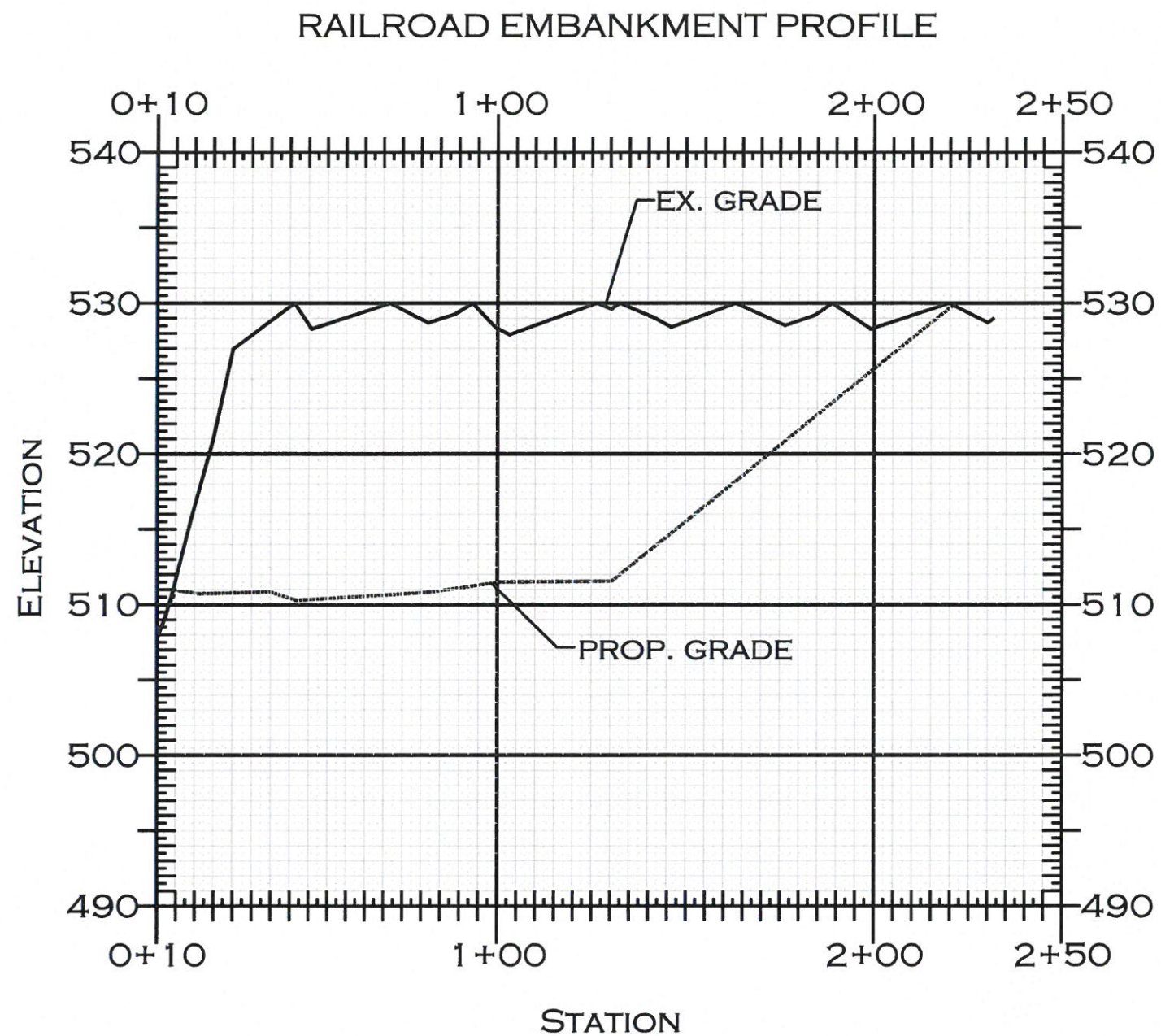
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SCALE (FT)

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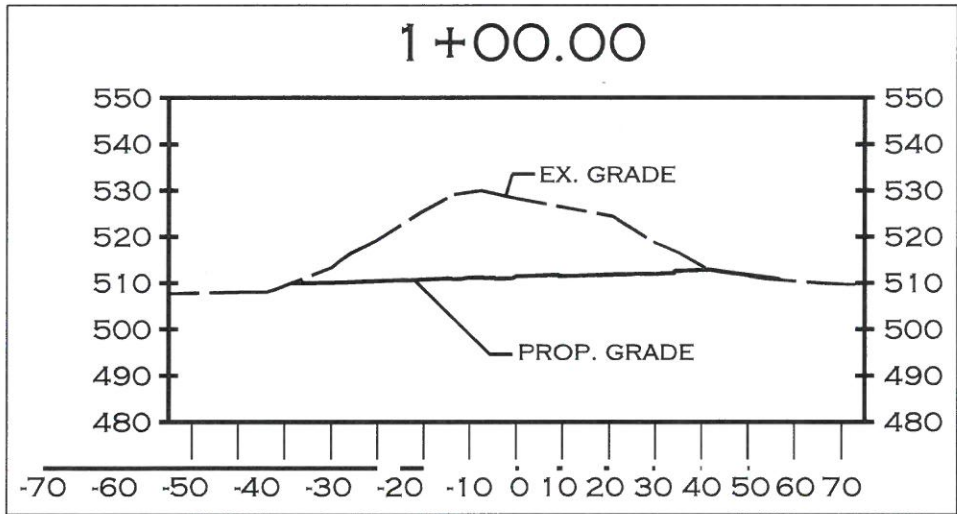
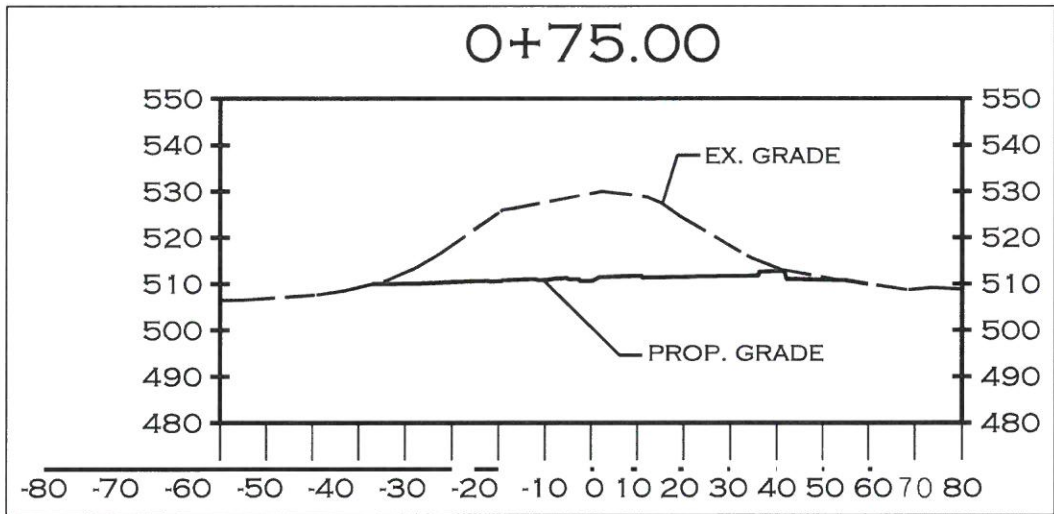
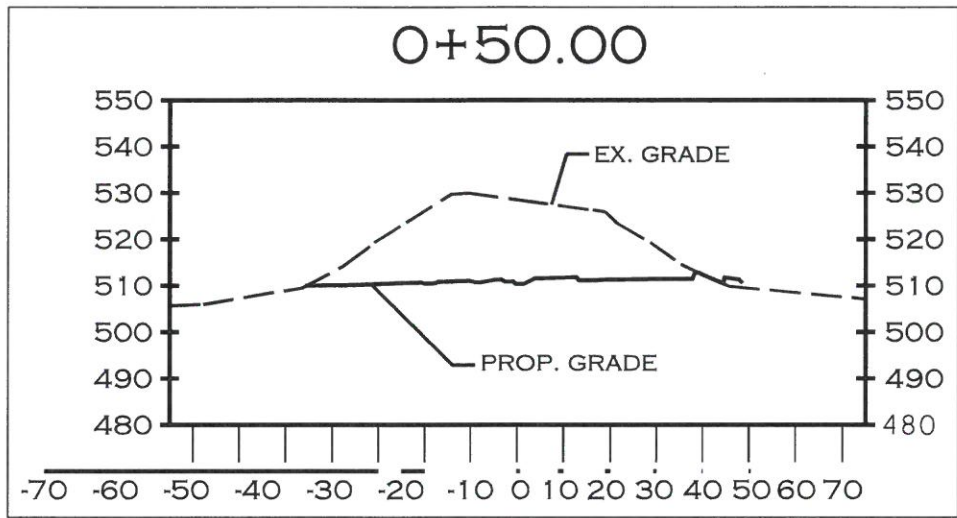
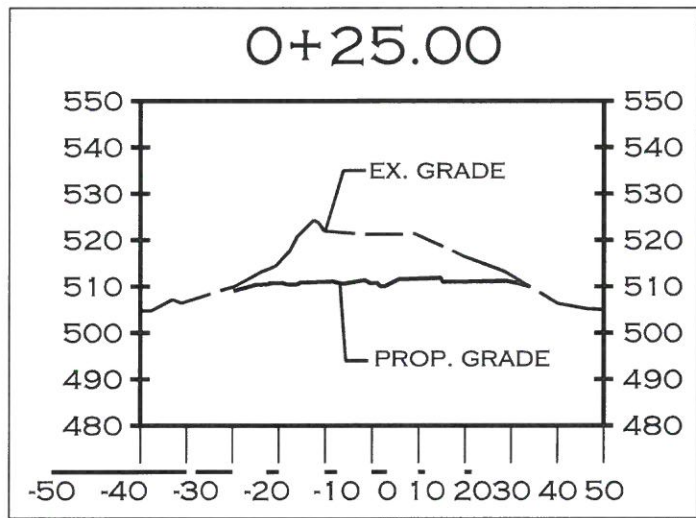
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STATE OF NEW YORK

KEVIN LEE TWEEDY

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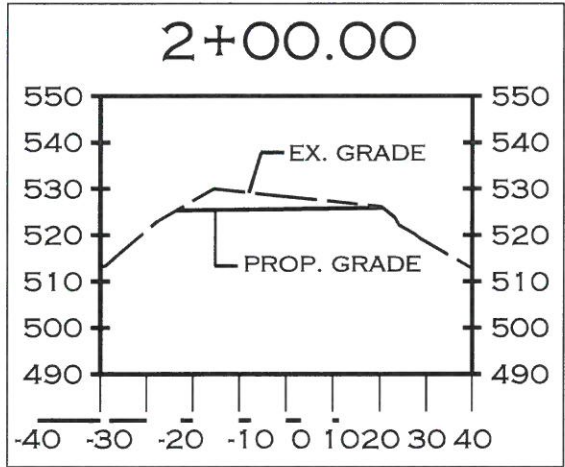
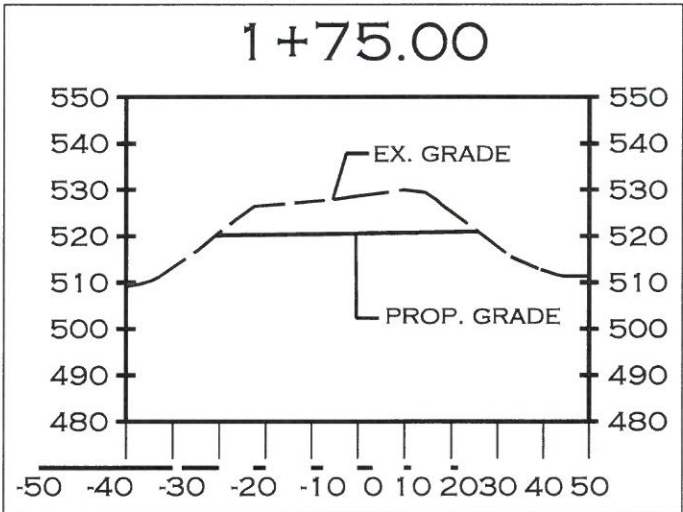
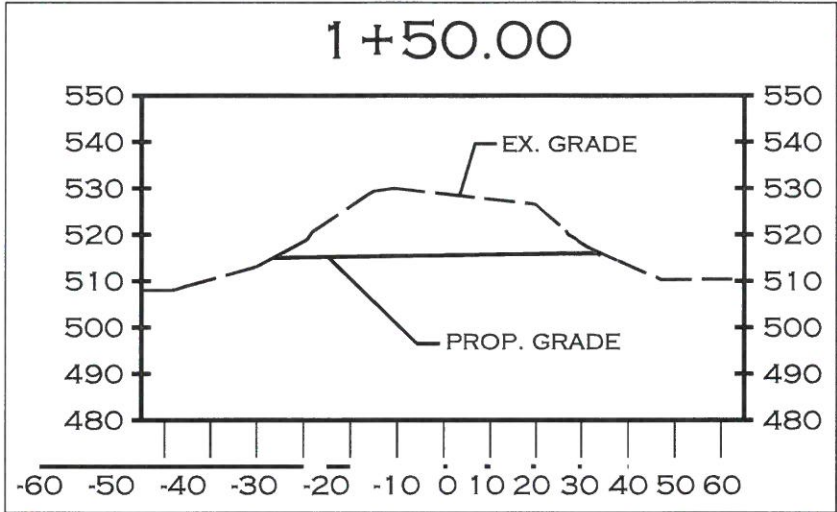
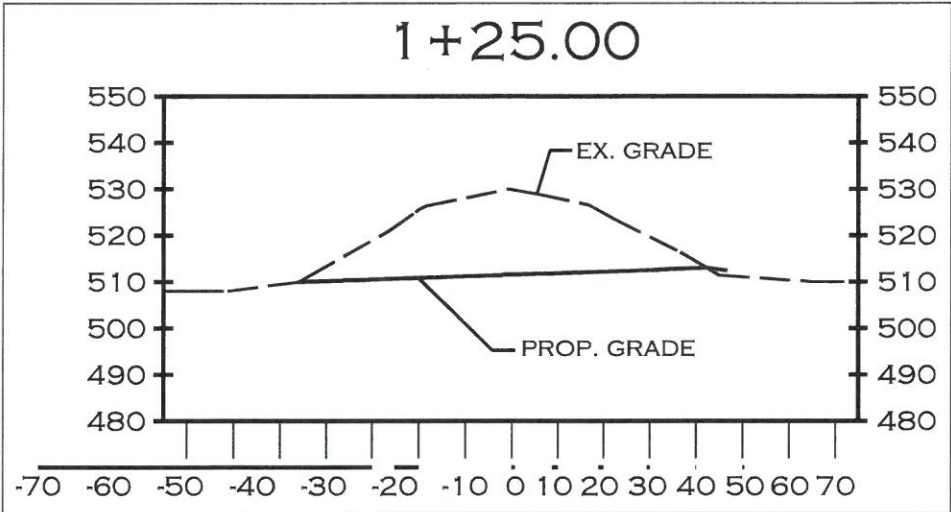
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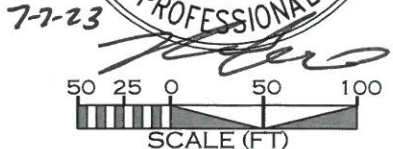
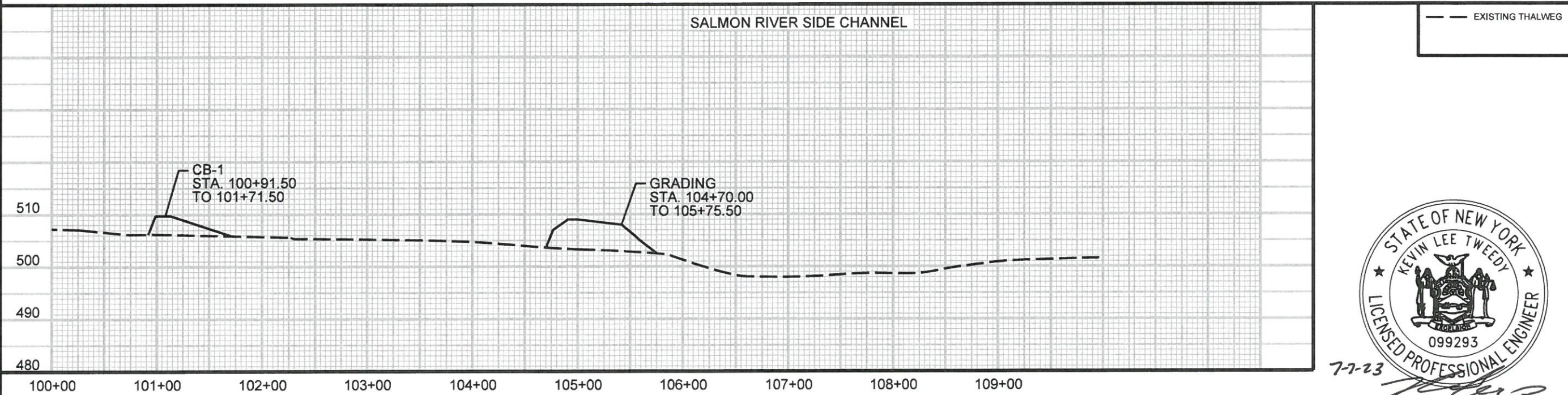
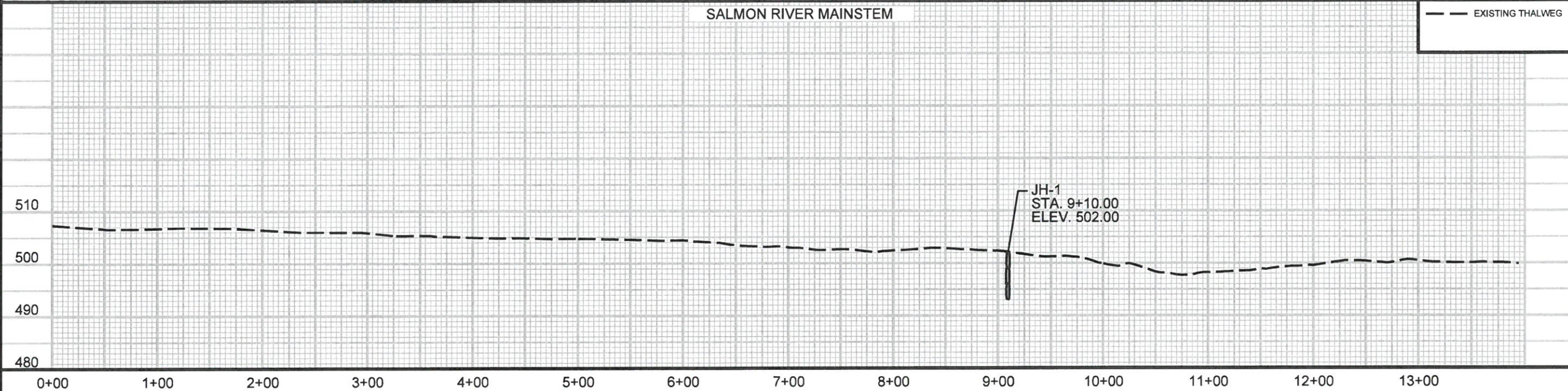
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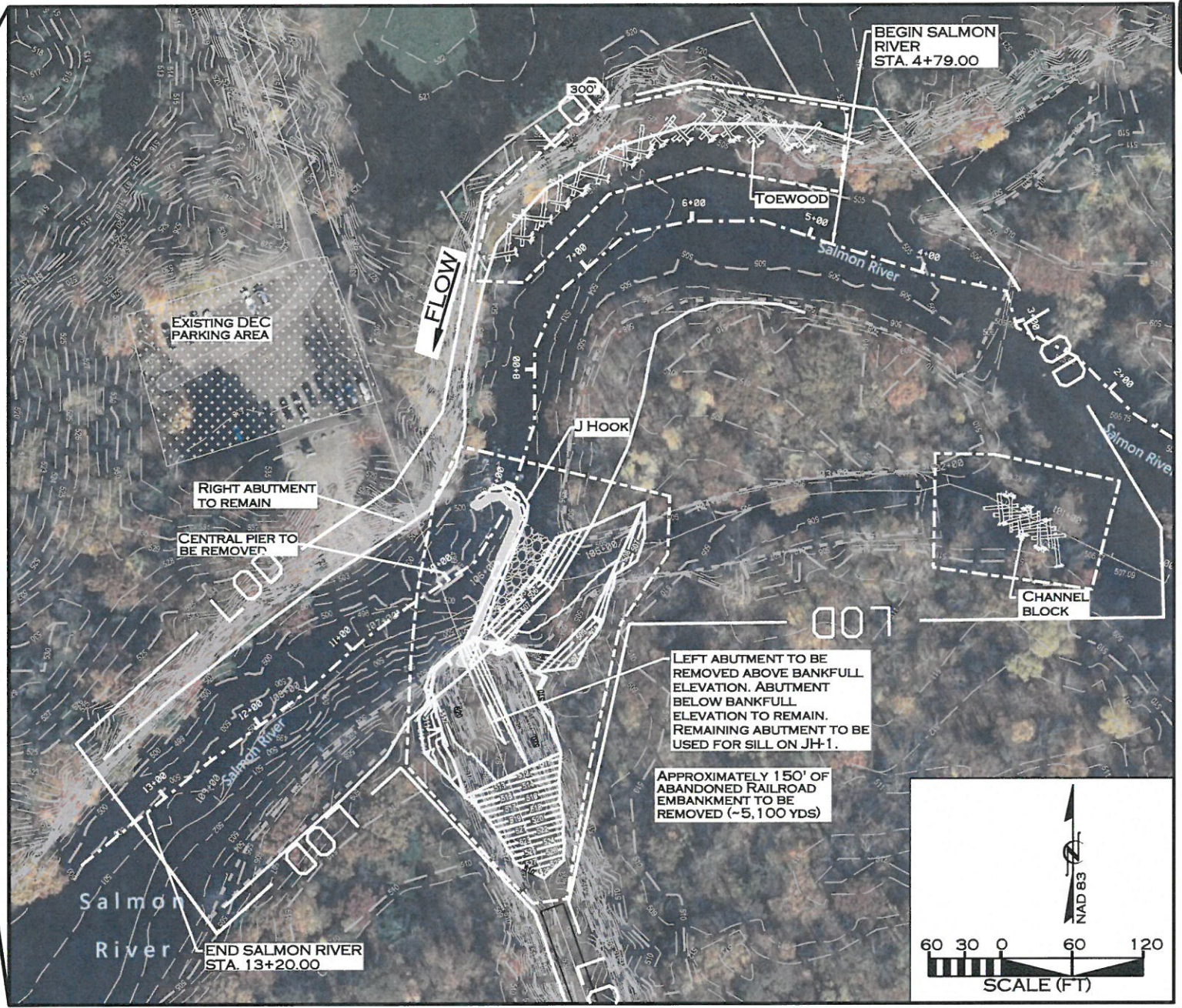
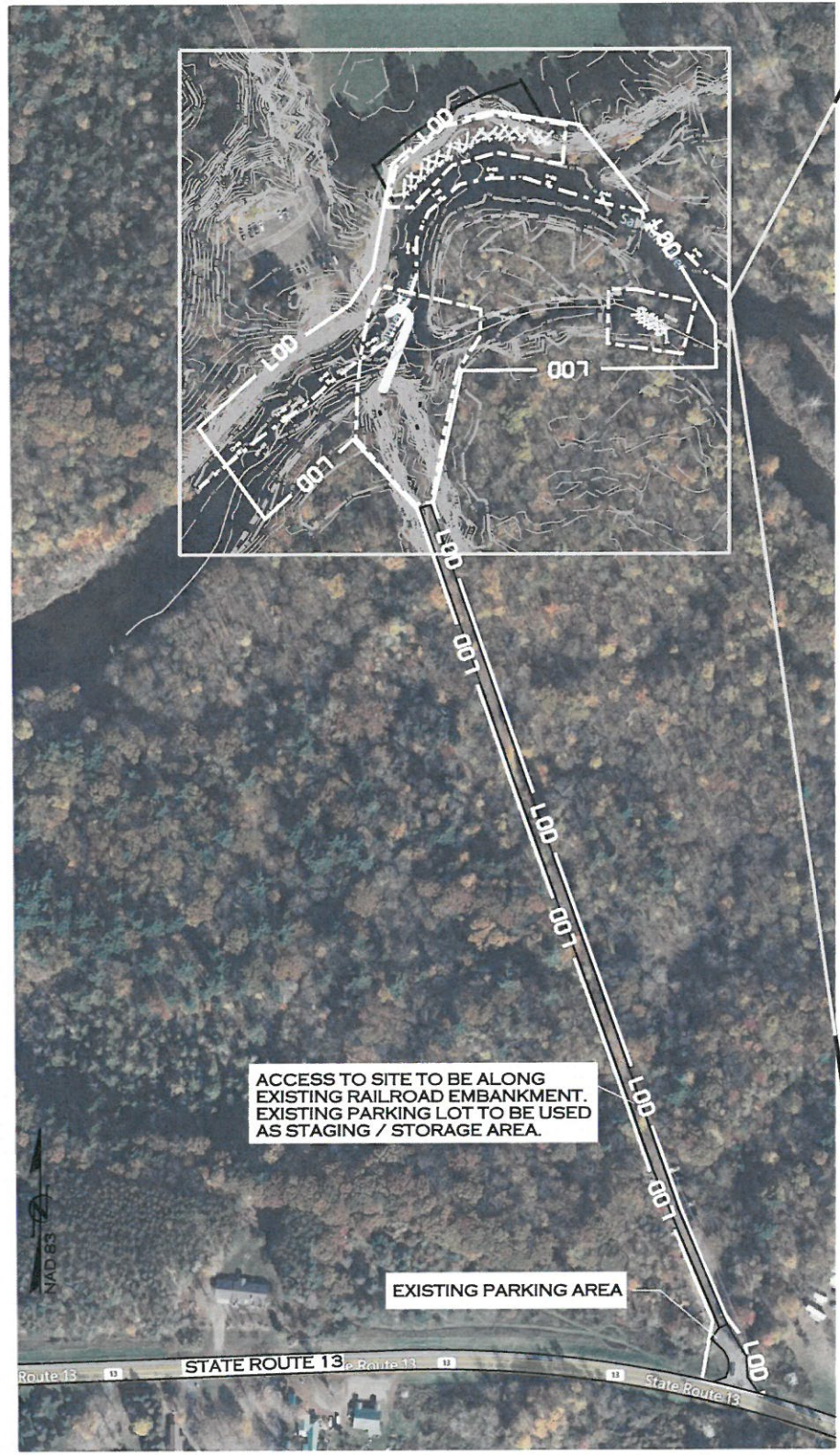
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EROSION CONTROL PLAN



EROSION AND SEDIMENT CONTROL LEGEND	
— LOD —	LIMITS OF DISTURBANCE
- - - - -	LIMITS OF GRADING



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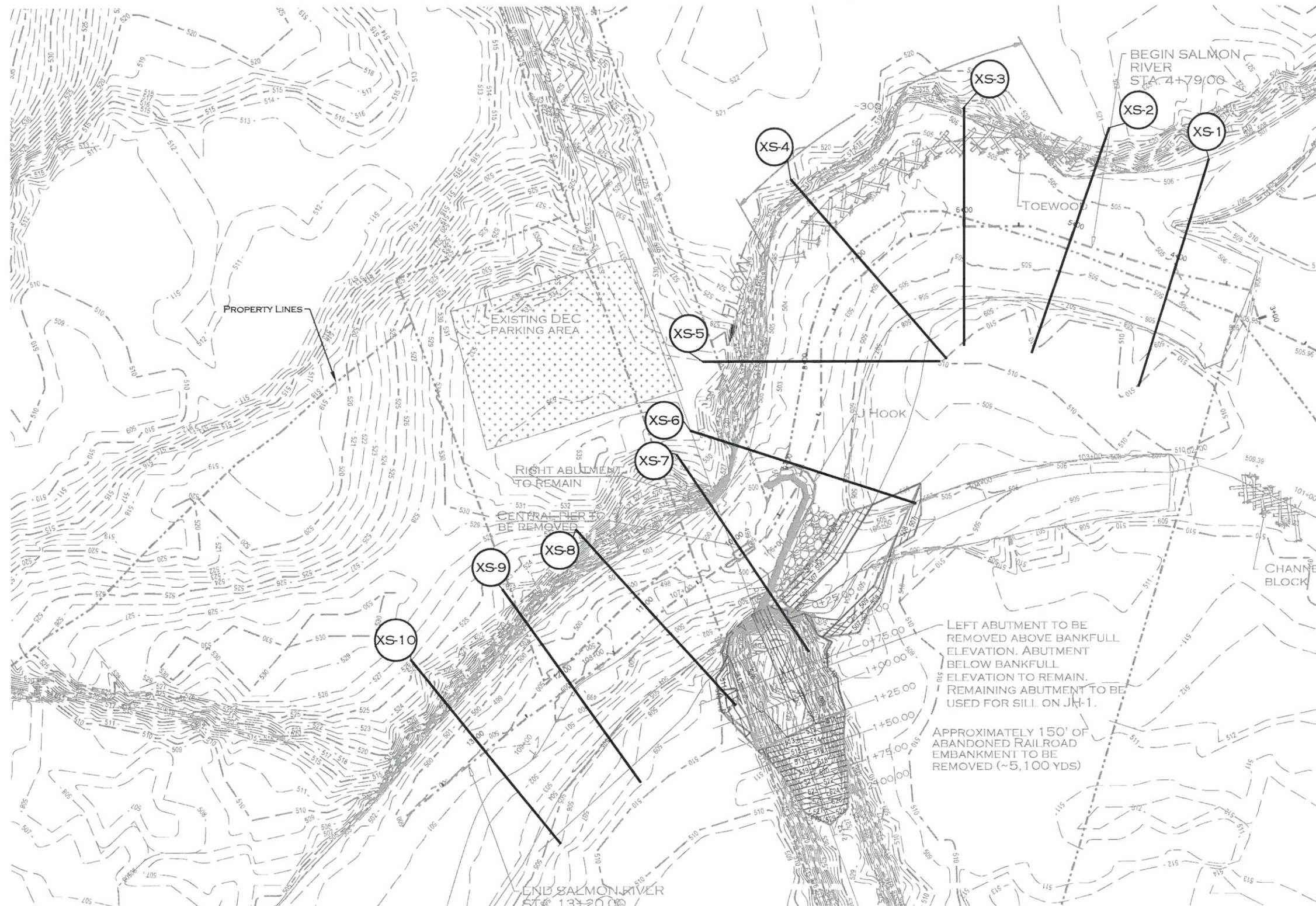
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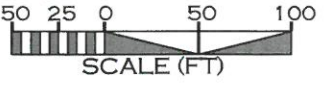
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CROSS
SECTION
OVERVIEW



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New York Field Office

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CARY, NC 27511

NY LICENSE # = 099293

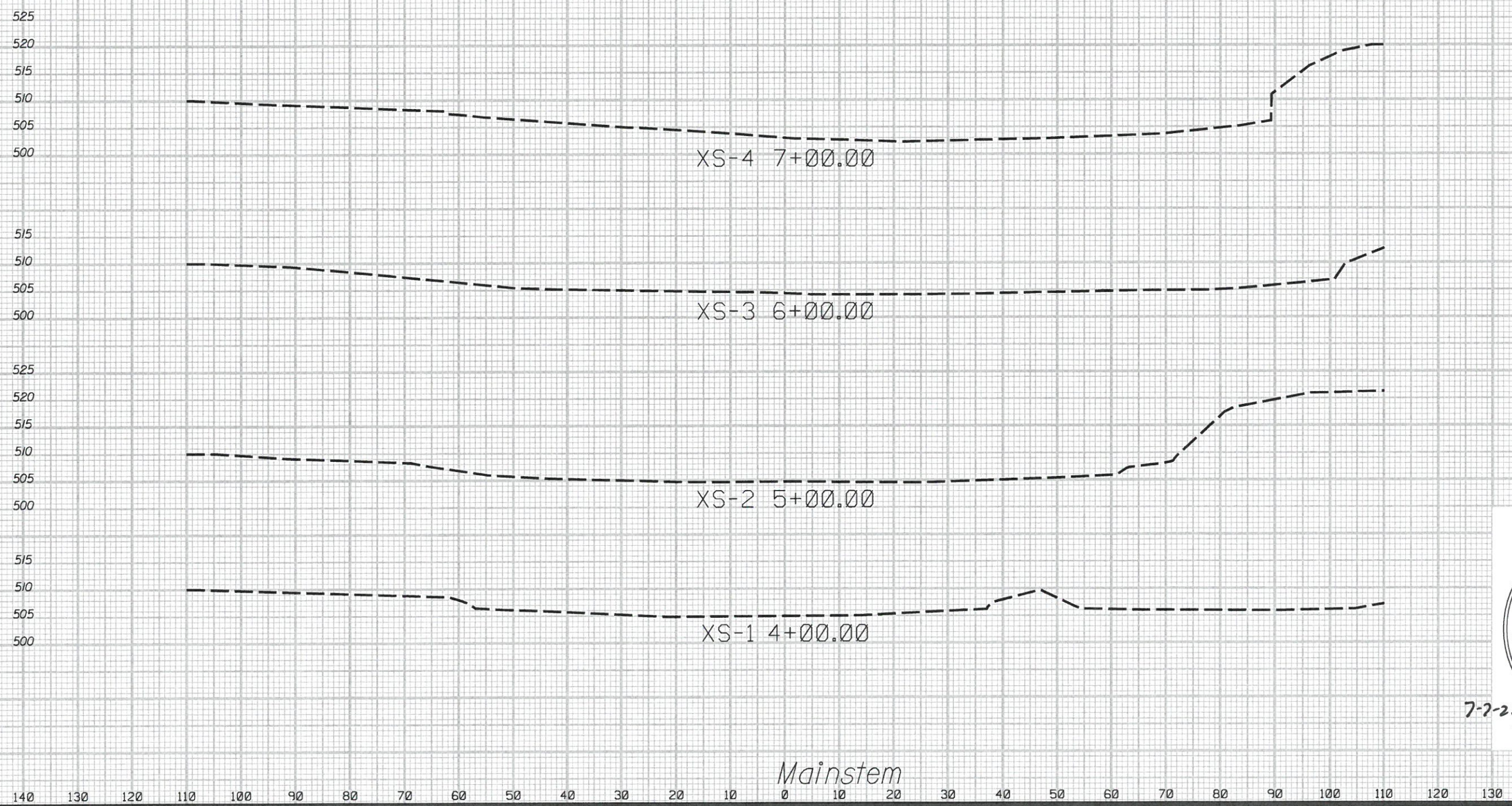
PROJECT ENGINEER

6/23/16



PROJ. REFERENCE NO.
BAL0054

SHEET NO.
X-1

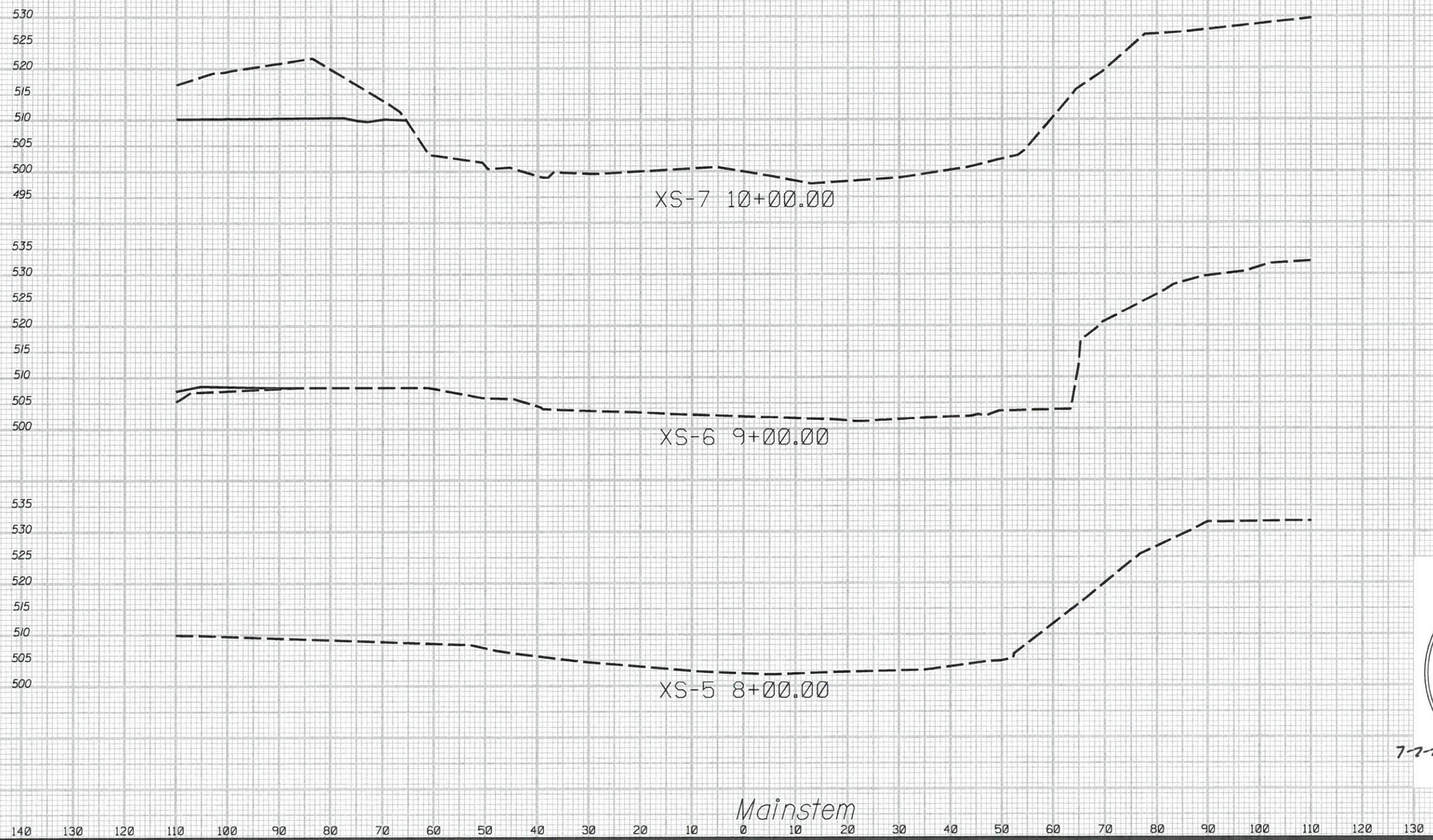


7-7-23

Mainstem

7/6/2023
D:\1\2\3\4\5\6\7\8\9\10\11\12\13\14\15\16\17\18\19\20\21\22\23\24\25\26\27\28\29\30\31\32\33\34\35\36\37\38\39\40\41\42\43\44\45\46\47\48\49\50\51\52\53\54\55\56\57\58\59\60\61\62\63\64\65\66\67\68\69\70\71\72\73\74\75\76\77\78\79\80\81\82\83\84\85\86\87\88\89\90\91\92\93\94\95\96\97\98\99\100\101\102\103\104\105\106\107\108\109\110\111\112\113\114\115\116\117\118\119\120\121\122\123\124\125\126\127\128\129\130\131\132\133\134\135\136\137\138\139\140\141\142\143\144\145\146\147\148\149\150\151\152\153\154\155\156\157\158\159\160\161\162\163\164\165\166\167\168\169\170\171\172\173\174\175\176\177\178\179\180\181\182\183\184\185\186\187\188\189\190\191\192\193\194\195\196\197\198\199\200\201\202\203\204\205\206\207\208\209\210\211\212\213\214\215\216\217\218\219\220\221\222\223\224\225\226\227\228\229\230\231\232\233\234\235\236\237\238\239\240\241\242\243\244\245\246\247\248\249\250\251\252\253\254\255\256\257\258\259\260\261\262\263\264\265\266\267\268\269\270\271\272\273\274\275\276\277\278\279\280\281\282\283\284\285\286\287\288\289\290\291\292\293\294\295\296\297\298\299\300\301\302\303\304\305\306\307\308\309\310\311\312\313\314\315\316\317\318\319\320\321\322\323\324\325\326\327\328\329\330\331\332\333\334\335\336\337\338\339\340\341\342\343\344\345\346\347\348\349\350\351\352\353\354\355\356\357\358\359\360\361\362\363\364\365\366\367\368\369\370\371\372\373\374\375\376\377\378\379\380\381\382\383\384\385\386\387\388\389\390\391\392\393\394\395\396\397\398\399\400\401\402\403\404\405\406\407\408\409\410\411\412\413\414\415\416\417\418\419\420\421\422\423\424\425\426\427\428\429\430\431\432\433\434\435\436\437\438\439\440\441\442\443\444\445\446\447\448\449\450\451\452\453\454\455\456\457\458\459\460\461\462\463\464\465\466\467\468\469\470\471\472\473\474\475\476\477\478\479\480\481\482\483\484\485\486\487\488\489\490\491\492\493\494\495\496\497\498\499\500\501\502\503\504\505\506\507\508\509\510\511\512\513\514\515\516\517\518\519\520\521\522\523\524\525\526\527\528\529\530\531\532\533\534\535\536\537\538\539\540\541\542\543\544\545\546\547\548\549\550\551\552\553\554\555\556\557\558\559\560\561\562\563\564\565\566\567\568\569\570\571\572\573\574\575\576\577\578\579\580\581\582\583\584\585\586\587\588\589\590\591\592\593\594\595\596\597\598\599\600\601\602\603\604\605\606\607\608\609\610\611\612\613\614\615\616\617\618\619\620\621\622\623\624\625\626\627\628\629\630\631\632\633\634\635\636\637\638\639\640\641\642\643\644\645\646\647\648\649\650\651\652\653\654\655\656\657\658\659\660\661\662\663\664\665\666\667\668\669\670\671\672\673\674\675\676\677\678\679\680\681\682\683\684\685\686\687\688\689\690\691\692\693\694\695\696\697\698\699\700\701\702\703\704\705\706\707\708\709\710\711\712\713\714\715\716\717\718\719\720\721\722\723\724\725\726\727\728\729\730\731\732\733\734\735\736\737\738\739\740\741\742\743\744\745\746\747\748\749\750\751\752\753\754\755\756\757\758\759\760\761\762\763\764\765\766\767\768\769\770\771\772\773\774\775\776\777\778\779\780\781\782\783\784\785\786\787\788\789\790\791\792\793\794\795\796\797\798\799\800\801\802\803\804\805\806\807\808\809\810\811\812\813\814\815\816\817\818\819\820\821\822\823\824\825\826\827\828\829\830\831\832\833\834\835\836\837\838\839\840\841\842\843\844\845\846\847\848\849\850\851\852\853\854\855\856\857\858\859\860\861\862\863\864\865\866\867\868\869\870\871\872\873\874\875\876\877\878\879\880\881\882\883\884\885\886\887\888\889\890\891\892\893\894\895\896\897\898\899\900\901\902\903\904\905\906\907\908\909\910\911\912\913\914\915\916\917\918\919\920\921\922\923\924\925\926\927\928\929\930\931\932\933\934\935\936\937\938\939\940\941\942\943\944\945\946\947\948\949\950\951\952\953\954\955\956\957\958\959\960\961\962\963\964\965\966\967\968\969\970\971\972\973\974\975\976\977\978\979\980\981\982\983\984\985\986\987\988\989\990\991\992\993\994\995\996\997\998\999\1000

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