Nell Creek Fish Passage

Project Sponsor: Curry Watersheds Nonprofit (CWN)

Project Location: 99898 S Bank Chetco Road
Brookings, OR 97415
T40S R13W Section 24
Lat: 42.09751, Long: -124.19235

Start Date: August 19, 2024

Completion Date: September 30, 2024

Project Summary

An existing road crossing over Nell Creek on the privately owned section of the South Bank Chetco River Road will be reconstructed to replace a failing, undersized 60 inch diameter corrugated metal culvert with an embedded, multi-plate arch pipe measuring 15 feet 4 inches in width by 10 feet 4 inches in height by 45 feet in length. Approximately 115 linear feet of roughened rock channel will be constructed, starting approximately 62 feet downstream of the road crossing, and extending through the upstream end of the pipe arch. Approximately 140 linear feet of asphalt (~190 SY) will be replaced where the road crossing is excavated. Approximately 130 feet downstream of the road crossing, an existing concrete sill will be removed and replaced with ~60 feet of roughened rock channel.

Scope of Work

1. Tree Removal
   At the location of the Nell Creek culvert replacement, 15-20 trees will be removed to create a work zone for the road reconstruction. The trees vary in size and species, and ~5 trees may need to be climbed or felled from a bucket truck to avoid damage to an adjacent home. Contractor will fall the trees, pile the limbs and brush, and buck the logs to manageable lengths, to be stored on-site.

2. Dewater Nell Creek
   Within the project site, Nell Creek will be dewatered during construction if the stream is flowing, or if subsurface flow could result in turbid water reaching lower Nell Creek and/or the Chetco River. Contractor is responsible for establishing coffer dams and routing stream flow (surface or subsurface) around construction activities. CWN's Project Manager will coordinate with the Oregon Department of Fish and Wildlife prior to the start of construction activities to salvage fish and other aquatic organisms from the project site, as needed.

3. Temporary Pedestrian Crossing
   There are approximately 7 occupied residential properties beyond the Nell Creek road crossing. A temporary, emergency access is in place for fire, ambulance, etc. vehicles, but the landowners will

need a pedestrian crossing over Nell Creek while the road is impassable. Contractor is responsible for constructing a temporary pedestrian crossing at the location of the concrete sill, using 24-inch diameter culvert and excavation spoils from the Nell Creek road crossing. Contractor will remove the temporary crossing after the Nell Creek crossing is passable for residential vehicles.

4. Road Culvert Replacement
   The existing 60-inch diameter culvert will be replaced with an embedded, multi-plate arch pipe. Approximately 140 linear feet of asphalt will be removed. Excavation spoils will be temporarily stored on-site. Suitable excavated material can be reincorporated into the reconstruction of the road fill. The remainder of the excavation spoils, excluding the asphalt, will be blended into the hillslope topography adjacent to the stream crossing. The CWN's Project Manager will determine the exact location and contouring of the spoils. Contractor is responsible for disposing of the asphalt and the 60-inch diameter culvert, off-site, at Contractor's expense. Telephone and broadband communication lines are buried in the road fill. Contractor is responsible for requesting a utility locate prior to construction, and working with the respective utility companies to protect and/or temporarily relocate the lines. See attached project design for specifications and details.

5. Roughened Rock Channel through Road Crossing
   Approximately 115 linear feet of roughened rock channel will be constructed to provide grade control on the stream channel and fish passage through the embedded arch pipe. The roughened rock channel will start ~62 feet downstream of the road crossing, and extend through the upstream end of the arch pipe. Construction of the roughened rock channel requires precise placement of large boulders and shaping of angular rock to create the engineered channel shape and gradient. Natural stream bed material (rounded rock) will be washed into the voids within the angular rock, to completely seal the roughened rock channel. If Nell Creek is flowing at the time of construction, it can serve as the water source to wash in the stream bed material; otherwise, Contractor is responsible for providing water. Water used to wash in the stream bed material must be contained on-site, and cannot flow into lower Nell Creek and/or the Chetco River. Excavated stream bed material that meets engineering specifications can be reused to fill voids in the roughened rock channel. See attached project design for specifications and details.

6. Replace Concrete Sill with Roughened Rock Channel
   Approximately 130 feet downstream of the road crossing, a concrete sill will be completely removed and disposed of off-site. In its place, ~60 feet of roughened rock channel will be constructed, in the same manner as the upstream roughened rock channel. See attached project design for specifications and details.

Other Considerations

- Machines used to excavate and place materials in Nell Creek are required to run bio-degradable hydraulic fluid (*permit requirement*).
- The CWN reserves the right to conduct a visual inspection of the Contractor's machine(s) prior to unloading, and to require off-site cleaning if the machine(s) is not clean (*free of dirt, vegetation, excessive grease, and/or leaks*).
- The Contractor, contractor employees, and subcontractors are expected to know and abide by the fire regulations that are in effect during project implementation. The project area is within the jurisdiction of the Oregon Department of Forestry and Coos Forest Patrol Association.
- The Contractor must be able to legally carry out project activities in the state of Oregon.
- The Contractor shall obtain and maintain, at its own expense, for the duration of this Agreement, general liability insurance with a combined single limit, or the equivalent, of not less than $2,000,000 for each occurrence for Bodily Injury and Property Damage. If driving for contractual work, then Auto Liability must be at least $1,000,000 combined single limit.

Construction Bid

The Nell Creek Fish Passage construction contract will be awarded using a Fixed Price Bid, with a Time and Materials subcomponent with a not-to-exceed amount.

The Fixed Price Bid includes the implementation of the six (6) items listed above in the Scope of Work. **Contractor is responsible for all material costs except the arch pipe.** The CWN purchased the arch pipe in advance to ensure sufficient time for fabrication. The arch pipe will be delivered to a drop location (TBD) off of the South Bank Chetco River Road. Contractor is responsible for reloading and transporting the arch pipe to the Nell Creek project site.

The Time and Materials subcomponent will be used to perform additional grading and contouring, site rehab, etc. that is not specified in the project design. Time and Materials activities will be directed by the CWN Project Manager.

The construction contract will be awarded to the most "Responsive, Responsible" contractor, based on the following criteria:

- Price (fixed price bid) – up to 40 points
- Availability (estimated start and completion date) – up to 30 points
- Experience – up to 30 points

The Curry Watersheds Nonprofit will provide the following:

- Ensure all permits, permissions, etc. are in place to conduct the project
- Coordinate fish and aquatic organism salvage prior to construction

- Mark trees to be removed
- Designate staging and spoils locations, and access routes
- Purchase the arch pipe and coordinate delivery to a drop location off the South Bank Chetco River Road
- Coordinate and manage landowner access

Construction Bid Process

In order to submit a construction bid, **Contractor must attend an on-site pre-award meeting on Monday, July 22, 2024 at 2:30 p.m.** The meeting location is: 99898 S Bank Chetco Road; Brookings, OR 97415. See attached Map 1. Contact Matt Swanson (541) 373-0800 if you have questions.

Contractor must submit a Nell Creek Fish Passage Construction Bid Form (see page 5) by 5:00 p.m. on Monday, July 29, 2024 to be considered for this project. Contractor may submit the form:

- In-person at the Curry Soil and Water Conservation District office: 29286 Ellensburg Ave, Gold Beach, OR 97444.
- By email: matt.swanson@currywatersheds.org
- By fax: (541) 247-0408, or
- By mail: Curry SWCD, Attn. Matt Swanson; PO Box 666, Gold Beach, OR 97444.

The Curry Watersheds Nonprofit will award the contract by the close of business on Monday, August 5, 2024, unless clarifying questions delay the award.

Nell Creek Fish Passage Construction Bid Form

Contractor Name: _____

Contractor Email & Phone: _____

Construction Contractor License: _____

Fixed Price Bid (total cost to complete the Scope of Work): _____

Machinery – for each piece of machinery that will be used, provide the following: type (i.e., excavator); weight of the machine; attachment(s); hourly rate; and mobilization/demobilization cost.

_____

_____

_____

_____

Availability When will you start construction? _____

Estimated time (in weeks) to replace the Nell Creek culvert? _____

Experience Experience installing embedded arch culverts (Y/N): _____ How many? _____

Experience constructing roughened rock channel (Y/N): _____ How many? _____

Past Projects – list any past projects (project name & contact) that you've implemented to demonstrate your experience installing embedded arch pipes and/or constructing roughened rock channel.

_____
_____
_____
_____
_____
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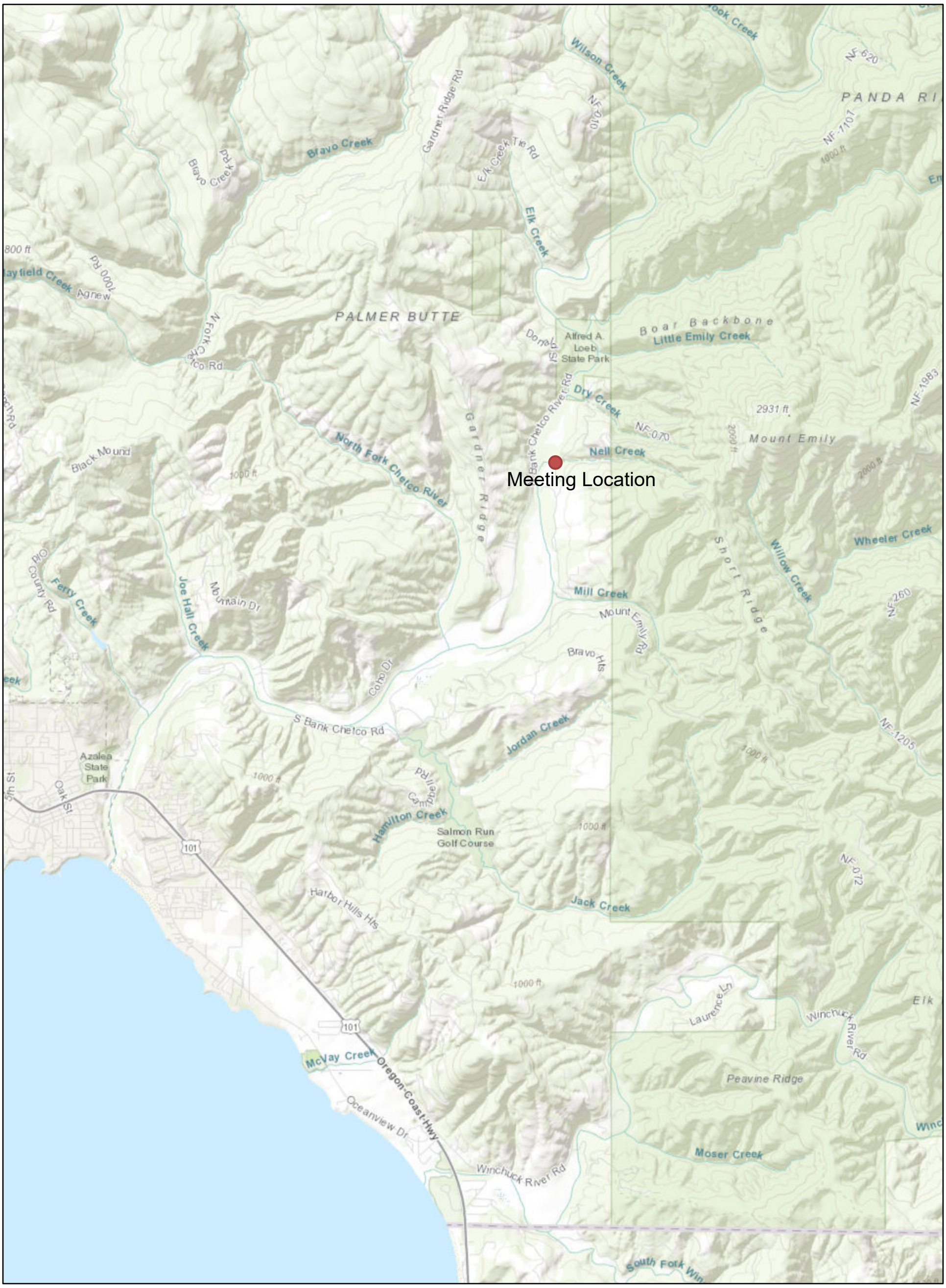
_____
_____
_____
_____
_____

Map 1. Nell Creek Fish Passage: Pre-Award Meeting Location



1:72,224

0 0.5 1 2 mi

0 1 2 4 km

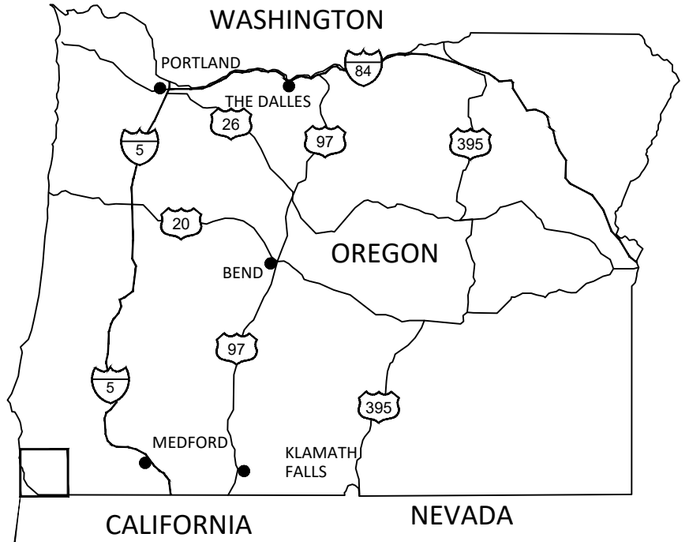
Bureau of Land Management, State of Oregon, State of Oregon DOT, State of Oregon GEO, Esri Canada, Esri, HERE, Garmin, USGS, METI/NASA, NGA, EPA, USDA

Created by LCOG for Curry County

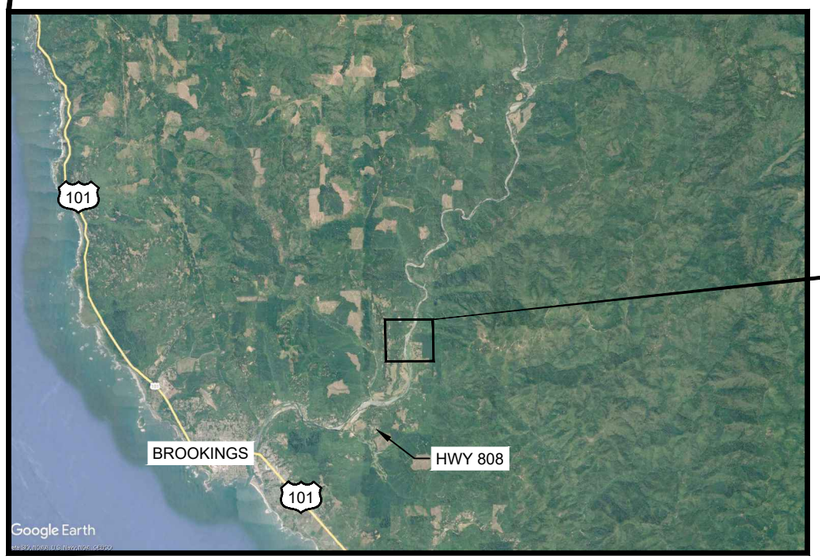
NELL CREEK FISH PASSAGE ENHANCEMENT PROJECT

FINAL DESIGN

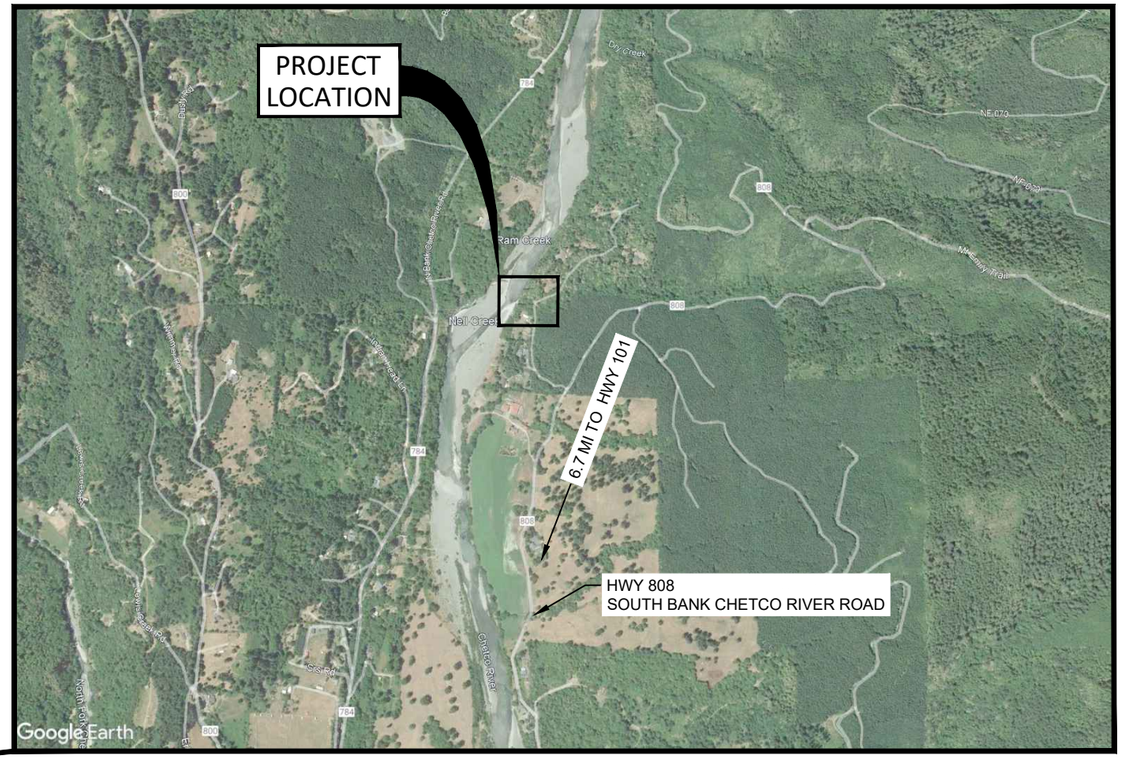
MAY 2024



LOCATION MAP
STATE OF OREGON
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

SHEET LIST

COORDINATES:
LATITUDE : 42.09751°N
LONGITUDE: 124.19235°W
CURRY COUNTY, OREGON

WATERBODY: NELL CREEK
TRIBUTARY OF: CHETCO RIVER

REGISTERED PROFESSIONAL ENGINEER
19089PE
Daniel Miller
OREGON
May 15, 1997
DANIEL S. MILLER
EXPIRES: 12/31/2024

NO.	BY	DATE	REVISION DESCRIPTION

JR, BB DRAWN	DM, JB DESIGNED	MB, JB, MS CHECKED
DM APPROVED	5/24/2024 DATE	220255 PROJECT

CURRY WATERSHEDS NONPROFIT
FINAL DESIGN
NELL CREEK FISH PASSAGE

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

COVER AND SHEET INDEX

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THE CONTRACTOR SHALL ATTEND A PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE CONTRACTING AGENT CURRY WATERSHEDS NONPROFIT (CWN) AND CONTRACTING AGENT'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

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

IN CASE OF DISCREPANCY, BETWEEN NOTES, LOCAL REGULATIONS, OR OTHER CONTRACT DOCUMENTATION, CONTRACTOR SHALL OBTAIN CLARIFICATION/DIRECTION FROM CONTRACTING AGENT (CWN).

EXISTING DATA

TOPOGRAPHIC SURVEY COLLECTED BY INTER-FLUVE, INC. USING TOTAL STATION AND RTK GPS ON SEPTEMBER 21, 2022 AND FEBRUARY 28,2024. SURVEY DATA IS REFERENCED TO NAD83 OREGON STATE PLANE, SOUTH ZONE, INTL FEET, NAVD 88.

LIDAR BARE EARTH DATASET IS FROM THE 2020 OREGON LIDAR CONSORTIUM SOUTH COAST 3DEP PROJECT, AND WAS PROVIDED BY CURRY SOIL & WATER CONSERVATION DISTRICT, CURRY WATERSHEDS PARTNERSHIP. LIDAR WAS COLLECTED BY NV5 GEOSPATIAL BETWEEN OCTOBER 14 AND OCTOBER 26, 2020 WHILE NO SNOW WAS ON THE GROUND AND RIVERS WERE AT OR BELOW NORMAL LEVELS.

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (6.3).

WATERS OF THE U.S.

THE ORDINARY HIGH WATER (OHW) LINES DISPLAYED IN THE DESIGN PACKAGE WERE DELINEATED BY INTER-FLUVE STAFF IN 2022, AND ARE BASED UPON ANALYSIS, MODELING AND BEST PROFESSIONAL JUDGEMENT.

WETLANDS HAVE NOT YET BEEN DELINEATED.

THESE LINES DO NOT NECESSARILY REPRESENT JURISDICTIONAL BOUNDARIES. IN THE STATE OF OREGON, THE OREGON DEPARTMENT OF STATE LANDS (DSL), AND THE UNITED STATES ARMY CORPS OF ENGINEERS (USACE) HAVE THE FINAL AUTHORITY IN DELINEATING WATERS AND WETLANDS BOUNDARIES.

SOILS

SOILS ONSITE ARE COMPOSED OF BAGNESS-PISTOL RIVER COMPLEX, 0 TO 3 PERCENT SLOPES, HIGH PRECIPITATION; AND,FLORAS-BOSLAND-DULANDY COMPLEX, 30 TO 60 PERCENT NORTH SLOPES, AS MAPPED BY NRCS.

UTILITIES

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

CONTRACTOR TO COORDINATE WITH RESIDENTS & UTILITY PROVIDER FOR TEMPORARY RELOCATIONS OF UTILITY LINES, INCLUDING POWER LINES.

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES. THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT THE CONTRACTOR'S EXPENSE.

PERMITS

CONTRACTING AGENCY (CWN) WILL PROVIDE CONTRACTOR WITH COPIES OF PROJECT PERMITS. CONTRACTOR WILL KEEP A COPY OF PROJECT PERMITS ON-SITE AT ALL TIMES, AND IS EXPECTED TO KNOW AND FOLLOW PERMIT REQUIREMENTS.

CWN WILL MONITOR TURBIDITY IN ACCORDANCE WITH PERMIT REQUIREMENTS. IF TURBIDITY EXCEEDS PERMIT THRESHOLDS, CWN WILL DIRECT CONTRACTOR TO TAKE CORRECTIVE ACTION AND/OR STOP INSTREAM CONSTRUCTION ACTIVITIES UNTIL TURBIDITY IS IN COMPLIANCE WITH PERMIT REQUIREMENTS.

IN-WATER WORK PERIODS

CONSTRUCTION ACTIVITIES BELOW ORDINARY HIGH WATER (OHW) CAN TAKE PLACE BETWEEN JULY 15TH AND SEPTEMBER 30TH.

FISH RESCUE

CONTRACTING AGENCY (CWN) AND/OR THE OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW) WILL INSTALL EXCLUSION NETS UPSTREAM AND DOWNSTREAM OF THE PROJECT SITE, AND WILL REMOVE FISH AND OTHER AQUATIC ORGANISMS FROM THE PROJECT SITE PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.

CONTRACTOR WILL NOTIFY CWN AT LEAST 14 DAYS PRIOR TO THE START OF CONSTRUCTION.

CONTRACTOR IS RESPONSIBLE FOR ENSURING EXCLUSION NETS REMAIN IN PLACE AND FUNCTIONAL THROUGHOUT PROJECT CONSTRUCTION. CONTRACTOR WILL IMMEDIATELY NOTIFY CWN IF AN EXCLUSION NET STOPS FUNCTIONING, AND WILL STOP ALL INSTREAM CONSTRUCTION ACTIVITIES UNTIL CWN AND/OR ODFW DETERMINES THE PROJECT SITE IS FREE OF FISH AND OTHER AQUATIC ORGANISMS.

CULTURAL RESOURCES

IF CONTRACTOR ENCOUNTERS ANY CULTURAL RESOURCES INCLUDING:

- NATIVE AMERICAN CULTURAL ARTIFACTS (EXAMPLE: FLAKES, ARROWHEADS, STONE TOOLS, BONE TOOLS, POTTERY, HEARTH FEATURES, ETC)
- HISTORIC ERA ARTIFACTS (EXAMPLE: BUILDING FOUNDATIONS, HOMESTEADS, MINING CAMPS, ETC)
- HUMAN SKELETAL REMAINS AND BONE FRAGMENTS

CONTRACTOR SHALL IMMEDIATELY DISCONTINUE ALL GROUND-DISTURBING ACTIVITY. DO NOT TOUCH OR MOVE THE OBJECTS AND MAINTAIN THE CONFIDENTIALITY OF THE SITE. FOLLOW THE PROCEDURES LISTED IN SHPO INADVERTENT DISCOVERY PROCEDURE. THEN AWAIT FURTHER DIRECTION FROM CULTURAL RESOURCES STAFF.

TREE SALVAGE

ALL SAPLING AND TREES TO BE REMOVED SHALL BE APPROVED AND CLEARLY MARKED BY THE CONTRACTING AGENT'S REPRESENTATIVE.

ALL REMOVED NATIVE VEGETATION SHALL BE INCORPORATED SHALL BE DISTRIBUTED IN DESIGNATED AREAS ON THE FLOODPLAIN OR ON THE FLOODPLAIN AS DIRECTED BY THE CONTRACTING AGENT'S REPRESENTATIVE.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE FELLED WITH STUMP AND ROOTS LEFT INTACT IN THE GROUND AS DIRECTED BY CONTRACTING AGENT'S REPRESENTATIVE.

LIVE TREES

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

KEEP OUT OF DRIP LINE OF ALL PRESERVED EXISTING TREES.

PLANTINGS

CONTRACTING AGENCY WILL REPLANT THE PROJECT SITE WITH LIVE SEEDLINGS.

CONTRACTOR'S PLANS

CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL BY THE CONTRACTING AGENT PRIOR TO COMMENCING WORK THE FOLLOWING PLANS:

- ACCESS, TRAFFIC CONTROL AND TEMPORARY STREAM CROSSING PLAN
- CONSTRUCTION SEQUENCING PLAN
- STREAM DIVERSION AND SITE DEWATERING PLAN
- EROSION, SEDIMENT AND DUST CONTROL PLAN
- EARTHWORKS EXCAVATION, PLACEMENT, SALVAGE & REUSE, AND DISPOSAL PLAN

CONSTRUCTION ACCESS

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS, AND PROVIDING REQUIRED TRAFFIC CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, SIGNAGE AND FLAGGERS.

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

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

TEMPORARY ACCESS ROUTES IN AREAS PRONE TO INUNDATION DURING THE IN-WATER WORK WINDOW SHALL BE DECOMMISSIONED BEFORE THE END OF THE IN-WATER WORK WINDOW.

CONSTRUCTION STAKING

THE CONTRACTING AGENT (CWN) OR DESIGNATED REPRESENTATIVE WILL INSTALL STAKES AND FLAGGING TO DELINEATE EQUIPMENT ENTRY AND EXIT POINTS, STAGING AND STOCKPILE AREAS, AND PROJECT LIMITS. THE CONTRACTING AGENT (CWN) WILL INSTALL ELEVATION CONTROL POINTS. THE CONTRACTOR SHALL BE RESPONSIBLE, AT OWN EXPENSE, FOR STAKING AND REPLACING DAMAGED OR MISSING STAKES.

THE CONTRACTING AGENT (CWN) AND CONTRACTING AGENT'S REPRESENTATIVE WILL MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

CONTRACTOR SHALL BE RESPONSIBLE FOR GRADE STAKEOUT. CONTRACTOR SHALL ALLOW ACCESS TO OWNER'S REPRESENTATIVE FOR SURVEY TO VERIFY GRADING IS CORRECT.

SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

ANY PROPERTY MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY AN OREGON STATE PROFESSIONAL LICENSED SURVEYOR AT CONTRACTOR'S EXPENSE.

REGISTERED PROFESSIONAL ENGINEER
19089PE
OREGON
May 15, 1997
DANIEL S. MILLER
EXPIRES: 12/31/2024

QUANTITIES

Item	Quantity	Units
Construction		
Road excavation to subgrade	850	CY
Road crossing structure	1	LS
Structure - pipezone backfill	221	CY
Structure - general backfill	422	CY
Structure - roughened channel	193	CY
Channel shaping upstream	57	CY
Asphalt replacement	190	SY
Concrete weir removal	1	LS
Roughened channel at weir	70	CY
Revegetation	1	LS

Abbrevations:	
	CY = cubic yards
	LS = lump sum
	SY = square yards

ABBREVIATIONS

APPROX	APPROXIMATE
BMP	BEST MANAGEMENT PRACTICES
BST	BITUMINOUS SURFACE TREATMENT
CWA	CLEAN WATER ACT
CWN	CURRY WATERSHEDS NONPROFIT
CY	CUBIC YARDS
°	DEGREES
DIA	DIAMETER
DBH	DIAMETER AT BREAST HEIGHT
DSL	OREGON DEPARTMENT OF STATE LANDS
EA	EACH
EC	EROSION CONTROL
EL or ELEV	ELEVATION
ESA	ENDANGERED SPECIES ACT
ESC	EROSION AND SEDIMENT CONTROL
EXIST	EXISTING
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FT or '	FEET
FTR	FULLY THREADED ROD
HEC-RAS	HYDROLOGIC ENGINEERING CENTER RIVER ANALYSIS SYSTEM
HORIZ	HORIZONTAL
IN or "	INCH
INV	INVERT
LBS	POUNDS
LF	LINEAR FOOT
LIDAR	LIGHT DETECTION AND RANGING
MAX	MAXIMUM
MIN	MINIMUM
MSF	THOUSAND SQUARE FEET
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NMFS	NATIONAL MARINE FISHERIES SERVICE
NRCS	NATIONAL RESOURCES CONSERVATION SERVICE
ODOT	OREGON DEPARTMENT OF TRANSPORTATION
OHW	ORDINARY HIGH WATER
OLW	ORDINARY LOW WATER
%	PERCENT
RMx	RIVER MILE x
RTK GPS	REAL-TIME KINEMATIC GLOBAL POSITIONING SYSTEM
SHPO	STATE HISTORIC PRESERVATION OFFICE
STA	STATION
STD	STANDARD
SY	SQUARE YARDS
TBD	TO BE DETERMINED
TYP	TYPICAL
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE
VERT	VERTICAL
WSE	WATER SURFACE ELEVATION
YR	YEAR

NO.	BY	DATE	REVISION DESCRIPTION

JR, BB	DM, JB	MB, JB, MS
DRAWN	DESIGNED	CHECKED
DM	5/24/2024	220255
APPROVED	DATE	PROJECT

CURRY WATERSHEDS NONPROFIT
FINAL DESIGN
NELL CREEK FISH PASSAGE

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

QUANTITIES & ABBREVIATIONS

SHEET
3 OF 13

REGISTERED PROFESSIONAL ENGINEER
19089PE
Daniel Miller
OREGON
May 15, 1997
DANIEL S. MILLER
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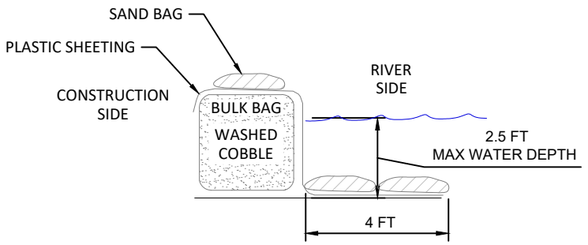
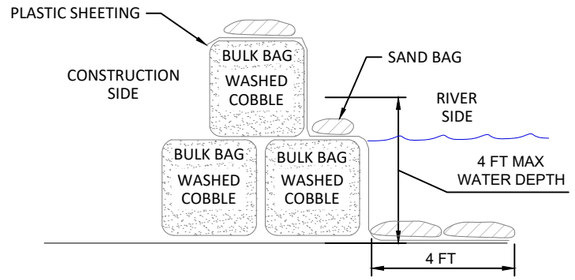


SECTION - WATER DEPTHS LESS THAN 2.5'



SECTION - WATER DEPTHS GREATER THAN 2.5'

1/4 TYPICAL DETAIL - TEMPORARY BULK BAG COFFERDAM

NOT TO SCALE

BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED COBBLE, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE.

2. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM.

3. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON THE RIVER SIDE OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4-FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS. ALL SANDBAGS SHALL BE FILLED WITH WASHED PEA GRAVEL.

4. THE TERMINAL ENDS OF BULK BAG COFFERDAM, WHERE IT CONNECTS TO CHANNEL BANK OR HIGH GROUND, SHALL BE SEALED WITH PLASTIC SHEETING AND STANDARD SANDBAGS.

5. BULK BAGS SHALL BE CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.

6. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. MINIMUM 16-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULK BAG COFFERDAM.

7. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED. BULK BAG FILL (WASHED COBBLE) AND SANDBAG FILL (WASHED PEA GRAVEL) SHALL BE DISPOSED OF ON SITE. BAGS AND PLASTIC SHEETING SHALL BE REMOVED FROM THE SITE ONCE CONSTRUCTION IS COMPLETED.

8. MEASUREMENT AND PAYMENT FOR BULK BAG COFFERDAM, SAND BAGS, PLASTIC SHEETING, WASHED COBBLE PLACEMENT, AND MAINTENANCE AND REMOVAL OF ALL MATERIALS, SHALL BE INCIDENTAL TO THE LUMP SUM ALL INCLUSIVE COST FOR DIVERSION AND DEWATERING.

9. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.

10. IF NECESSARY, GAPS BETWEEN BULK BAGS SHALL BE FILLED WITH WASHED STREAM GRAVEL TO IMPROVE COFFERDAM SEAL.

11. IF FLOW CONDITIONS ENCOUNTERED ON SITE DURING CONSTRUCTION DO NOT ALLOW FOR SUCCESSFUL DEWATERING USING THIS METHOD, SHEETPILE COFFERDAM (HIGH FLOWS) OR SAND BAG COFFERDAM (LOW FLOWS) MAY BE CONSIDERED.

NO.	BY	DATE	REVISION DESCRIPTION

JR, BB	DM, JB	MB, JB, MS
DRAWN	DESIGNED	CHECKED
DM	5/24/2024	220255
APPROVED	DATE	PROJECT

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EROSION CONTROL DETAILS

SHEET
4 OF 13

REGISTERED PROFESSIONAL ENGINEER
19089PE
Daniel Miller
OREGON
May 15, 1997
DANIEL S. MILLER
EXPIRES: 12/31/2024

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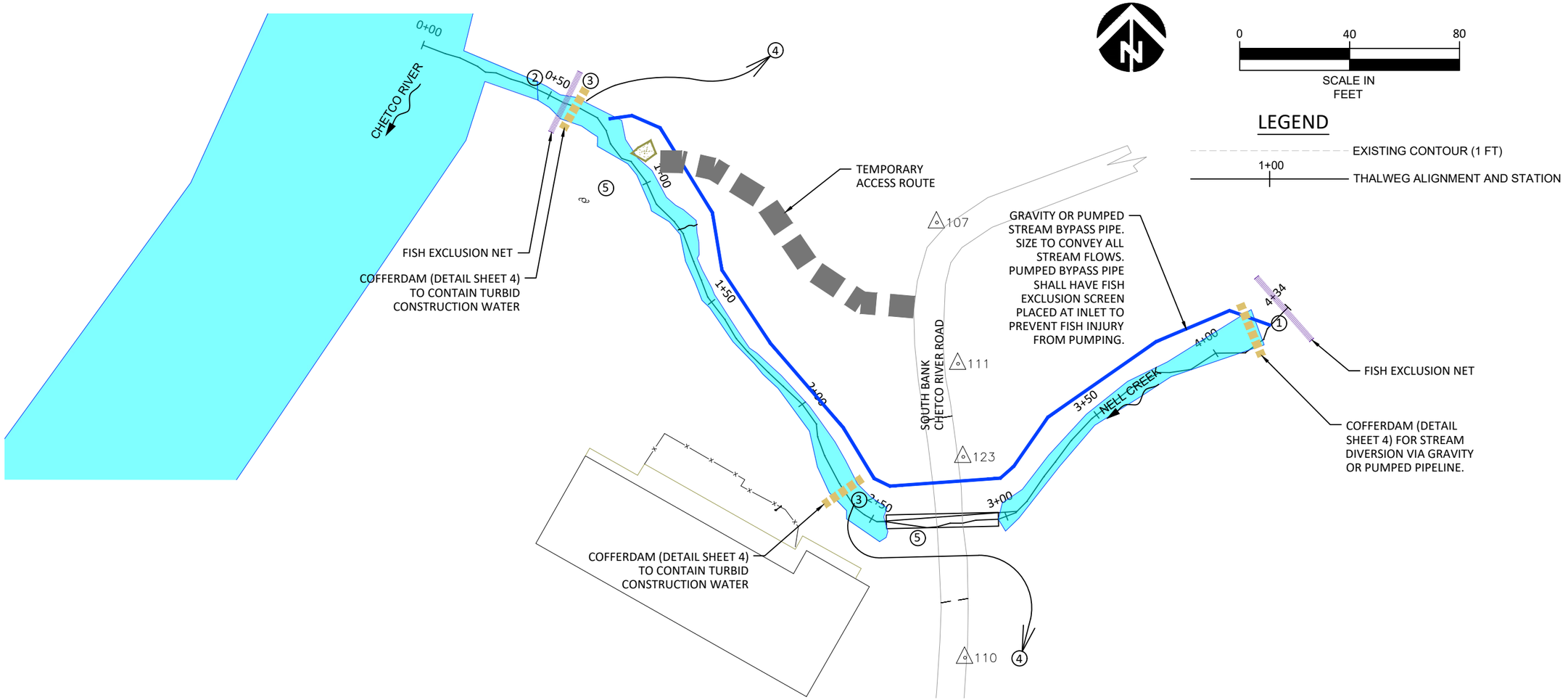


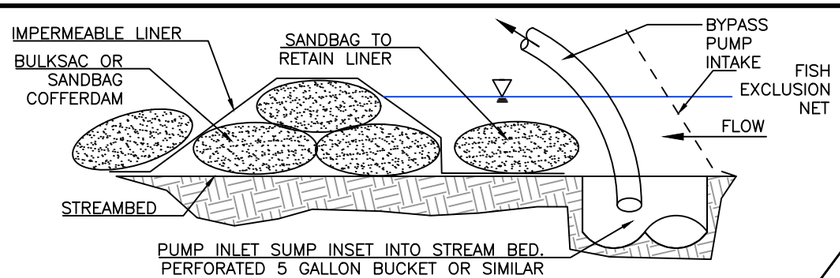
PLAN VIEW

STREAM BYPASS:

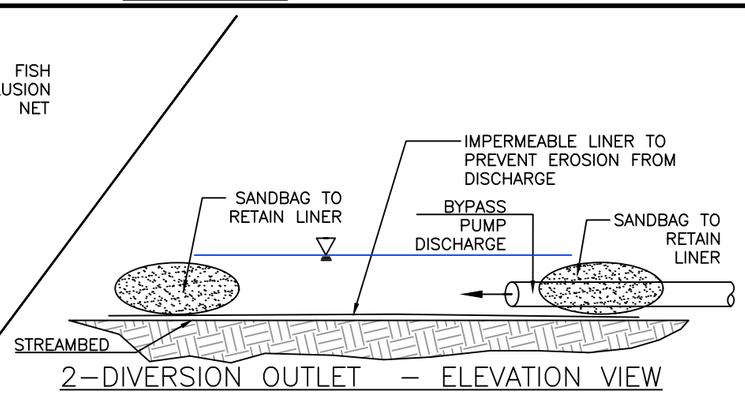
1. PLACE SAND BAG OR BULK SACK COFFERDAM (SEE SHEET 4) LINED WITH IMPERMEABLE LINER. BYPASS SHALL CONVEY ALL STREAM FLOW
2. CONTROL BYPASS FLOW DISCHARGE TO PREVENT EROSION

SITE DEWATERING:

3. PLACE SUMP TO PUMP TURBID WATER
4. DISCHARGE TURBID SITE WATER ONTO UPLAND AREA. LOCATION TO BE APPROVED BY OWNER. CONTROL DISCHARGE TO PREVENT EROSION. INFILTRATION INTO THE GROUND, FILTRATION BY VEGETATION OR SEDIMENT CONTAINMENT BMPs SHALL BE USED TO PREVENT RETURN OF TURBID WATER TO SURFACE WATERS.
5. RECYCLE WATER FOR CONSTRUCTION OF STREAMBED SUBSTRATE TO WASH STREAMBED SEDIMENT IN TO ROUGHENED CHANNEL STONE MIX.



1–PUMPED DIVERSION INLET – ELEVATION VIEW



2–DIVERSION OUTLET – ELEVATION VIEW

STREAM BYPASS INLET AND OUTLET DETAILS

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STAGING & STREAM BYPASS

SHEET 5 OF 13

REGISTERED PROFESSIONAL ENGINEER
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DANIEL S. MILLER
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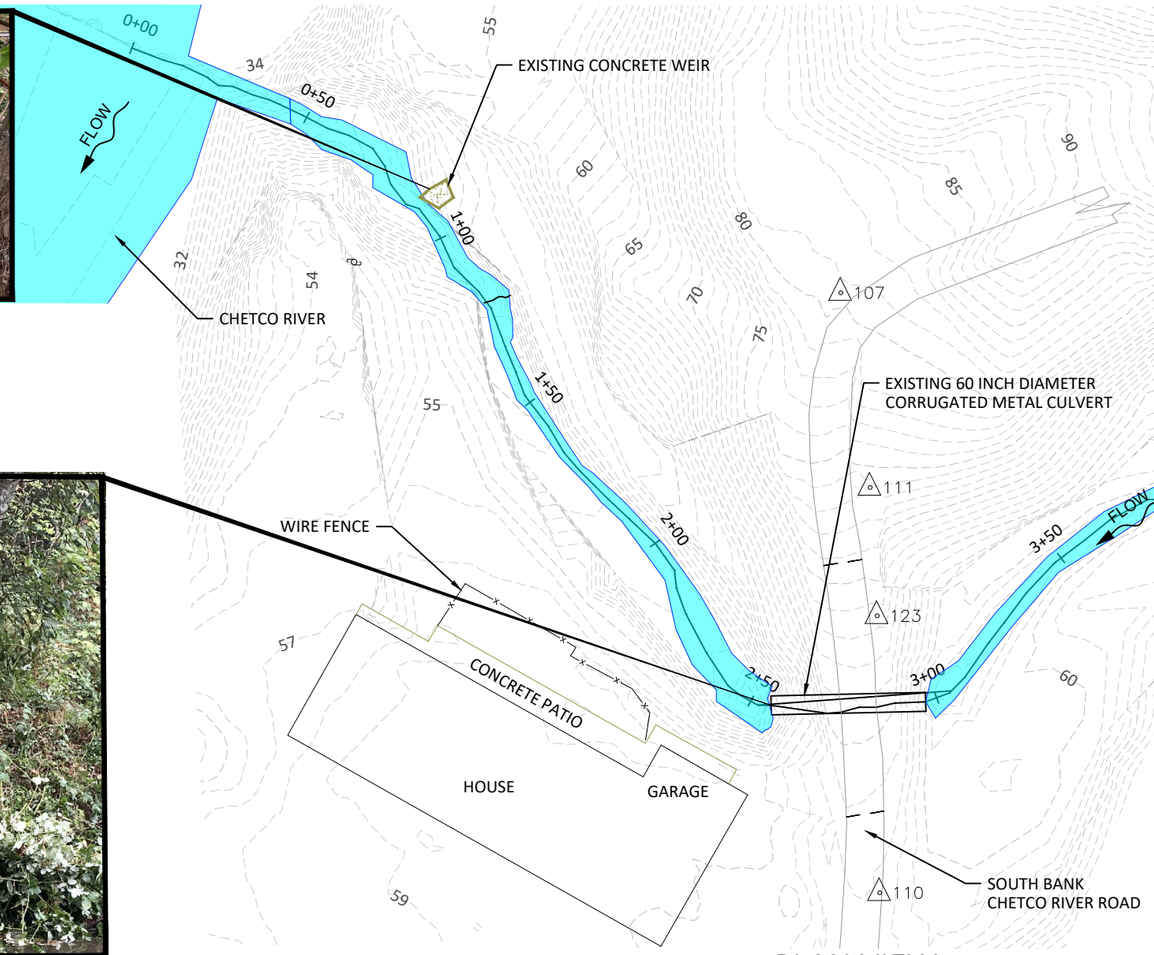
EXISTING CONCRETE WEIR-LOOKING UPSTREAM

EXISTING 60-INCH CMP OUTLET



0 40 80

SCALE IN FEET

LEGEND

EXISTING CONTOUR (1 FT)

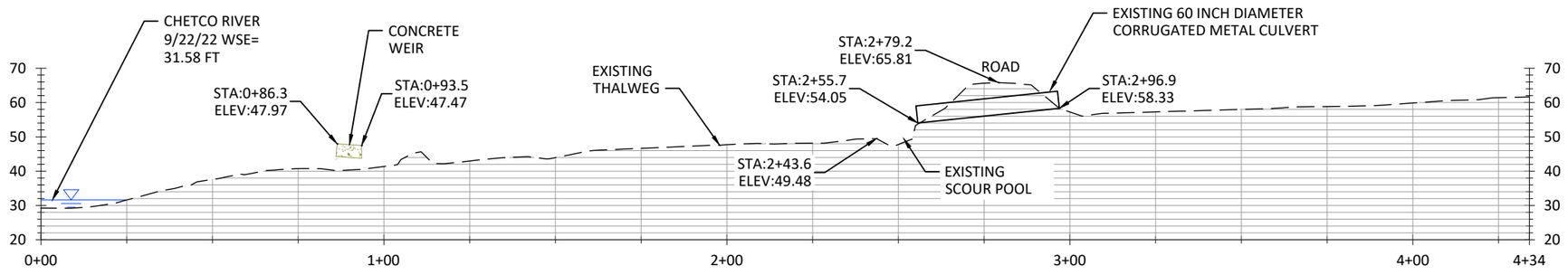
1+00 THALWEG ALIGNMENT AND STATION

TOPOGRAPHIC SURVEY COLLECTED 09/21/2022 AND 02/28/2024 BY INTER-FLUVE WITH TOTAL STATION AND GNSS EQUIPMENT. HORIZONTAL AND VERTICAL COORDINATES ARE NAD83 OREGON STATE PLANE SOUTH ZONE, INTERNATIONAL FOOT.

SURVEY CONTROL POINTS

POINT #	NORTHING	EASTING	ELEVATION	DESC
107	179225.49	3919390.50	80.80	PK Nail
110	179067.14	3919400.76	62.97	PK Nail
111	179174.09	3919398.23	73.33	PK Nail
123	179140.23	3919400.10	68.32	PK Nail

PLAN VIEW



1x VERTICAL EXAGGERATION

40' 40'

PROFILE VIEW

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DM APPROVED | 5/24/2024 DATE | 220255 PROJECT

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EXISTING PLAN & PROFILE

SHEET 6 OF 13

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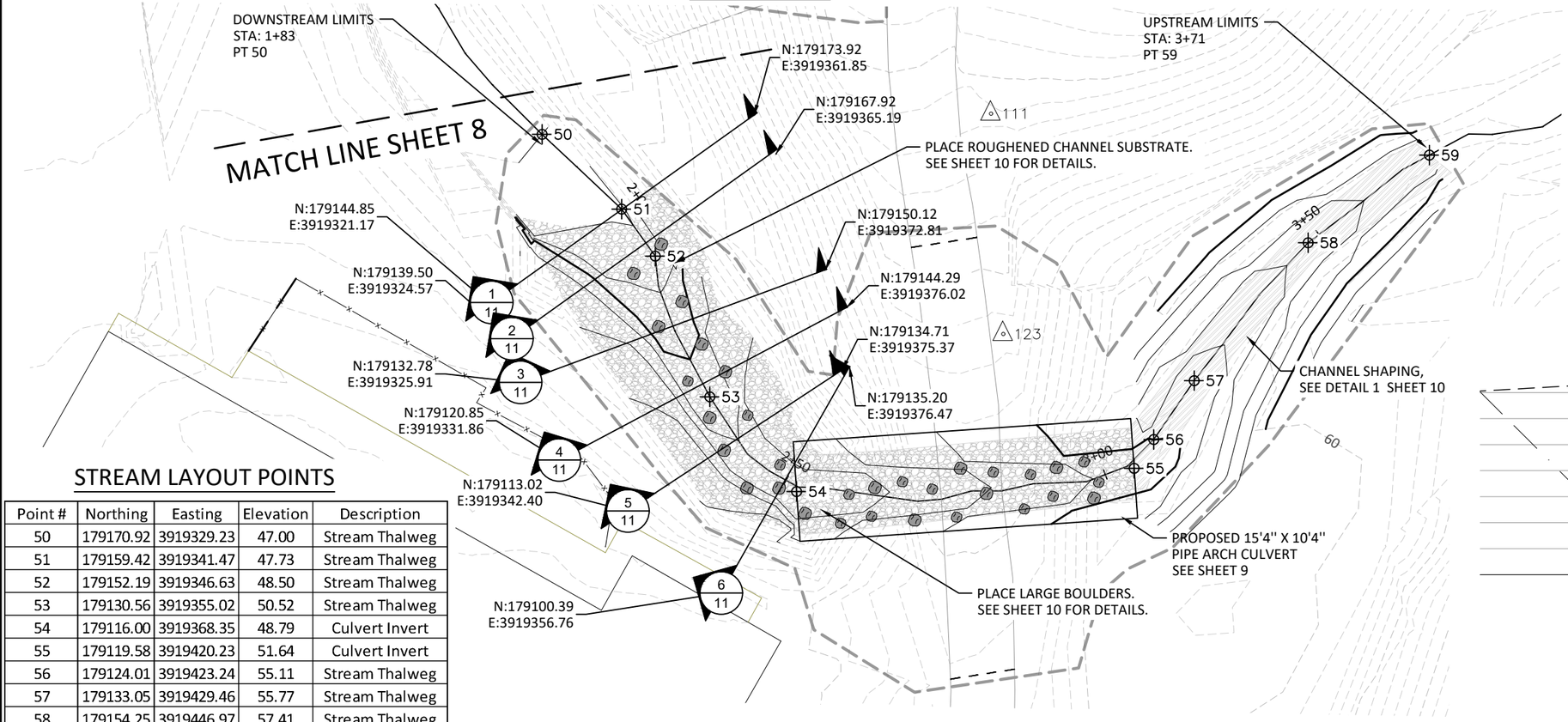
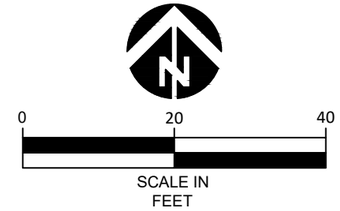
PLAN VIEW



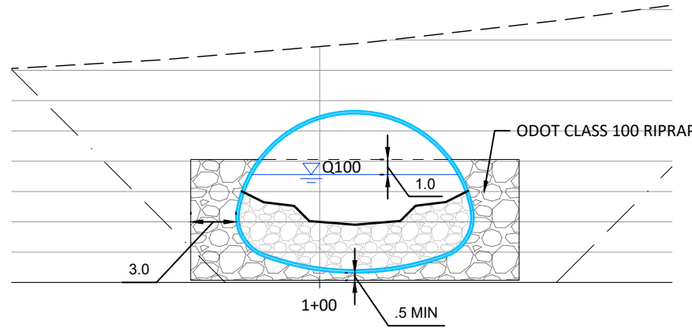
STREAM LAYOUT POINTS

Point #	Northing	Easting	Elevation	Description
50	179170.92	3919329.23	47.00	Stream Thalweg
51	179159.42	3919341.47	47.73	Stream Thalweg
52	179152.19	3919346.63	48.50	Stream Thalweg
53	179130.56	3919355.02	50.52	Stream Thalweg
54	179116.00	3919368.35	48.79	Culvert Invert
55	179119.58	3919420.23	51.64	Culvert Invert
56	179124.01	3919423.24	55.11	Stream Thalweg
57	179133.05	3919429.46	55.77	Stream Thalweg
58	179154.25	3919446.97	57.41	Stream Thalweg
59	179167.72	3919465.61	58.79	Stream Thalweg

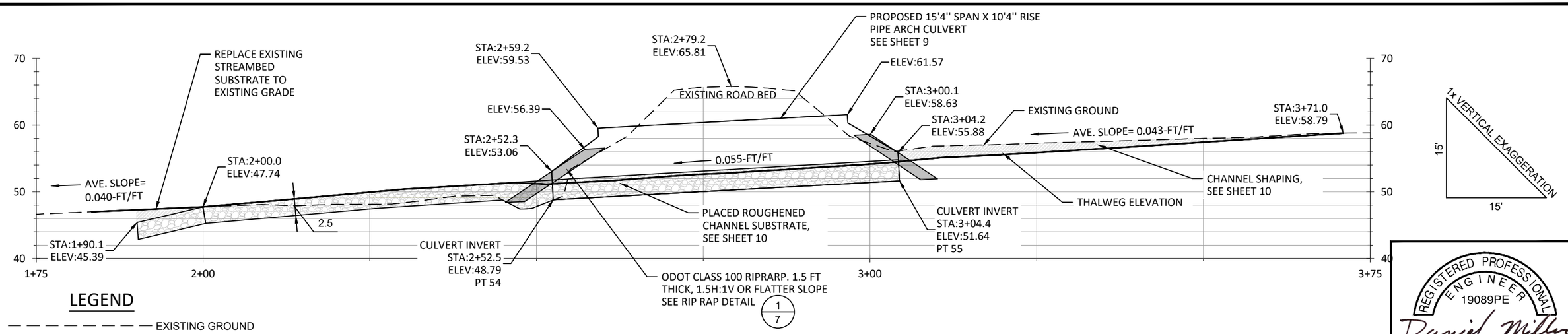


LEGEND

- EXISTING CONTOUR (1 FT)
- PROPOSED CONTOUR (1 FT)
- 1+00 — THALWEG ALIGNMENT AND STATION
- LIMITS OF DISTURBANCE



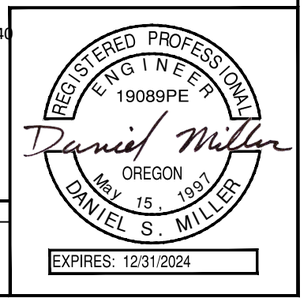
1/7 RIP RAP DETAIL
1"= 10'



LEGEND

- EXISTING GROUND
- FINISHED GRADE

PROFILE VIEW



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PIPE ARCH PLAN & PROFILE

SHEET
7 OF 13

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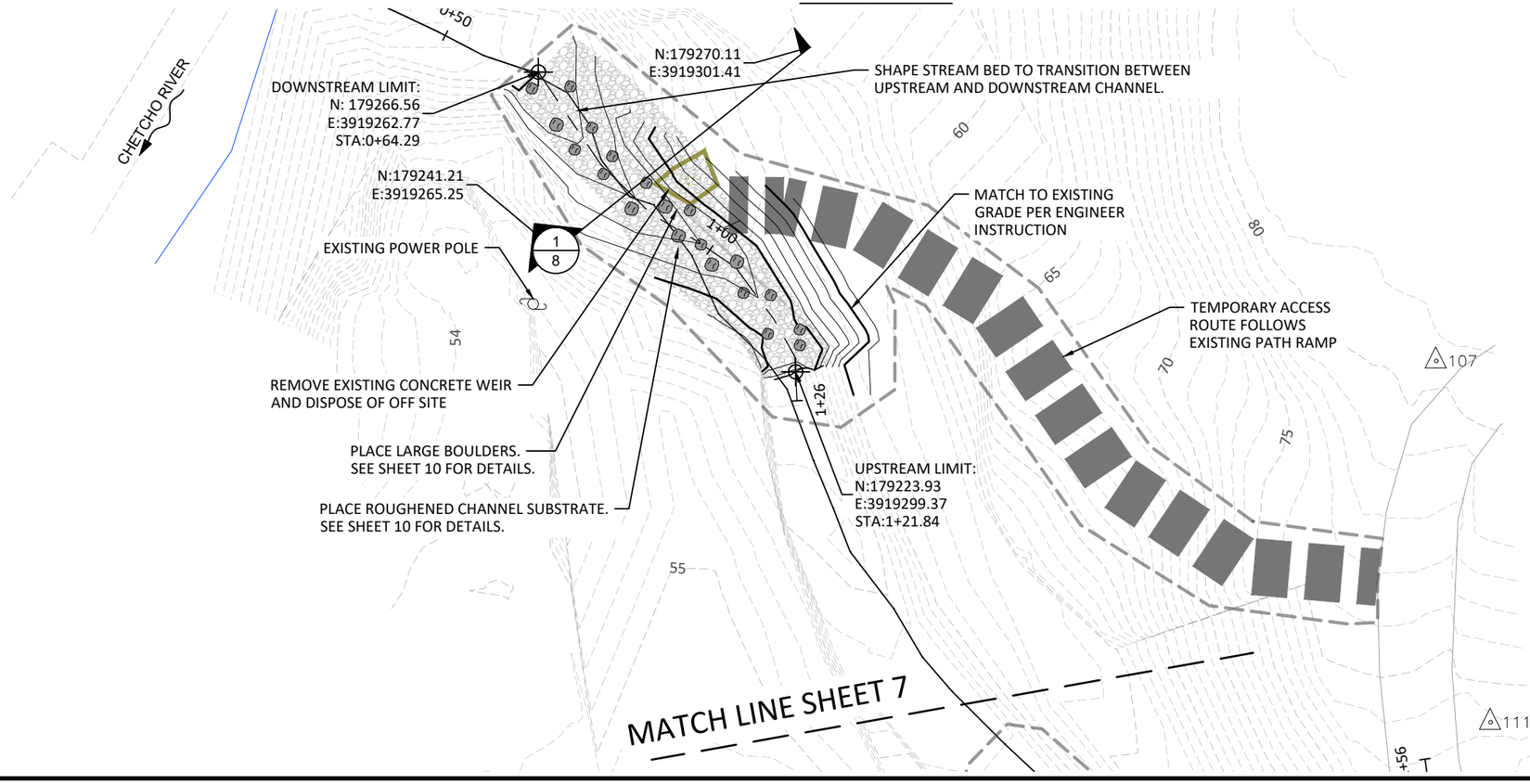
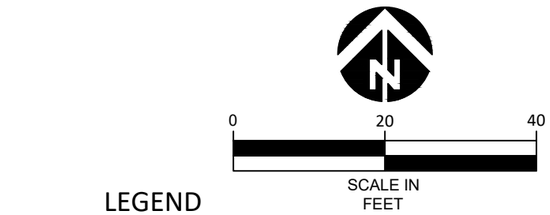
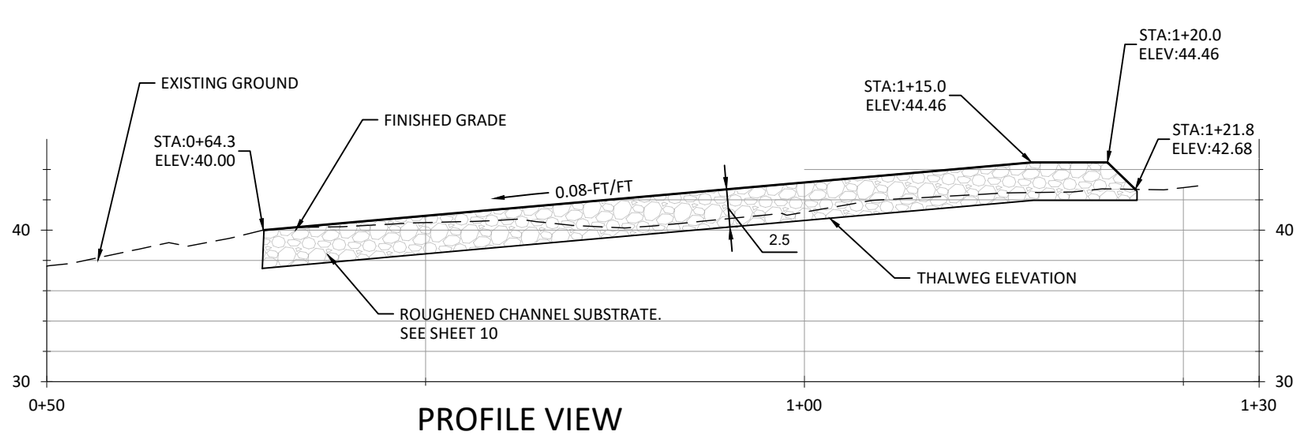
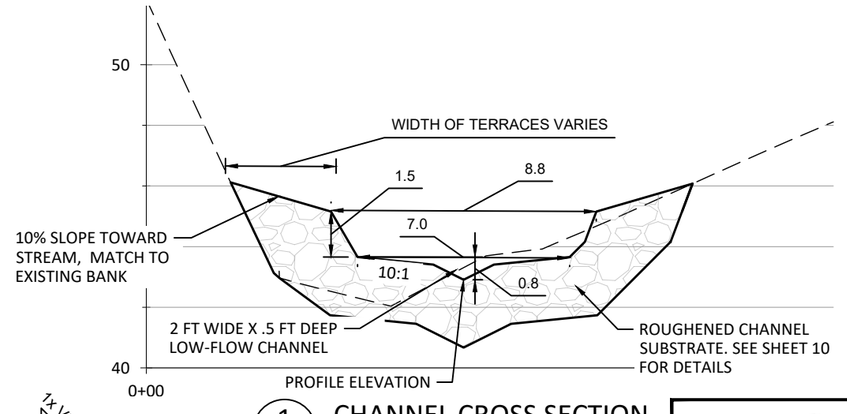
PLAN VIEW

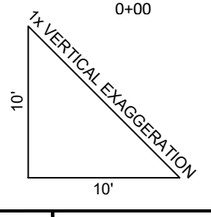






PROFILE VIEW





1/8 CHANNEL CROSS SECTION
NOT TO SCALE

TYPICAL SECTION APPLIED ALONG CHANNEL STATION 0+64.3 TO 120.0

LEGEND

EXISTING GROUND

FINISHED GRADE

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CONCRETE WEIR REMOVAL
PLAN & PROFILE

SHEET
8 OF 13

REGISTERED PROFESSIONAL ENGINEER
19089PE
Daniel Miller
OREGON
May 15, 1997
DANIEL S. MILLER
EXPIRES: 12/31/2024

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ADDITIONAL REQUIREMENTS
1. MATERIALS MUST BE DENSE GRADED. NO OPEN OR GAP GRADED MATERIAL IS ALLOWED.

2. FINE BEACH SANDS, WINDBLOWN SANDS, STREAM DEPOSITS EXHIBITING FINE, ROUNDED PARTICLES AND TYPICALLY SPECIFIED BY AASHTO AS A-3 MATERIALS ARE NOT ALLOWED.

3. ON-SITE MIXING OR BLENDING TO ACHIEVE SPECIFIED GRADATION IS NOT ALLOWED.

4. MAXIMUM PARTICLE SIZE MUST NOT EXCEED 3 INCHES. FOR A-2 MATERIALS MOISTURE CONTENT MUST BE BETWEEN -3% TO +2% OF OPTIMUM AS DEFINED BY AASHTO T-180. ALL SOIL CLASSIFICATIONS ARE LIMITED IN HEIGHT OF COVER AND STRUCTURE SHAPE APPLICATIONS AS FOLLOWS:

A) A-1-A MATERIAL IS SUITABLE FOR ALL LONG SPAN SHAPES, SIZES, AND FILL HEIGHTS.
B) A-1-B MATERIAL IS SUITABLE FOR USE WITH HIGH PROFILE ARCH AND PEAR SHAPED STRUCTURES TO A 12 FEET MAXIMUM FILL HEIGHT AND FOR USE WITH ELLIPTICAL AND LOW PROFILE ARCH STRUCTURES TO A 20 FEET MAXIMUM FILL HEIGHT.

AASHTO M-145 - TABLE 2 (MODIFIED)

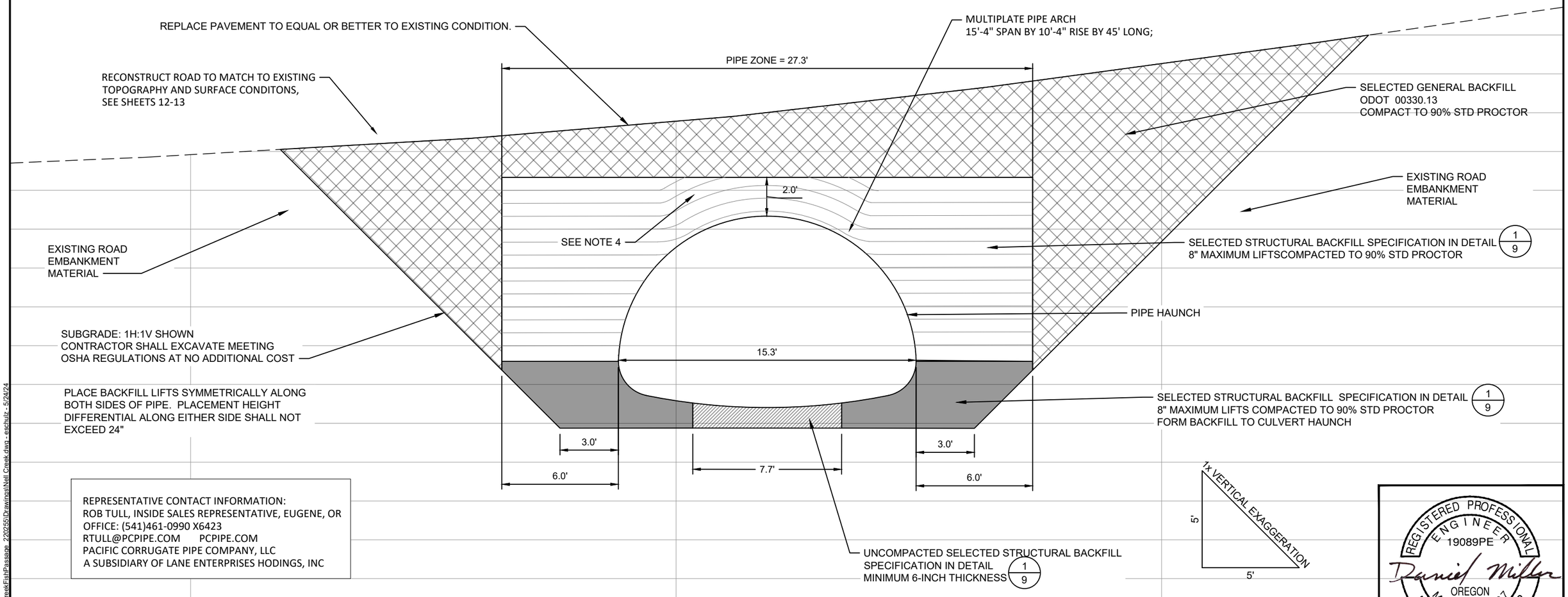
GROUP CLASSIFICATION	A-1	A-2 (MODIFIED)		
SIEVE ANALYSIS, PERCENT PASSING:	A-1-A	A-1-B	A-2-4	A-2-5
NO. 10 (2.00 MM)	50 MAX	——	——	——
NO. 40 (0.425 MM)	30 MAX	50 MAX	——	——
NO. 100 (0.150 MM)	——	——	50 MAX	50 MAX
NO. 200 (0.075 MM)	15 MAX	25 MAX	20 MAX	20 MAX
CHARACTERISTICS OF FRACTION PASSING NO. 40 (0.425 MM)				
LIQUID LIMIT	——	——	40 MAX	41 MAX
PLASTICITY INDEX	6 MAX		10 MAX	10 MAX
USUAL TYPES OF SIGNIFICANT	STONE FRAGMENTS		SILTY OR CLAYEY	
CONSTITUENT MATERIALS	GRAVEL OR SAND		GRAVEL OR SAND	

NOTES:

1. ALL BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
2. COMPLETE AND REGULAR MONITORING OF THE PIPE ARCH STRUCTURE IS NECESSARY DURING THE BACKFILL PROCESS TO AT LEAST THE MINIMUM COVER LEVEL.
3. PREVENT DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
4. PLACE SELECT GRANULAR BACKFILL IN RADIAL LIFTS AT APPROXIMATELY 85% OF THE RISE OF THE PIPE ARCH STRUCTURE.

1/9 BACKFILL SPECIFICATIONS

PIPE ARCH DETAILS



REPRESENTATIVE CONTACT INFORMATION:
ROB TULL, INSIDE SALES REPRESENTATIVE, EUGENE, OR
OFFICE: (541)461-0990 X6423
RTULL@PCPIPE.COM PCPIPE.COM
PACIFIC CORRUGATE PIPE COMPANY, LLC
A SUBSIDIARY OF LANE ENTERPRISES HODINGS, INC

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19089PE
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PIPE ARCH CROSS SECTIONS

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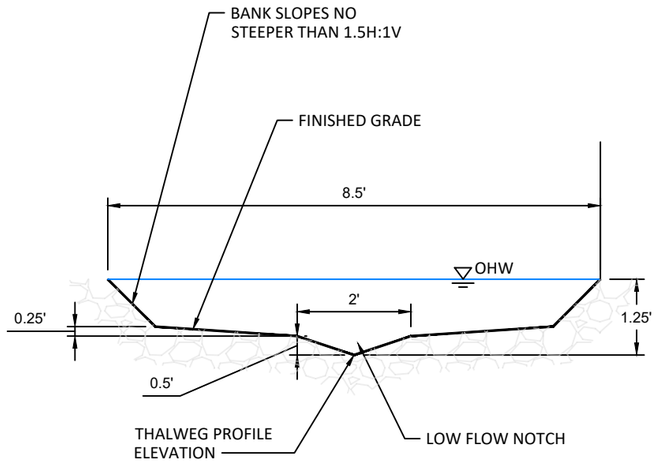


1/10 TYPICAL FINISHED GRADE DIMENSIONS

NOT TO SCALE

ROUGHENED CHANNEL STONE

ROUGHENED CHANNEL STONE AGGREGATE SHALL BE HARD, SOUND AND DURABLE MATERIAL, FREE FROM SEAMS, CRACKS, AND OTHER DEFECTS TENDING TO DESTROY ITS RESISTANCE TO WEATHER. STONE SHALL BE ROUNDED TO SUB-ANGULAR IN SHAPE. COBBLE AND LARGER STONE SHALL HAVE THICKNESS AXIS GREATER THAN 60 PERCENT OF THE LENGTH AXIS.

ROUGHENED CHANNEL STONE SHALL HAVE A WELL-GRADED DISTRIBUTION OF STONE SIZES AND CONFORM TO THE FOLLOWING GRADATION.

ROUGHENED CHANNEL STONE GRADATION	
PERCENT FINER BY WEIGHT	STONE SIZE (IN)
100	27-31
84	21-24
50	18-21
15	3 -5

THE SIZE GRADATION OF ROUGHENED CHANNEL STONE SHALL BE EVALUATED BY THE ENGINEER BY VISUAL INSPECTION AT THE STAGING AREA AND AGAIN AT PLACEMENT. IF SO ORDERED BY THE ENGINEER, CONTRACTOR SHALL DUMP INDIVIDUAL LOADS ON A FLAT SURFACE AND INDIVIDUAL ROCKS CONTAINED IN THE LOAD SORTED AND MEASURED TO CONFIRM GRADATION.

STREAMBED SEDIMENT MIX

VOLUME OF VOIDS TYPICALLY RANGES FROM 30-35% OF TOTAL PLACED VOLUME OF ROUGHENED CHANNEL STONE. VOIDS IN ROUGHENED CHANNEL STONE SHALL BE FILLED WITH:

- 50% EVENLY GRADED 3INCH TO 10INCH COBBLE, AND
- 50% STREAMBED SEDIMENT. STREAMBED SEDIMENT SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS OR AS APPROVED BY THE ENGINEER. ALTERNATE GRADATION SHALL REQUIRE WRITTEN APPROVAL OF THE ENGINEER.

Sieve Size	Percent Passing
2½"	99-100
2"	65-95
1"	50-85
No. 4	26-44
No. 40	16 max.
No. 200	5.0-9.0

AMEND FINAL COMBINED ROUGHENED CHANNEL AND STREAMBED MIX AS NECESSARY TO INCLUDE 10 PERCENT PASSING THE NO. 200 SIEVE (SILT).

ALL PERCENTAGES ARE BY WEIGHT.THE PORTION OF SEDIMENT RETAINED ON NO. 4 SIEVE SHALL NOT CONTAIN MORE THAN 0.2 PERCENT WOOD WASTE.

MATERIALS SHALL MEET THE FOLLOWING TEST REQUIREMENTS FOR QUALITY:

Aggregate Property	Test Method	Requirement
Degradation Factor	WSDOT T 113	15 min.
Los Angeles Wear, 500 Rev.	AASHTO T 96	50% max.
Bulk Specific Gravity	AASHTO T 85	2.55 min.

EXECUTION:

CONTRACTOR SHALL ALLOW ENGINEER TO WORK DIRECTLY WITH OPERATOR AND LABORER AS LONG AS NECESSARY FOR MIXING AND WASHING OF MATERIALS TO MEET SPECIFICATIONS.

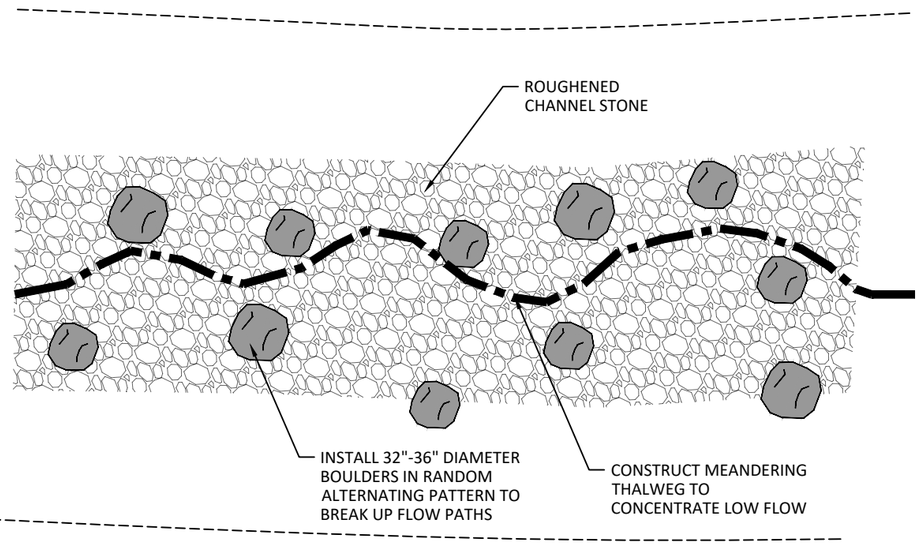
WORK FROM UPSTREAM TO DOWNSTREAM. ROUGHENED CHANNEL STONE SHALL BE CONTINUOUSLY AMENDED WITH STREAMBED SEDIMENT MIX TO ACHIEVE HOMOGENEOUS GRADATION FOR FULL THICKNESS OF STONE PLACEMENT. THE FINAL CHANNEL BOTTOM SHOULD BE A DENSE, WELL INTERLOCKED STREAMBED WITH LOW PERMEABILITY. COMPACT EACH LAYER AND FILL SURFACE VOIDS BY WASHING IN FINE MATERIAL. USE WATER PRESSURE, TAMPING RODS, AND SIMILAR HAND OPERATED EQUIPMENT TO FORCE FINE MATERIAL INTO ALL SURFACE VOIDS.

THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE STREAM FLOW DOES NOT GO SUBSURFACE THROUGH THE CULVERT FOR A 48 HOUR PERIOD OF RE-WATERING.

NATIVE MATERIAL MEETING GRADATION FOR THE SPECIFIED BED CLASS, AND CHANNEL ROCK MAY BE SALVAGED AND INCORPORATED INTO THE SIMULATED STREAMBED.

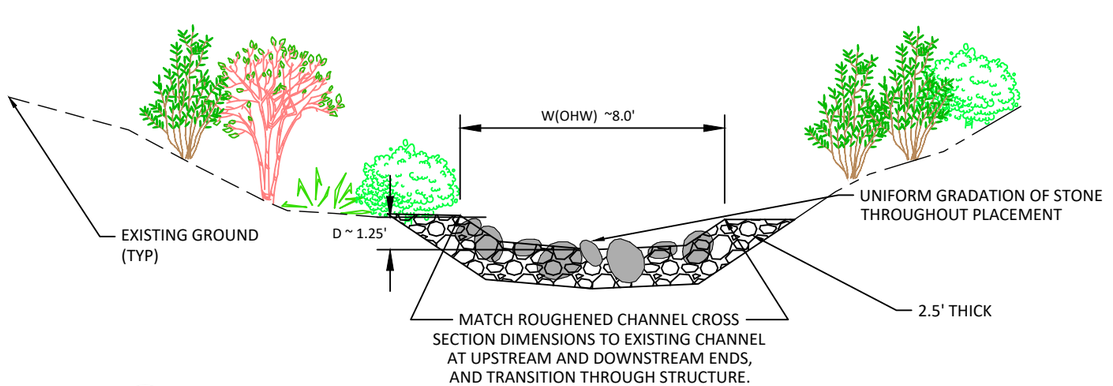
CONTRACTOR SHALL MAKE ADJUSTMENTS TO STONE MIXTURE AS DIRECTED BY ENGINEER.

2/10 ROUGHENED CHANNEL DETAILS



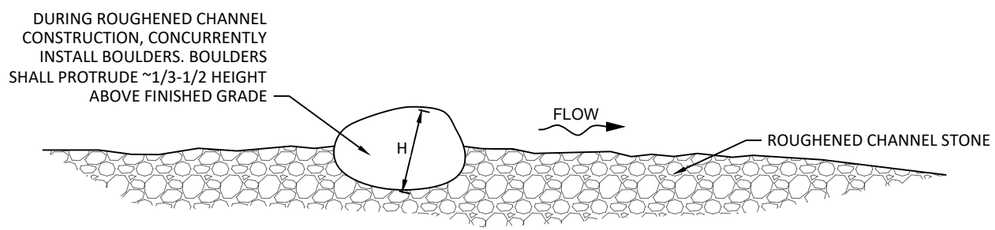
4/10 ROUGHENED CHANNEL LARGE ELEMENT BOULDERS

NOT TO SCALE



3/10 TYPICAL STREAM AND ROUGHENED CHANNEL CROSS SECTION

NOT TO SCALE



5/10 ROUGHENED CHANNEL BOULDER PLACEMENT

NOT TO SCALE

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ROUGHENED CHANNEL DETAILS

SHEET 10 OF 13

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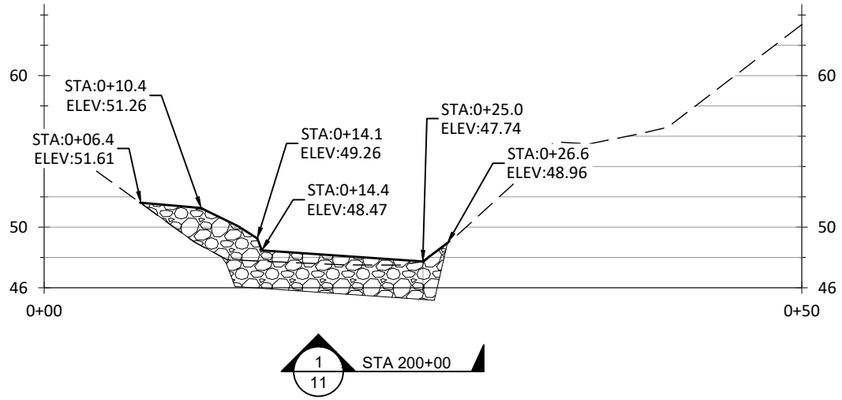
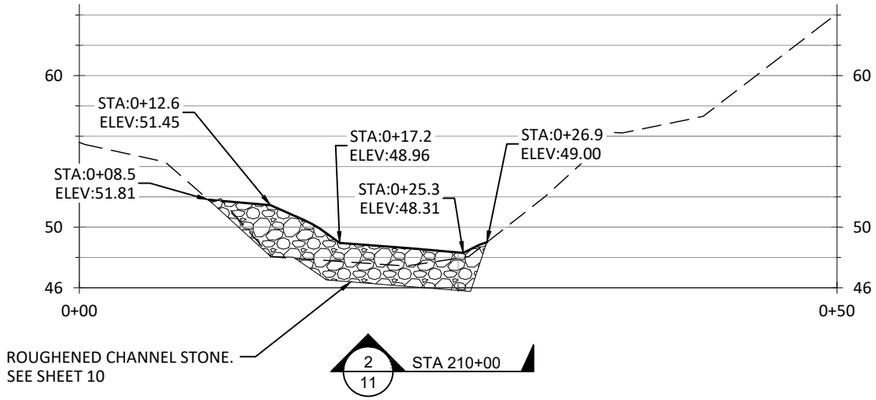
LEGEND

EXISTING GRADE

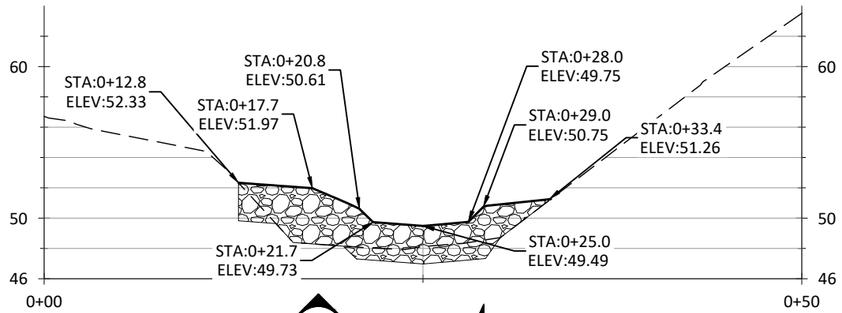
PROPOSED GRADE



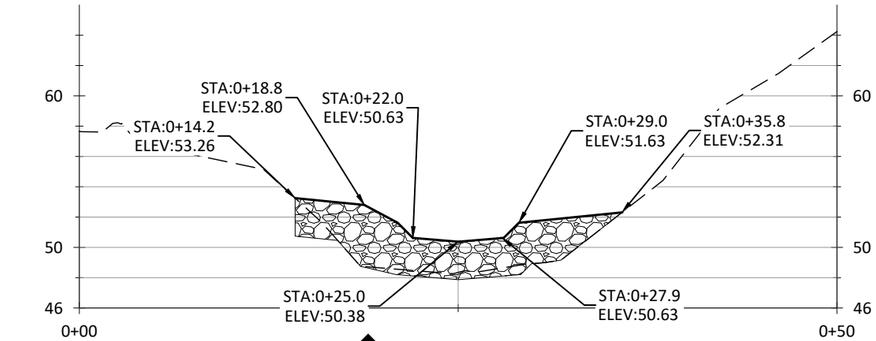
1 / 11 STA 200+00



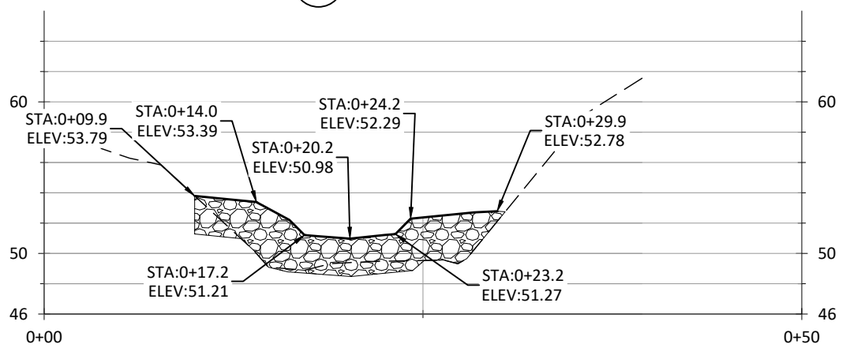
2 / 11 STA 210+00



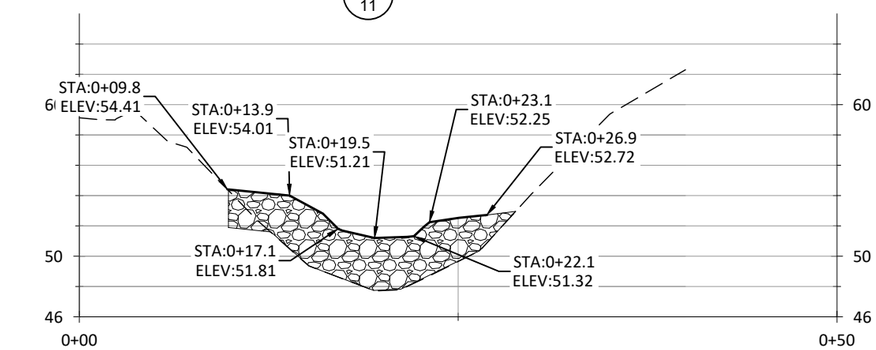
3 / 11 STA 220+00



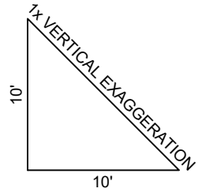
4 / 11 STA 230+00



5 / 11 STA 240+00



6 / 11 STA 250+00



NOTE: CROSS SECTION ORIENTATION IS LEFT TO RIGHT LOOKING DOWNSTREAM

REGISTERED PROFESSIONAL ENGINEER
19089PE
Daniel Miller
OREGON
May 15, 1997
DANIEL S. MILLER
EXPIRES: 12/31/2024

NO.	BY	DATE	REVISION DESCRIPTION

JR, BB	DM, JB	MB, JB, MS
DRAWN	DESIGNED	CHECKED
DM	5/24/2024	220255
APPROVED	DATE	PROJECT

CURRY WATERSHEDS NONPROFIT
FINAL DESIGN
NELL CREEK FISH PASSAGE

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

STREAM GRADING SECTIONS STA 2+00-2+50

SHEET 11 OF 13

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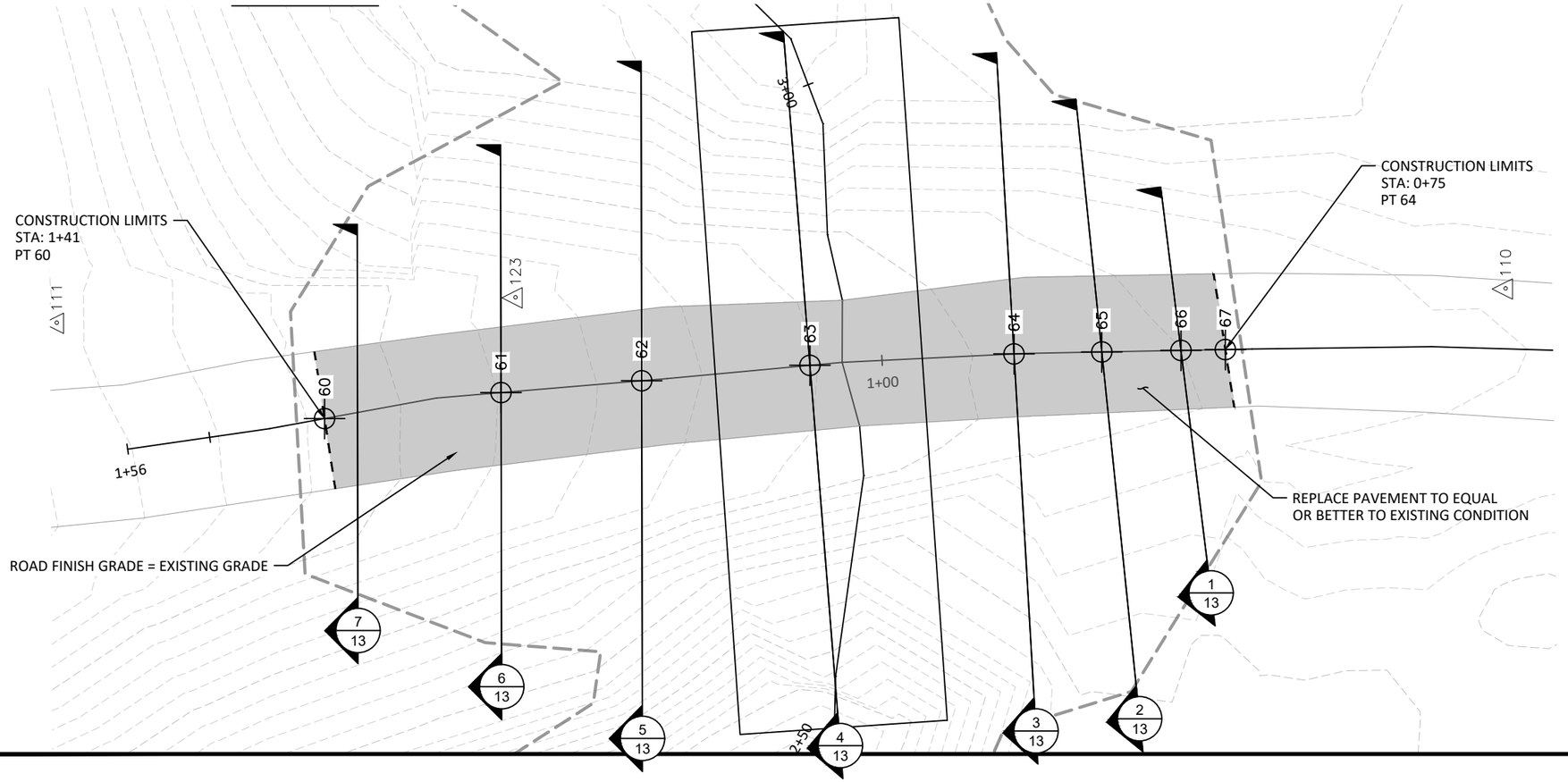
PLAN VIEW



0 10 20

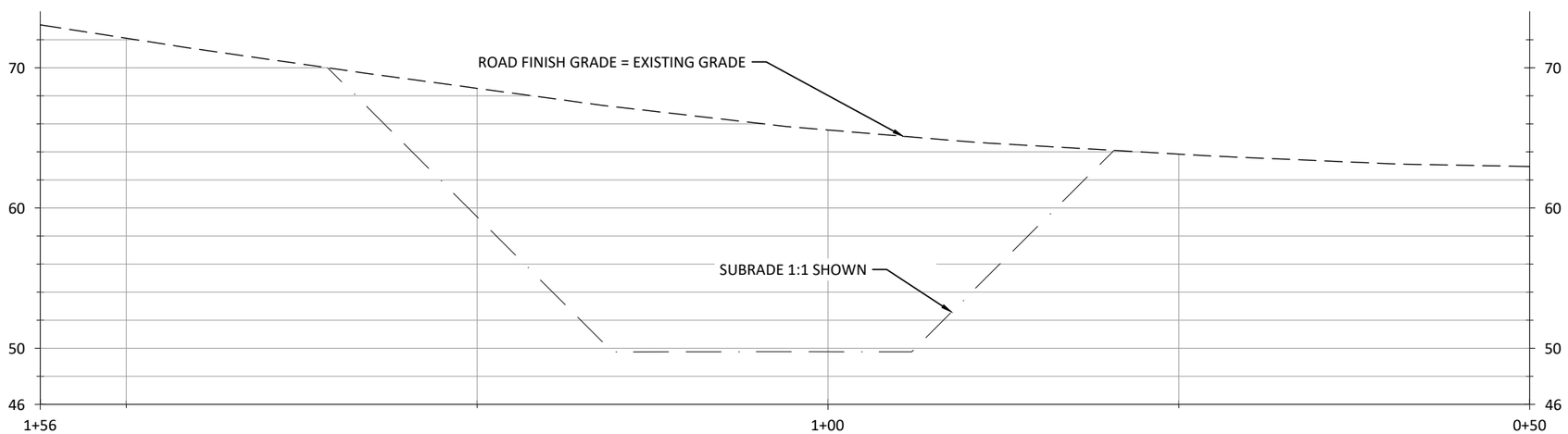
SCALE IN FEET

LEGEND

- EXISTING CONTOUR (1 FT)
- PROPOSED CONTOUR (1 FT)
- 1+00 THALWEG ALIGNMENT AND STATION
- LIMITS OF DISTURBANCE

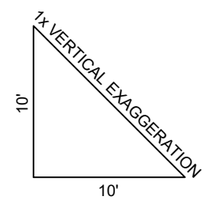
ROAD LAYOUT POINTS

Point #	Northing	Easting	Elevation	Description
60	179154.32	3919391.15	70.82	Road CL
61	179141.30	3919393.07	68.97	Road CL
62	179130.91	3919393.94	67.55	Road CL
63	179118.49	3919395.08	66.08	Road CL
64	179103.43	3919395.92	64.74	Road CL
65	179096.95	3919396.07	64.35	Road CL
66	179091.10	3919396.18	64.01	Road CL
67	179087.83	3919396.25	63.82	Road CL



LEGEND

- EXISTING GROUND
- SUBGRADE



PROFILE VIEW

NO.	BY	DATE	REVISION DESCRIPTION

JR, BB DRAWN	DM, JB DESIGNED	MB, JB, MS CHECKED
DM APPROVED	5/24/2024 DATE	220255 PROJECT

CURRY WATERSHEDS NONPROFIT
FINAL DESIGN
NELL CREEK FISH PASSAGE

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ROAD PLAN & PROFILE

SHEET 12 OF 13

REGISTERED PROFESSIONAL ENGINEER
19089PE
Daniel Miller
OREGON
May 15, 1997
DANIEL S. MILLER

EXPIRES: 12/31/2024

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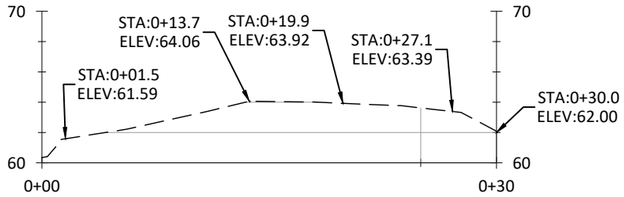
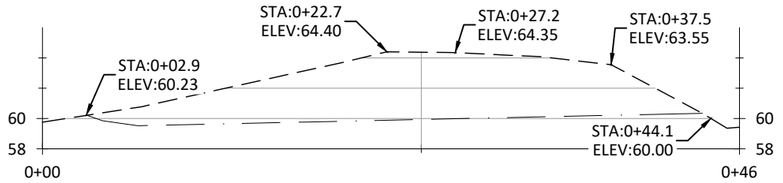
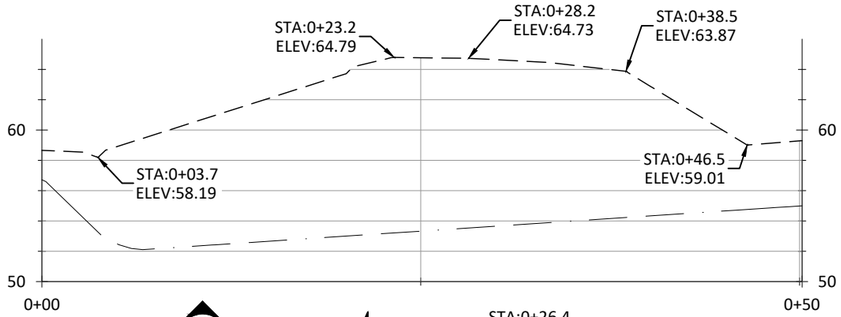


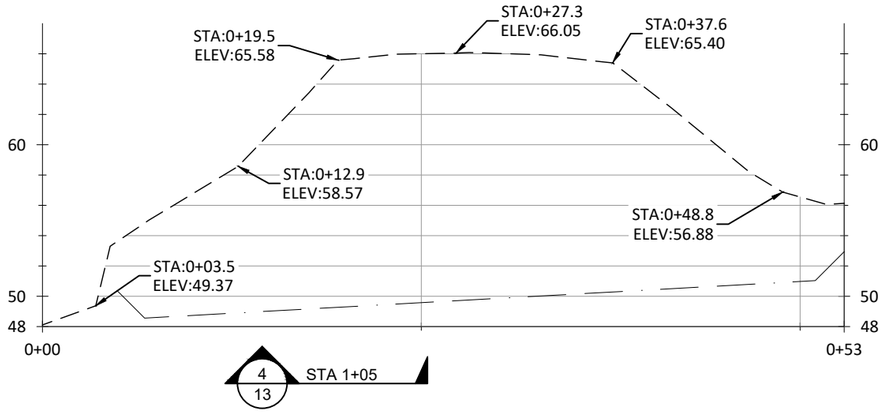
1 / 13 STA 0+78



2 / 13 STA 0+84



3 / 13 STA 0+90

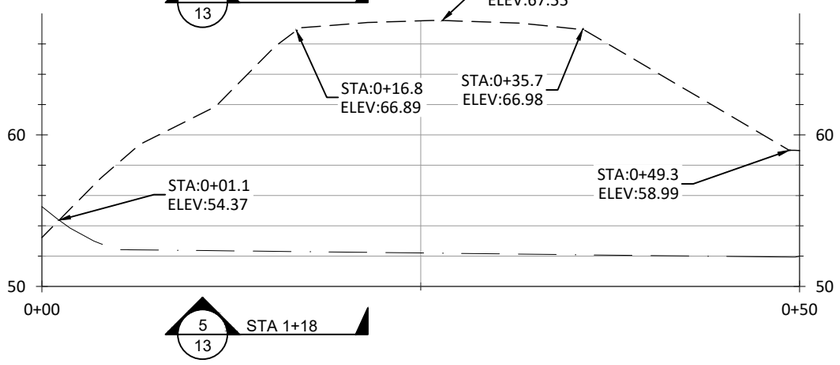


4 / 13 STA 1+05

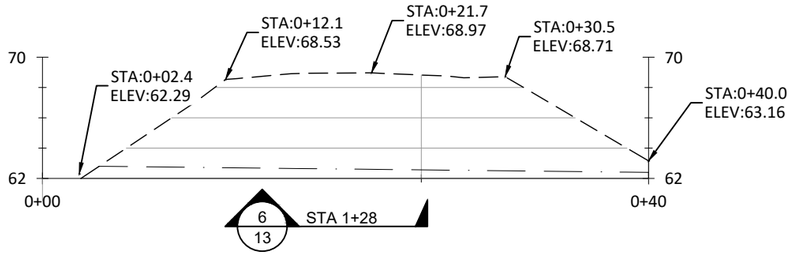
LEGEND

EXISTING GROUND

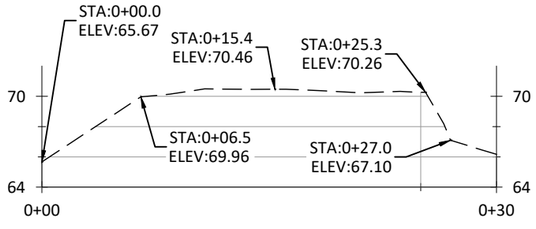
SUBGRADE



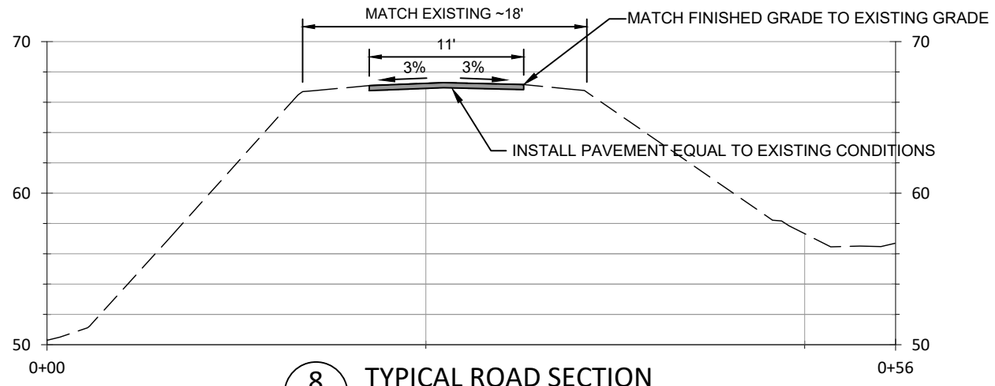
5 / 13 STA 1+18



6 / 13 STA 1+28

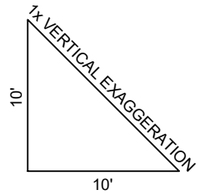


7 / 13 STA 1+39



8 / 13 TYPICAL ROAD SECTION

NOT TO SCALE



NO.	BY	DATE	REVISION DESCRIPTION

JR, BB (DRAWN)	DM, JB (DESIGNED)	MB, JB, MS (CHECKED)
DM (APPROVED)	5/24/2024 (DATE)	220255 (PROJECT)

CURRY WATERSHEDS NONPROFIT
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ROAD CROSS SECTIONS &
TYPICAL SECTION

SHEET
13 OF 13

EXPIRES: 12/31/2024

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