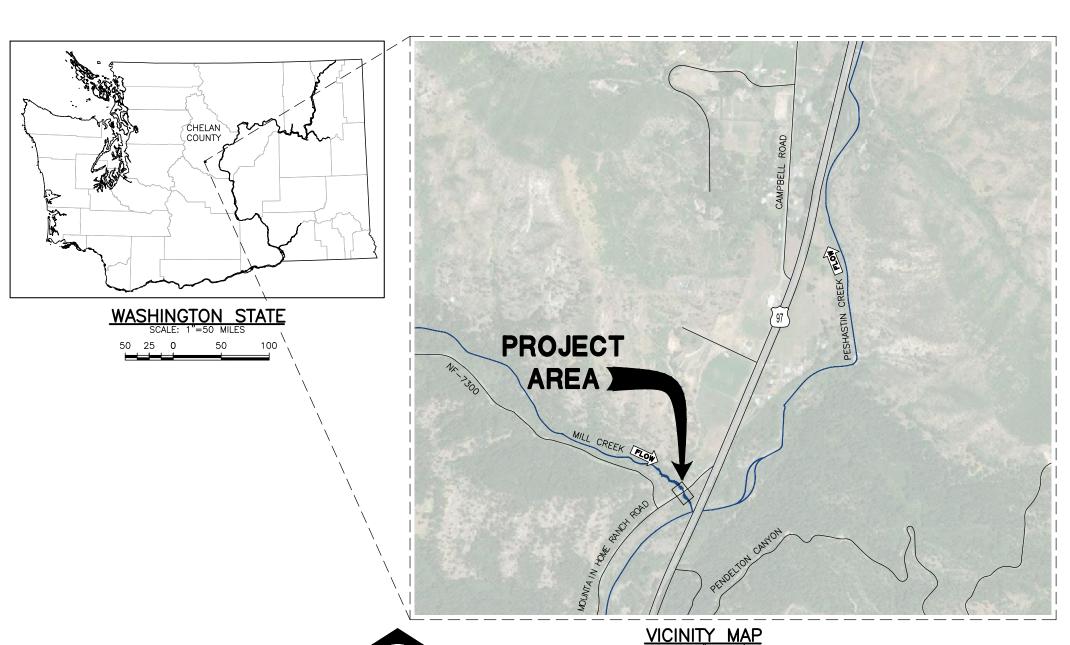
MILL CREEK FISH PASSAGE PROJECT

CHELAN COUNTY NATURAL RESOURCES DEPARTMENT



	DRAWING LIST						
SHEET NO	SHEET TITLE						
1	COVER SHEET						
2	NOTES & SUMMARY OF QUANTITIES						
3	SITE PREPARATION & DEWATERING PLAN						
4	TEMPORARY DETOUR DETAILS						
5	CHANNEL GRADING PLAN & PROFILE						
6	TYPICAL GRADING SECTIONS						
7	EXCAVATION PAY ITEMS						
8	HEADWALL & WINGWALL DETAILS						
9	ROADWAY PAVING, STRIPING, & GUARDRAIL PLAN						
10	TRAFFIC CONTROL PLAN - SIGNAL OPTION						
11	TRAFFIC CONTROL PLAN - FLAGGER OPTION						
12	TRAFFIC CONTROL PLAN - ALTERNATE OPTION						
13	SITE RESTORATION PLAN						

CONTACT INFORMATION

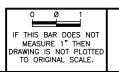
NATURAL SYSTEMS DESIGN, INC

305 FLORA STREET BELLINGHAM, WA 98225 (360) 656-5207

CHELAN COUNTY NATURAL RESOURCES

411 WASHINGTON STREET, SUITE 201 WENATCHEE, WA 98801 (509) 667-6533









tural Systems Design	

AME OR INITIALS AND DATE GEOGRAPHIC INFORMATION	
SIGNED NT LATITUDE 47°30'40"N	
HECKED RH LONGITUDE 120°37'55"W	
RAWN NT TN/SC/RG T23N/S6/R18E	
HECKED JS DATE JULY 31, 2019	_
ILONED 32	_

MILL CREEK FISH PASSAGE PROJECT

COVER SHEET

SHEET 1 OF 13

- 2. NATURAL SYSTEMS DESIGN HEREAFTER REFERRED TO AS "ENGINEER" IS RESPONSIBLE FOR THE PREPARATION OF THESE PLANS AND CONTRACT DOCUMENTS: AND WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGE, OR USE, OF THESE PLANS WHICH INCLUDES ALTÉRATION, DELETION, OR EDITING OF THIS DOCUMENT WITHOUT EXPLICIT WRITTEN PERMISSION FROM THE ENGINEER. ANY OTHER UNAUTHORIZED USE OF THIS DOCUMENT IS
- 3. THE CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; AND FURTHER AGREES THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS IN ACCORDANCE WITH THE PROVISIONS OUTLINED BY THE PROJECT CONTRACT DOCUMENTS.
- 4. ALL IMPROVEMENTS SHALL BE ACCOMPLISHED UNDER THE APPROVAL, INSPECTION, AND TO THE SATISFACTION OF THE CONTRACTING AGENCY. IMPROVEMENT CONSTRUCTION SHALL COMPLY WITH THESE PLANS AND THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD PLANS FOR CONSTRUCTION OF ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, CURRENT EDITION AND THE CONTRACT DOCUMENTS UNLESS NOTED OTHERWISE. ALL REFERENCES TO THE "STANDARD SPECIFICATIONS" SHALL MEAN THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, CURRENT
- 5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTOR(S) TO EXAMINE THE PROJECT SITE PRIOR TO THE OPENING OF BID PROPOSALS. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, SUCH AS THE NATURE AND LOCATION OF THE WORK; AND THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE AFFECTING THE AVAILABILITY OF TRANSPORTATION, THE DISPOSAL, HANDLING, AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRICITY, ROADS, THE UNCERTAINTIES OF WEATHER, THE CONDITIONS OF THE GROUND, SURFACE AND SUBSURFACE MATERIALS, GROUNDWATER, THE EQUIPMENT AND FACILITIES NEEDED FOR AND DURING THE PERFORMANCE OF THE WORK, AND THE COSTS THEREOF. ANY FAILURE BY THE CONTRACTOR AND SUBCONTRACTOR(S) TO ACQUAINT THEMSELVES WITH ALL THE AVAILABLE INFORMATION WILL NOT RELIEVE THE CONTRACTOR AND SUBCONTRACTOR(S) FROM RESPONSIBILITY FOR PROPERLY ESTIMATING THE DIFFICULTY AND COST OF SUCCESSFULLY PERFORMING THE WORK.
- 6. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE CONTRACT DOCUMENTS AND FOR ALL REQUIRED SUBMITTALS TO THE CONTRACTING AGENCY.

PERMIT NOTES

- EVERY REASONABLE EFFORT SHALL BE MADE TO 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 WILL BE IN COMPLIANCE WITH PERMIT CONDITIONS ISSUED BY PERTINENT REGULATORY AGENCIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE COPIES OF ALL PERMITS ON THE JOB SITE, AND UNDERSTAND AND COMPLY WITH ALL PERMIT CONDITIONS.
- 3. ALL WORK THAT DISTURBS THE SUBSTRATE, BANK, OR SHORE OF A WATERS OF THE STATE THAT CONTAINS FISH LIFE SHALL BE CONDUCTED ONLY DURING THE WORK PERIOD FOR THAT WATERBODY AS ALLOWED BY RELEVANT HYDRAULIC WORK PERMITS. THOSE PORTIONS OF THE PROJECT WORK THAT OCCUR OUTSIDE OR ABOVE THE ORDINARY HIGH WATER MARK (ABOVE THE USACE JURISDICTIONAL LINE) ARE NOT SUBJECT TO THE WORK PERIODS DESCRIBED ABOVE UNLESS SPECIFIED IN THE RELEVANT PERMITS.
- 4. ALL ACTIVITIES THAT INVOLVE WORK ADJACENT TO, OR WITHIN THE WETTED CHANNEL SHALL, AT ALL TIMES, REMAIN CONSISTENT WITH ALL APPLICABLE WATER QUALITY STANDARDS; EFFLUENT LIMITATION; AND STANDARDS OF PERFORMANCE, PROHIBITIONS, PRETREATMENT STANDARDS, AND MANAGEMENT PRACTICES ESTABLISHED PURSUANT TO THE CLEAN WATER ACT OR PURSUANT TO APPLICABLE STATE AND LOCAL LAW.
- 5. IF AT ANY TIME, AS A RESULT OF PROJECT ACTIVITIES, FISH ARE OBSERVED IN DISTRESS, A FISH KILL OCCURS, OR WATER QUALITY PROBLEMS DEVELOP (INCLUDING EQUIPMENT LEAKS OR SPILLS), OPERATIONS SHALL CEASE AND THE CONTRACTING AGENCY SHALL BE NOTIFIED **IMMEDIATELY**
- 6. IF, DURING CONSTRUCTION, ARCHAEOLOGICAL REMAINS ARE ENCOUNTERED, CONSTRUCTION IN THE VICINITY SHALL BE HALTED, AND THE STATE OFFICE OF HISTORIC PRESERVATION AND THE CONTRACTING AGENCY SHALL BE NOTIFIED IMMEDIATELY.

SURVEY NOTES

- 1. UNLESS NOTED OTHERWISE ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS AND OTHER SURVEY MARKERS DURING CONSTRUCTION.
- 2. ALL ALIGNMENTS SHOWN IN THESE DRAWINGS WILL BE MADE AVAILABLE TO THE CONTRACTOR IN ELECTRONIC FORMAT (.DWG, SHAPE FILE, LANDXML, ETC.) FOR THE CONTRACTOR TO USE IN SURVEYING AND STAKING OUT PROJECT ELEMENTS.
- 3. 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 CONTRACTING AGENCY A SET OF PLANS, MARKED UP TO THE SATISFACTION OF THE CONTRACTING AGENCY, REFLECTING THE AS-CONSTRUCTED
- 4. ELEVATIONS SHOWN ON THE PLANS FOR PIPE INVERTS, TOPS OF BANKS, THALWEG, GRADE CONTROLS, ETC., ARE BASED UPON THE TOPOGRAPHIC INFORMATION SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY ALL NECESSARY SURFACE ELEVATIONS IN THE FIELD AND NOTIFY THE CONTRACTING AGENCY OF ANY DISCREPANCIES, WHICH MIGHT AFFECT PROPER OPERATION OF THE NEW FACILITIES BEFORE BREAKING GROUND AND PRIOR TO FACILITY INSTALLATION. THE CONTRACTING AGENCY SHALL BE CONTACTED IN THE EVENT THERE ARE DISCREPANCIES SO THAT THE PROPER ADJUSTMENTS CAN BE MADE BY ENGINEER PRIOR TO THE INSTALLATION OF THE FACILITIES, AS SET FORTH IN THE SPECIAL PROVISIONS.
- 5. LIDAR FOR THIS PROJECT WAS COLLECTED IN 2015 AND IS REPRESENTATIVE OF CONDITIONS AT THE TIME OF COLLECTION. LIDAR DATA HAVE BEEN SUPPLEMENTED WITH LOCAL GROUND SURVEY TO BETTER DEFINE THE CHANNEL; GROUND SURVEY OCCURRED IN 2008. THE HORIZONTAL DATUM IS NAD83 WASHINGTON STATE PLANE NORTH (FT). THE VERTICAL DATUM

EROSION, SEDIMENT CONTROL AND WATER MANAGEMENT NOTES

- 1. A SEDIMENT AND EROSION CONTROL PLAN WILL BE DEVELOPED BY THE CONTRACTOR AND SUBMITTED FOR APPROVAL BY CONTRACTING AGENCY AND/OR THE ENGINEER BEFORE ANY CONSTRUCTION MAY BEGIN. THE SEDIMENT AND EROSION CONTROL PLAN WILL IDENTIFY BEST MANAGEMENT PRACTICES TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS DRAINAGE SYSTEMS AND ADJACENT PROPERTIES IS MINIMIZED.
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY EROSION CONTROL MEASURES. THE EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PERFORMANCE OF THE TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE PROJECT.
- 3. ACTIVITIES SHALL BE DESIGNED AND CONSTRUCTED TO AVOID AND MINIMIZE ADVERSE IMPACTS TO WATERS OF THE UNITED STATES TO THE MAXIMUM EXTENT PRACTICAL THROUGH THE USE OF PRACTICAL ALTERNATIVES. ALTERNATIVES THAT SHALL BE CONSIDERED INCLUDE THOSE THAT MINIMIZE THE NUMBER AND EXTENT OF IN-WATER WORK AND EQUIPMENT CROSSINGS OF WETTED CHANNELS.
- 4. AT NO TIME SHALL SEDIMENT-LADEN WATER BE DISCHARGED OR PUMPED DIRECTLY INTO THE SUBJECT RIVER, STREAM, OR WETLAND. WATER SHALL BE DISCHARGED IN ACCORDANCE WITH REQUIREMENTS SET FORTH IN THE PROJECT PERMITS AND / OR CONTRACT DOCUMENTS.
- 5. IF HIGH WATER LEVEL CONDITIONS THAT CAUSE SILTATION OR EROSION ARE ENCOUNTERED DURING CONSTRUCTION, WORK SHALL STOP UNTIL THE WATER LEVEL SUBSIDES.
- 6. PERMIT CONDITIONS CONTAIN SPECIFIC REQUIREMENTS FOR THE CONTROL OF EROSION AND TURBIDITY FROM PROJECT OPERATIONS, TURBIDITY WILL BE MONITORED ON A FREQUENT BASIS BY THE PROJECT MANAGEMENT AND INSPECTION STAFF ON-SITE. TURBIDITY AMOUNTS IN EXCESS OF THE PERMITTED CONCENTRATIONS AND/OR DURATIONS WILL CAUSE WORK TO BE STOPPED UNTIL IMPROVED PRACTICES ARE IN EFFECT AND THE PROBLEMS CONTROLLED. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR ANY PROJECT DELAYS THAT OCCUR BY NATURE OF THIS FAILURE TO ADEQUATELY CONTAIN SEDIMENT ON-SITE.
- 7. CONTRACTOR SHALL LIMIT MACHINERY MOVEMENT TO CONSTRUCTION AREAS DEFINED ON SITE PLAN OR IDENTIFIED AS ACCEPTABLE BY THE ENGINEER OR CONTRACTING AGENCY.
- 8. ALL EXTERNAL GREASE, OIL, SOIL, VEGETATION, AND OTHER DEBRIS, SHALL BE PRESSURE-WASHED OFF THE EQUIPMENT PRIOR TO TRANSPORT TO THE SITE.
- 9. ALL EQUIPMENT OPERATING BELOW OHWM SHALL UTILIZE READILY BIODEGRADABLE VEGETABLE-BASED HYDRAULIC FLUIDS.
- 10. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT NO PETROLEUM PRODUCTS, HYDRAULIC FLUID, SEDIMENTS, SEDIMENT-LADEN WATER, CHEMICALS, OR ANY OTHER TOXIC OR DELETERIOUS MATERIALS ARE ALLOWED TO ENTER OR LEACH INTO THE SUBJECT RIVER, STREAM, OR WETLAND,
- 11. THE CONTRACTOR SHALL HAVE AN EMERGENCY SPILL KIT ONSITE AT ALL TIMES.
- 12. NO TREES OR WETLAND VEGETATION SHALL BE REMOVED UNLESS THEY ARE SHOWN AND NOTED TO BE REMOVED ON THE PLANS OR AS DIRECTLY SPECIFIED ON—SITE BY THE PROJECT MANAGEMENT STAFF. ALL TREES CONFLICTING WITH GRADING SHALL BE REMOVED. NO GRADING SHALL TAKE PLACE WITHIN THE DRIP LINE OF TREES NOT TO BE REMOVED UNLESS OTHERWISE APPROVED.

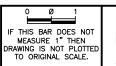
13. FOLLOWING CONSTRUCTION, SITE RESTORATION WILL INCLUDE ESTABLISHING LONG-TERM EROSION PROTECTION MEASURES. THESE MEASURES WILL INCLUDE PLANTINGS, EROSION CONTROL FABRIC, SEED, AND MULCH. EQUIPMENT AND EXCESS SUPPLIES WILL BE REMOVED AND THE WORK AREA WILL BE CLEANED.

CONSTRUCTION NOTES

- 1. CONTRACT DOCUMENTS REFER IN PART, TO THESE PLANS.
- 2. CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE ALL WORK AS INDICATED IN THE CONTRACT DOCUMENTS.
- CONSTRUCTION HOURS SHALL BE WEEKDAYS BETWEEN 7:00 A.M. AND 6:30 P.M. UNLESS PRIOR APPROVAL IS RECEIVED FROM THE CONTRACTING AGENCY.
- 4. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE BY THE CONTRACTING AGENCY OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
- 5. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
- 6. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST SKILLS AND ATTENTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THIS CONTRACT.
- 7. THE CONTRACTOR SHALL MAKE ALL NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, ROADWAY, DRAINAGE WAYS, PRIVATE BRIDGE, CULVERTS, AND VEGETATION UNTIL SUCH ITEMS ARE TO BE DISTURBED OR REMOVED AS INDICATED IN THE CONTRACT
- 8. THE CONTRACTOR SHALL KEEP THE JOB SITE CLEAN AND HAZARD FREE. CONTRACTOR SHALL DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH FOR THE DURATION OF THE WORK. UPON COMPLETION OF WORK, CONTRACTOR SHALL REMOVE ALL MATERIAL AND EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY.
- 9. DIMENSION CALLOUTS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON THE PLANS.
- 10. MATERIAL AND EQUIPMENT SHALL NOT BE STORED OUTSIDE OF IDENTIFIED STAGING AREAS. THE CONTRACTOR SHALL USE ONLY DESIGNATED SPECIFIC SITES FOR STORAGE OF EQUIPMENT AND MATERIALS AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF ALL EQUIPMENT AND MATERIALS.

ITEM NO.	QUANTITY	UNITS	DESCRIPTION
1	LUMP SUM	L.S.	MOBILIZATION
2	0.25	ACRE	CLEARING
3	1,260	L.F.	HIGH VISIBILITY FENCE
4	LUMP SUM	L.S.	TEMPORARY STREAM DIVERSION
5	LUMP SUM	L.S.	TEMPORARY DETOUR
6	LUMP SUM	L.S.	TEMPORARY BRIDGE
7	1,150	C.Y.	STRUCTURE EXCAVATION CLASS A INCL. HAUL
8	LUMP SUM	L.S.	SHORING OR EXTRA EXCAVATION CL. A
9	LUMP SUM	L.S.	STRUCTURAL PLATE CULVERT
10	490	C.Y.	GRAVEL BACKFILL FOR PIPE ZONE BEDDING
11	535	S.F.	STRUCTURAL EARTH WALL
12	LUMP SUM	L.S.	CHANNEL GRADING
13	LUMP SUM	L.S.	CHANNEL CONSTRUCTION
14	20	C.Y.	STREAMBED SAND
15	115	C.Y.	CRUSHED SURFACING BASE COURSE
16	132	TON	HMA CL. 3/8 IN. PG 64-28
17	91	L.F.	BEAM GUARDRAIL TYPE 31
18	4	EACH	BEAM GUARDRAIL TYPE 31 NON-FLARED TERMINAL
19	2	EACH	BEAM GUARDRAIL PLACEMENT - 25' SPAN
20	LUMP SUM	L.S.	SURVEYING
21	LUMP SUM	L.S.	PROJECT TEMPORARY TRAFFIC CONTROL
22	0.42	ACRE	SEEDING AND MULCHING
23	LUMP SUM	L.S.	EROSION CONTROL AND WATER POLLUTION PREVENTION
24	LUMP SUM	L.S.	TEMPORARY FENCE
25	682	L.F.	PAINT LINE
26	5,000	DOL	MINOR CHANGE









NAME OR I	NITIALS AND DATE	GEOGRAPH	IIC INFORMATION
DESIGNED	NT	LATITUDE	47*30'40"N
CHECKED	RH	LONGITUDE	120°37'55"W
DRAWN	NT	TN/SC/RG	T23N/S6/R18E
CHECKED		DATE	JULY 31, 2019
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MILL CREEK FISH PASSAGE PROJECT NOTES & SUMMARY OF QUANTITIES

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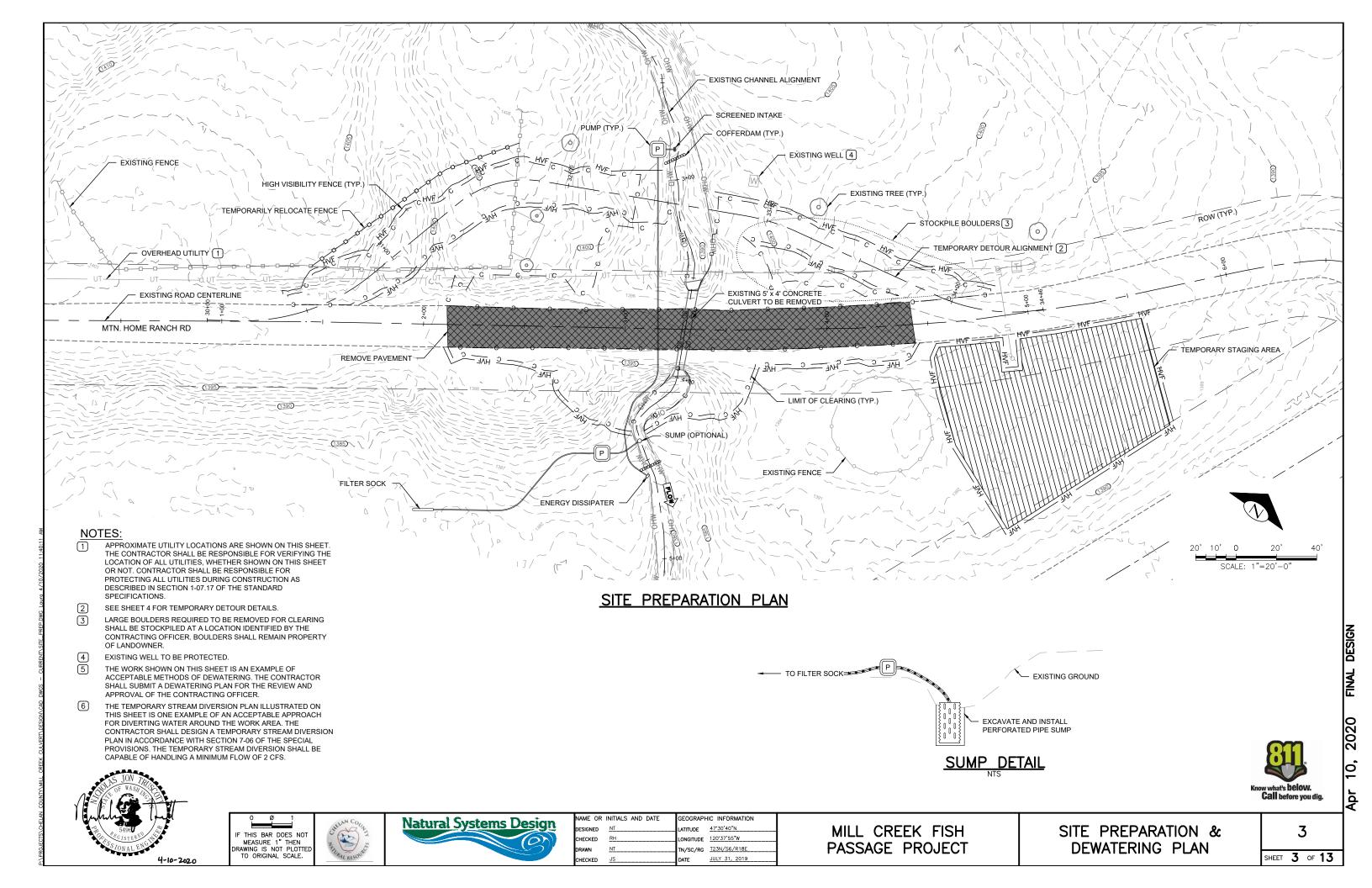
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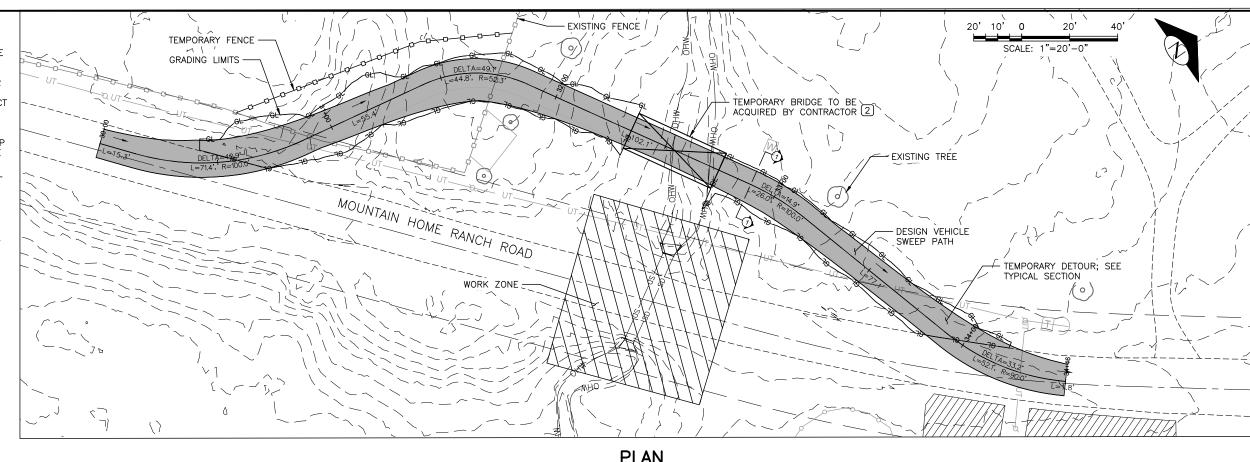
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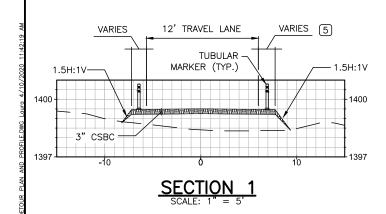
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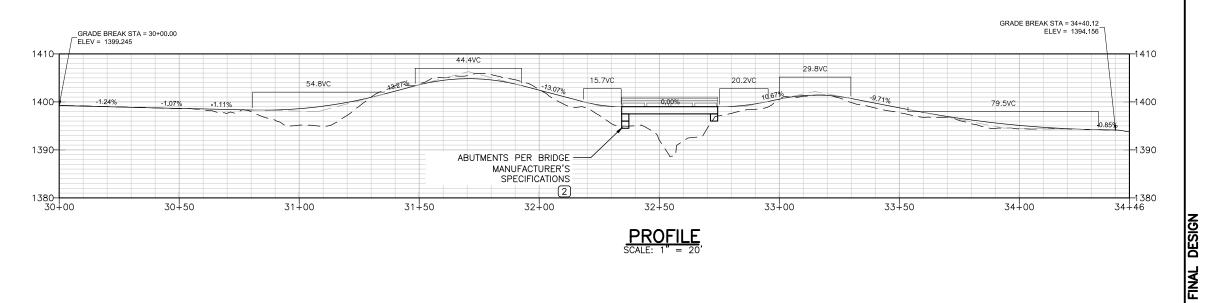


- 1 TRAFFIC FROM MOUNTAIN HOME RANCH ROAD SHALL BE TEMPORARILY DETOURED WHILE WORK PROCEEDS. THE DETOUR SHALL INCLUDE A TEMPORARY BRIDGE OVER MILL CREEK. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING A TEMPORARY BRIDGE IN ACCORDANCE WITH THESE DRAWINGS AND THE CONTRACT DOCUMENTS.
- 2 TEMPORARY BRIDGE SHALL BE RATED FOR HL-93 OR HS 20-44 LOADING. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF BRIDGE FOR REVIEW AND APPROVAL; SEE SPECIAL PROVISIONS FOR ADDITIONAL DETAILS. A MINIMUM SPAN OF 17' IS REQUIRED; ABUTMENTS SHALL BE SET OUTSIDE OF THE ORDINARY HIGH WATER MARK.
- 3 TEMPORARY BRIDGE SHALL INCLUDE LONGITUDINAL TRAFFIC BARRIER WHICH SATISFIES THE REQUIREMENTS FOR NCHRP TL-1 RATED BARRIER.
- (4) TEMPORARY BRIDGE SHALL BE NO LESS THAN 16 FEET WIDE TO ACCOMMODATE A 12 FOOT TRAVEL LANE AND TWO FEET OF SHY DISTANCE ON EITHER SIDE OF THE
- (5) ROAD WIDTH SHALL BE ADJUSTED TO ACCOMMODATE SWEEP PATH SHOWN ON THIS SHEET.
- 6 TEMPORARY FENCE SHALL BE SIMILAR IN KIND OF EXISTING FENCE.

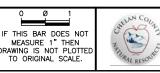


PLAN SCALE: 1" = 20'











NAME OR I	NITIALS AND DATE	GEOGRAPHIC INFORMATION		
DESIGNED	JJ	LATITUDE	47*30'40"N	
CHECKED	RH	LONGITUDE	120°37'55"W	
DRAWN	JJ	TN/SC/RG	T23N/S6/R18E	
CHECKED	JS	DATE	JULY 31, 2019	

MILL CREEK FISH PASSAGE PROJECT

TEMPORARY DETOUR DETAILS

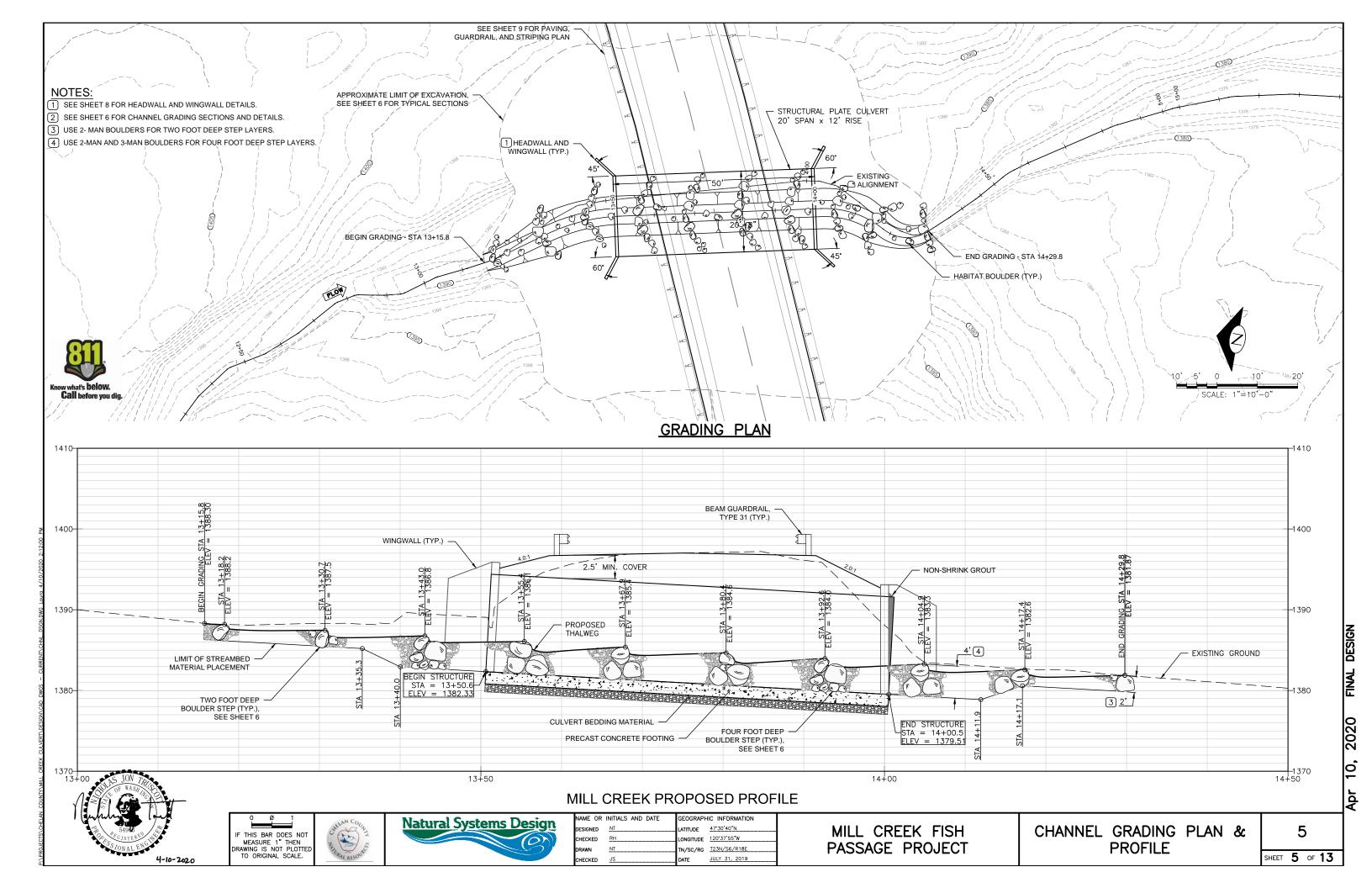
Know what's **below. Call** before you dig.

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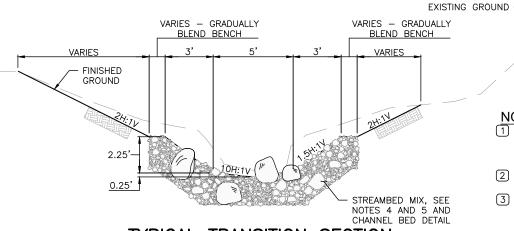
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SHEET 4 OF 13



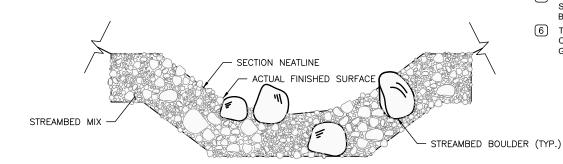
TYPICAL CHANNEL SECTION

STA 13+35.0 TO 13+49.1 STA 13+99.0 TO 14+18.0



TYPICAL TRANSITION SECTION

STA 13+15.8 TO 13+35.0 STA 14+18.0 TO 14+29.8



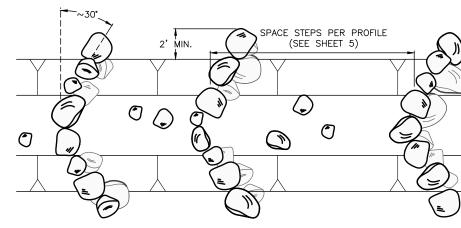
CHANNEL BED DETAIL

NOTES:

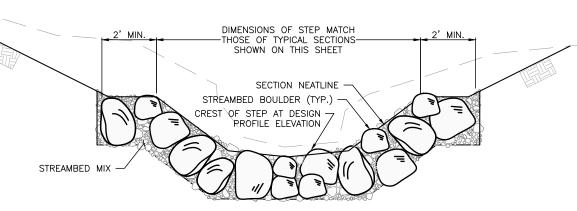
EXISTING GROUND

- 1 THE STREAMBED SHALL BE CONSTRUCTED FOLLOWING THE PROFILE SHOWN ON SHEET 5 WITH SIX, FOUR FOOT DEEP BOULDER STEPS AND FOUR, TWO FOOT DEEP BOULDER STEPS CONSTRUCTED AT IDENTIFIED LOCATIONS.
- BOULDER STEP THICKNESS SHALL MATCH THE DEPTH SHOWN ON SHEET 5.
- FOUR FOOT DEEP BOULDER STEPS SHALL BE CONSTRUCTED AS SHOWN ON THIS SHEET USING A COMBINATION OF TWO MAN AND THREE MAN STREAMBED BOULDERS. THREE MAN BOULDERS SHALL COMPRISE A MINIMUM OF 30% (BY NUMBER OF BOULDERS) INCLUDED IN EACH BOULDER STEP.
- (4) TWO FOOT DEEP BOULDER STEPS SHALL SHALL BE CONSTRUCTED AS SHOWN; THREE MAN BOULDERS ARE NOT REQUIRED, BUT ARE ACCEPTABLE FOR USE PROVIDED THE STEP DIMENSIONS AND ELEVATIONS ARE AS SHOWN ON THIS SHEET AND SHEET 5.
- INCORPORATE A MINIMUM OF TWO AND A MAXIMUM OF FOUR STREAMBED BOULDERS (TWO MAN) INTO THE STREAMBED BETWEEN EACH BOULDER STEP.
- THE STREAMBED BETWEEN BOULDER STEPS SHALL BE COMPRISED OF STREAMBED MIX MEETING THE FOLLOWING

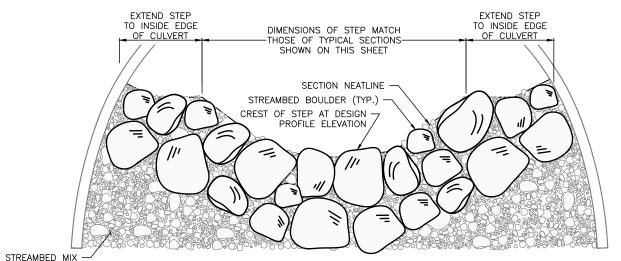
% PASSING	DIAMETER (INCHES)
100	18
84	9-12
50	3-5
16	0.25-0.75
10 MIN.	#40 SIEVE
5 MIN.	#200 SIEVE



BOULDER STEP PLAN VIEW



BOULDER STEP ELEVATION VIEW - TWO FOOT DEPTH



BOULDER STEP ELEVATION VIEW - FOUR FOOT DEPTH



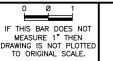
FINAL DESIGN

2020

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Apr









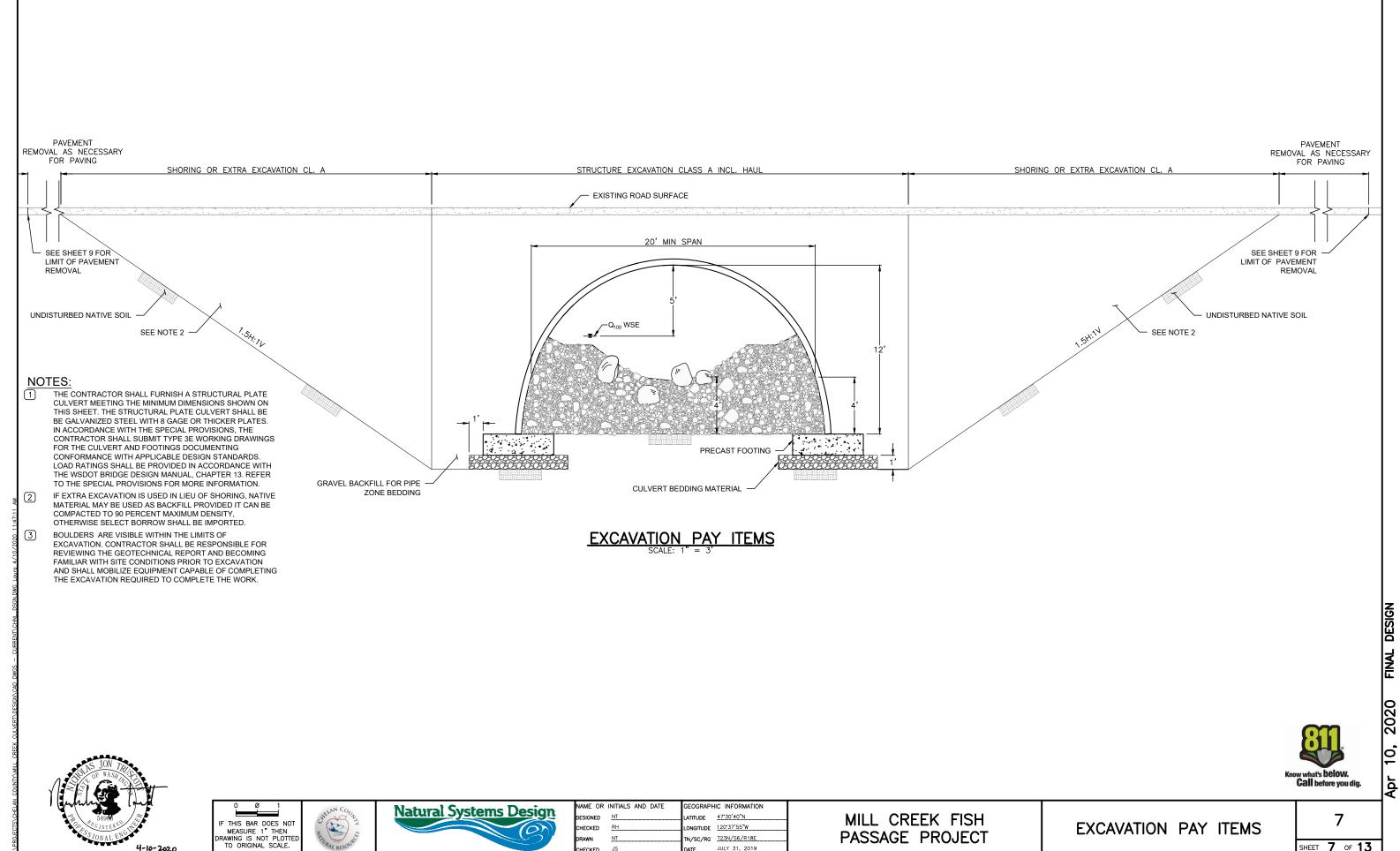
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DESIGNED	NT	LATITUDE	47*30'40"N	ı
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MILL CREEK FISH PASSAGE PROJECT

TYPICAL GRADING SECTIONS

6

SHEET 6 OF 13



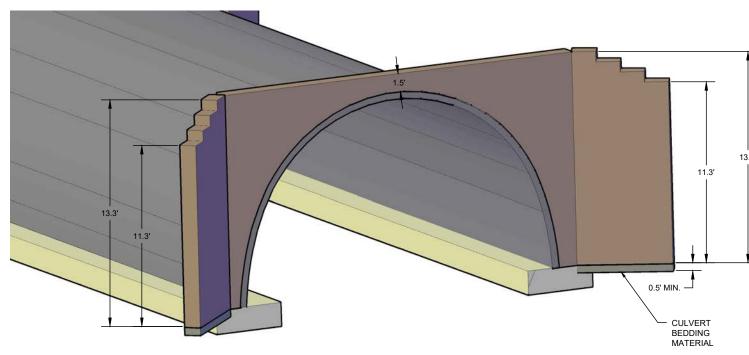
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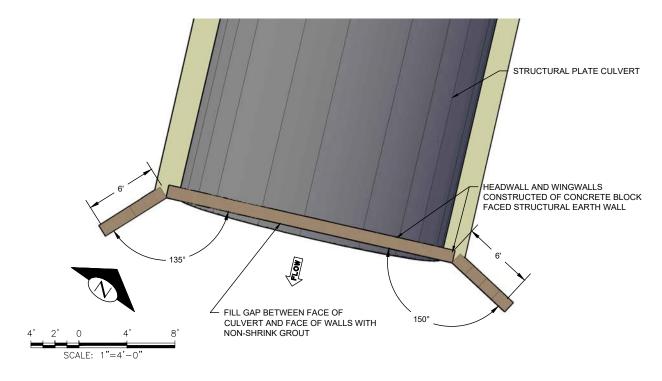
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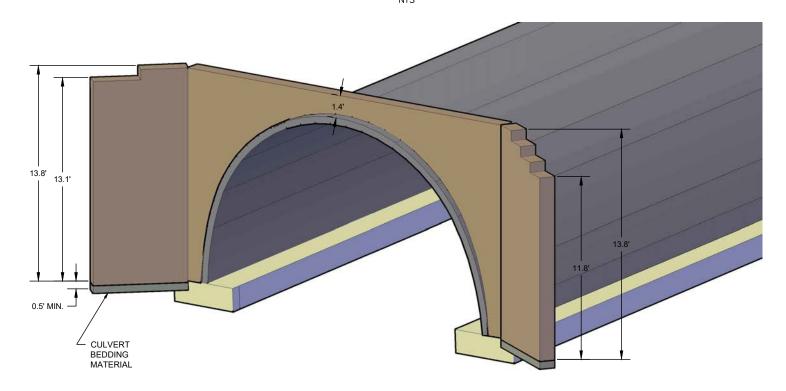
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SHEET **7** OF **13**



UPSTREAM HEADWALL & WINGWALL ISOMETRIC VIEW



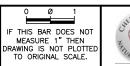


DOWNSTREAM HEADWALL & WINGWALL ISOMETRIC VIEW

DOWNSTREAM HEADWALL & WINGWALL PLAN VIEW

- HEADWALLS AND WINGWALLS SHALL BE STRUCTURAL EARTH WALLS. SEE SECTION 6-13 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
- HEADWALL AND WINGWALLS SHALL BE DESIGNED SUCH THAT NO GAP IS PRESENT BETWEEN THE WALLS AND THE CULVERT. THE CONTRACTOR IS ENCOURAGED TO SELECT A STRUCTURAL EARTH WALL SYSTEM THAT IS COMPATIBLE WITH THE STRUCTURAL PLATE CULVERT. USE OF NON-SHRINK GROUT IS ALLOWABLE TO FILL ANY GAPS RESULTING FROM HEADWALL AND WINGWALL CONSTRUCTION.
- CONTRACTOR SHALL SUBMIT STRUCTURAL EARTH WALL WORKING DRAWINGS TO CONTRACTING AGENCY FOR REVIEW AND APPROVAL.







	NAME OR	INITIALS	AND	DATE	GEOGRAPH	IC INFORMATION
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	CHECKED	RH			LONGITUDE	120°37'55"W
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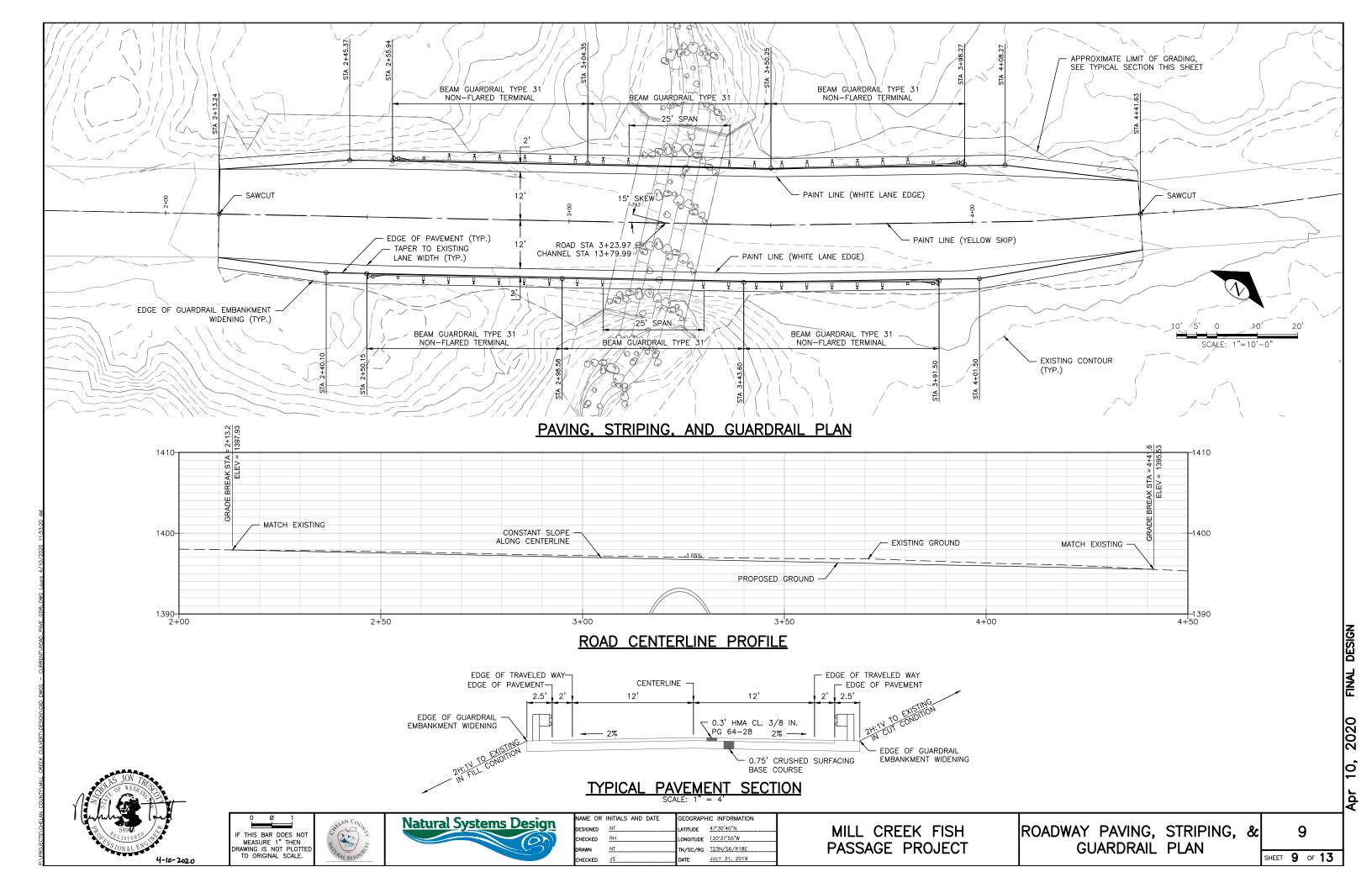
MILL CREEK FISH PASSAGE PROJECT **DETAILS**

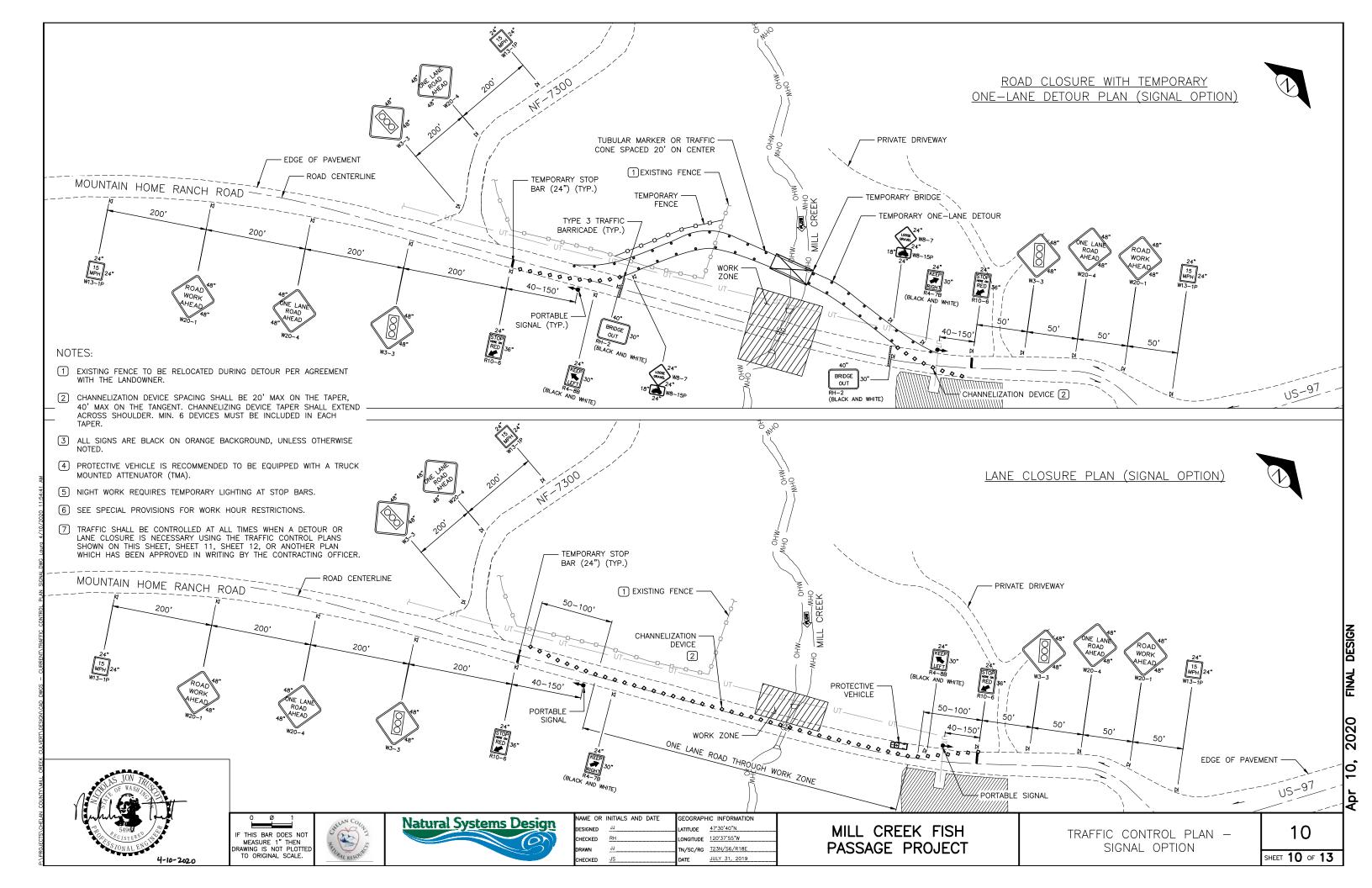
8 SHEET **8** OF **13**

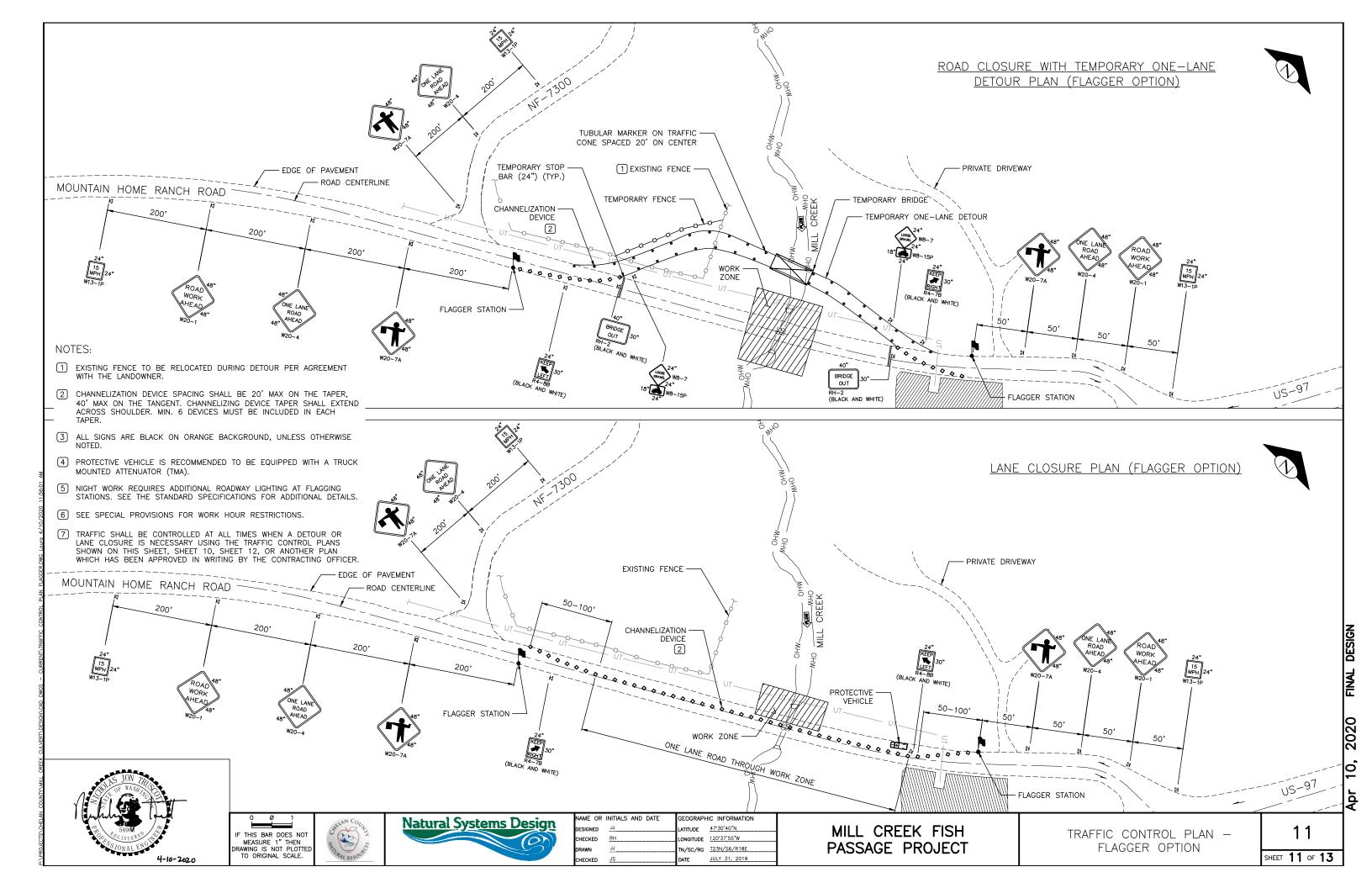
Apr 10, 2020

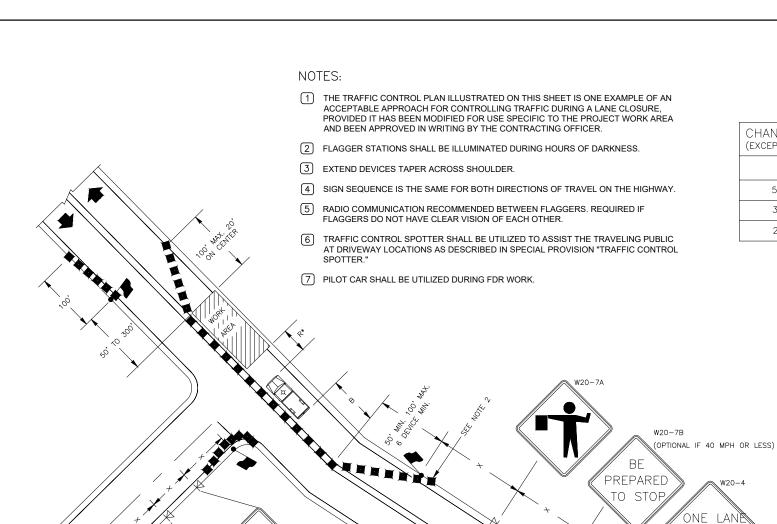
FINAL DESIGN

HEADWALL & WINGWALL









CHANNELIZING (except for flagg	DEVICE SPA	ACING (FEET) nts)		
MPH	TAPER	TANGENT		
50/65	40	80		
35/45	30	60		

20

40

25/30

W20-1

ROAD WORK AHEAD

ROAD

AHEAD

SIGN SPACING = X (F	EET)	
RURAL HIGHWAYS	60/65 MPH	800'+-
RURAL ROADS	45/55 MPH	500'+-
URBAN ARTERIALS AND RURAL ROADS	35/40 MPH	350'+-
RURAL ROADS URBAN STREETS RESIDENTIAL AREAS & BUSINESS DISTRICTS	25/30 MPH	200'+-
ALL SIGNS ARE 48" X 48" AND OTHERWISE DESIGNATED.	BLACK ON ORANGE	UNLESS

BUFFER DATA									
BUFFER SPACE	BUFFER SPACE = B								
SPEED (MPH)	25	30	35		40	45	50	55	60
LENGTH (feet)	155	200	250		305	360	425	495	570
PROTECTIVE VEH	HICLE RO	LL AHE	EAD [DIS	TANCE	= R			
VEHICLE TYPE	TYPICAL VEHICLE LOADED WEIGHT (LBS)			POSTED SPEED (MPH)		STATIONARY OPERATION (MPH)			
4 YARD DUMP TRUCK	24,000			50-5 45	5		'5 0		
2 TON CARGO TRUCK	15,000			50-5 45	5		00 5		
1 TON		000							
CARGO TRUCK	10,000			50-55		5	150		
ROLL AHEAD S	TOPPING	DISTAN	ICE A	L 4S3	45 SUMES	DRY		00 INT.	

^{*} WHEN A TMA IS USED, THE ROLL AHEAD DISTANCE IS 30' MIN. TO 100' MAX. PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.

ALTERNATING ONE—WAY TRAFFIC FLAGGER
CONTROLLED OR PILOT CAR CONTROLLED



O Ø 1

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

PREPARED TO STOP

ÍNE LANÈ

ROAD AHEAD

ROAD WORK

AHEAD

4-10-2020

W20-1

W20-7B

PILOT CAR OPERATIONS

G20-4 36" X 18"

PILOT CAR

FOLLOW ME

(ON PILOT CAR)

(OPTIONAL IF 40 MPH OR LESS)

FOR PILOT CAR OPERATIONS THE FOLLOWING SIGNS SHALL BE REQUIRED TO SUPPLEMENT THE SIGNS SHOWN ON THIS PLAN.

STOP

WAIT FOR

PILOT CAR

(FOR ROAD APPROACHES AS NEEDED)



WAIT FOR PILOT CAR

USE THIS SIGN IF NO FLAGGERS ARE ON DUTY WITH APPROVAL FROM ENGINEER

LEGEND

DATE GEOGRAPI	GEOGRAPHIC INFORMATION	
LATITUDE	47'30'40"N	
LONGITUDE	120'37'55"W	
TN/SC/RG	T23N/S6/R18E	
DATE	JULY 31, 2019	
	LATITUDE LONGITUDE TN/SC/RG	

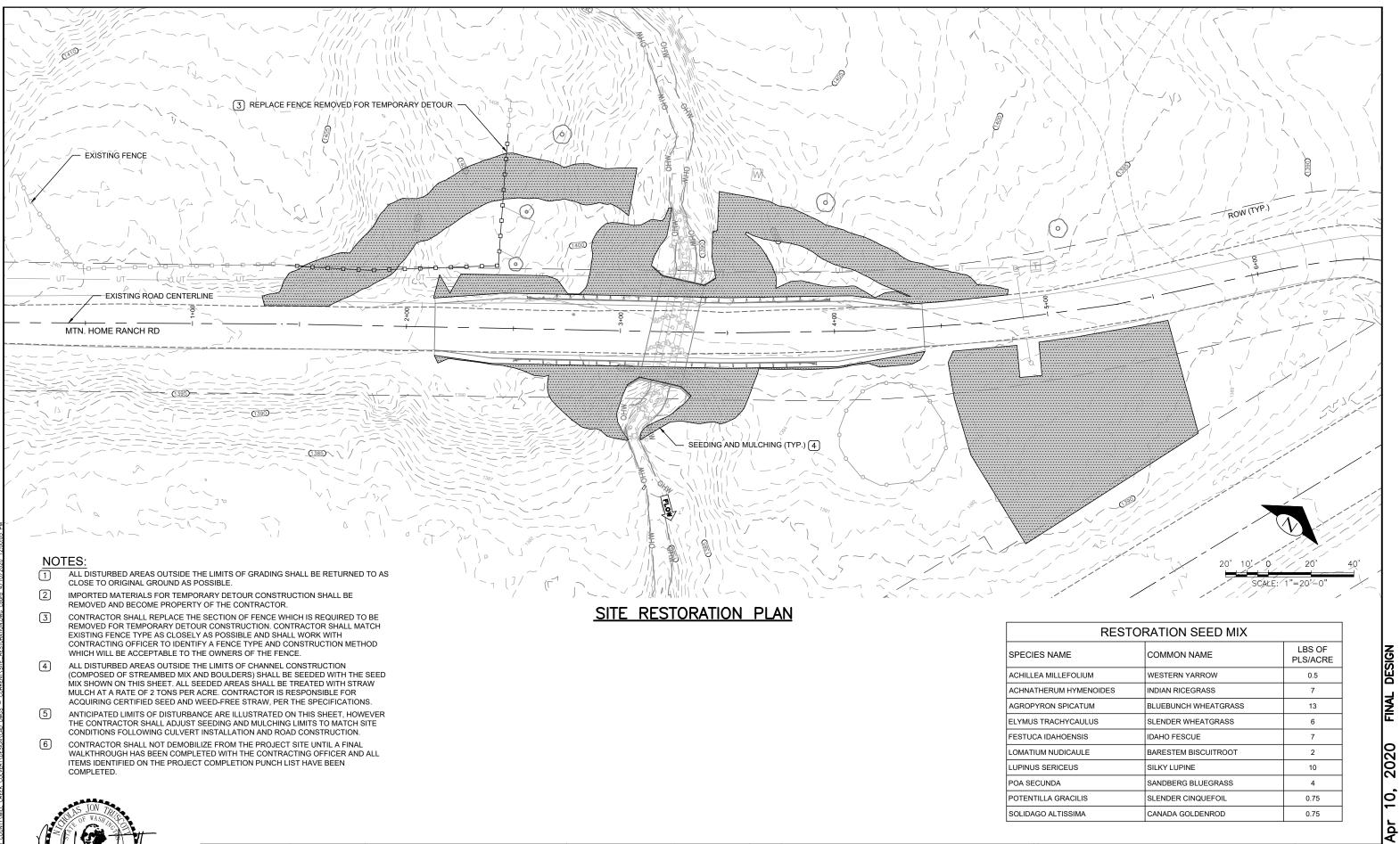
SIGN LOCATION - TRIPOD MOUNT

FLAGGING STATION

EXISTING STOP BAR

(WHEN SPECIFIED IN CONTRACT)

TEMPORARY TRAFFIC CONTROL DEVICES











NAME OR	NITIALS AND DATE	GEOGRAPH	IIC INFORMATION
DESIGNED	NT	LATITUDE	47*30'40"N
CHECKED	RH	LONGITUDE	120'37'55"W
DRAWN			T23N/S6/R18E
CHECKED		DATE	JULY 31, 2019
CHECKED		DATE	

MILL CREEK FISH PASSAGE PROJECT

SITE RESTORATION PLAN

13

SHEET 13 OF 13