

DESIGN PLANS

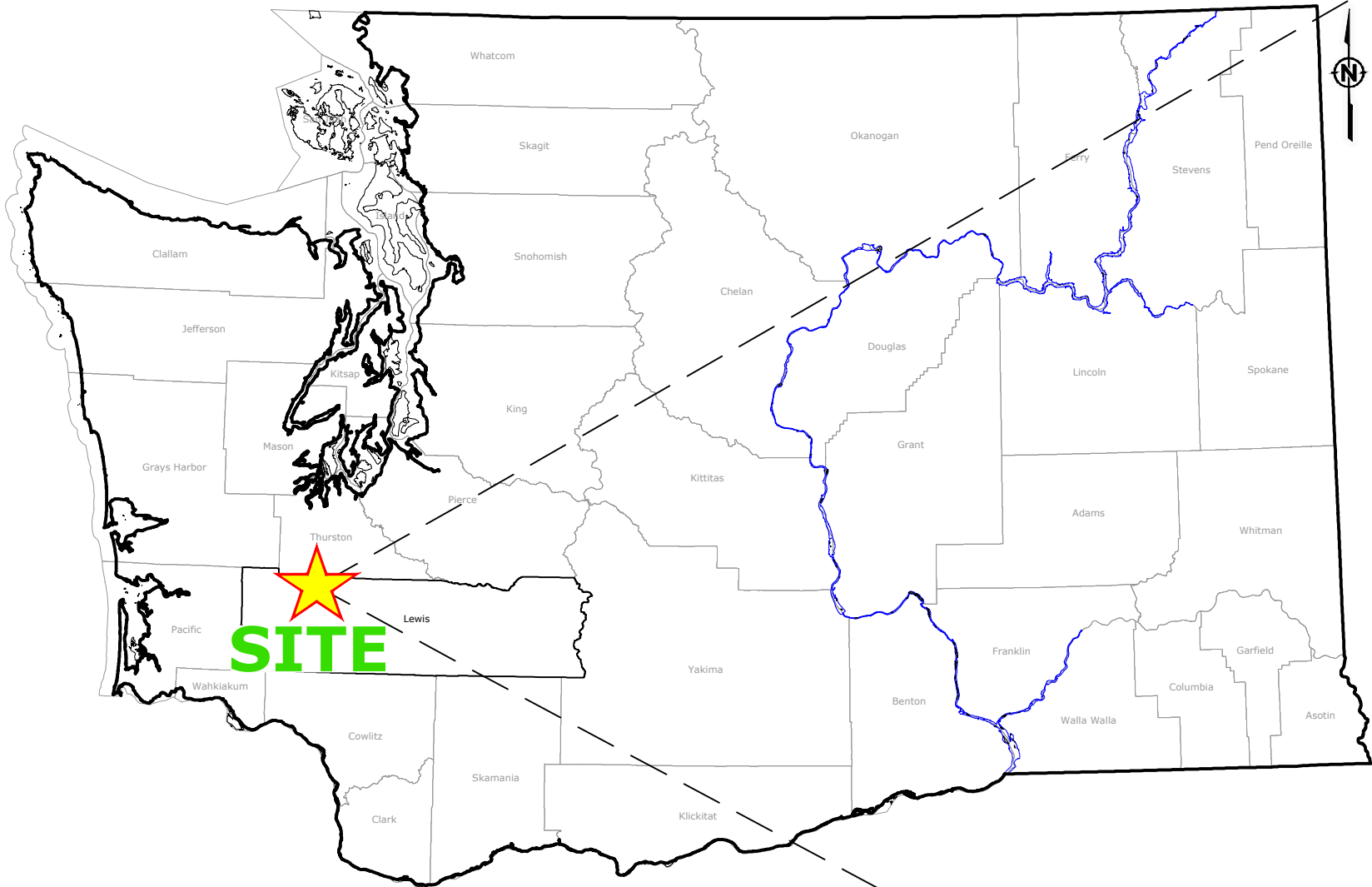
CHINA CREEK RESTORATION PROJECT

PHASE 2

AGNEW MILL PONDS, CITY OF CENTRALIA

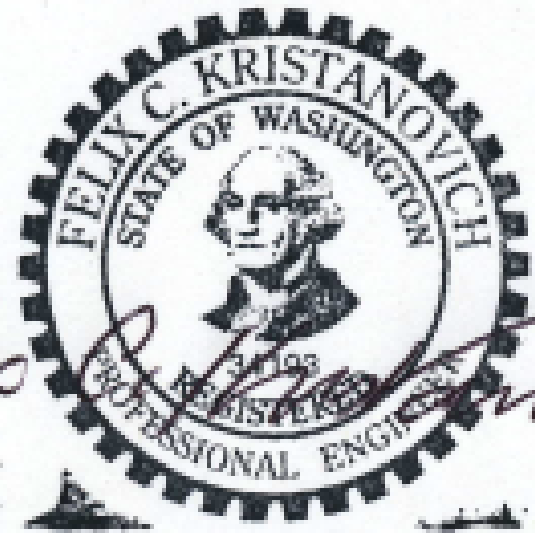
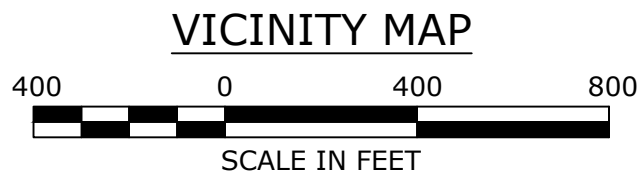
LEWIS COUNTY, WASHINGTON

OCTOBER 2020



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SOURCE:
IMAGE: Google Earth Pro™ DATED 7/16/2014.



KNAUCHMAN_4/23/20
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GENERAL NOTES

- THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE PLANS AND ONE (1) COPY OF THE APPROPRIATE CONSTRUCTION SPECIFICATIONS AT THE JOB SITE AT ALL TIMES.
- ALL ELEVATIONS ARE BASED ON USGS DATUM.
- FIELD-VERIFY ALL DIMENSIONS BEFORE CONSTRUCTION.
- PROPOSED CONTOURS SHOWN ARE TO FINISHED GRADE.
- CONTRACTOR SHALL VISIT SITE PRIOR TO SUBMITTING A BID ON THIS PROJECT TO FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS. ANY EXISTING CONDITIONS FOUND AS VARIANCE WITH THESE DRAWINGS SHALL BE IMMEDIATELY REPORTED TO THE CITY ENGINEER.
- ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE CITY ENGINEER AND INSPECTOR.
- EXISTING UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES, IF SHOWN ON THESE PLANS, ARE LOCATED FROM RECORDS ONLY AND SHALL BE CONSIDERED APPROXIMATE. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS UNKNOWN AND NOT REPRESENTED IN THE PLAN SET. FOR VERIFICATION OF THE LOCATIONS OF ALL EXISTING UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS, IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ALL UTILITY COMPANIES AT LEAST 3 FULL WORKING DAYS PRIOR TO ANY GRADING, EXCAVATION OR CONSTRUCTION OF THE IMPROVEMENTS. ANY CONFLICTS SHALL BE REPORTED TO THE OWNER AND ENGINEER IMMEDIATELY. ALL EXISTING UTILITIES SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. ANY DAMAGE TO THESE STRUCTURES CAUSED BY THE CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES. OPEN BURNING OF DEBRIS SHALL NOT BE PERMITTED.
- THE CONTRACTOR SHALL GRADE AND EXCAVATE TO THE LIMITS AND DIMENSIONS SHOWN ON THESE DRAWINGS.
- SILTATION CONTROL IS REQUIRED. IT SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION AS DIRECTED BY THE CITY ENGINEER IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL RULES, REGULATIONS AND PERMITS.
- THE CONTRACTOR IS REQUIRED TO EXERCISE PARTICULAR CARE DURING EXCAVATION TO PREVENT UNNECESSARY DAMAGE TO TREES, RETAINING WALLS, STRUCTURES, UTILITIES, ETC., IN THE VICINITY OF CONSTRUCTION. ONLY THOSE TREES IN DIRECT CONFLICT WITH CONSTRUCTION OPERATIONS SHALL BE REMOVED, AS AGREED UPON BETWEEN THE CONTRACTOR AND OWNER. LANDSCAPED AREAS AND FENCING SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
- ALL EXISTING FENCE REMOVED AND NOT REUSED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND HE SHALL BE RESPONSIBLE FOR THE DISPOSAL OF THIS ITEM.
- ALL FENCE REMOVED DUE TO CONSTRUCTION OR CONTRACTOR'S NEGLIGENCE SHALL BE REPLACED IN LIKE OR BETTER CONDITION UNLESS OTHERWISE NOTED ON THE PLANS. TEMPORARY FENCE SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS OR AS DETERMINED IN THE FIELD.
- ALL CONSTRUCTION METHODS AND OPERATIONS MUST BE PERFORMED IN SUCH A MANNER AS TO PROTECT ALL ADJACENT EXISTING BUILDING AND SITE ELEMENTS. ANY EXISTING ELEMENTS DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THAT EXISTING OR BEFORE THE DAMAGE OCCURRED. THE ITEM REPLACEMENT AND COST OF CONSTRUCTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- TOPSOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED AND STOCKPILED PRIOR TO GRADING OPERATIONS. ALL TOPSOIL SHALL BE SPREAD OVER GRADED AREAS TO A DEPTH OF AT LEAST TWO INCHES. THE CONTRACTOR SHALL PROVIDE ADDITIONAL OFF-SITE TOPSOIL AS NEEDED TO ACHIEVE TWO INCH DEPTH. ANY TOPSOIL USED FROM THE PROJECT SITE WILL BE CONSIDERED AS TYPE "B" SOIL, AND WILL BE PAID AS TYPE "B" SOIL. TYPE "A" SOIL MUST BE FROM AN OFF-SITE APPROVED SOURCE.
- COMPACT FILL TO 95% OF SOIL'S STANDARD PROCTOR UNLESS OTHERWISE SPECIFIED IN THE PLAN DOCUMENTS.
- ALL EXCAVATION IS CONSIDERED UNCLASSIFIED FOR THE PURPOSE OF BIDDING. ALL EXISTING ASPHALT AND CONCRETE PAVEMENT, ORGANIC CONTAMINATED OR WET SOILS OR OTHER DELETERIOUS MATERIALS REMOVED MUST BE TOTALLY AND LEGALLY REMOVED FROM SITE AT NO ADDITIONAL COST TO THE OWNER.
- ALL TRAFFIC CONTROL, INCLUDING BARRICADES AND FLAGGING PERSONNEL, SHALL BE PROVIDED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
- ALL CONTRACTOR'S STAGING AND MATERIAL STORAGE AREAS SHALL BE COORDINATED AND APPROVED BY THE CITY ENGINEER. ALL SUCH AREAS AND CONSTRUCTION METHODS SHALL BE DONE IN SUCH A MANNER AS TO CREATE A MINIMUM INTERFERENCE WITH RESIDENTS SURROUNDING THE PROJECT LOCATION. ANY STAGING AREA(S) MUST BE RESTORED TO PRECONSTRUCTION CONDITIONS.
- ALL CONTROL POINTS AND CONSTRUCTION STAKEOUT SHALL BE PROVIDED BY THE CONTRACTOR. THE CONSTRUCTION STAKING SHALL BE COMPLETED BY A WASHINGTON STATE LICENSED LAND SURVEYOR. AT COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE THE CITY ENGINEER WITH AS-BUILT DRAWINGS, SEALED BY A REGISTERED ENGINEER OR A PROFESSIONALLY LICENSED SURVEYOR, WHICH PROVIDES THE ELEVATION AND LOCATION OF ALL IMPROVEMENTS IN RELATION TO A REPEATABLE BASELINE. THE CONTRACTOR SHALL ALSO PROVIDE THE AS-BUILT DRAWINGS ON A COMPACT DISC IN AUTO CAD (vR14 OR LATER RELEASE).

PROJECT NOTES

- INGRESS AND EGRESS SHALL BE ON COMMON PROPERTY OR EASEMENTS, UNLESS OTHER ARRANGEMENTS ARE MADE BY THE CONTRACTOR. CONTRACTOR SHALL AT COMPLETION OF PROJECT, RESTORE LANDSCAPING TO PRE-EXISTING CONDITIONS.
- THE LATEST EDITION OF FHWA MUTCD MANUAL SHALL GOVERN THE PLACEMENT OF TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, CONES, SIGNS, ETC., DURING THE CONSTRUCTION PERIOD.
- CONTRACTOR SHALL CONSTRUCT, IF NECESSARY, GRADED DRAINAGE PATHS (DITCHES, SWALES, ETC.) TO MAINTAIN DRAINAGE INTO PROPOSED STORM SEWER INLETS AND/OR CHANNELS.
- THE CONTRACTOR SHALL INSTALL SUITABLE EROSION CONTROL PRODUCTS AS NECESSARY TO MEET LOCAL, STATE, AND FEDERAL REQUIREMENTS.
- THE EXISTING CREEK WILL BE FILLED WITH THE MATERIAL EXCAVATED AFTER COMPLETION OF THE NEW CHANNEL AT ALL LOCATIONS WHERE CHANNEL IS NOT LOCATED WITHIN EXISTING WETLANDS OR IS UNDER HIGH WATER. THE HABITAT BIOLOGIST OR THEIR REPRESENTATIVE MUST INSPECT AND APPROVE THE NEW CHANNEL BEFORE THE STREAM IS DIVERTED INTO THE CHANNEL OR SECTIONS OF THE NEW CHANNEL.
WHEN DIVERTING THE FLOW INTO THE NEW CHANNEL SECTION:
 - FIRST REMOVE THE PLUG AT THE DOWNSTREAM END.
 - FACE THE STREAM SIDE OF THE PLUG WITH A SANDBAG OR SIMILAR DEVICE.
 - PARTIALLY REMOVE THE UPSTREAM PLUG TO ALLOW 1/3 TO 1/2 OF THE FLOW INTO THE NEW CHANNEL SECTION FOR A MINIMUM OF 10 HOURS. DO NOT ALLOW THE OLD CHANNEL TO DEWATER.
 - REMOVE THE REMAINDER OF THE UPSTREAM PLUG IF THE NEW CHANNEL SECTION HAS FLOW THROUGHOUT THE ENTIRE LENGTH.
 - CLOSE THE UPSTREAM END OF THE OLD CHANNEL AND SECURELY ARMOR THE ENTRANCE OF THE OLD CHANNEL TO PREVENT RE-ENTRY OF ANY FLOW. ARMOR MATERIAL MUST CONSIST OF CLEAN, ANGULAR ROCK INSTALLED TO WITHSTAND THE 50-YEAR PEAK FLOW.
 - FILL THE OLD CHANNEL BEGINNING FROM THE UPSTREAM CLOSURE. COMPACT THE FILL MATERIAL. WATER DISCHARGING FROM THE FILL MUST NOT ADVERSELY AFFECT FISH LIFE.
- CONTRACTOR WILL FOLLOW INTEGRATED STREAMBANK PROTECTION GUIDELINES (WDFW, 2013) FOR INSTALLATION OF WOODY DEBRIS AND CUTOFF LOGS.
- INSPECT ALL COIR LOGS FOR BREAKS IN THE NETTING, AND REPAIR ALL BREAKS WITH NATURAL OR SYNTHETIC ROPE PRIOR TO LOG INSTALLATION. PLACE THE LOGS IN THE TRENCH SUCH THAT THE ENDS ARE BUTTED FIRMLY TOGETHER. THE LOGS SHOULD BE LACED TOGETHER, END-TO-END, WITH COIR OR SYNTHETIC ROPE TO CREATE A CONTINUOUS LENGTH. END-TO-END LACING MAY BE COMPLETED EITHER BEFORE OR AFTER PLACEMENT IN THE STREAM, WHICHEVER IS EASIEST. THE UPSTREAM AND DOWNSTREAM ENDS OF THE CONTINUOUS LENGTH OF COIR LOGS TEND TO BE WEAK SPOTS AND SHOULD THEREFORE BE BURIED THREE TO FIVE FEET Laterally INTO THE BANK TO PROTECT AGAINST EROSION FORCES.
- WHEN PROPERLY INSTALLED, THE UPPER SURFACE OF THE ROLL SHOULD BE PARALLEL TO THE WATER SURFACE AT OR ABOVE THE ORDINARY HIGH-WATER LINE AND WITHIN THE ZONE OF PERENNIAL VEGETATION. CUT-AND-FILL ADJUSTMENTS CAN BE MADE AS NEEDED, USING ONLY HAND TOOLS WHEREVER POSSIBLE, TO SEAT THE ROLL SO THAT IT LIES SMOOTHLY AT THE CORRECT ELEVATION.
- SECURE THE COIR LOG IN THE TRENCH BY DRIVING STAKES (1.5 x 1.5 x 48 INCHES) DIRECTLY THROUGH COIR LOGS INTO THE GROUND AND TIE THE STAKES END TOGETHER WITH A ROPE. THE TOPS OF THE STAKES SHOULD NOT EXTEND ABOVE THE TOP OF THE LOG. ALL STAKES SHOULD HAVE NOTCHES THAT PREVENT LACED TWINE FROM SLIDING OFF THE ENDS OF STAKES, AS SPECIFIED IN THE WDFW INTEGRATED STREAM PROTECTION GUIDELINES.
- ONCE THE LOGS ARE SECURED, SOIL SHOULD BE BACKFILLED ON THE BANK SIDE OF THE LOG, AND THE BANK SHOULD BE RESHAPED AS NECESSARY. PLANNED SURFACE TREATMENTS AND PLANTINGS SHOULD THEN BE INSTALLED ON THE BANK. CARE SHOULD BE TAKEN TO DISTURB AS LITTLE SOIL AS POSSIBLE OUTSIDE THE WORK AREA AND TO AVOID DAMAGING ANY EXISTING TREES AND SHRUBS ON OR NEAR THE BANK.
- ROOTED HERBACEOUS PLANTINGS SHOULD BE INSTALLED INTO THE TOP OR SIDES OF THE COIR LOG. ALTERNATIVELY, LIVE CUTTINGS CAN BE INSTALLED THROUGH THE LOG INTO THE UNDERLYING SUBSTRATE IF A MEANS TO MECHANICALLY PIERCE THE LOGS IS AVAILABLE.
- LOGS MUST BE INSTALLED DURING LOW FLOW TO AVOID COMPLICATIONS ARISING FROM BUOYANCY DURING INSTALLATION. ANY WORK THAT OCCURS IN THE CHANNEL HAS TO BE COMPLETED IN DESIGNATED WORK PERIODS TO AVOID CONFLICTS WITH SPAWNING RESIDENT OR ANADROMOUS FISH. CRITICAL PERIODS IN SALMONID LIFE CYCLES SUCH AS SPAWNING OR MIGRATION SHOULD BE AVOIDED. INSTREAM WORK WINDOWS VARY AMONG FISH SPECIES AND STREAMS. CONTACT THE WASHINGTON DEPARTMENT OF FISH AND WILDLIFE'S AREA HABITAT BIOLOGIST FOR INFORMATION ON WORK WINDOWS.
- CONTRACTOR WILL REVEGETATE AND PLANT WITH NATIVE VEGETATION. REFER TO DRAWING 17 FOR SPECIES.
- COIR LOGS WILL BE INSTALLED IN THE MAIN LOW FLOW CHANNEL, EXCEPT AT THE LOCATIONS WHERE ROUGHNESS TREES ARE SPECIFIED.

WORKING IN WET

- NO CONSTRUCTION WILL BE CONDUCTED IN THE PERMANENT EXISTING POOL AREAS (DRAWING 9). IN THE REMAINING AREAS, CONTRACTOR SHOULD UTILIZE "PARTIAL ISOLATION" TECHNIQUE WITH CONSTRUCTION OCCURRING IN STANDING WATER, INSTEAD OF FLOWING WATER. (SEE CONSTRUCTION CONSIDERATION APPENDIX, STREAM HABITAT RESTORATION GUIDELINES, WASHINGTON STATE DEPARTMENT OF ECOLOGY, US FISH AND WILDLIFE SERVICE, AND WASHINGTON DEPARTMENT OF FISH AND WILDLIFE, 2004).
- TEMPORARY BARRIERS SHOULD ISOLATE DIFFERENT CONSTRUCTION REACHES. THE BARRIERS CAN BE TEMPORARY BERMS, CRIB-WALLS, OR SAND-BAG BARRIERS THAT WILL ISOLATE CONSTRUCTION REACHES.
- A SPIDER EXCAVATOR (WALKING ALL TERRAIN EXCAVATOR) FOR EXCAVATION, FILL, AND PLACING LOGS AND BOULDERS IN THE CHANNEL CAN BE UTILIZED FOR ALL WORK.

CONSTRUCTION PERIOD

- THE CONSTRUCTION SHOULD BE CONDUCTED DURING SUMMER/EARLY FALL, COINCIDENTAL WITH THE LOWEST WATER LEVEL IN CHINA CREEK AND TO MINIMIZE DISTURBANCE TO COHO SALMON, OBSERVED IN THE CREEK. WDFW RECOMMENDS MAY THROUGH EARLY SEPTEMBER AS THE PREFERRED CONSTRUCTION WINDOW, WITH JULY AND AUGUST MONTHS SEASONALLY DRIEST.

SEEDING SPECIFICATIONS:

- PROPOSED SEED MIXES IN THIS PLAN WILL BE ADJUSTED SUCH THAT THEY ARE FOCUSED ON THE SEED MIX FROM NATIVE PLANTS THAT WILL BE APPROVED BY REGULATORY AGENCIES.
- CONTRACTOR SHALL FOLLOW 2019 WSDOT TEMPORARY EROSION CONTROL MANUAL AND WSDOT STANDARD SPECIFICATION 8-01.3(2)B FOR SEEDING AND FERTILIZING.
- SEEDING AND FERTILIZING SHALL NOT BE DONE DURING WINDY WEATHER OR WHEN THE GROUND IS FROZEN, EXCESSIVELY WET, OR OTHERWISE UNAVAILABLE. CONTRACTOR SHALL NOTIFY THE ENGINEER NOT LESS THAN 24 HOURS IN ADVANCE OF ANY SEEDING OPERATION AND SHALL NOT BEGIN THE WORK UNTIL THE AREAS PREPARED FOR SEEDING HAVE BEEN APPROVED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL SEEDED AREAS ARE COVERED WITH SPECIFIED EROSION CONTROL MEASURES PRIOR TO EXPOSURE TO ADVERSE WEATHER.
- CONTRACTOR SHALL PROVIDE ALL AGRO-HISTOLOGICAL MATERIALS AS NOTED. ALL MATERIALS MUST MEET REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF AGRICULTURE GUIDELINES. CONTRACTOR SHALL PROVIDE DOCUMENTATION WITH THE SEED SHIPMENT THAT INCLUDES STATE OF THE ORIGIN, YEAR OF HARVEST, IDENTIFICATION OF SEED SUPPLIER, SUPPLIER CERTIFICATION NUMBER, PERCENT GERMINATION, PERCENT HARD SEED, AND DATE OF SEED TESTING.
- PROJECT BIOLOGIST/HORTICULTURIST SHALL INSPECT/VERIFY STABILITY OF EACH SEED COMPONENT BEFORE APPLICATION.
- APPLICATION OF SEEDS SHALL BE DONE BY HYDRO-SEEDING, OR BY HAND METHODS IF THE AREA IS NOT ACCESSIBLE. HYDRO-SEEDING SHALL BE CONDUCTED FOLLOWING WDSOT 2020 STANDARDS SPECIFICATION 8-01.3(2)B.
- CONTRACTOR WILL IRRIGATE/WATER PLANTS FOR FIRST TWO SUMMERS UNTIL PLANTED VEGETATION GETS ESTABLISHED.
- THE CONTRACTOR SHALL PROVIDE THE FOLLOWING MATERIAL:

WET MIX - SPREAD EQUALLY THROUGHOUT VEGETATION ZONES 1 AND 2			
SCIENTIFIC NAME	COMMON NAME	PERCENT	TOTAL LBS (OUT OF 35)
ACHILLEA MILLEFOLIUM PACIFICA	PACIFIC YARROW	0.3	10.5
CAREX OBNUPTA	SLOUGH SEDGE \$112/LB	0.3	10.5
CAREX PACHYSTACHYA	THICK-HEAD SEDGE	0.01	0.35
CAREX STIPATA	SAWBEAK SEDGE 150/LB	0.1	3.5
CAREX VESICARIA	INFLATED SEDGE	0.01	0.35
ELEOCHARIS PALUSTRIS	CREEPING SPIKERUSH 280/LB	0.02	0.7
EPILOBIUM ANGUSTIFOLIUM	FIREWEED	0.005	0.175
GLYCERIA ELATA	TALL MANNAGRASS 192/LB	0.03	1.05
GLYCERIA GRANDIS	AMERICAN MANNAGRASS 192/LB	0.01	0.35
JUNCUS ACUMINATUS	TAPERTIP RUSH	0.005	0.175
JUNCUS BOLANDERI	BOLANDER'S RUSH	0.005	0.175
JUNCUS ENSIFOLIUS	DAGGERLEAF RUSH 576/LB	0.02	0.7
MIMULUS GUTTATUS	YELLOW MONKEYFLOWER	0.005	0.175
OENANTHE SARMENTOSA	WATER PARSLEY 288/LB	0.02	0.7
POTENTILLA ANSERINE (PACIFICA)	SILVERWEED	0.005	0.175
SAGITTARIA LATIFOLIA	WAPATO	0.01	0.35
SCHOENOPLECTUS ACUTUS	HARDSTEM BULRUSH	0.015	0.525
SCIRPUS MICROCARPUS	SMALL-FRUITED BULRUSH 128/LB	0.1	3.5
SPARGANIUM EURYCARPUM	GIANT BUR-REED	0.01	0.35
SYMPHYOTRICHUM SUBSPICATUM	DOUGLAS' ASTER 252/LB	0.02	0.7
		1	35

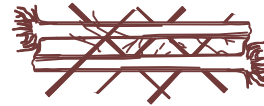
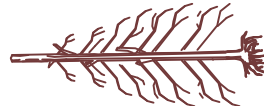
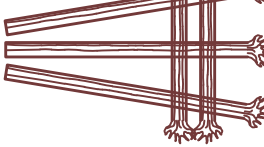
NOTE: TO BE SPREAD AT 35 LBS PER ACRE FIRST YEAR

DRY MIX - SPREAD EQUALLY THROUGHOUT VEGETATION ZONE 3			
SCIENTIFIC NAME	COMMON NAME	PERCENT	TOTAL LBS (OUT OF 30)
AQUILEGIA FORMOSA	RED COLUMBINE	0.005	0.15
ARUNCUS DIOICUS	GOAT'S BEARD	0.02	0.6
BALSAMORHIZA DELTOIDEA	DELTOID BALSAMROOT	0.01	0.3
ERIGERON SPECIOSUS	SHOWY FLEABANE	0.02	0.6
FRAGARIA VESCA	WOODLAND STRAWBERRY	0.005	0.15
FRITILLARIA AFFINIS	CHOCOLATE LILY	0.005	0.15
GEUM MACROPHYLLUM	LARGE-LEAVED AVENS	0.01	0.3
IRIS TENAX	OREGON IRIS	0.01	0.3
LILIUM COLUMBIANUM	COLUMBIA LILY	0.005	0.15
LUPINUS BICOLOR (MICRANTHUS)	SMALL-FLOWERED LUPINE	0.02	0.6
LUPINUS LEPIDUS	PRAIRIE LUPINE	0.005	0.15
LUPINUS POLYPHYLLUS	MANY-LEAVED LUPINE	0.3	9
LUPINUS RIVULARIS		0.3	9
LUZULA MULTIFLORA	MANY-FLOWERED WOODRUSH	0.005	0.15
LUZULA PARVIFLORA	SMALL-FLOWERED WOODRUSH	0.005	0.15
MAIANTHENUM RACEMOSUM	SOLOMON SEAL	0.2	6
MIMULUS GUTTATUS	YELLOW MONKEYFLOWER	0.005	0.15
PENSTEMON SERRULATUS	COAST PENSTEMON	0.005	0.15
PETASITES FRIGIDUS	PALMATE COLTSFOOT	0.02	0.6
POTENTILLA GRACILIS	GRACEFUL CINQUEFOIL	0.005	0.15
SYMPHYOTRICHUM SUBSPICATUM	DOUGLAS' ASTER	0.03	0.9
TELLIMA GRANDIFLORA	FRINGECUP	0.01	0.3
		1	30


NOTE: TO BE SPREAD AT 30 LBS PER ACRE FIRST YEAR

COIR LOGS

MATERIAL	COMPONENT	REQUIREMENT
COIR LOGS (HUMUS INJECTED)	MATERIAL OF CONSTRUCTION	COCONUT MATTRESS COIR FIBER/PLANT SOURCE HUMUS
	COIR DENSITY	9 POUNDS PER FT ²
	MINIMUM DIAMETER	12-INCHES
	MAXIMUM LENGTH	20 FEET
	REINFORCEMENT MATERIAL	ORGANIC WRAP WITH ATTACHMENT SOCK AT ONE END
STAKES	HUMUS GRANULAR	GROPOWER 12-8-8 CRF, 7.5 BULK POUNDS PER LINEAR FOOT
	MATERIAL OF CONSTRUCTION	HARD WOOD
	DIMENSIONS	1.5 x 1.5 x 48 INCHES, PENCIL POINT
WIRE LOOP	MATERIAL OF CONSTRUCTION	8 TO 12 GAGE NON-COATED OR EQUAL
REINFORCING BAR	MATERIAL OF CONSTRUCTION	STEEL REINFORCEMENT BAR (REBAR)
	DIMENSIONS	0.625 INCH DIAMETER BY 48 INCHES

WOOD SCHEDULE					
SYMBOL	TYPE OF WOOD / TYPE OF STRUCTURE	DIAMETER (INCHES)	LENGTH (FT)	# STRUCTURES	# MAIN PIECES TOTAL
	A - FLOODPLAIN STRUCTURE	18	20	11	22
	A - TREE TOPS	<3	10	11	55
	A - COTTONWOOD - WILLOW - LIVE POLES	VARIES	VARIES	11	187
	B - ROUGHNESS TREES	18	15	69	69
	C - KEY MEMBERS NOT PARALLEL TO THE BANK	30-36	50	6	18
	C - KEY MEMBERS PARALLEL TO THE BANK	30	30	6	12
	C - LOG PILINGS	2	8-12	11	132
	D - CUTOFF LOGS (CONNECT TO VINEGAR VALLEY CHANNEL)	12	25	1	4
	D - BANK LOGS	12	10	1	2

69 — TOTAL
62 — WITH NO ROOTWADS
7 — WITH ROOTWADS (ONLY UPSTREAM TREE IN EACH GROUP)

3	01/17/20	MB	FK	REV. END STATION
2	10/18/19	MB	FK	REV. DRAWING SET
1	08/02/19	MB	FK	REV. WOOD STRUCTURES, CL ALIGNMENT, NOTES, & DETAILS
REV.	DATE	DR.	CH.	REVISION
PRELIMINARY PLANS GENERAL NOTES				
CHINA CREEK RESTORATION PROJECT AGNEW MILL PONDS LEWIS COUNTY, WASHINGTON				
				
PREPARED BY: FK/GR		DATE: 04/17/2019		DRAWING 1A
DRAFTED BY: BSC		SCALE: N.T.S		
APPROVED BY: FK		PROJECT: 1690007822		

HEAVY DUTY STOP LOGS MANUFACTURED BY PLASTI-FAB COMPOSITE SOLUTIONS (EUGENE, OREGON) OR EQUAL SHALL BE USED. THE MANUFACTURER SPECIFICATIONS INCLUDE:

PART 1
PART 2 GENERAL

2.1 SUMMARY

- A. THIS SECTION INCLUDES ALL STOP LOG SYSTEMS REQUIRED FOR THE PROJECT.

2.2 REFERENCES

- A. DESIGN, FABRICATE, AND TEST STOP LOG SYSTEMS AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED PROCEDURES AND THE FOLLOWING CODES AND STANDARDS:
1. ASTM A276 - STAINLESS STEEL BARS
 2. ASTM D256 - IZOD IMPACT STRENGTH
 3. ASTM D570 - WATER ABSORPTION RATE
 4. ASTM D638 - TENSILE STRENGTH
 5. ASTM D695 - COMPRESSIVE PROPERTIES OF RIGID PLASTIC
 6. ASTM D696 - COEFFICIENT OF LINEAR EXPANSION
 7. ASTM D790 - FLEXURAL PROPERTIES
 8. ASTM D2583 - INDENTATION HARDNESS
 9. ASTM D2563-0 - VISUAL DEFECTS
 10. ASTM D2584 - RESIN, GLASS & FILLER CONTENT
- B. MANUFACTURER SHALL BE EXPERIENCED IN THE DESIGN AND MANUFACTURE OF STOP LOGS AND ACCESSORIES FOR A MINIMUM OF 25 YEARS.
- C. MANUFACTURER MUST PROVIDE WARRANTY FOR 25 YEARS AGAINST FAILURE DUE TO CORROSION OF COMPOSITE MATERIALS.

2.3 SUBMITTALS

- A. SUBMIT THE FOLLOWING FOR ACCEPTANCE:
1. APPROVAL DRAWINGS
 - a. SHOWING ALL CRITICAL DIMENSIONS
 - b. SHOWING PRINCIPAL PARTS AND MATERIALS

2.4 DELIVERY, STORAGE AND HANDLING

- A. SHIP ALL STOP LOGS WITH SUITABLE PACKAGING TO PROTECT PRODUCTS FROM DAMAGE.
- B. PROTECT STOP LOGS, LIFTING PINS, GUIDE FRAMES, LIFTING DEVICES, AND STORAGE RACKS FROM DAMAGE.

PART 3 PRODUCTS

3.1 MATERIALS

- A. STOP LOG PANELS SHALL BE:
2. ENGINEERED COMPOSITE FIBERGLASS REINFORCED PLASTIC (FRP) COMPLETELY ENCAPSULATING AN INTERNAL STEEL REINFORCING STRUCTURE.
 - a. INFUSION MOLDED TO CREATE A SEAMLESS CORROSION BARRIER IMPERVIOUS TO MOISTURE
 - b. FRP RESIN SHALL BE: POLYESTER.
 - c. INTERNAL STEEL REINFORCING: CARBON STEEL AS NEEDED FOR DEFLECTION REQUIREMENTS
 - d. SEAL FOAM CORE BETWEEN STEEL REINFORCING
 - e. MATERIAL TO BE EPDM
- B. GUIDE FRAMES
1. GUIDE FRAME RAILS TO BE: T-304 STAINLESS STEEL.
- C. LIFTING PINS
1. LIFTING PINS TO BE: T-304 STAINLESS STEEL.
- D. ANCHOR BOLTS (WHEN APPLICABLE)
1. ANCHOR BOLTS TO BE: T-304 STAINLESS STEEL.
- E. LIFTING BEAM/POLES
1. LIFTING BEAM/POLES TO BE: T-304 STAINLESS STEEL.
- F. STORAGE RACKS
1. STORAGE RACKS TO BE: T-304 STAINLESS STEEL.

3.2 STOP LOGS

- A. ACCEPTABLE MANUFACTURERS:
1. PLASTI-FAB A DIVISION OF ERSHIGS, INC.
 2. OR APPROVED EQUAL.

3.3 DESIGN CRITERIA

- A. VISUAL INSPECTION FOR DEFECTS SHALL BE MADE WITHOUT THE AID OF MAGNIFICATION. DEFECTS SHALL BE CLASSIFIED AS SHOWN IN TABLE 1 LEVEL II OF ANSI/ASTM D2563-0, APPROVED 1977, (OR ANY SUBSEQUENT REVISION).
- B. DEFLECTION
1. DEFLECTION ACROSS THE STOP LOG WIDTH SHALL BE LIMITED TO: L/360 OR ¼" (6MM), WHICHEVER IS LESS, AT THE MAXIMUM OPERATING HEAD.
- C. HEAD PRESSURE
1. STOP LOG SYSTEM SHALL BE DESIGNED FOR A MAXIMUM HEAD PRESSURE AS PER GATE SCHEDULE.
- D. STOP LOG PANEL SIZE AS SHOWN ON THE CONTACT DRAWINGS AND/OR GATE SCHEDULE.
- E. SURFACE CONDITIONS
1. ALL STOP LOG PANELS SHALL BE FLAT AND LEVEL.
 2. WARPAGE THROUGHOUT THE ENTIRE STOP LOG PANEL SHALL NOT PRODUCE A CROWN OF MORE THAN 1/16" (1.6MM) IN ANY DIRECTION.

3.4 CONSTRUCTION

A. STOP LOG PANELS

1. THE STOP LOG SHALL BE FABRICATED BY MEANS OF VACUUM INFUSION TO ENCAPSULATE THE INTERNAL STRUCTURAL MATRIX TOTALLY AND PROTECT IT AGAINST CORROSION FROM MOISTURE OR CHEMICAL DETERIORATION WITH A MINIMUM THICKNESS OF ¼ INCH (6MM) FRP ON THE FRONT AND BACK FACINGS, AND ¾ INCH (19MM) FRP ON THE REMAINING PERIMETER. STOP LOGS SHALL BE DESIGNED SO THE MAXIMUM FIBER STRESS (ULTIMATE OR YIELD, WHICHEVER APPLIES) SHALL EXCEED 2.5 TIMES THE WORKING STRESS. STOP LOGS SHALL BE SUITABLY REINFORCED TO WITHSTAND THE MAXIMUM SEATING HEAD WITH A DEFLECTION LESS THAN 1/360 OF THE STOP LOG WIDTH OR ¼ INCH (6MM), WHICHEVER IS LESS. STOP LOG COVERS THAT ARE FABRICATED FROM PRESSED OR LAMINATED SHEET MATERIAL AND/OR GLUED/BONDED TO A SUBSTRUCTURE SHALL NOT BE ACCEPTABLE. NO SEAMS OR JOINTS THAT MAY ALLOW WATER INTRUSION WILL BE ACCEPTABLE. EACH STOP LOG SHALL BE MOLDED INDIVIDUALLY TO THE EXACT DIMENSIONS SPECIFIED.
2. STOP LOG SHALL BE MANUFACTURED OF REINFORCED THERMOSET PLASTIC IN THE FORM OF FRP.
3. STOP LOG SHALL HAVE UV STABILIZING PIGMENT IN THE RESIN TO PROVIDE LONG-TERM PROTECTION FROM UV.
4. THE SURFACE SHALL BE RESIN-RICH TO A DEPTH OF 0.010 INCHES (2.5MM) TO 0.020 INCHES (5MM) AND REINFORCED WITH C-GLASS OR POLYMERIC FIBER SURFACING MATERIAL.
5. THE SURFACE SHALL BE FREE OF EXPOSED REINFORCING FIBERS.
6. THE COMPOSITION OF THESE SURFACE SHALL BE APPROXIMATELY 95% (BY WEIGHT) RESIN. THE REMAINING LAMINATE SHALL BE MADE UP OF COPOLYMER COMPOSITE AND REINFORCING FIBERS IN A FORM, ORIENTATION, AND POSITION TO MEET THE MECHANICAL REQUIREMENTS.
7. STRUCTURAL REINFORCING SHALL BE UTILIZED TO ATTAIN THE NECESSARY STIFFNESS TO MEET DEFLECTION REQUIREMENTS AND SHALL BE WELL-ENCAPSULATED WITH A LAMINATE NOT LESS THAN ½" (6MM) THICK ON EACH SIDE TO ENSURE AGAINST ANY PERMEATION BY WATER TO THE CORE AREAS. INTERNAL STEEL STRUCTURE TO BE WELDED PER AWS STANDARDS, SANDBLASTED, AND COATED WITH EPOXY VINYL ESTER RESIN IMMEDIATELY PRIOR TO VACUUM INFUSION TO ENSURE COMPLETE BONDING WITH EXTERNAL CORROSION BARRIER.
8. T-316 STAINLESS STEEL LIFTING PINS SHALL BE ATTACHED TO THE STOP LOG BY PASSING COMPLETELY THROUGH THE LOG. STAINLESS STEEL LIFTING PIN SHALL BE FASTENED TO THE LOG WITH SUFFICIENT REINFORCING TO WITHSTAND THE LIFTING FORCE. LIFTING PINS ATTACHED TO THE SURFACE OF THE LOG ARE NOT ACCEPTABLE. THE THROUGH HOLES SHALL NOT PASS THROUGH OR BE IN CONTACT WITH THE INTERNAL STEEL REINFORCING.
9. CORE MATERIAL MUST BE 100% RESISTANT TO DECAY AND ATTACK BY FUNGUS AND BACTERIA AND BE RESISTANT TO HYDROCARBONS.
10. TO ASSURE MAXIMUM SERVICE LIFE, THE COPOLYMER COMPOSITE SHALL BE ULTRAVIOLET STABILIZED AND SEAMLESS TO PROTECT INNER STRUCTURAL MEMBERS FROM CORROSION.
11. METAL, CONCRETE, OR WOOD STOP LOGS SUBJECT TO CORROSION / BACTERIAL BREAKDOWN / ROT SHALL NOT BE ACCEPTABLE ALTERNATIVES TO COMPOSITE FRP MATERIAL.
12. STOP LOG PANELS SHALL BE MANUFACTURED USING ADVANCED TECHNOLOGY VACUUM INFUSION RESIN TRANSFER PROCESSES. THE CLOSED MOLD VACUUM PROCESS MUST COMPLETELY EVACUATE ALL AIR FROM THE MOLD PRIOR TO INFUSING THE MOLD WITH PREMIUM QUALITY RESIN AS SPECIFIED. THE VACUUM INFUSION PROCESS MUST ELIMINATE THE POTENTIAL OF AIR ENTRAPMENT AND/OR VOIDS IN THE MATRIX OF THE STOP LOG PANEL (WHICH CAUSE DEFECTS AND PERFORMANCE-DETRACTING IRREGULARITIES), PRODUCING A FINISHED PRODUCT THAT IS ONE-PIECE, SEAMLESS, AND UNIFORMLY IMPENETRABLE BY FLUIDS, ELIMINATING THE CHANCE FOR INTERIOR CORROSION. STOP LOGS PRODUCED BY TECHNIQUES THAT EMPLOY ADHESIVES OR MECHANICAL FASTENERS TO ATTACH INDIVIDUAL PANELS TO A PRE-FABRICATED FRAMEWORK, RESULTING IN SEAMS ALONG VERTICAL AND HORIZONTAL AXES OF THE STOP LOG, SHALL NOT BE ALLOWED, AS THEY CREATE STRESS-POTENTIAL AREAS, PORTALS FOR FLUID INFILTRATION, SUBSEQUENT DE-LAMINATION, AND PRODUCT FAILURE DUE TO CORROSION.

B. SEALS

1. THE STOP LOGS SHALL BE EQUIPPED WITH ELASTOMERIC BOTTOM SEALS TO SEAL BETWEEN THE LOGS. VERTICAL SEALS SHALL BE MOUNTED ON THE FACE AT THE ENDS OF THE STOP LOGS POSITIONED TO CONTACT THE INSIDE OF THE GUIDE RAILS. SEALS SHALL BE MADE OF MOLDED EPDM, HAVING A HARDNESS OF 55 - 65 SHORE A DUROMETER, WITH A MAXIMUM COMPRESSION SET OF 25% AND LOW TEMPERATURE BRITTLINESS TO MEET SUFFIX F-17 (- 40°F/C).
- C. GUIDE FRAMES
1. GUIDE FRAMES SHALL BE STYLED FOR IN-CHANNEL MOUNTING AS SHOWN ON THE CONTRACT DRAWINGS AND/OR STOP LOG SCHEDULE.
 2. GUIDE FRAMES SHALL BE FABRICATED FROM T-316 STAINLESS STEEL. AND SHALL HAVE A SLOT SUITABLE FOR MATING WITH THE STOP LOG PANELS.

3.5 PHYSICAL PROPERTIES

- A. STRUCTURAL CHARACTERISTICS FOR FRP GLASS MAT LAMINATES SHALL MEET THE FOLLOWING MINIMUM PHYSICAL PROPERTIES:

Tensile strength	15,000 psi (1034 ksc)
Flexural Modulus	900,000 psi (70307 ksc)
Flexural Strength	20,000 psi (1406 ksc)
Compressive Strength	20,000 psi (1547 ksc)
Impact Strength	9.0 ft-lbs/in. (1.24 kgf.m/25mm)
Water absorption	0.12% (in 24 hours)

- B. SEALS: EXTRUDED EPDM SEALS SHALL HAVE THE FOLLOWING PHYSICAL CHARACTERISTICS:

Specific Gravity	1.25
Hardness	55 – 65 Shore A Durometer
Tensile Strength	1500 psi min. (0.07ksc)

PART 4 EXECUTION

4.1 INSTALLATION

- A. THOROUGHLY CLEAN AND REMOVE ALL SHIPPING MATERIALS PRIOR TO SETTING.
- B. INSTALL STOP LOG SYSTEMS PER MANUFACTURER'S RECOMMENDATIONS.

EXCAVATION AND EXCAVATION LIMITS

DESIRABLE DESIGN SLOPE CORRESPONDS TO A HORIZONTAL DISTANCE THAT IS LIMITED TO 2 TIMES THE HEIGHT OF THE CUT (2H:1V), EXCEPT NEAR THE PROPERTY LINES (BNNR NEAR THE WEST EDGE, AND STORAGE SHED PROPERTY ON THE SOUTH), WHERE IT CAN BE REDUCED TO 1.5H:1V. DEWATERING SYSTEM MUST BE IN PLACE, PROPERLY FUNCTIONING WITH NO SIGNIFICANT SEEPAGE IN THE CUT FACE AT ALL TIMES DURING EXCAVATION PERIOD. SEE ARC GEOTECHNICAL REPORT (PAGE 12, MAY 14, 2020) FOR DETAIL RECOMMENDATIONS. STEEPER SLOPES MAY BE STABLE BUT SHOULD NOT EXCEED 1H:1V WITHOUT SPECIFIC RECOMMENDATIONS FROM A GEOTECHNICAL SPECIALIST. IF SLOPES STEEPER THAN 1.5H:1V ARE NECESSARY THAN A GEOTECHNICAL SPECIALIST SHOULD BE ON THE SITE DURING EXCAVATION TO OBSERVE PERFORMANCE OF SLOPES.


LIMITING OPEN CUT AREA AND DEPTH

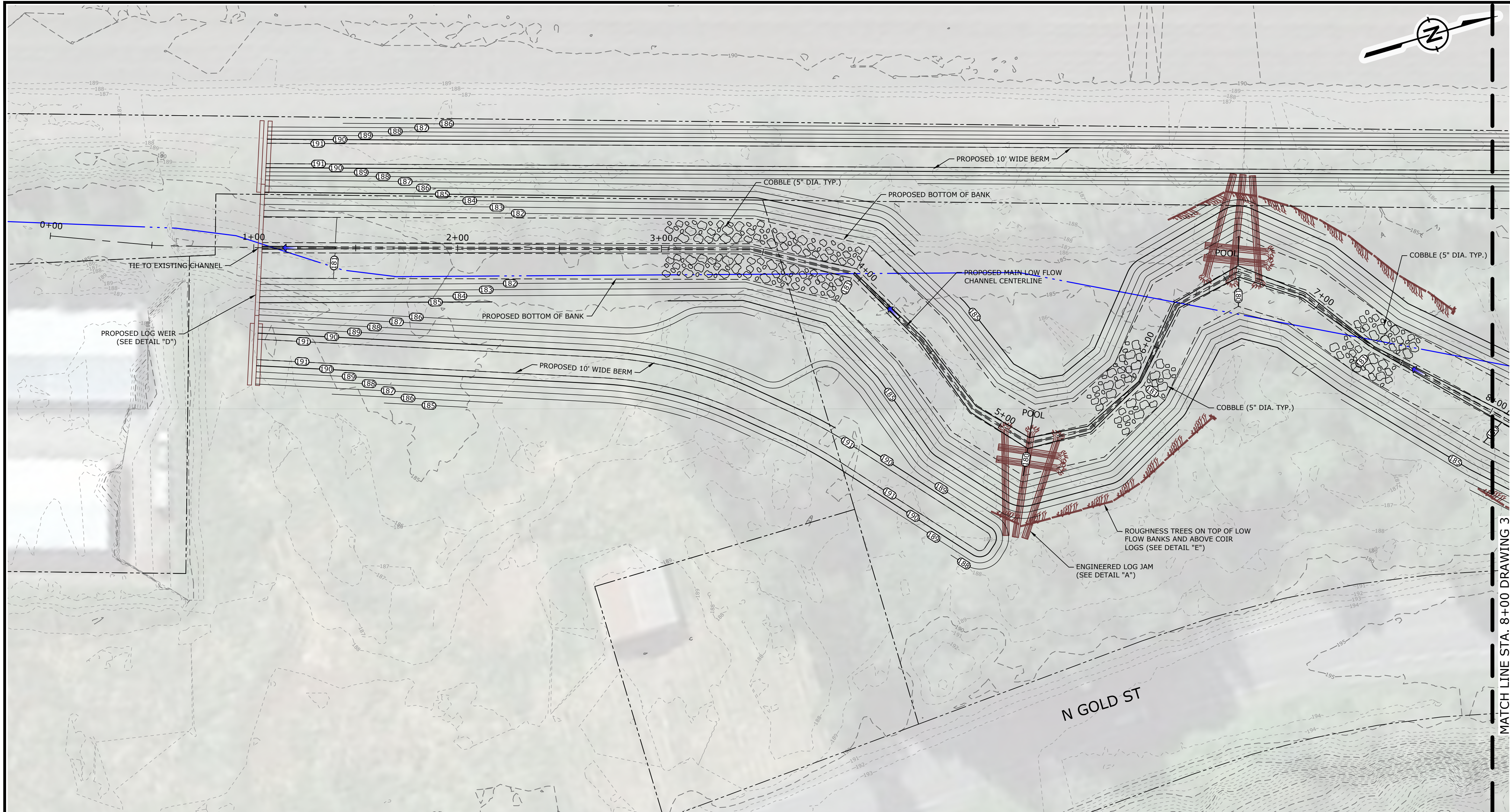
SPECIFICALLY, THE CONCRETE FOUNDATION DESIGN CALLS FOR CONSTRUCTING A 43 FEET LONG BEAM. THE BEAM IS SHOWN IN PLAN ON STRUCTURAL SHEET 51. IF CONDITIONS REQUIRE LIMITING THE FOUNDATION EXCAVATION (AREA AND DEPTH) FOR THE FORMS WE WOULD RECOMMEND STAGING IN ORDER TO: A) HELP LIMIT POTENTIAL LOSS OF SOIL ADJACENT TO (OR UNDERNEATH) THE FORMS PLACED TO BUILD THE BEAM AND B) IMPROVE EFFICIENCY OF ANY REQUIRED DEWATERING.

THERE ARE AT LEAST TWO WAYS THE CONTRACTOR COULD MAKE THE STAGED CUTS TO BUILD THE FORMWORK SUCH AS:

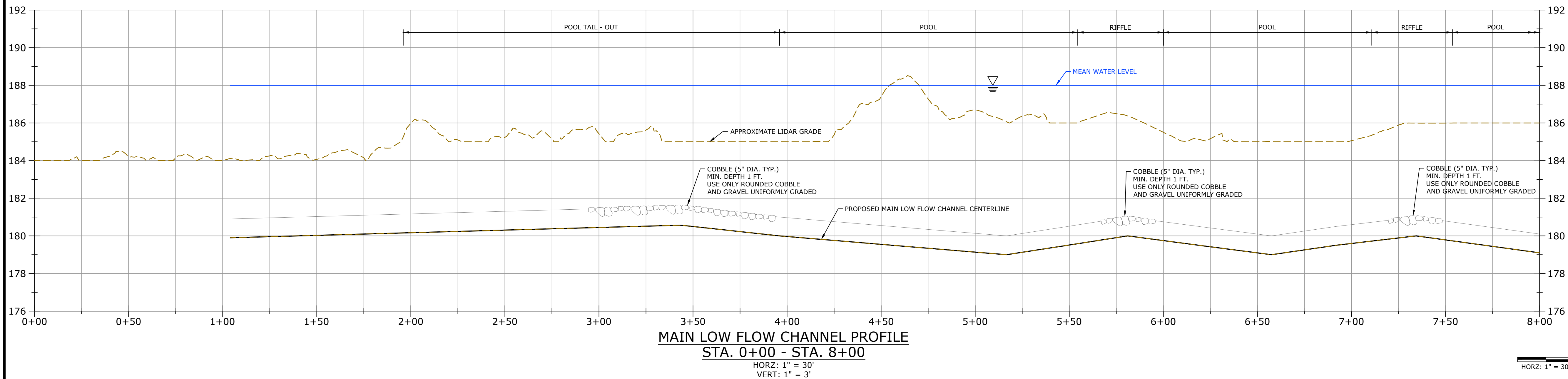
- A) CUT OPEN BOTH ENDS OF THE BEAM AREA TO ABOUT 16 FEET IN LENGTH WHILE LEAVING A CENTER SECTION ABOUT 11 FEET LONG (16 + 16 - 43 = 11) AS MEASURED IN THE EAST-WEST DIRECTION (ALONG THE LONG AXIS OF THE BEAM). AFTER THE TWO 16 FEET LONG SECTIONS HAVE BEEN POURED, CURED AND FORMS REMOVED THEN THE CENTER SECTION WOULD BE CONSTRUCTED AND THE BEAM FINISHED.
- B) CUT OPEN ONE SECTION ABOUT 16 FEET LONG, COMPLETE THE BEAM CONSTRUCTION FOR THAT SEGMENT THEN MOVE TO THE NEXT SEGMENT. THIS METHOD WOULD SEEMINGLY REQUIRE A LONGER CONSTRUCTION TIME TO COMPLETE THE ENTIRE BEAM COMPARED TO THE METHOD DESCRIBED ABOVE IN A.

THERE ARE LIKELY OTHER WAYS TO ACCOMPLISH SUCH A STAGED APPROACH AND THE MEANS AND METHODS WILL BE SELECTED BY THE CONTRACTOR. IN SUMMARY THE INTENT IS TO REDUCE THE WORKING LENGTH OF EXCAVATIONS AND TO BUILD FORMS IN THE DIRECTION OF THE LONG AXIS (EAST-WEST) OF THE GRADE BEAM SO THAT NO CUT IS LONGER THAN ABOUT 16 FEET ALONG THE BEAM AS SHOWN IN FIGURE 1. THE WIDTH (NORTH-SOUTH) OF THE EXCAVATIONS MAY EXCEED THIS LIMIT (SUCH AS FOR THE STRUCTURAL OPTION 2) AS NO CUTS ARE PLANNED BEYOND IN THE NORTH-SOUTH DIRECTION.

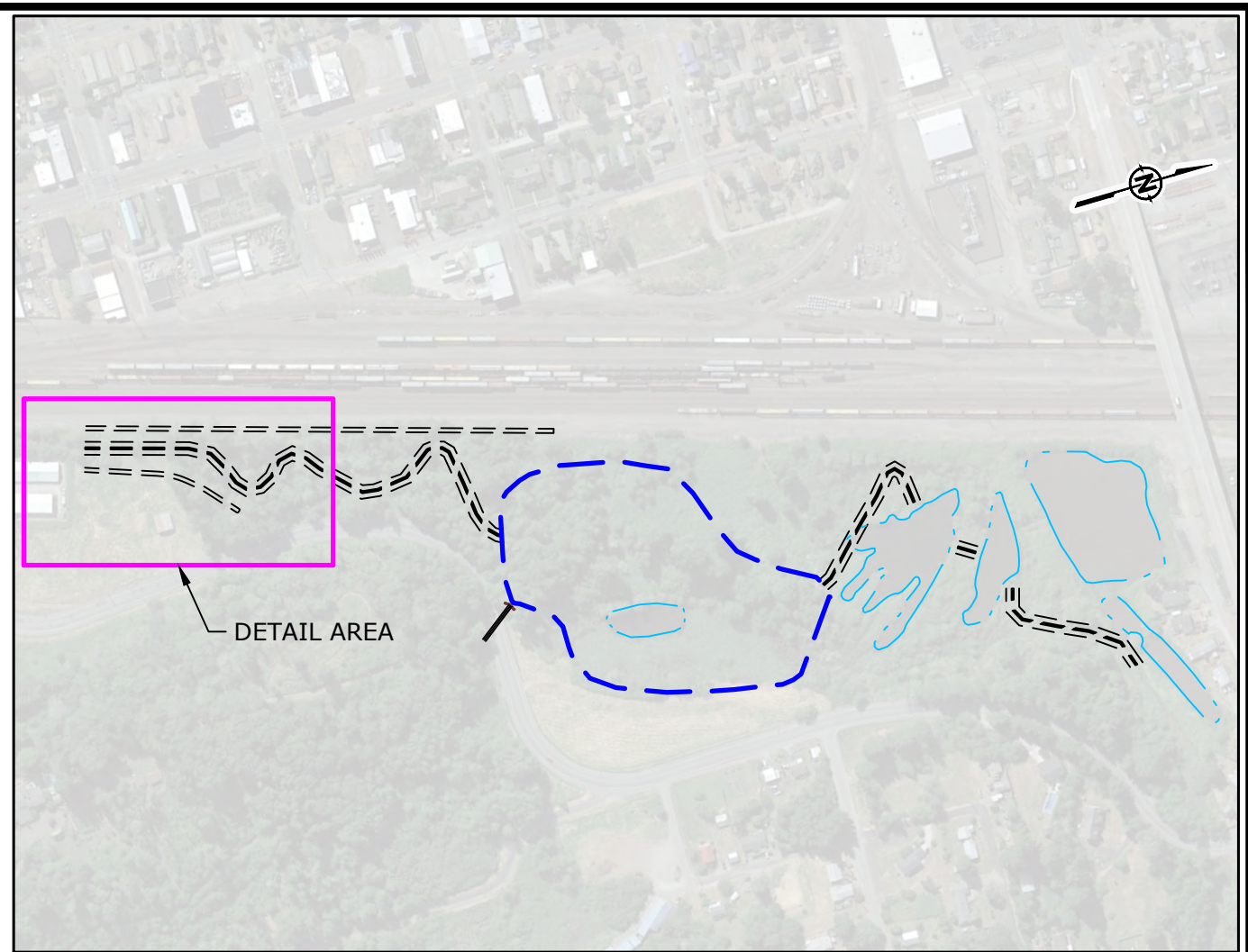
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PRELIMINARY PLANS GENERAL NOTES				
CHINA CREEK RESTORATION PROJECT AGNEW MILL PONDS LEWIS COUNTY, WASHINGTON				
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PREPARED BY: FK/GR		DATE: 07/30/2020		DRAWING 1B
DRAFTED BY: BSC		SCALE: N.T.S		
APPROVED BY: FK		PROJECT: 1690007822		



MAIN LOW FLOW CHANNEL PLAN VIEW
STA. 0+00 - STA. 8+00
SCALE: 1" = 30'



MAIN LOW FLOW CHANNEL PROFILE
STA. 0+00 - STA. 8+00
HORZ: 1" = 30'
VERT: 1" = 3'



KEY MAP
1" = 400'

- LEGEND
- 195 --- LIDAR ELEVATION CONTOUR (MAJOR)
 - 194 --- LIDAR ELEVATION CONTOUR (MINOR)
 - 185 --- PROPOSED ELEVATION CONTOUR (MAJOR)
 - 184 --- PROPOSED ELEVATION CONTOUR (MINOR)
 - --- APPROXIMATE BOTTOM OF BANK
 - --- WETLANDS (FRESHWATER FORESTED/SHRUB)
 - --- WETLANDS (FRESHWATER POND)
 - --- RIPARIAN VEGETATION
 - --- CHANNEL FLOW DIRECTION
 - --- EXISTING CHANNEL
 - --- PROPERTY BOUNDARY

- SOURCES:
- AERIAL IMAGERY: Google Earth Pro®, Imagery Date 7/16/2014.
 - EXISTING TOPOGRAPHY: LIDAR DATA COLLECTED BY WATERSHED SCIENCES, INC. WHO CREATED THIS DATA SET FOR THE PUGET SOUND LIDAR CONSORTIUM. DATA SET: 2009 PUGET SOUND LIDAR CONSORTIUM PSLC TOPOGRAPHIC LIDAR LEWIS COUNTY WASHINGTON. THIS DATA IS ASSEMBLED INTO 7.5-MINUTE USGS QUADRANGLES AND FURTHER BROKEN DOWN TO 3.75 MINUTE QUARTER QUADS.
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 - FEMA FLOODPLAIN DESIGNATIONS: FIRM FLOOD INSURANCE RATE MAP, CITY OF CENTRALIA, WASHINGTON, LEWIS COUNTY, PANEL 1 OF 2, COMMUNITY PANEL NUMBER 530103 0001 B, EFFECTIVE DATE: JUNE 1, 1982. FIRM FLOOD INSURANCE RATE MAP, CITY OF CENTRALIA, WASHINGTON, LEWIS COUNTY, PANEL 2 OF 2, COMMUNITY PANEL NUMBER 530103 0002 B, EFFECTIVE DATE: JUNE 1, 1982.

30 0 30 60
SCALE IN FEET

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2	10/18/19	MB	FK	REV. DRAWING SET
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REV.	DATE	DR.	CH.	REVISION

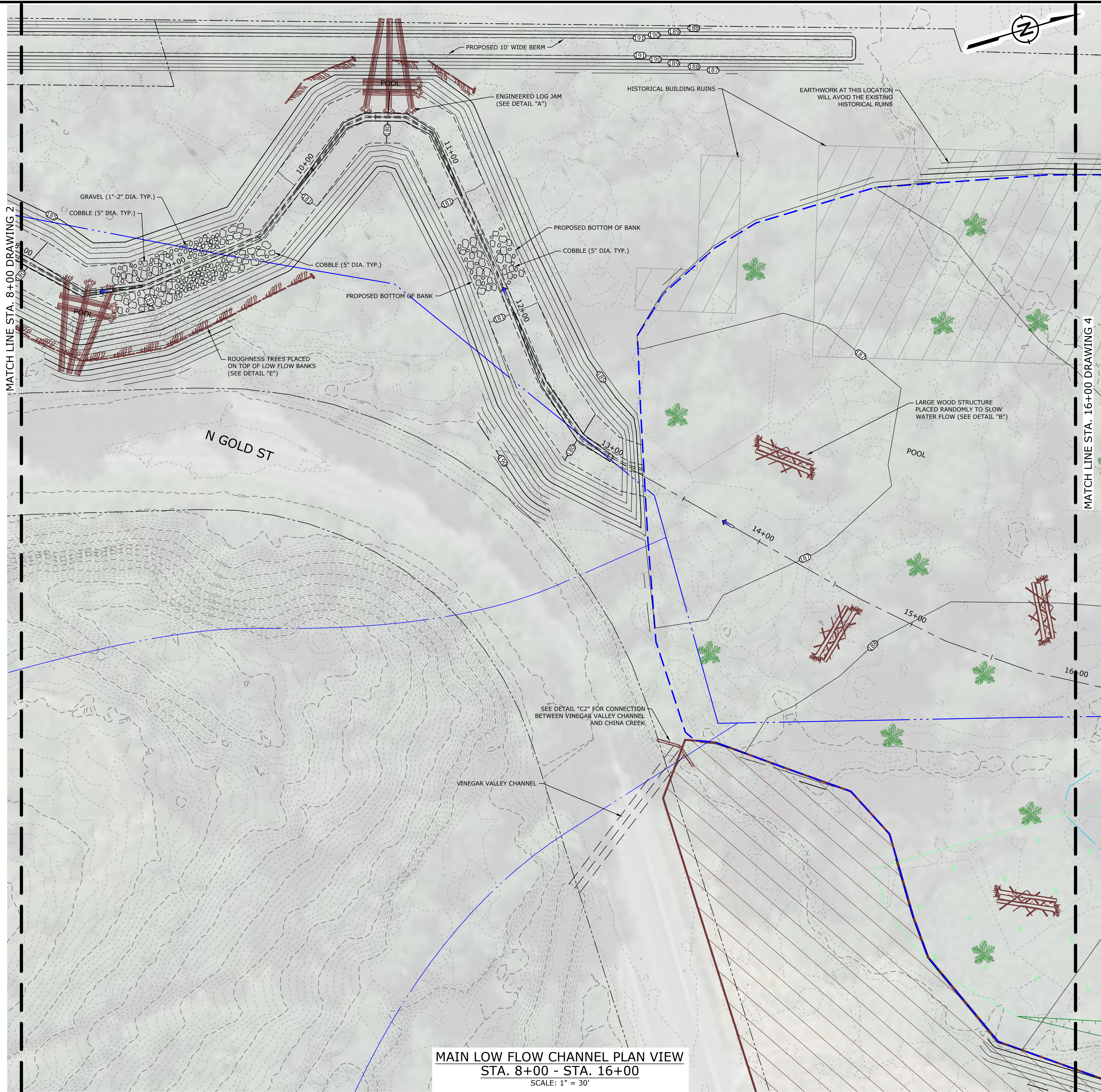
PRELIMINARY PLANS
PLAN AND PROFILE
MAIN LOW FLOW CHANNEL
STA. 0+00 - STA. 8+00

CHINA CREEK RESTORATION PROJECT
AGNEW MILL PONDS
LEWIS COUNTY, WASHINGTON

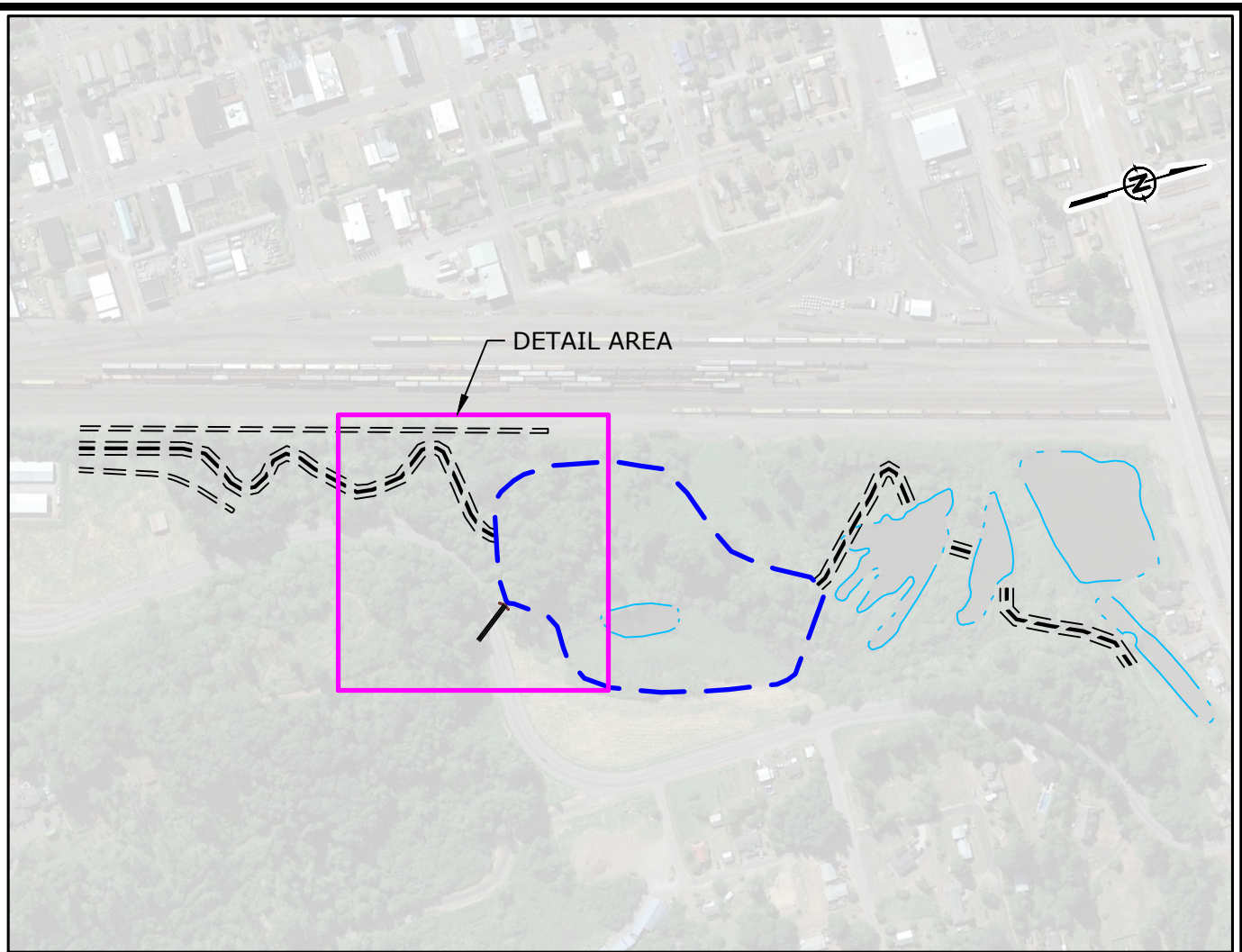
RAMBOLL

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DRAFTED BY: BSC	SCALE: 1" = 30'	2
APPROVED BY: FK	PROJECT: 1690007822	

FILE: 10/8/20
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MAIN LOW FLOW CHANNEL PLAN VIEW
STA. 8+00 - STA. 16+00
SCALE: 1" = 30'



KEY MAP
1" = 400'

- LEGEND
- 195 --- LIDAR ELEVATION CONTOUR (MAJOR)
 - 194 --- LIDAR ELEVATION CONTOUR (MINOR)
 - 193 --- PROPOSED ELEVATION CONTOUR (MAJOR)
 - 192 --- PROPOSED ELEVATION CONTOUR (MINOR)
 - APPROXIMATE BOTTOM OF BANK
 - WETLANDS (FRESHWATER FORESTED/SHRUB)
 - WETLANDS (FRESHWATER POND)
 - RIPARIAN VEGETATION
 - CHANNEL FLOW DIRECTION
 - EXISTING CHANNEL
 - PROPERTY BOUNDARY
 - FUTURE EXTENT OF FLOOD POOL (WHEN FULL)

- SOURCES:
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 - FEMA FLOODPLAIN DESIGNATIONS: FIRM FLOOD INSURANCE RATE MAP, CITY OF CENTRALIA, WASHINGTON, LEWIS COUNTY, PANEL 1 OF 2, COMMUNITY PANEL NUMBER 530103 0001 B, EFFECTIVE DATE: JUNE 1, 1982. FIRM FLOOD INSURANCE RATE MAP, CITY OF CENTRALIA, WASHINGTON, LEWIS COUNTY, PANEL 2 OF 2, COMMUNITY PANEL NUMBER 530103 0002 B, EFFECTIVE DATE: JUNE 1, 1982.



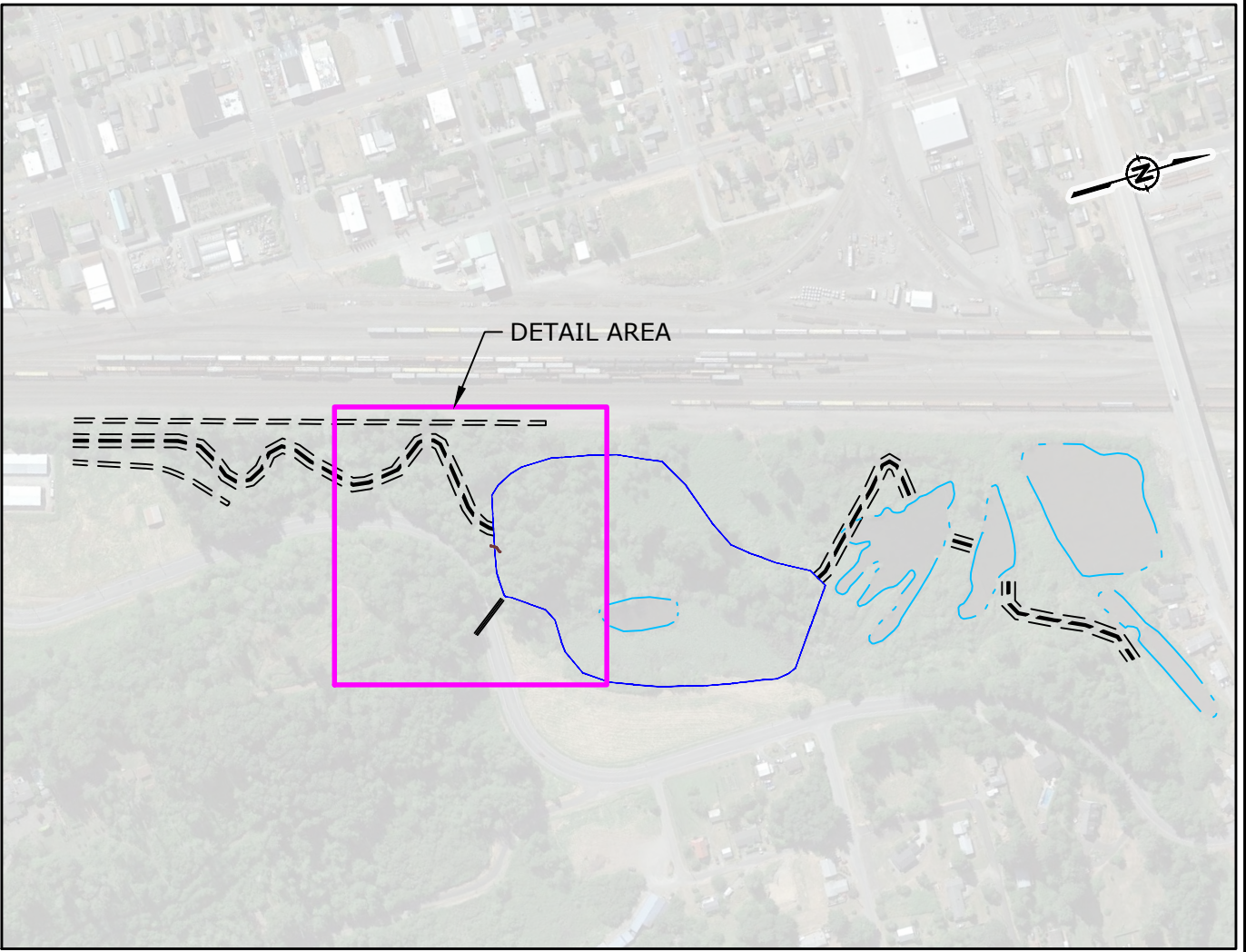
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2	10/18/19	MB	FK	REV. DRAWING SET
1	08/02/19	MB	FK	REV. WOOD STRUCTURES, CL ALIGNMENT, NOTES, & DETAILS

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MAIN LOW FLOW CHANNEL
STA. 8+00 - STA. 16+00

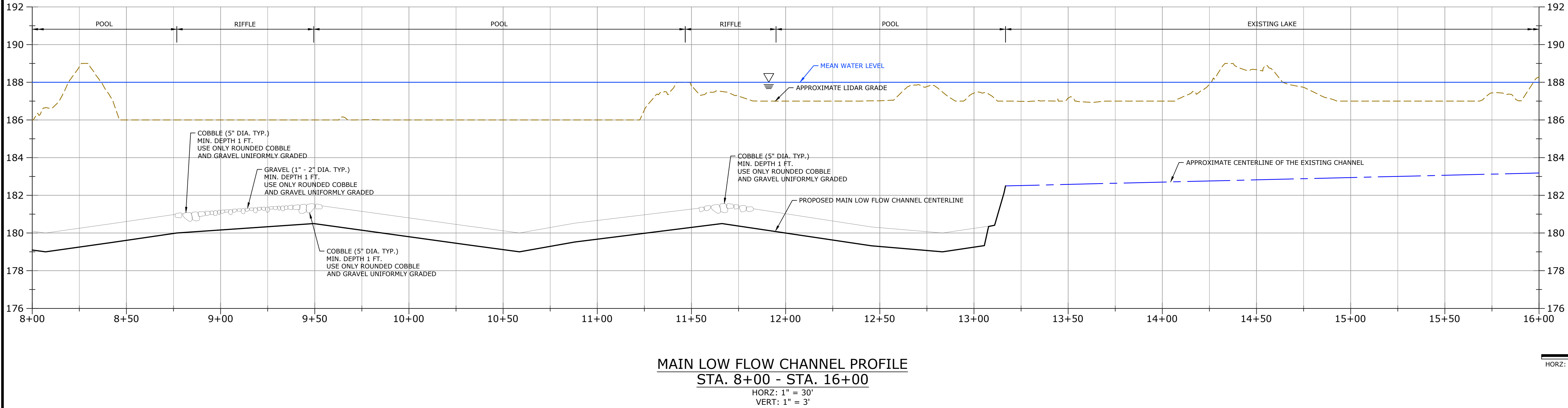
CHINA CREEK RESTORATION PROJECT
AGNEW MILL PONDS
LEWIS COUNTY, WASHINGTON

RAMBOLL

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APPROVED BY: FK	PROJECT: 1690007822	



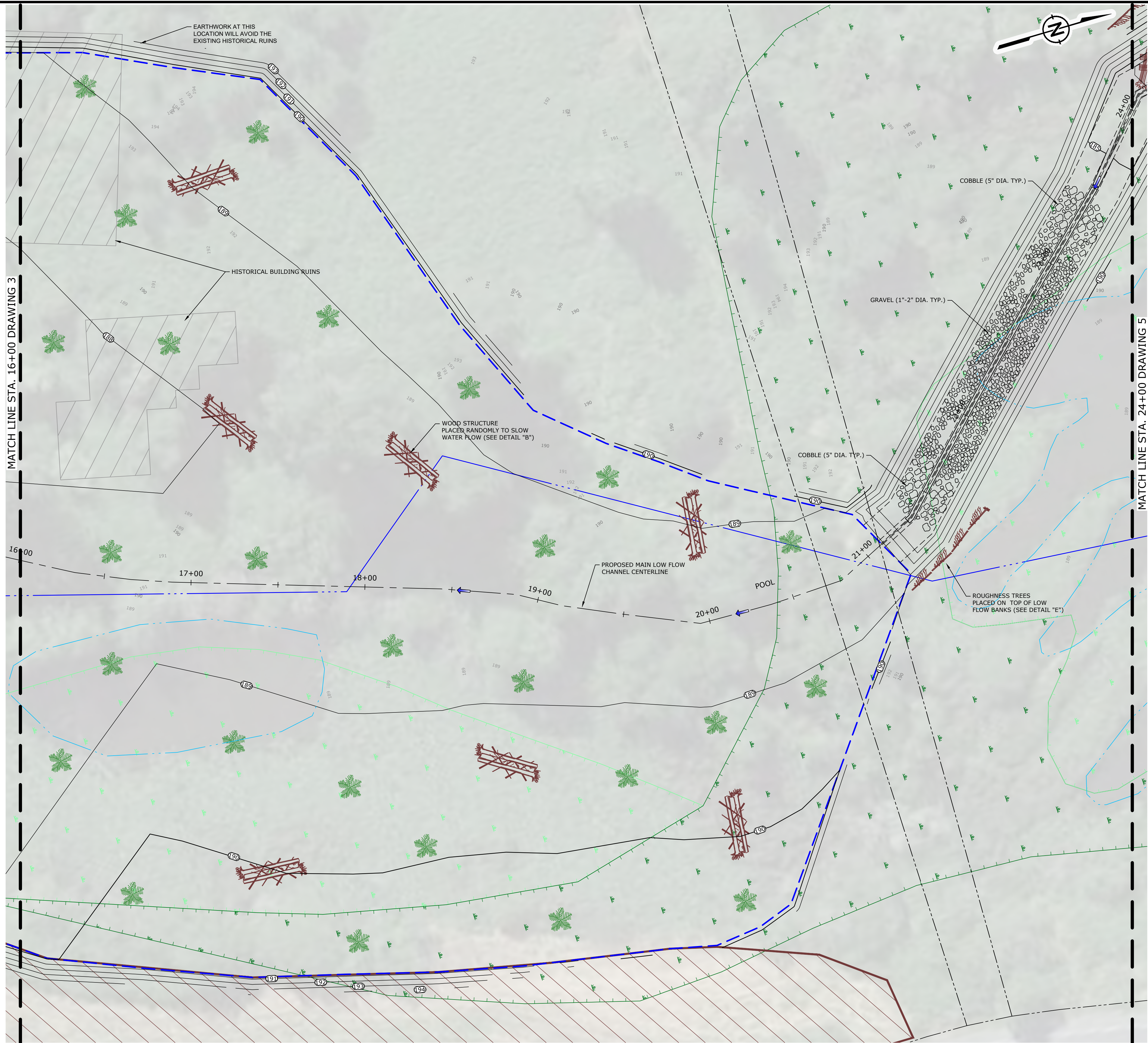
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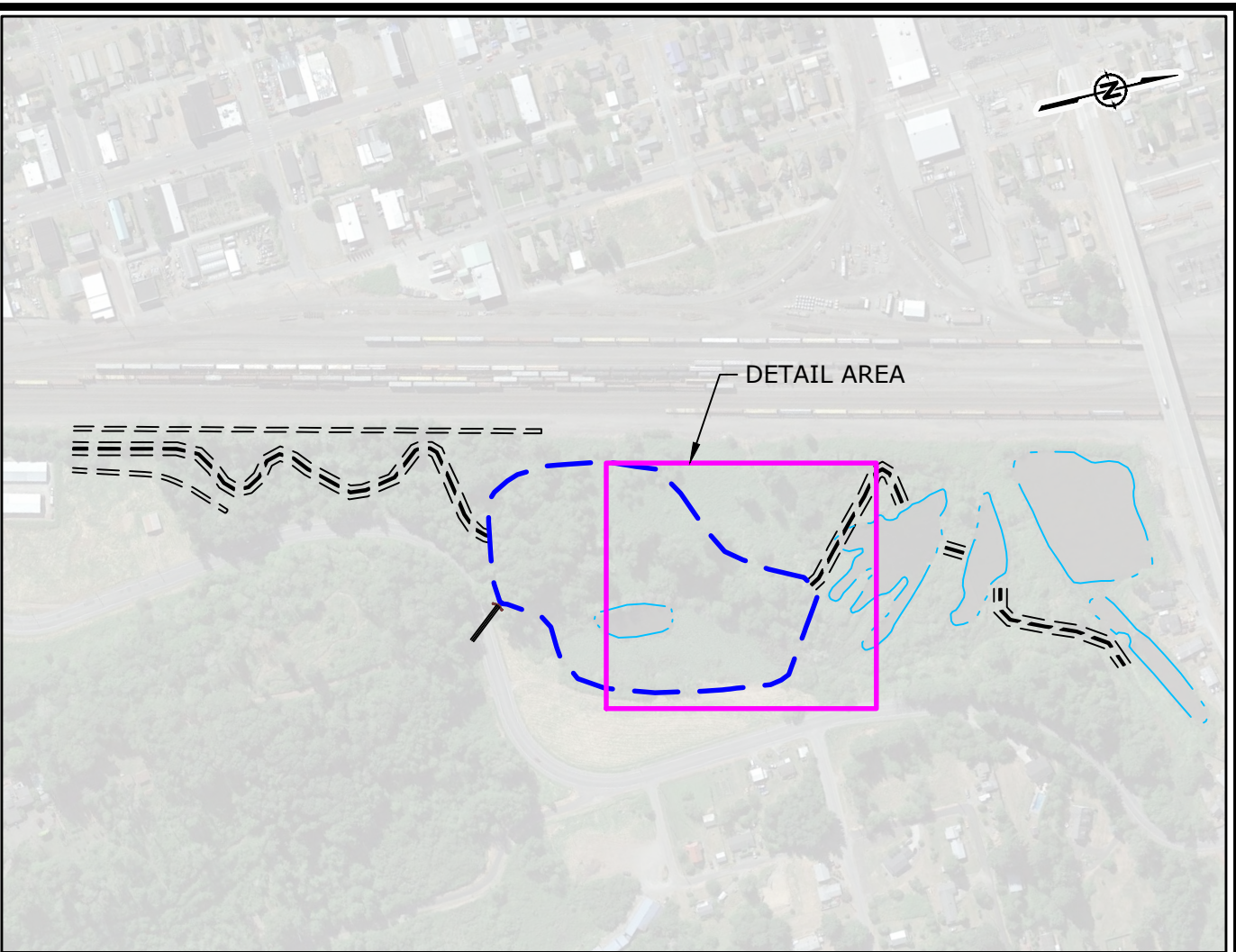
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1	06/02/19	MB	FK	REV. WOOD STRUCTURES, CL ALIGNMENT, NOTES, & DETAILS

PRELIMINARY PLANS PROFILE MAIN LOW FLOW CHANNEL STA. 8+00 - STA. 16+00			
CHINA CREEK RESTORATION PROJECT AGNEW MILL PONDS LEWIS COUNTY, WASHINGTON			
RAMBOLL			
PREPARED BY: FK/GR	DATE: 04/18/2019	DRAWING	
DRAFTED BY: BSC	SCALE: 1" = 30'	3A	
APPROVED BY: FK	PROJECT: 1690007822		

KNUGHAN 4/29/20
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MAIN LOW FLOW CHANNEL PLAN VIEW
STA. 16+00 - STA. 24+00
SCALE: 1" = 30'



KEY MAP
1" = 400'

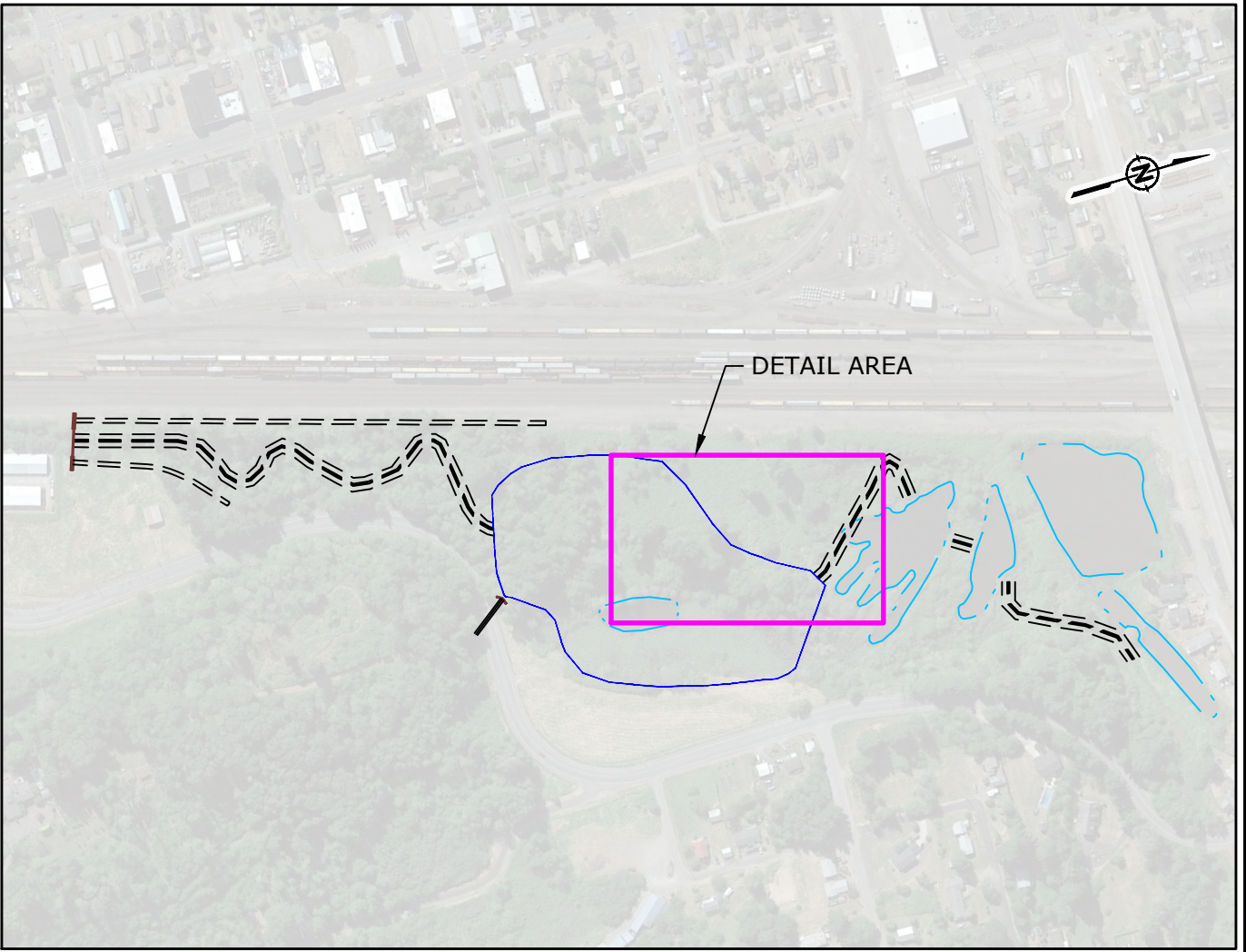
- LEGEND
- 195 LIDAR ELEVATION CONTOUR (MAJOR)
 - 194 LIDAR ELEVATION CONTOUR (MINOR)
 - 189 PROPOSED ELEVATION CONTOUR (MAJOR)
 - 188 PROPOSED ELEVATION CONTOUR (MINOR)
 - APPROXIMATE BOTTOM OF BANK
 - WETLANDS (FRESHWATER FORESTED/SHRUB)
 - WETLANDS (FRESHWATER POND)
 - RIPIARIAN VEGETATION
 - CHANNEL FLOW DIRECTION
 - EXISTING CHANNEL
 - PROPERTY BOUNDARY
 - FUTURE EXTENT OF FLOOD POOL (WHEN FULL)
 - EXISTING LAKES (REMAIN IN PLACE)

- SOURCES:
- AERIAL IMAGERY: Google Earth Pro®, Imagery Date 7/16/2014.
 - EXISTING TOPOGRAPHY: LIDAR DATA COLLECTED BY WATERSHED SCIENCES, INC. WHO CREATED THIS DATA SET FOR THE PUGET SOUND LIDAR CONSORTIUM. DATA SET: 2009 PUGET SOUND LIDAR CONSORTIUM PSLC TOPOGRAPHIC LIDAR LEWIS COUNTY WASHINGTON. THIS DATA IS ASSEMBLED INTO 7.5-MINUTE USGS QUADRANGLES AND FURTHER BROKEN DOWN TO 3.75 MINUTE QUARTER QUADS.
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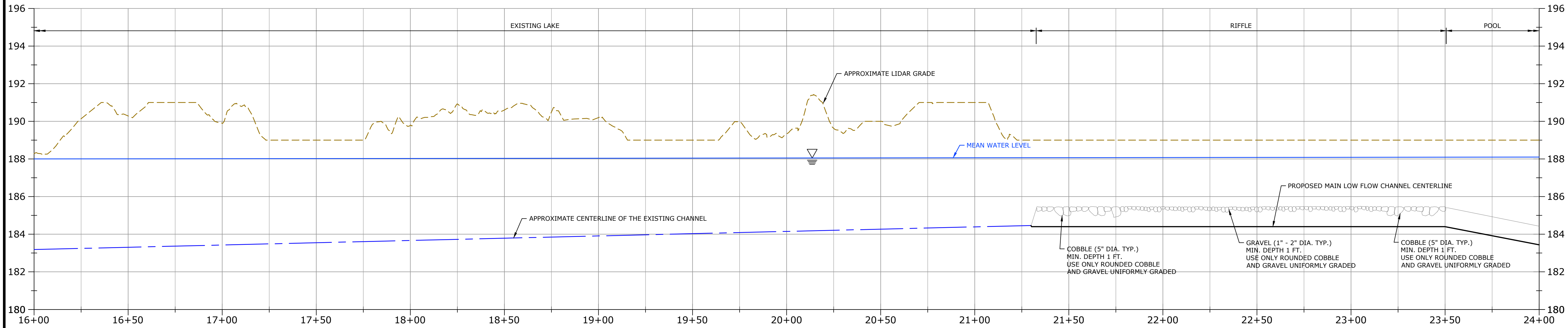


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REV.	DATE	DR.	CH.	REVISION
PRELIMINARY PLANS PLAN MAIN LOW FLOW CHANNEL STA. 16+00 - STA. 24+00				
CHINA CREEK RESTORATION PROJECT AGNEW MILL PONDS LEWIS COUNTY, WASHINGTON				
RAMBOLL				
PREPARED BY: FK/GR	DATE: 04/18/2019	DRAWING		
DRAFTED BY: BSC	SCALE: 1" = 30'	4		
APPROVED BY: FK	PROJECT: 1690007822			

KNAUGHAN 4/22/20
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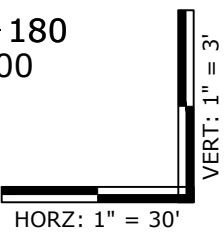


KEY MAP
1" = 400'



MAIN LOW FLOW CHANNEL PROFILE
STA. 16+00 - STA. 24+00

HORZ: 1" = 30'
VERT: 1" = 3'



REV.	DATE	DR.	CH.	REVISION
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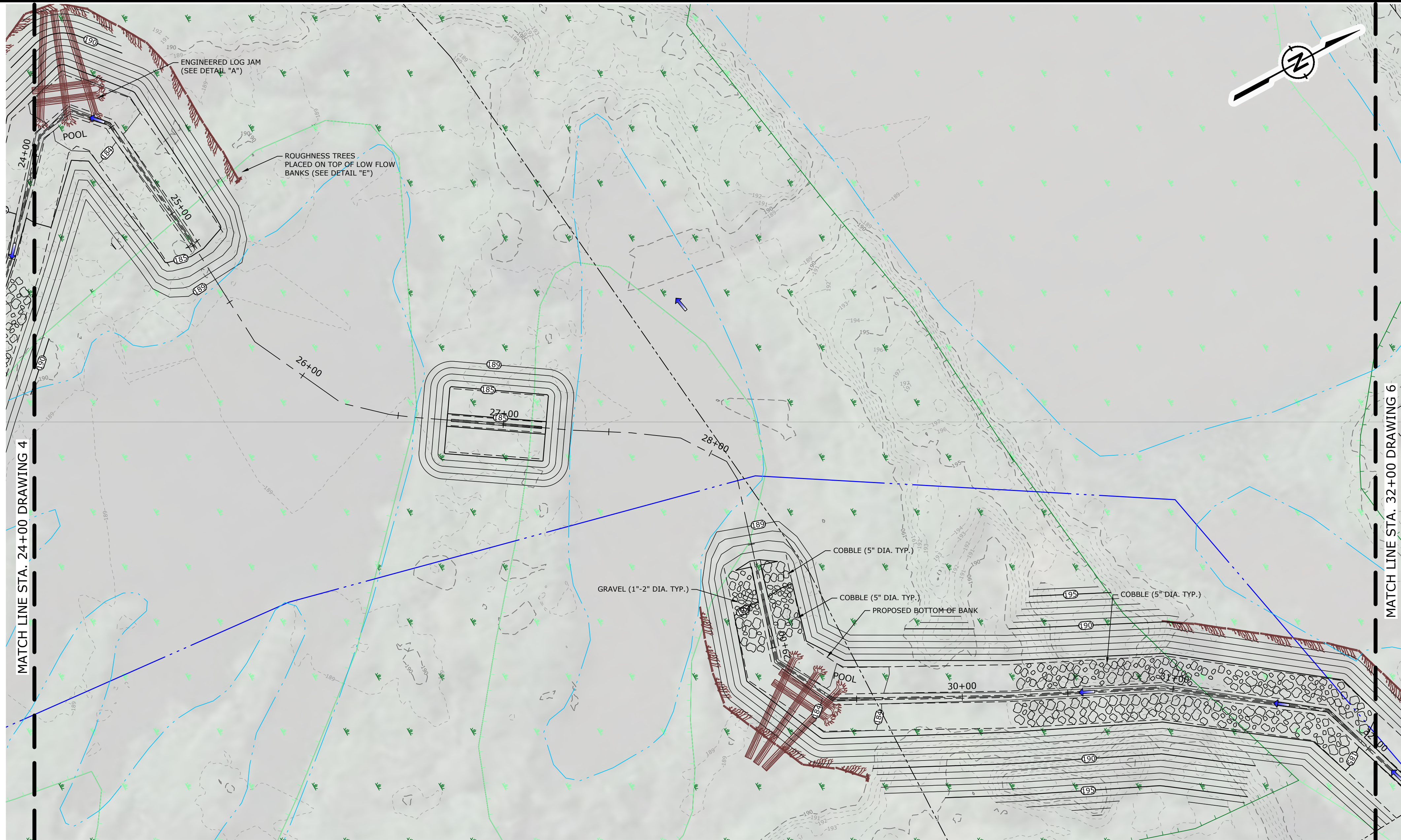
PRELIMINARY PLANS
PROFILE
MAIN LOW FLOW CHANNEL
STA. 16+00 - STA. 24+00

CHINA CREEK RESTORATION PROJECT
AGNEW MILL PONDS
LEWIS COUNTY, WASHINGTON

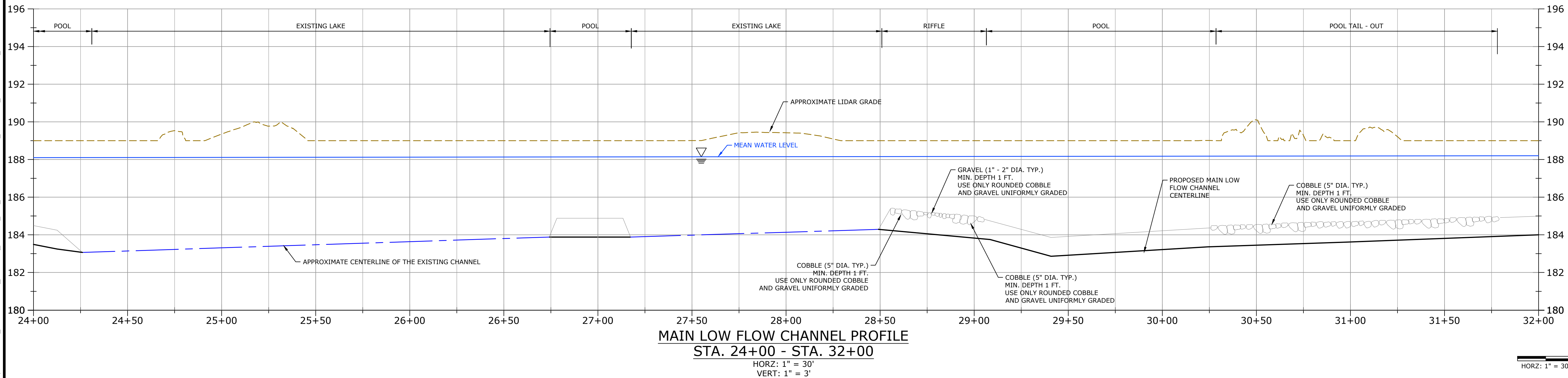


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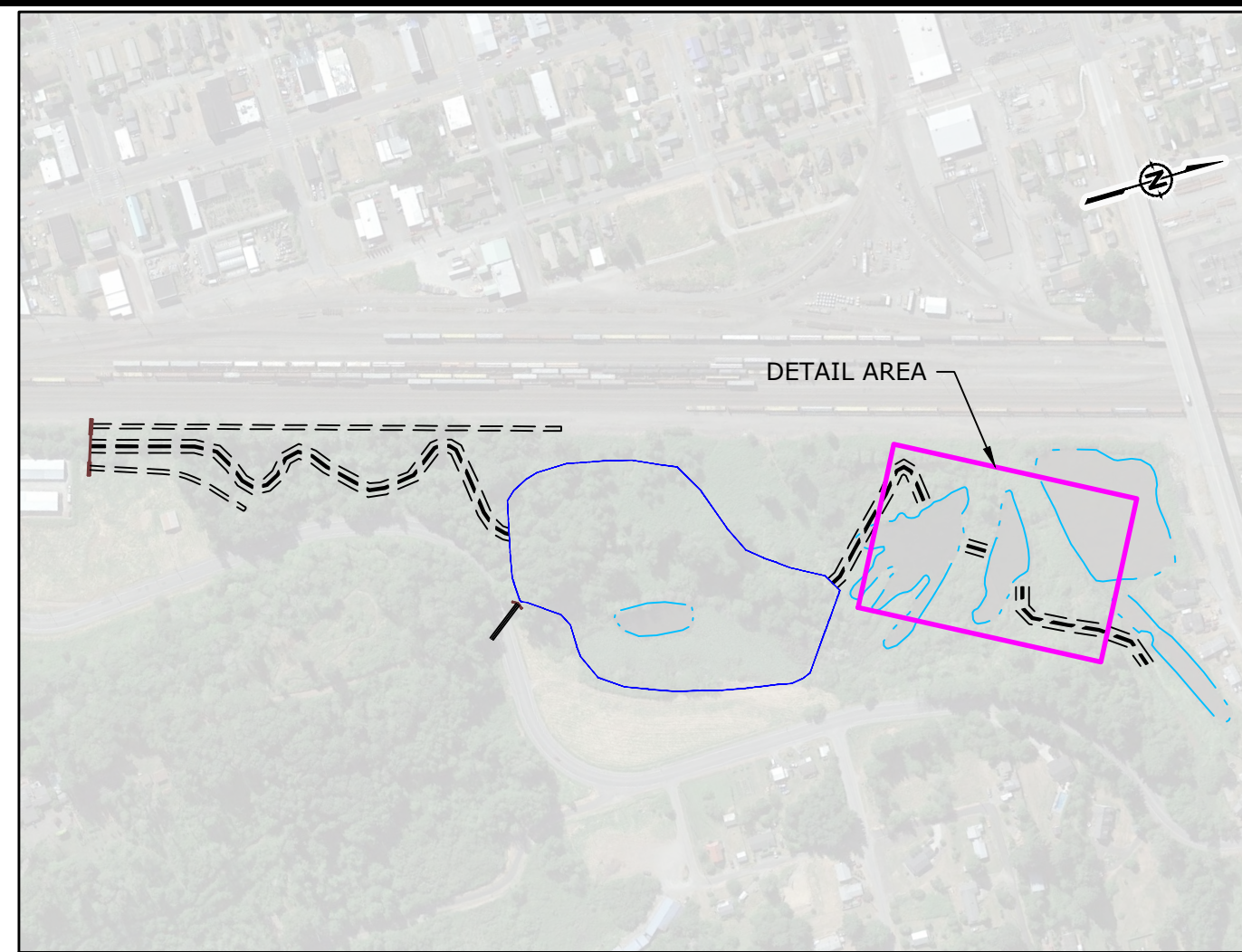
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MAIN LOW FLOW CHANNEL PLAN VIEW
STA. 24+00 - STA. 32+00
SCALE: 1" = 30'



MAIN LOW FLOW CHANNEL PROFILE
STA. 24+00 - STA. 32+00
HORZ: 1" = 30'
VERT: 1" = 3'



KEY MAP
1" = 400'

LEGEND

- 195 LIDAR ELEVATION CONTOUR (MAJOR)
- 194 LIDAR ELEVATION CONTOUR (MINOR)
- 185 PROPOSED ELEVATION CONTOUR (MAJOR)
- 184 PROPOSED ELEVATION CONTOUR (MINOR)
- APPROXIMATE BOTTOM OF BANK
- WETLANDS (FRESHWATER FORESTED/SHRUB)
- WETLANDS (FRESHWATER POND)
- RIPARIAN VEGETATION
- CHANNEL FLOW DIRECTION
- EXISTING CHANNEL
- PROPERTY BOUNDARY
- EXISTING LAKES (REMAIN IN PLACE)

SOURCES:

- AERIAL IMAGERY: Google Earth Pro®, Imagery Date 7/16/2014.
- EXISTING TOPOGRAPHY: LIDAR DATA COLLECTED BY WATERSHED SCIENCES, INC. WHO CREATED THIS DATA SET FOR THE PUGET SOUND LIDAR CONSORTIUM. DATA SET: 2009 PUGET SOUND LIDAR CONSORTIUM PSLC TOPOGRAPHIC LIDAR LEWIS COUNTY WASHINGTON. THIS DATA IS ASSEMBLED INTO 7.5-MINUTE USGS QUADRANGLES AND FURTHER BROKEN DOWN TO 3.75 MINUTE QUARTER QUADS.
- WETLAND BOUNDARY: OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLANDS INVENTORY WETLANDS MAPPER WEB SITE. CHINA CREEK WETLANDS, DATED DEC. 3, 2014.
- FEMA FLOODPLAIN DESIGNATIONS: FIRM FLOOD INSURANCE RATE MAP, CITY OF CENTRALIA, WASHINGTON, LEWIS COUNTY, PANEL 1 OF 2, COMMUNITY PANEL NUMBER 530103 0001 B, EFFECTIVE DATE: JUNE 1, 1982. FIRM FLOOD INSURANCE RATE MAP, CITY OF CENTRALIA, WASHINGTON, LEWIS COUNTY, PANEL 2 OF 2, COMMUNITY PANEL NUMBER 530103 0002 B, EFFECTIVE DATE: JUNE 1, 1982.

30 0 30 60
SCALE IN FEET

REV.	DATE	DR.	CH.	REVISION
2	10/18/19	MB	FK	REV. DRAWING SET
1	06/02/19	MB	FK	REV. WOOD STRUCTURES, CL ALIGNMENT, NOTES, & DETAILS

PRELIMINARY PLANS
PLAN AND PROFILE
MAIN LOW FLOW CHANNEL
STA. 24+00 - STA. 32+00

CHINA CREEK RESTORATION PROJECT
AGNEW MILL PONDS
LEWIS COUNTY, WASHINGTON

RAMBOLL

PREPARED BY: FK/GR	DATE: 04/18/2019	DRAWING
DRAFTED BY: BSC	SCALE: 1" = 30'	5
APPROVED BY: FK	PROJECT: 1690007822	