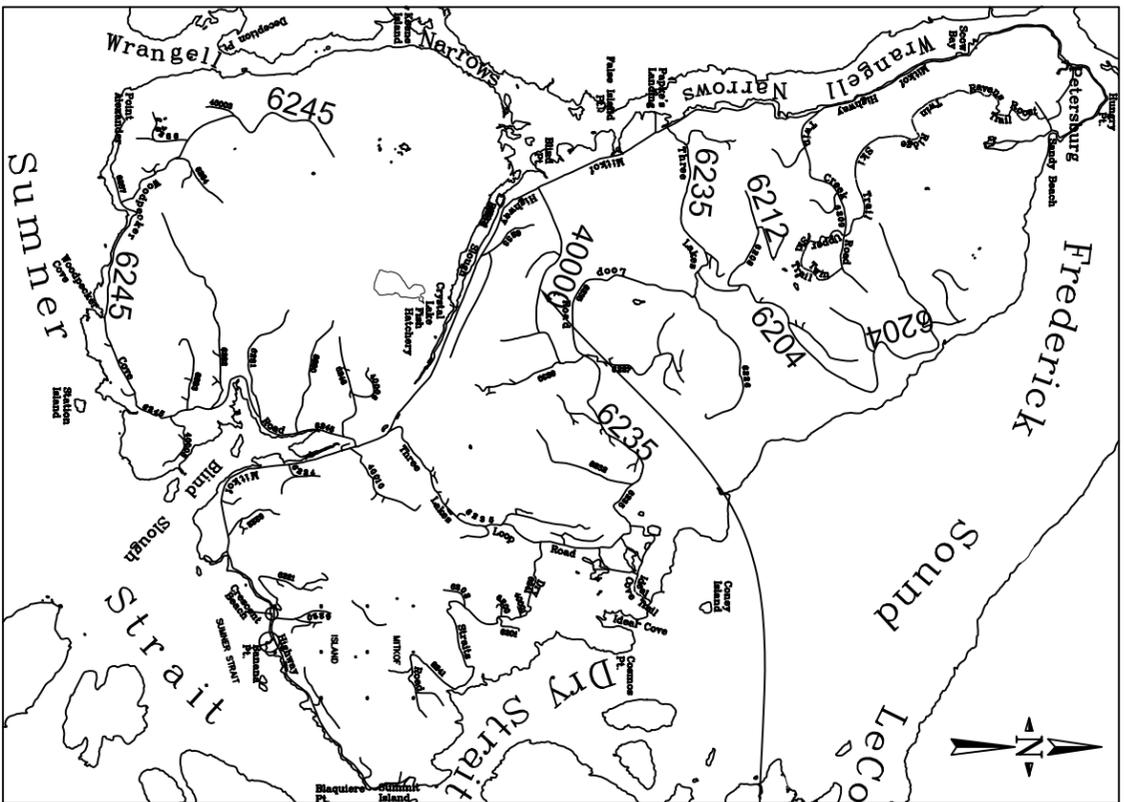


PROJECT  
LOCATION

S. E. ALASKA KEY MAP



PROJECT  
LOCATION

SCALE IN KILOMETERS

VICINITY MAP

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE--REGION 10  
TONGASS NATIONAL FOREST  
PETERSBURG RANGER DISTRICT

# MITKOF FISH PASSAGE IMPROVEMENTS CULVERT REPLACEMENT ROAD 40000 MILEPOST 2.492 & MILEPOST 3.337

PREPARED  
FOR:

PREPARED  
BY:

PREPARED  
FOR:

CONTRACTORS:  
KETCHIKAN READY MIX - KETCHIKAN, AK.  
OLSON CONSTRUCTION - PETERSBURG, AK

*Professional Consulting Engineers*  
860 Windrose Drive  
Coupeville, Washington 98239  
(360) 678-4747

USDA Forest Service  
TONGASS NATIONAL FOREST  
Petersburg Ranger District

Metric Unit Drawings

CONTACT INFORMATION:  
Bob Gubernick  
USDA Forest Service  
Petersburg Office  
Petersburg, AK 99833  
(907) 772-5840

APPROVED AT CHINOOK ENGINEERING:

DATE

U.S.F.S CONTRACTING  
REPRESENTATIVE:

ROBERT GUBERNICK

DATE

SHEET	SHEET NO.	INDEX OF DRAWINGS TITLE	COVER SHEET TITLE
1	C-1	GENERAL NOTES AND SPECS	
2	C-2	SURVEY SITE PLAN MP-2.492	
3	C-3	SITE PLAN MP-2.492	
4	C-4	PROFILES MP-2.492	
5	C-5	SURVEY SITE PLAN MP-3.337	
6	C-6	SITE PLAN MP-3.337	
7	C-7	PROFILES MP-3.337	
8	C-8	ROCK CROSS WEIR DETAILS	
9	C-9	TYPICAL CULVERT DETAILS	
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6/1/2002	CULVERT ORDERS				
6/1/2002	FOREST SERVICE REVIEW				R.G.
6/11/2002	ADF&G TITLE 16 REVIEW				
REV DATE	ISSUED	DWN	DES	CHK	APP



Mitkof Fish Passage Improvements Rd-40000 MP-2.492

## Cover Sheet and Index

# GENERAL NOTES:

MATERIAL SPECIFICATIONS ARE ATTACHED AS FOLLOWS:

1. FOREST SERVICE SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES
2. CONTRACT INFORMATION AS SPECIFIED UNDER SOLICITATION NO. R10-05-01-01

# CULVERT NOTES:

1. DO NOT PLACE EXCESS AND/OR UNSUITABLE MATERIAL EXCAVATED DURING CONSTRUCTION ADJACENT TO OR IN THE STREAM CHANNEL.
2. CULVERT JOINTS SHALL HAVE WATERTIGHT GASKETS AND WILL NOT LEAK. ALL JOINTS SHALL BE JOINED WITH 10mm SLEEVED GASKET AND FULLY CORRUGATED BAND TO MATCH REFORMED PIPE END.
3. EXCAVATION SHALL BE APPROVED BY THE CO BEFORE BACKFILLING IN ACCORDANCE WITH SECTION 203, METHOD 4 AND SECTION 206.
4. STRUCTURAL EXCAVATION, AND BORROW EXCAVATION, ARE INCIDENTAL TO 603. ALL USABLE MATERIAL (STRUCTURAL EXCAVATION) SHALL BE USED AS BACKFILL (BORROW EXCAVATION). REFERENCE SHEET C3.
5. EXCESS AND/OR UNSUITABLE MATERIAL SHALL BE HAULED TO A DISPOSAL SITE APPROVED OF BY THE CO OR ENGINEER. STRUCTURAL EXCAVATION, BORROW EXCAVATION, SHALL BE PAID UNDER ITEM, END HAUL, 203(22).
6. IF BLASTING IS NOTED ON THE PLANS, BEDROCK EXCAVATION AND/OR BLASTING SHALL BE PAID UNDER PAY ITEM, 220(02).
7. STEEL WEIRS SHALL BE INSTALLED IN CULVERTS INDICATED ON THE PLANS AND WILL BE PAID UNDER PAY ITEM, STEEL WEIRS, 555(03).
8. ALL QUANTITIES ARE BASED ON IN-PLACE PRISM VOLUMES.
9. ALL CULVERTS DESIGNATED FOR REMOVAL WILL BECOME THE PROPERTY OF THE CONTRACTOR AND WILL BE DISPOSED OF OFF NATIONAL FOREST PROPERTY IN ACCORDANCE WITH STATE AND FEDERAL LAW.
10. ALL DISTURBED AREAS AND BARE SOILS WILL BE SEEDED IN ACCORDANCE WITH TNF PS 625.
11. ALL CULVERT FABRICATION SHALL BE PRECEDED BY SHOP DRAWING SUBMITTALS THAT WILL BE REVIEWED AND APPROVED IN WRITING BY THE CO OR THE ENGINEER PRIOR TO FABRICATION. WEIR SIZE, SPACING, PIPE LENGTH AND JOINT LOCATIONS SHALL BE NOTED.

12. DEWATERING OR DIVERSIONS MAY BE REQUIRED DEPENDING ON FLOW, GROUND WATER DEPTHS AT THE TIME OF INSTALLATION, AND CULVERT EMBEDMENT DEPTHS. THE CONTRACTOR WILL SUBMIT A DEWATERING PLAN 14 DAYS IN ADVANCE OF CONSTRUCTION. THE PLAN WILL INCLUDE THE METHOD AND LOCATION OF DEWATERING AND EROSION CONTROL MEASURE FOR DEALING WITH THE RETURN FLOW BACK TO THE EXISTING STREAM CHANNEL. THE PLAN WILL BE APPROVED BY THE CO WITHIN 5 WORKING DAYS OF PLAN SUBMISSION. ALL DEWATERING AND DIVERSIONS ARE CONSIDERED INCIDENTAL TO CONSTRUCTION OF THE STRUCTURES AND WILL NOT BE PAID SEPARATELY.
13. IF A TRASH (PUMPS) USED DURING CONSTRUCTION THE INTAKE MUST BE OPERATED, AND MAINTAINED TO PREVENT FISH ENTRAPMENT, ENTRAINMENT, OR INJURY WITH THE USE OF PERFORATED PLATE AND WOVEN WIRE WITH A MESH SIZE NOT GRATER THAN 3/32 INCHES OR A PROFILE BAR AND WEDGEWIRE WITH OPENINGS NOT GREATER THAN 1.75MM. APPROACH VELOCITIES SHALL NOT EXCEED A PASSIVE VELOCITY OF 0.2 FEET PER SECOND (FPS) OR AN ACTIVE VELOCITY 0.4 FPS.
14. BLASTING OVERPRESSURES TRANSMITTED TO THE FISH HABITAT THROUGH THE GROUND SHALL NOT CAUSE MORTALITY TO JUVENILE FISH AND SHALL BE LIMITED TO A MAXIMUM OF 2 PSI IN FISH HABITAT. IF THIS CONDITION IS EXCEEDED, ALL BLASTING ACTIVITIES SHALL BE SUSPENDED AND ADF&G NOTIFIED IMMEDIATELY.
15. GEOTEXTILE SHALL BE TYPE IV-B, 251(13A).

# RIPRAP NOTES:

1. CULVERT INFILL MATERIAL SHALL BE INSTALLED IN ALL PIPES ACCORDING TO THE PLANS.
2. UPSTREAM AND DOWNSTREAM ROCK WEIRS SHALL BE CONSTRUCTED ACCORDING TO THE PLANS FROM SHOT ROCK.

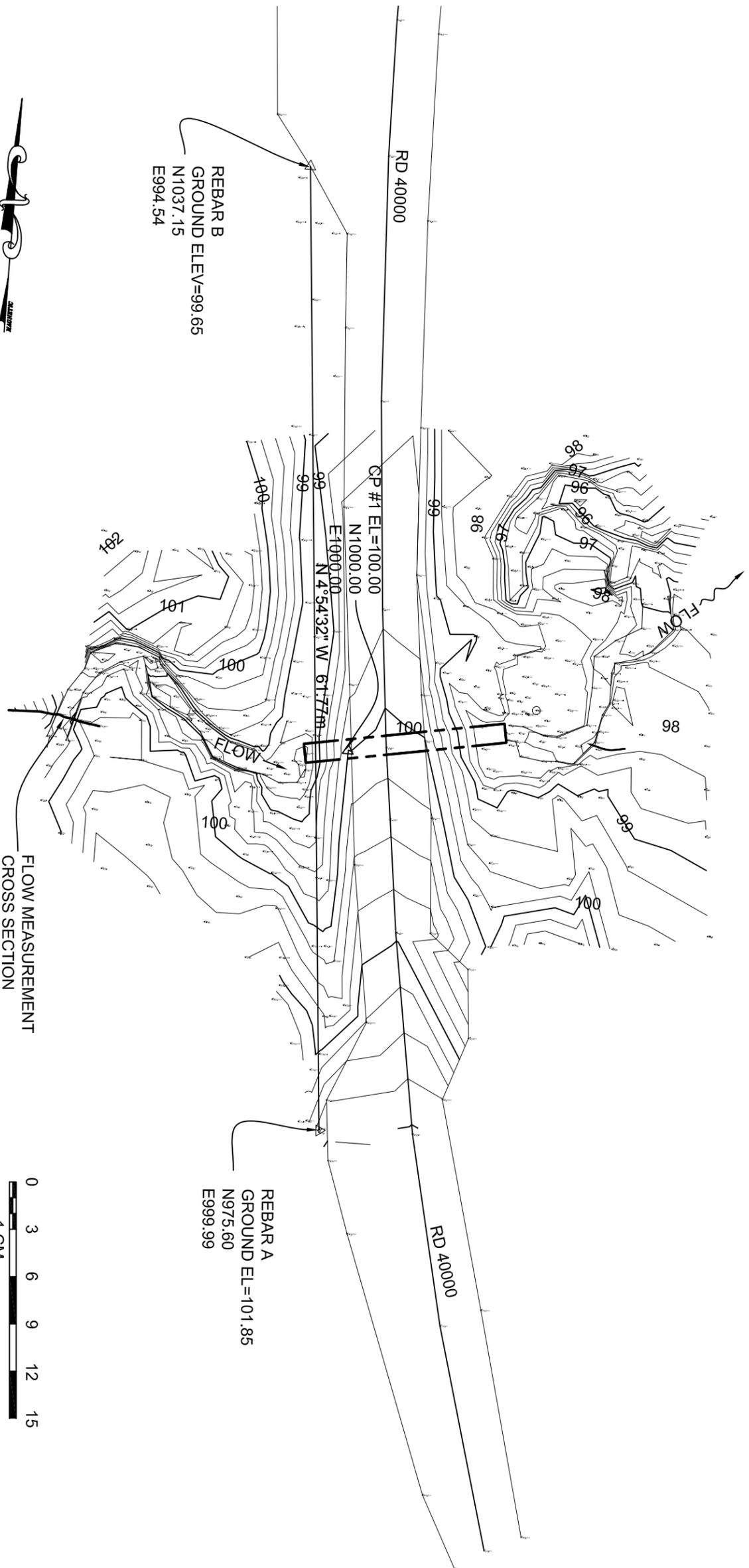


6/1/2002	CULVERT ORDERS					
6/1/2002	FOREST SERVICE REVIEW					R.G.
6/11/2002	ADF&G TITLE 16 REVIEW					
REV DATE	ISSUED	DWN	DES	CHK	APP	

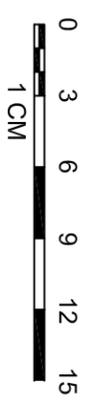
Mitkof Fish Passage Improvements Rd-40000 MP-2.492  
**GENERAL NOTES AND SPECIFICATIONS**

# RECON AND SURVEY NOTES:

1. SITE SURVEY BY: GREG SCHEFF AND ASSOCIATES, COMPLETED NOVEMBER 12, 2001.
2. SITE RECONNAISSANCE BY: CHINOOK ENGINEERING; KEN CACHELIN AND JAY KIDDER, COMPLETED OCTOBER 15, 2001.
3. FIELD BOOK DATES: FIELD BOOK DATA IS FULLY CONTAINED IN CHINOOK ENGINEERING ARCHIVES AND INDIVIDUAL OFFICES AT GREG SCHEFF AND ASSOCIATES AND THE TONGASS NATIONAL FOREST, PETERSBURG, BOB GUBERNICK.
4. QUARRY PLAN: SEE GENERAL QUARRY PLAN AS PREPARED BY KETCHIKAN READY MIX ON-SITE REPRESENTATIVE.
5. DRAWING FORMAT: ALL DRAWINGS WERE DEVELOPED USING AUTOCAD 2000
6. ALL UNITS ARE METRIC
7. COORDINATES ARE ASSUMED BY SURVEYOR OF RECORD AND ARE PRESERVED FOR CONSTRUCTION AND FIELD COORDINATION



FLOW MEASUREMENT  
CROSS SECTION



Metric Unit Drawings

## SITE SURVEY

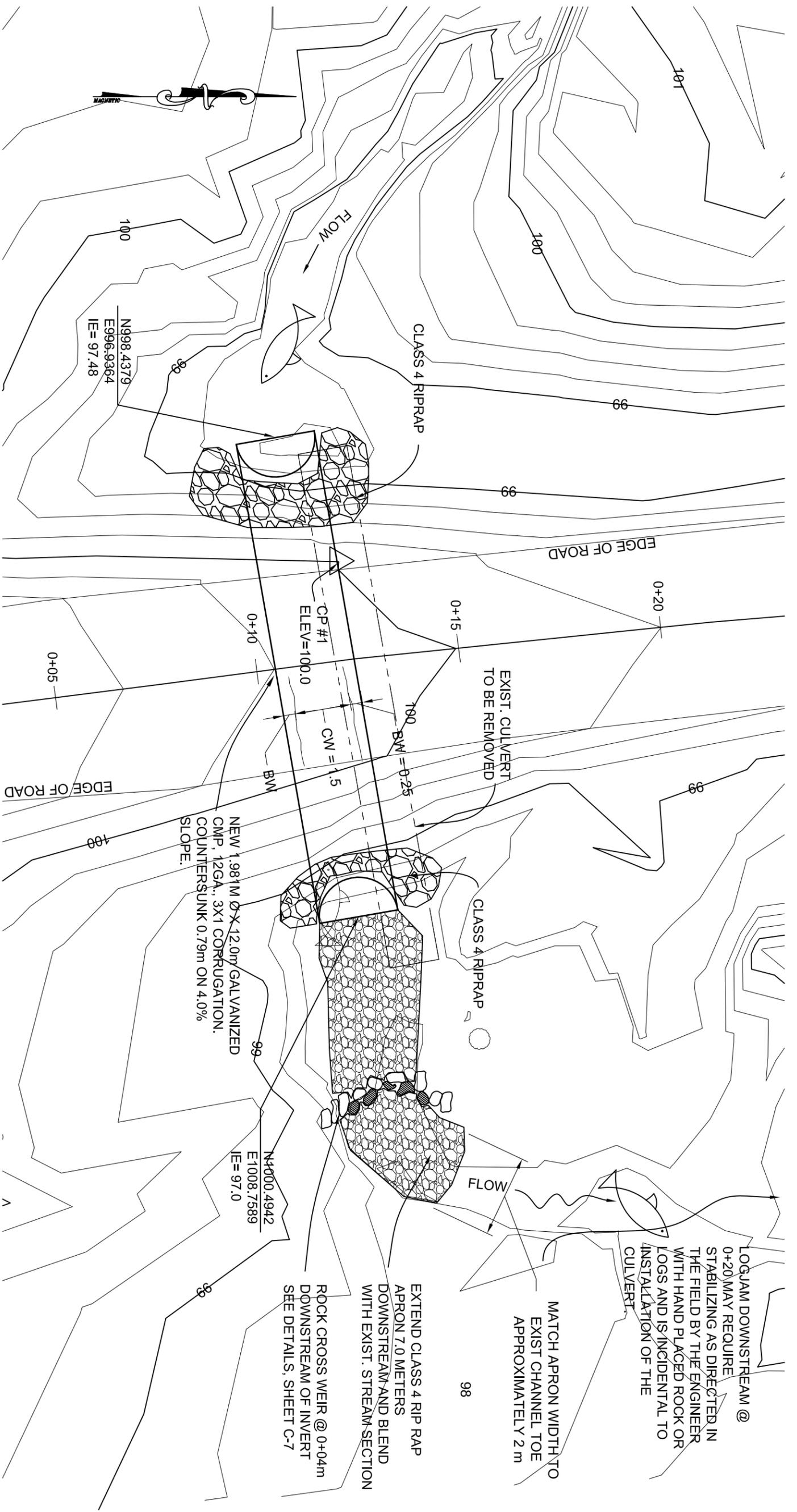
1:300

Mitkof Fish Passage Improvements Rd-40000 MP-2.492  
**Survey Site Plan**

6/1/2002	CULVERT ORDERS				
6/1/2002	FOREST SERVICE REVIEW				R.G.
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**CHINOOK ENGINEERING**  
 860 Windrose Drive  
 Coupeville, Washington 98238  
 (360) 678-4747  
 Professional Consulting Engineers



NOTE:  
RESIDENT FISH STREAM

# SITE PLAN

40000  
2.492

1:100



Metric Unit Drawings

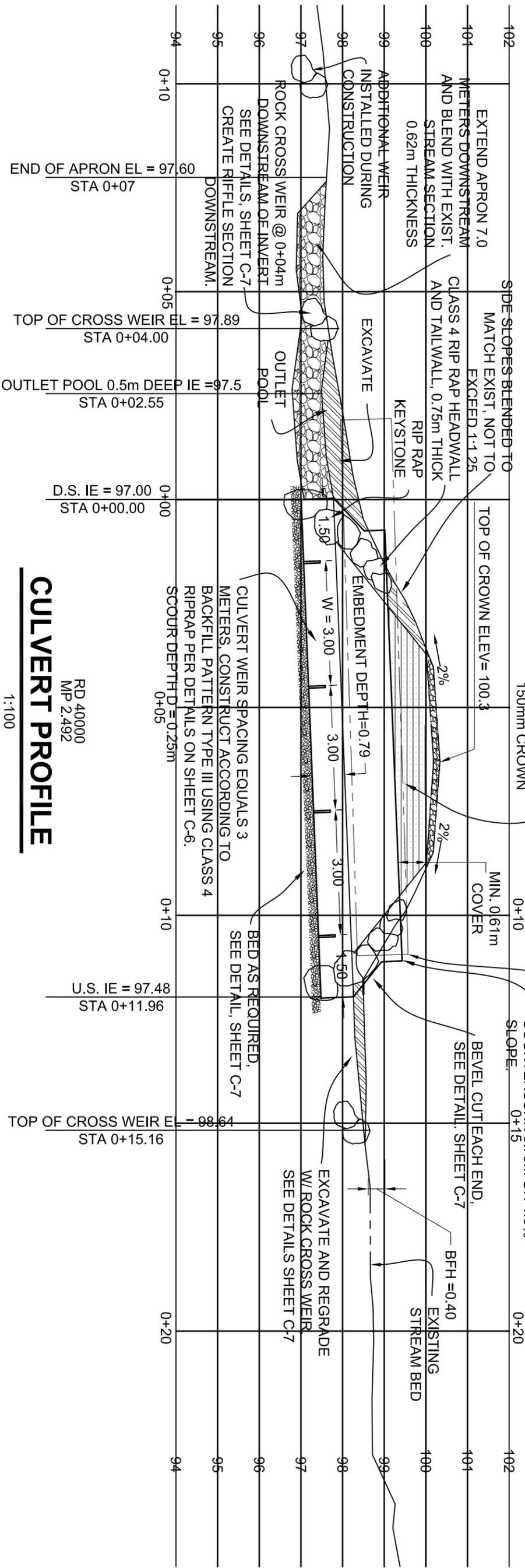
6/1/2002	CULVERT ORDERS				
6/1/2002	FOREST SERVICE REVIEW				R.G.
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Mitkof Fish Passage Improvements Rd-40000 MP-2.492  
**Site Plan**

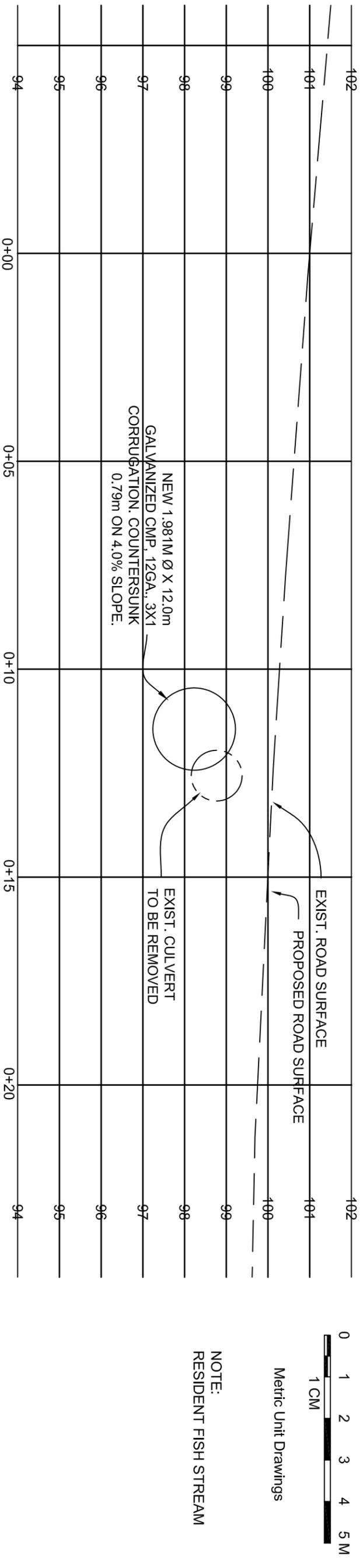
COMPACTED ON-SITE MATERIAL AND/OR OTHER APPROVED BACKFILL COMPACTED TO 95% MAX. DENSITY. FEATHER CROWN AND TAPER ROAD SURFACE TO MATCH EXISTING WITH 150mm OF BED COURSE SURFACING AS PER 704.09. 150mm CROWN



### CULVERT PROFILE

1:100

RD 40000  
MP 2.492



Metric Unit Drawings

NOTE:  
RESIDENT FISH STREAM

NEW 1.981M Ø X 12.0m  
GALVANIZED CMP, 12GA., 3X1  
CORRUGATION, COUNTERSUNK  
0.79m ON 4.0% SLOPE.

EXIST. CULVERT  
TO BE REMOVED

RD 40000  
MP 2.492

### ROAD PROFILE @ C.L. LOOKING UPSTREAM

1:100

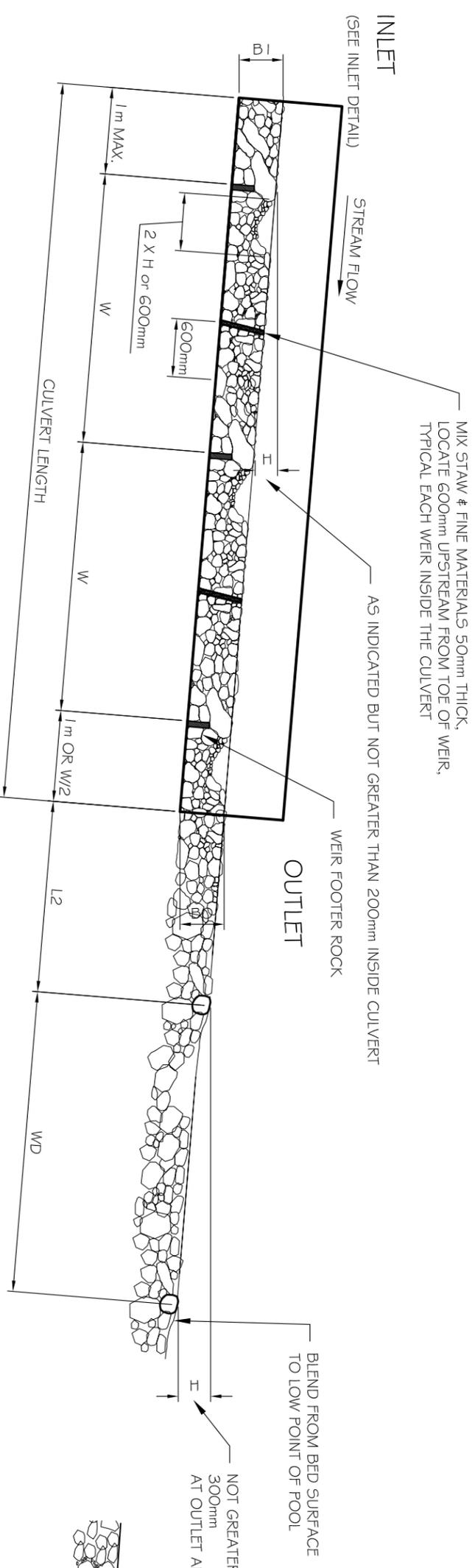
6/1/2002	CULVERT ORDERS				
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Mitkof Fish Passage Improvements Rd-40000 MP-2.492

## Culvert/Road Profiles



MIX STAW & FINE MATERIALS, 50mm THICK, LOCATE 600mm UPSTREAM FROM TOE OF WEIR, TYPICAL EACH WEIR INSIDE THE CULVERT

INLET (SEE INLET DETAIL)  
STREAM FLOW  
AS INDICATED BUT NOT GREATER THAN 200mm INSIDE CULVERT

WEIR FOOTER ROCK  
OUTLET  
BLEND FROM BED SURFACE TO LOW POINT OF POOL  
NOT GREATER THAN 300mm AT OUTLET APRON

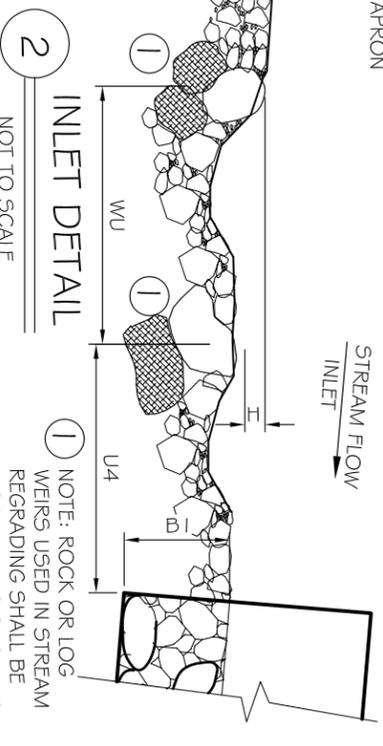
1 TYPICAL CMP INFILL & WEIR - HIGH GRADIENT  
NOT TO SCALE

NOTES:

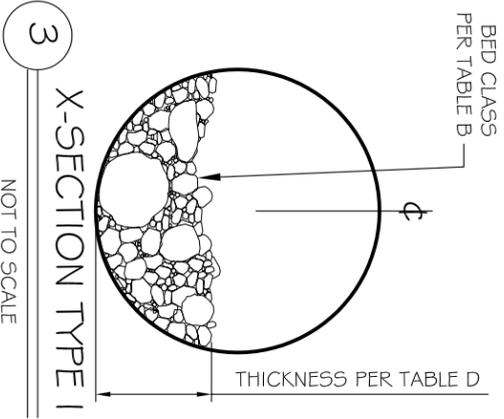
1. PLACE CULVERT INFILL & ROCK WEIRS AS SPECIFIED ON THE PLANS.

NOTES:

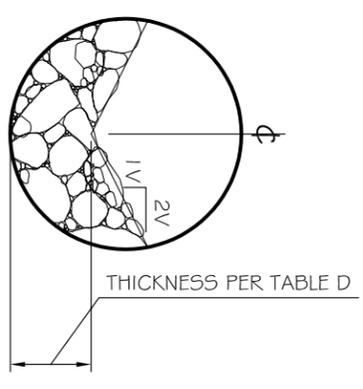
1. BANKS MAY NOT BE REQUIRED. CONSTRUCT BANKS ONLY WHEN SHOWN ON THE SITE PLAN.
2. SPACE FIRST WEIR 1m FROM OUTLET END OR 2W, WHICHEVER IS GREATER (STEEL WEIRS ONLY) OR AS SHOWN ON THE PLANS.
3. TOP OF ROCK WEIR SHALL PROTRUDE ABOVE UPSTREAM BED BY NO MORE THAN 0.2 X BANK FULL DEPTH OR AS STAKED BY THE C.O.R.
4. WHERE SHOWN ON THE PLANS, UTILIZE LOW-GRADIENT OUTLET APRON CONFIGURATION.



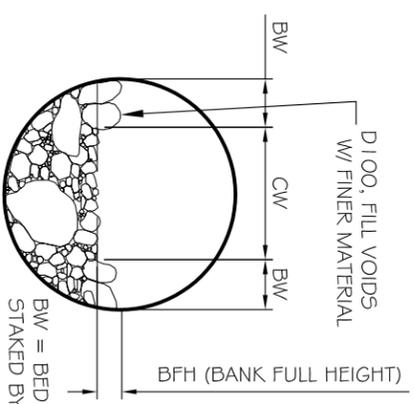
2 INLET DETAIL  
NOT TO SCALE



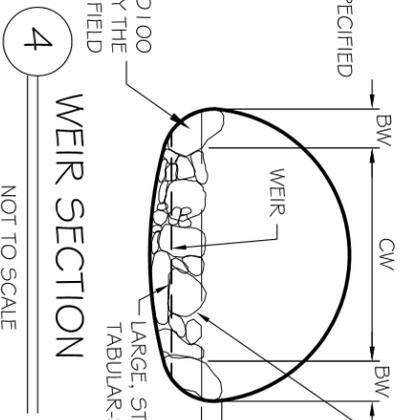
3 X-SECTION TYPE I  
NOT TO SCALE



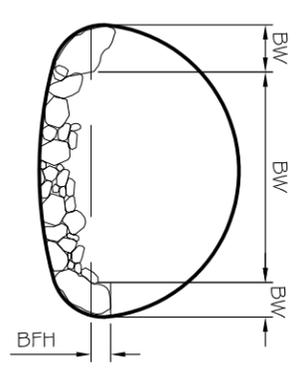
7 X-SECTION TYPE II  
NOT TO SCALE



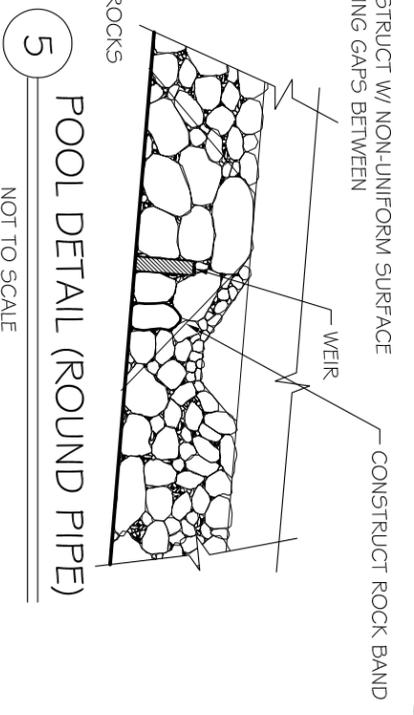
8 X-SECTION TYPE III  
NOT TO SCALE



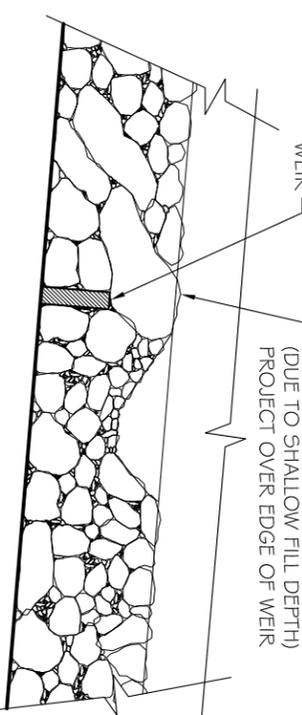
4 WEIR SECTION  
NOT TO SCALE



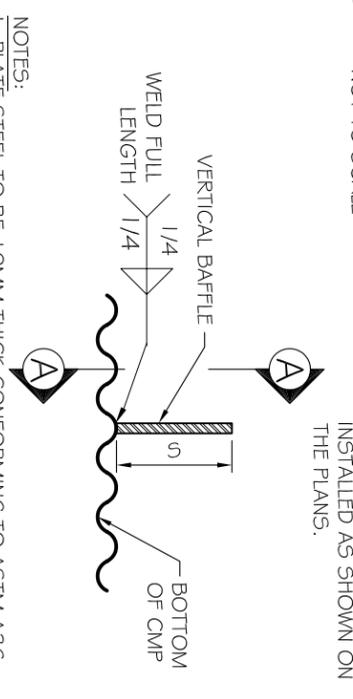
9 POOL SECTION  
NOT TO SCALE



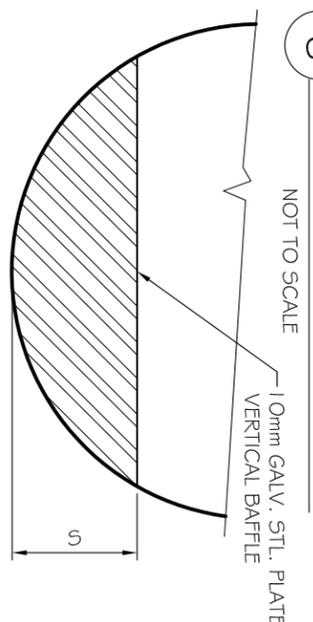
5 POOL DETAIL (ROUND PIPE)  
NOT TO SCALE



10 POOL DETAIL (PIPE ARCH)  
NOT TO SCALE



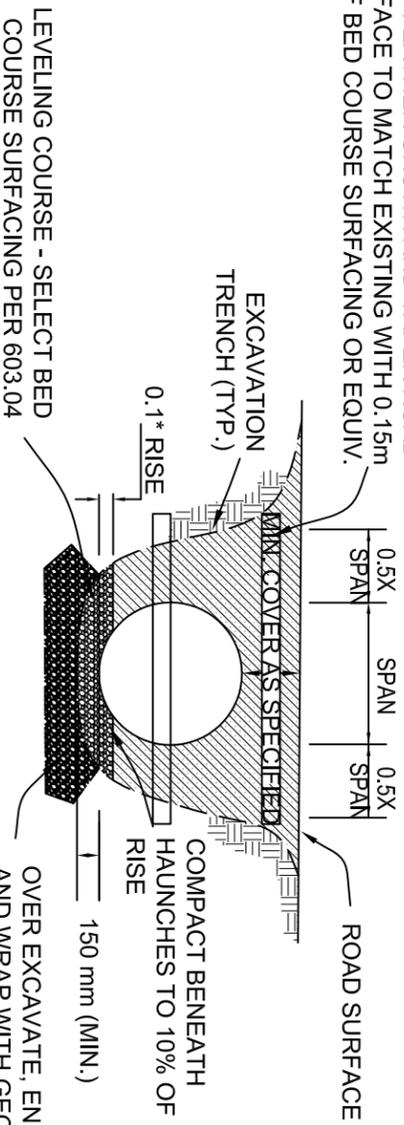
6 WEIR WELDING DETAIL  
NOT TO SCALE



A SECTION A-A  
NOT TO SCALE

<b>TONGASS</b> ENGINEERING & RECREATION		DESIGNED: X. XXXXXX DRAWN: X. XXXXXX REVIEWED: X. XXXXXX TMTTFP-03/04	DATE: XXXXXX DATE: XXXXXX DATE: XXXXXX	REVISION: XXXXXX XXXXXXXXXXXX XXXXXX	BY: X. XXXXX X. XXXXX X. XXXXX		ROAD 40000 - M.P. 2.492 & 3.337 USDA FOREST SERVICE - TONGASS NATIONAL FOREST R-10 - ??? DISTRICT	TYPICAL CULVERT DETAILS - HIGH GRADIENT CMP_DETAILS_HI_GRADIENT.DWG PLOT ON 11"X17" PAPER	SH. 10 of 10
--	--	--	--	---	---	--	---	---	--------------

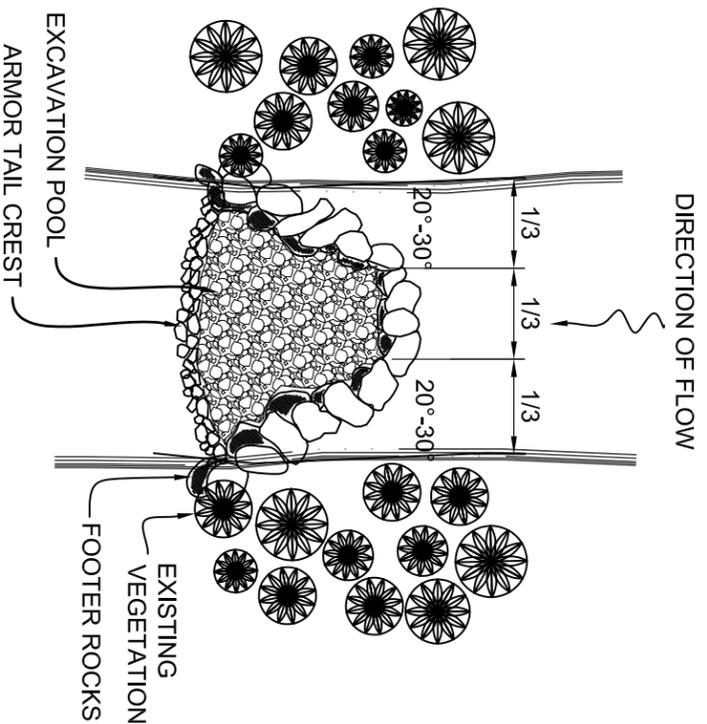
BORROW EXCAVATION BACKFILL PER 603.08  
FEATHER CROWN AND TAPER ROAD  
SURFACE TO MATCH EXISTING WITH 0.15m  
OF BED COURSE SURFACING OR EQUIV.



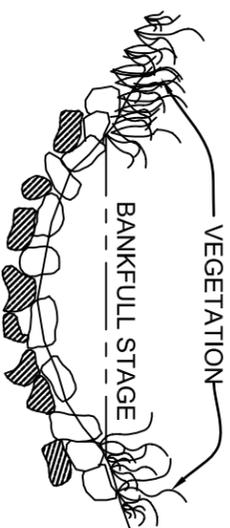
OVER EXCAVATE, ENLARGE FOOTING,  
AND WRAP WITH GEOTEXTILE AS  
REQUIRED FOR SOFT FOUNDATIONS  
AS DIRECTED BY COR OR ENGINEER.

## INSTALLATION SECTION (TYP.)

1:100

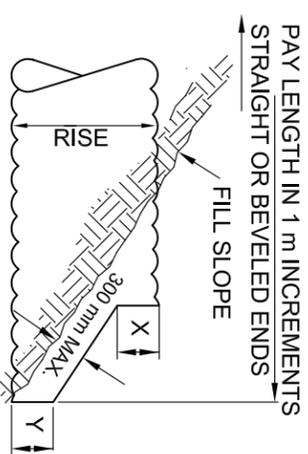


NOTE: INDIVIDUAL ROCK SIZES  
WILL BE DETERMINED BY THE  
ENGINEER. LOCATIONS AND  
SHAPES ARE REPRESENTED ON  
PLAN AND PROFILE. CONSTRUCT  
IN ACCORDANCE WITH DETAILS.



## CROSS SECTION

1:100

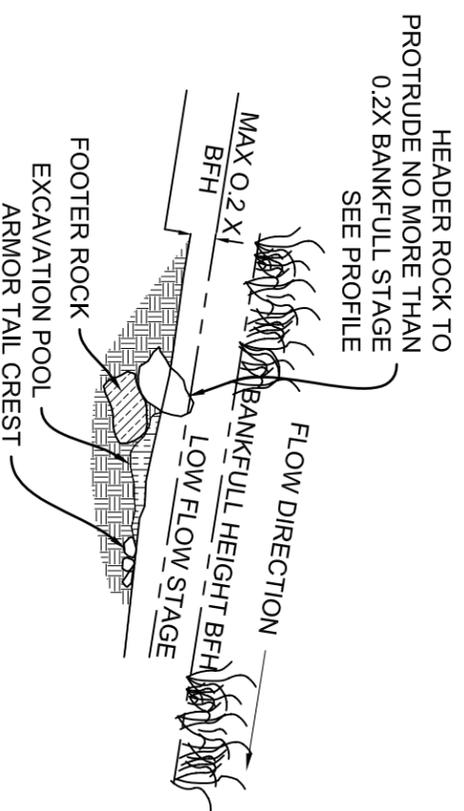


## END BEVEL DETAIL

1:100

### ROUND PIPE AND ARCHES

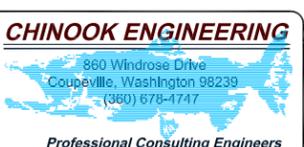
1. STEP BEVEL PIPE ARCHES WHEN RISE EQUALS 1800 mm OR LARGER.
2. STEP BEVEL ROUND PIPES WHEN DIAMETER EQUALS 1828 mm OR LARGER.
3. ROUND PIPES AND PIPE ARCHES WITH DIMENSIONS LESS THAN INDICATED ABOVE SHALL BE BEVELED ONLY WHEN SHOWN ON THE DRAWINGS, OR CALLED FOR IN THE SCHEDULE OF ITEMS. BEVEL OF PIPE SHALL BE 1:1.25 SLOPE UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SCHEDULE OF ITEMS.
4. THE ENDS OF CULVERTS SHALL NOT BE CUT ON A SKEW UNLESS SHOWN ON THE DRAWINGS, OR CALLED FOR IN THE SCHEDULE OF ITEMS.
5. X = 1/4 DIAMETER OR MANUFACTURERS STANDARDS. Y = PIPE EMBEDMENT DEPTH OR X, WHICHEVER IS GREATER.



## PROFILE VIEW

1:100

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# Rock Cross Weir Details