

SF Dry Cottonwood Culvert Replacement
FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

Please fill in the highlighted areas
all sections (IA, IB, IC, etc.) must be addressed or the application will be considered invalid

I. APPLICANT INFORMATION

A. Applicant Name: Clark Fork Coalition

B. Mailing Address: Box 7593

C. City: Missoula State: MT Zip: 59807

Telephone: 406-542-0539 E-mail: info@clarkfork.org

D. Contact Person: Will McDowell

Address if different from Applicant:

City: State: Zip:

Telephone: 406-396-7716 E-mail: will@clarkfork.org

E. Landowner and/or Lessee Name (if other than Applicant): US Forest Service, Beaverhead Deer Lodge National Forest

Mailing Address: Pintler Ranger District

City: Philipsburg State: MT Zip: 59858

Telephone: 406-859-3211 E-mail: phooper@fs.fed.us

II. PROJECT INFORMATION*

A. Project Name: South Fork Dry Cottonwood AOP Culvert Replacement

River, stream, or lake: South Fork Dry Cottonwood (Upper Clark Fork)

Location: Township: T5N Range: R8W Section: 7

Latitude: 46.2045 Longitude: -112.6432 within project (decimal degrees)

County: Deer Lodge

B. Purpose of Project:
The reconnect three miles of native trout stream habitat by replacing a USFS culvert to allow upstream fish passage.

C. Brief Project Description:

SF Dry Cottonwood Culvert Replacement

This project will replace the South Fork of Dry Cottonwood culvert on Forest Service Road 8634, one of two major fish barrier culverts in the 23-square mile Dry Cottonwood drainage of the Upper Clark Fork. This new aquatic organism passage (AOP) culvert will allow upstream passage and improve a conservation population of westslope cutthroat trout by reconnecting three (3) miles of good fish habitat to the mainstem of the creek. There is also a small riparian fencing component.

Dry Cottonwood Creek supports a conservation population of westslope cutthroat trout from near its mouth up to just below the continental divide, a total of over fourteen (14) fish-bearing stream miles. These trout are 95% to 98% pure westslope cutthroats, rated by Montana Fish Wildlife and Parks as a "conservation population." This drainage is unusual in the Deer Lodge Valley, in that it contains no brown trout or brook trout, which are competitive with the native fish. Hence this watershed provides a good conservation area for native cutthroat trout, and a potential recruitment area for fluvial native fish to the Clark Fork river, which is undergoing Superfund clean-up.

In total, there are seven (7) miles of the North and South Forks of Dry Cottonwood Creek which are cut off from upstream fish movements and migration by impassable culverts. The North Fork AOP replacement is designed, bid and under contract, and will be built in 2018. The South Fork AOP culvert has just been designed, and is the focus of this project. The proposed design will replace a perched 47" x 71" arch culvert near the bottom of the South Fork of Dry Cottonwood (see photo), with a 137"x 87" x48' steel pipe-arch "stream simulation" culvert---it is at stream grade, includes grade control and natural stream channel dimensions, shape and substrate. The culvert is designed with enough headroom for easy construction of the stream channel and grade controls inside. The Clark Fork Coalition coordinated with the USFS and FWP on the design process, which was paid for by CFC with support of private donations.

The channel at this project site has been altered by historic placer mining. To make the grades work better for fish passage, the new AOP culvert location is slightly changed from the current site. The existing culvert will be left in place as an emergency flood overflow site, but the new culvert, and new channel segment, is designed to take the entire 100-year flow. The channel grade inside the culvert is about 5%, and includes grade controls, which is favorable for native trout passage. The new channel area upstream of the culvert will be fenced off as part of a new 900 ft. riparian fence included in this project. The new channel downstream of the culvert will be protected from livestock impact by slash-filter windrows and the rocky steep terrain.

Once the project is funded, and the design finalized, the CFC will advertise for private construction firms to install the structure. Once a qualified contractor is selected, the CFC sign the contract and provide construction oversight, in coordination with the Engineering program at BDNF. The CFC will also provide monitoring reports of project progress and photo documentation of the entire installation process, as well as verifying low-flow velocities at culverts.

The US Forest Service, in its *East Deer Lodge Valley Landscape Restoration Management Project Record of Decision* approved in March 2015, specifically recommended that this culvert be replaced as part of a larger effort to enhance and restore native westslope cutthroat trout populations, a Species of Special Concern for the USFS, and for the State of Montana. The US Forest Service recommends these passage improvements to enhance stream connectivity for all life stages of westslope cutthroats.

The Clark Fork Coalition has been working with the USFS, private landowners, and other partners to enhance stream health and fisheries in the East Valley Landscape since 2008. This includes an effort to address all the limiting factors for westslope cutthroat trout in Dry Cottonwood Creek. At the lower end of the drainage, the Coalition has installed new water conservation measures and reduced irrigation-related dewatering. In the lower and middle drainage, the Clark Fork Coalition, three neighboring ranches, and the State of Montana have installed riparian fencing and reduced riparian grazing pressure significantly. Also in this private land segment, the Coalition has funded installation of six (6) new drain culverts, installed slash windrows for sediment capture, and re-graded the road to reduce fine sediment inputs to the stream. Replacement of fish barrier culverts with AOP culverts is the next step.

SF Dry Cottonwood Culvert Replacement

- E. The project agreement includes a 20-year maintenance commitment. Please discuss your ability to meet this commitment.

The USFS is required to maintain FS Road 8634, including all its crossing structures. The CFC, FWP and the USFS have negotiated maintenance agreement language for the North Fork culvert which can be used here on this Project as well.

- F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:

The primary cause of habitat degradation is a fish passage barrier caused by an under-sized, perched culvert. This culvert will be replaced by a "stream simulation" culvert which is designed to promote passage of all ages and size classes of wild trout.

- G. What public benefits will be realized from this project?:

The public will benefit from: a) more connected native trout habitat on public and private lands—which supports long-term persistence of these fish populations; b) improved native fish populations.

- H. Will the project interfere with water or property rights of adjacent landowners? (explain):

The project is almost entirely within the USFS maintenance right-of-way for FS Road 8634. The adjacent landowner (private inholding) is very much in favor of the project, and is eager to see the new fence go in along the road at the upstream end of the culvert, to protect the stream and riparian area on his private land from trespass USFS allotment cattle during summer.

- I. Will the project result in the development of commercial recreational use on the site?: (explain):

No.

- J. Is this project associated with the reclamation of past mining activity?:

Not directly. Although the site was the site of past placer mining, which altered topography.

Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:



Date:

30 Nov 2017

Sponsor (if applicable):



***Highlighted boxes will automatically expand.**

SF Dry Cottonwood Culvert Replacement

Mail To: Montana Fish, Wildlife & Parks
Fisheries Division
PO Box 200701
Helena, MT 59620-0701

E-mail To: Michelle McGree
mmcgree@mt.gov

(electronic submissions MUST be signed)

Incomplete or late applications will be rejected and returned to applicant.
Applications may be rejected if this form is modified.

***** Applications must be signed and *received* by the Future Fisheries Program Officer in Helena before December 1 and June 1 of each year to be considered for the subsequent funding period.*****

SE Dry Cottonwood Culvert Replacement
BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

South Fork Dry Cottonwood AOP Culvert Replacement

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES**	IN-KIND CASH	TOTAL
Personnel***								
Survey	1	crew day	\$1,100.00	\$ 1,100.00	1,100.00			\$ 1,100.00
Design	15	days	\$960.00	\$ 14,400.00		10,000.00		\$ 10,000.00
Engineering				\$ -				\$ -
Permitting	1	day	\$480.00	\$ 480.00		480.00		\$ 480.00
Oversight	8	days	\$480.00	\$ 3,840.00		3,840.00		\$ 3,840.00
				\$ -				\$ -
			Sub-Total	\$ 19,820.00	\$ 1,100.00	\$ 14,320.00	-	\$ 15,420.00
Travel								
Mileage	600	miles	\$0.54	\$ 324.00			324.00	\$ 324.00
Per diem				\$ -				\$ -
			Sub-Total	\$ 324.00	\$ -	\$ -	\$ 324.00	\$ 324.00
Construction Materials****								
Embankment Guide berm	15	CY	\$15.00	\$ 225.00			225.00	\$ 225.00
Structure excavation & backfill	422	CY	\$32.00	\$ 13,504.00			13,504.00	\$ 13,504.00
Bedding material (placed)	80	CY	\$40.00	\$ 3,200.00			3,200.00	\$ 3,200.00
Placed riprap (Class 4)	60	CY	\$80.00	\$ 4,800.00			4,800.00	\$ 4,800.00
16 rock cross vanes built	56	CY	\$80.00	\$ 4,480.00	4,480.00			\$ 4,480.00
Crush aggregate placed/compact ed	70	CY	\$40.00	\$ 2,800.00	2,800.00			\$ 2,800.00
137"x87"x48' arch culvert	48	ft	\$250.00	\$ 12,000.00	12,000.00			\$ 12,000.00
Channel excavation and shaping	120	CY	\$25.00	\$ 3,000.00	3,000.00			\$ 3,000.00
Fencing barbed wire	900	ft	\$1.50	\$ 1,350.00	1,350.00			\$ 1,350.00
			Sub-Total	\$ 45,359.00	\$ 23,630.00	\$ -	\$ 21,729.00	\$ 45,359.00
Equipment and Labor								
Trakhoe Excavator	1	day	\$1,400.00	\$ 1,400.00			1,400.00	\$ 1,400.00

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Dump truck	1 day	\$600.00	\$ 600.00			600.00	\$ 600.00
Skid steer small	1 day	\$400.00	\$ 400.00			400.00	\$ 400.00
(clearing grubbing erosion control etc.)			\$ -				\$ -
			\$ -				\$ -
			\$ -				\$ -
		Sub-Total	\$ 2,400.00	\$ -	\$ -	\$ 2,400.00	\$ 2,400.00
Mobilization							
Mobilize			\$ 6,000.00	3,000.00		3,000.00	\$ 6,000.00
							\$ -
							\$ -
			\$ -				\$ -
		Sub-Total	\$ 6,000.00	\$ 3,000.00	\$ -	\$ 3,000.00	\$ 6,000.00
TOTALS			\$ 73,903.00	\$ 27,730.00	\$ 14,320.00	\$ 27,453.00	\$ 69,503.00

OTHER REQUIREMENTS:

All of the columns in the budget table and the matching contribution table MUST be completed appropriately or the application will be invalid. Please see the example budget sheet for additional clarification.

*Units = feet, hours, inches, etc. Do not use lump sum unless there is no other way to describe the costs.

**Can include in-kind materials. Justification for in-kind labor (e.g. hourly rates used for calculations). Describe here or in text.

Reminder: Government salaries cannot be used as in-kind match

***The Review Panel suggests that design and oversight costs associated with a proposed project not exceed 15% of the total project budget. If design and oversight costs are in excess of 15%, applications must include a minimum of two competitive bids for the cost of undertaking the project.

****The Review Panel recommends a maximum fencing cost of \$1.50 per foot. Additional costs may be the responsibility of the applicant and/or partners.

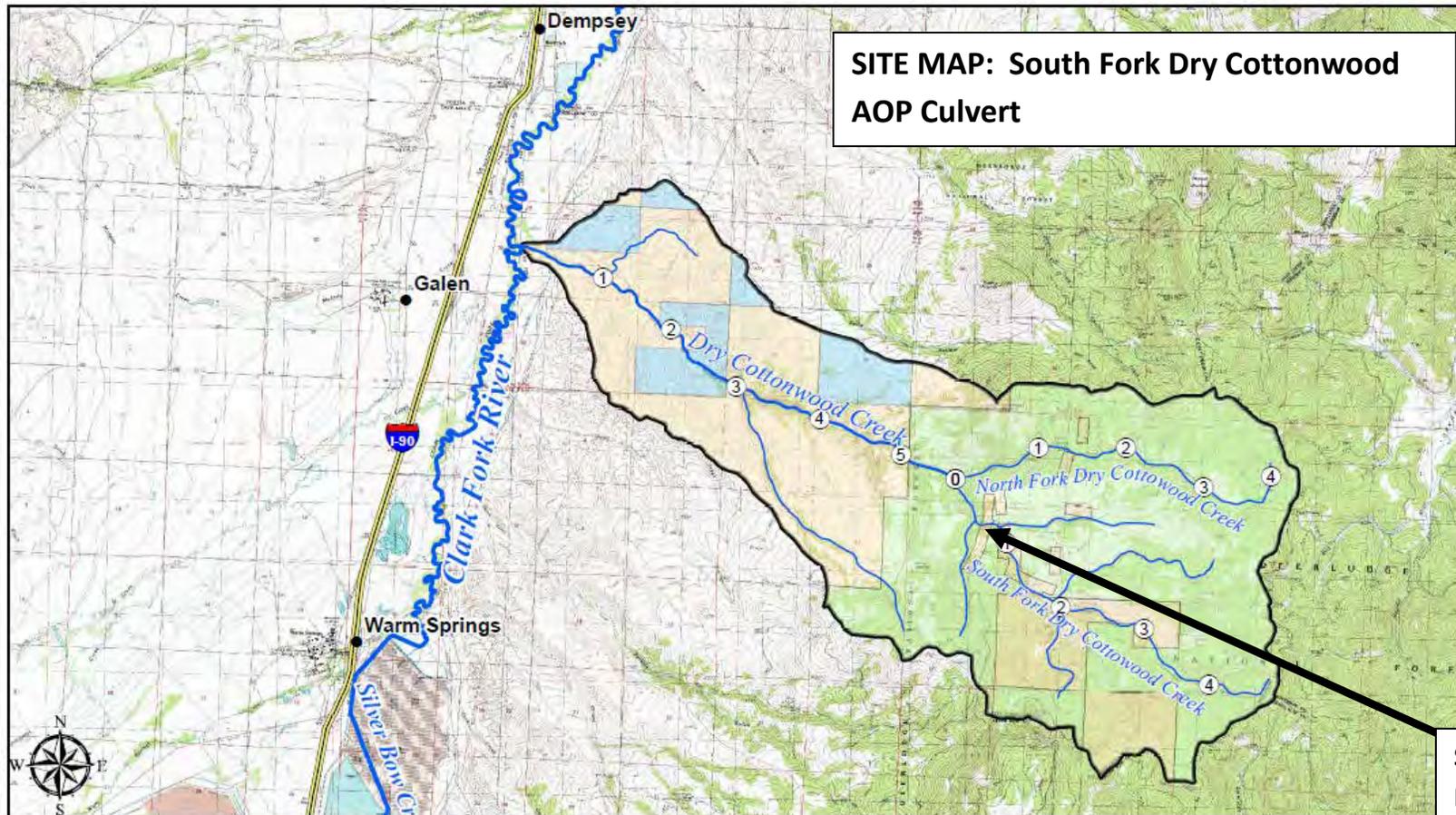
MATCHING CONTRIBUTIONS (do not include requested funds)

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Secured? (Y/N)
Clark Fork Coalition	\$ 14,320.00	\$ -	\$ 14,320.00	yes
US Forest Service (RAC grant to CFC)	\$ -	\$ 27,453.00	\$ 27,453.00	yes
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	

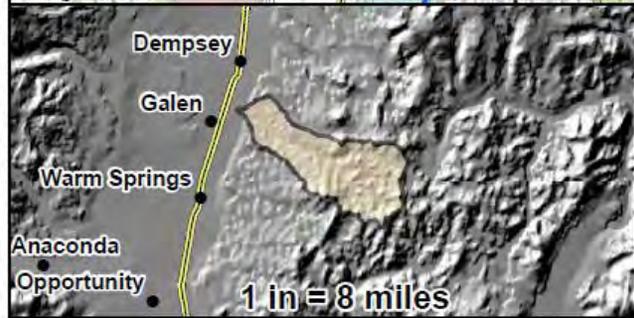
SE Dry Cottonwood Culvert Replacement
BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

	\$ -	\$ -	\$ -	
TOTALS	\$ 14,320.00	\$ 27,453.00	\$ 41,773.00	

SF Dry Cottonwood Culvert Replacement

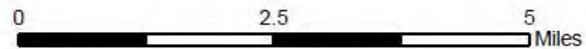


South Fork Dry Cottonwood AOP Culvert Replacement SITE



Dry Cottonwood Creek Watershed

- Dry Cottonwood Creek Watershed Boundary
- River Miles
- Interstate Highway
- U.S. Forest Service
- State Land
- Private Land



SF Dry Cottonwood Culvert Replacement



South Fork Dry Cottonwood Culvert: USFS Road 8634 proposed for replacement



South Fork Dry Cottonwood Culvert Replacement

Montana Fish, Wildlife & Parks

P.O. Box 25

Anaconda, MT 59711

Phone: (406) 529-8058

E-mail: jason.lindstrom@mt.gov

November 27, 2017

Montana Fish, Wildlife & Parks
Future Fisheries Program, Attn: Michelle McGree
PO Box 200701
Helena, MT 59620

RE: Support for South Fork Dry Cottonwood AOP Culvert Replacement

I would like to offer my support for this culvert replacement project proposed by the Clark Fork Coalition in cooperation with the U.S. Forest Service (USFS). The existing culvert is significantly perched and poses an upstream barrier to fish movement. Dry Cottonwood Creek and its tributaries support a conservation population of westslope cutthroat trout. No other species such as introduced brook trout or brown trout have been documented in the stream during routine sampling. This makes the Dry Cottonwood Creek drainage relatively unique, and a good location to promote cutthroat trout conservation. Replacing this culvert with one that meets USFS aquatic organism passage standards would greatly enhance fish passage and habitat connectivity for westslope cutthroat trout in the Dry Cottonwood Creek drainage.

Dry Cottonwood Creek is also a direct tributary (seasonally connected) to the Clark Fork River. This allows for potential recruitment of fluvial, native fish to the river. Currently the upper Clark Fork River is being remediated by DEQ for damages caused by past mining in the Butte and Anaconda areas. Water quality is presently such that native trout have difficulty surviving in the upper reaches of the river. As the cleanup advances and water quality improves, tributaries with native trout populations such as Dry Cottonwood Creek will play an important role in helping to improve the fishery of the upper river. Please feel free to contact me with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Lindstrom", written in a cursive style.

Jason Lindstrom
Montana Fish, Wildlife & Parks
Fisheries Biologist - Upper Clark Fork

ABBREVIATIONS

⊙	AT	LPG	LIQUID PROPANE GAS
Δ	ANGLE OF DEFLECTION, DELTA ANGLE	LT	LEFT
<PT	ANGLE POINT	MAX	MAXIMUM
AB	ANCHOR BOLT	MD	MEASURE DOWN
ABDN	ABANDON	MFD	MANUFACTURED
AC	ASBESTOS CONCRETE	MFR	MANUFACTURE, MANUFACTURER
ADDN	ADDITIONAL	MH	MANHOLE
ADJ	ADJACENT	MIN	MINIMUM
AFF	ABOVE FINISHED FLOOR	MISC	MISCELLANEOUS
ALT	ALTERNATE	MJ	MECHANICAL JOINT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MOV	MOTOR OPERATED VALVE
APPROX	APPROXIMATE	MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
APVD	APPROVED	N	NORTH
ARCH	ARCHITECTURE, ARCHITECTURAL	NE	NORTHEAST
ASPH	ASPHALT	NG	NATURAL GAS
AVE	AVENUE	NIC	NOT IN CONTRACT
AVG	AVERAGE	NO	NUMBER
BFV	BUTTERFLY VALVE	NOM	NOMINAL
BLDG	BUILDING	NTS	NOT TO SCALE
BLK	BLOCK	NW	NORTHWEST
BLVD	BOULEVARD	OC	ON CENTER
BM	BEAM, BENCHMARK	OD	OUTSIDE DIAMETER
BOT	BOTTOM	OF	OVERFLOW
BRG	BEARING	OH	OVERHEAD
BRKT	BRACKET	OHP	OVERHEAD POWER
BVC	BEGIN VERTICAL CURVE	OHT	OVERHEAD TELEPHONE
C-C	CENTER TO CENTER	OPNG	OPENING
CHAN	CHANNEL	PC	POINT OF CURVATURE
CHK	CHECK	PCC	POINT OF COMPOUND CURVATURE
CI	CAST IRON	PE	PLAIN END, POLYETHYLENE
CIPC	CAST-IN-PLACE CONCRETE	PERP	PERPENDICULAR
CIRC	CIRCULAR	PI	POINT OF INTERSECTION
CJ	CONSTRUCTION JOINT, CONTROL JOINT	PL	PROPERTY LINE
CL	CENTER LINE	PNL	PANEL
CLR	CLEAR, CLEARANCE	PRC	POINT OF REVERSE CURVATURE
CMP	CORRUGATED METAL PIPE	PREFAB	PREFABRICATED
CMU	CONCRETE MASONRY UNITS	PRELIM	PRELIMINARY
CO	CLEANOUT	PREP	PREPARE, PREPARATION
COL	COLUMN	PROP	PROPERTY
CONC	CONCRETE	PRV	PRESSURE REDUCING VALVE
CONSTR	CONSTRUCTION	PSF	POUNDS PER SQUARE FOOT
CONT	CONTINUE, CONTINUED, CONTINUOUS	PSI	POUNDS PER SQUARE INCH
CONTR	CONTRACTOR	PT	POINT, POINT OF TANGENCY
COORD	COORDINATE	PVC	POLYVINYL CHLORIDE
CP	CONTROL PANEL, CONTROL POINT	PVI	POINT OF VERTICAL INTERSECTION
CPLG	COUPLING	PVMT	PAVEMENT
CTR	CENTER	R, RAD	RADIUS
CTV	CABLE TELEVISION	RC	REINFORCED CONCRETE
CU	CUBIC, COPPER	RCP	REINFORCED CONCRETE PIPE
CF	CUBIC FEET	RD	ROAD
CULV	CULVERT	RDCR	REDUCER
CY	CUBIC YARD	REBAR	REINFORCEMENT BAR
DET	DETAIL	REF	REFERENCE
DI	DUCTILE IRON, DRAIN INLET	REINF	REINFORCE
DIA, Ø	DIAMETER	REQD	REQUIRED
DIAG	DIAGONAL	RR	RAILROAD
DIM	DIMENSION	RST	REINFORCING STEEL
DR	DRIVE	RT	RIGHT
DWG	DRAWING	R/W	RIGHT-OF-WAY
E	EAST	S	SOUTH, SANITARY SEWER
EA	EACH	SAN	SANITARY
EL, ELEV	ELEVATION	SCH	SCHEDULE
ELB	ELBOW	SD	STORM DRAIN
ELEC	ELECTRIC, ELECTRICAL	SDWK	SIDEWALK
ENCL	ENCLOSE	SE	SOUTHEAST
ENGR	ENGINEER	SECT	SECTION
EOP	EDGE OF PAVEMENT	SF	SQUARE FOOT
EQ	EQUAL, EQUALLY	SHT	SHEET
EQ SP	EQUALLY SPACED	SIM	SIMILAR
EQUIP	EQUIPMENT	SLP	SLOPE
EQUIV	EQUIVALENT	SPEC	SPECIFICATION
EVC	END VERTICAL CURVE	SQ	SQUARE
EW	EACH WAY	SSTL	STAINLESS STEEL
EXC	EXCAVATE	STA	STATION
EXP	EXPANSION	SS	SANITARY SEWER SERVICE
EXP JT	EXPANSION JOINT	STD	STANDARD
EXST	EXISTING	ST	STREET
FCV	FLOW CONTROL VALVE	STL	STEEL
FD	FLOOR DRAIN	STRUCT	STRUCTURE
FDN	FOUNDATION	SW	SOUTHWEST
FES	FLARED END SECTION	SYM	SYMMETRICAL
FET	FLARED END TERMINAL	TB	THRUST BLOCK
FF	FINISHED FLOOR	TBC	TOP BACK OF CURB
FG	FINISH GRADE	TBM	TEMPORARY BENCH MARK
FHYD	FIRE HYDRANT	TEL	TELEPHONE
FJ	FLANGE JOINT	TEMP	TEMPORARY
FL	FLOW LINE	THRU	THROUGH
FLEX	FLEXIBLE	TYP	TYPICAL
FM	FORCEMAIN	UG	UNDERGROUND
FT	FOOT, FEET	UGP	UNDERGROUND POWER
FO	FIBER OPTIC	UGT	UNDERGROUND TELEPHONE
FTG	FOOTING, FITTING	UTIL	UTILITY
G	NATURAL GAS	V	VALVE, VOLT
GA	GAGE, GAUGE	VB	VALVE BOX
GAL	GALLON	VERT	VERTICAL
GALV	GALVANIZED	VOL	VOLUME
GND	GROUND	W	WEST, WATER
GVL	GRAVEL	WTR	WATER
HB	HOSE BIB	WD	WOOD
HDPE	HIGH DENSITY POLYETHYLENE	W/	WITH
HOR, HORIZ	HORIZONTAL	W/O	WITHOUT
HWY	HIGHWAY	WL	WETLAND
HYD	HYDRANT	WM	WIRE MESH, WATER METER
ID	INSIDE DIAMETER	WS	WATERSTOP, WATER SURFACE, WATER SERVICE
IE	INVERT ELEVATION	WT	WEIGHT
IN	INCH	WV	WATER VALVE
INV	INVERT	WWF	WELDED WIRE FABRIC
JB	JUNCTION BOX	WWM	WELDED WIRE MESH
JT	JOINT	XFMR	TRANSFORMER
K	RATE OF VERTICAL CURVATURE	X-ING	CROSSING
LBS	POUNDS	XS	CROSS SECTION
LF	LINEAR FEET	YD	YARD
LN	LANE		

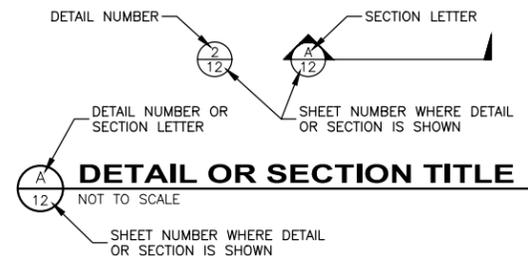
LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
-----	-----	MAJOR CONTOUR	⊙	⊙	STUMP
-----	-----	MINOR CONTOUR	⊙	⊙	SHRUB/BUSH
---OHT---	---OHT---	OVERHEAD TELEPHONE	☀	☀	TREE-CONIFER
---UGT---	---UGT---	UNDERGROUND TELEPHONE	☀	☀	TREE-DECIDUOUS
---CTV---	---CTV---	CABLE TELEVISION	⊙	⊙	TREE LINE
---FO---	---FO---	FIBER OPTIC	⊙	⊙	COMMUNICATION MANHOLE
---G---	---G---	NATURAL GAS	⊙	⊙	COMMUNICATION VAULT
---OHP---	---OHP---	OVERHEAD POWER	⊙	⊙	TELEPHONE RISER
---UGP---	---UGP---	UNDERGROUND POWER	⊙	⊙	CABLE TV RISER
---S---	---S---	SANITARY SEWER	⊙	⊙	NATURAL GAS METER
---SS ---SS ---SS ---SS---	---SS ---SS ---SS ---SS---	SANITARY SEWER SERVICE	⊙	⊙	NATURAL GAS RISER
---FM---	---FM---	SANITARY SEWER FORCEMAIN	⊙	⊙	NATURAL GAS VALVE
---SD---	---SD---	STORM DRAIN	⊙	⊙	LIGHT POLE
-----	-----	STORM CULVERT	⊙	⊙	STREET LIGHT POLE
---W---	---W---	WATER	⊙	⊙	POWER RISER
---WS ---WS ---WS ---WS---	---WS ---WS ---WS ---WS---	WATER SERVICE	⊙	⊙	PAD MOUNTED TRANSFORMER
---O---	---O---	CHAINLINK FENCE	⊙	⊙	POWER VAULT
---X ---X ---X ---X---	---X ---X ---X ---X---	BARBED WIRE FENCE	⊙	⊙	UTILITY POLE
---□ ---□ ---□ ---□---	---□ ---□ ---□ ---□---	WOOD FENCE	⊙	⊙	GUY WIRE
-----	-----	GRAVEL ROAD	⊙	⊙	SANITARY MANHOLE
-----	-----	PROPERTY/LOT LINE	⊙	⊙	SANITARY CLEANOUT
-----	-----	PROPERTY EASEMENT	⊙	⊙	SANITARY LAMPHOLE
-----	-----	PROPERTY SETBACK	⊙	⊙	STORM MANHOLE
-----	-----	RIGHT-OF-WAY	⊙	⊙	STORM ROUND INLET
-----	-----	CITY LIMIT/DISTRICT BOUNDARY	⊙	⊙	STORM SQUARE INLET
-----	-----	RAILROAD	⊙	⊙	STORM CATCH BASIN
-----	-----	DITCH	⊙	⊙	11.25' ELBOW
-----	-----	WATER EDGE	⊙	⊙	22.50' ELBOW
-----	-----	WETLAND	⊙	⊙	45' ELBOW
-----	-----	BUILDING	⊙	⊙	90' ELBOW
-----	-----	BENCHMARK	⊙	⊙	TEE
-----	-----	CONTROL POINT	⊙	⊙	CROSS
-----	-----	PROPERTY PIN	⊙	⊙	CAP
-----	-----	BORING	⊙	⊙	FIRE HYDRANT
-----	-----	MONITORING WELL	⊙	⊙	GATE VALVE
-----	-----	TEST PIT	⊙	⊙	REDUCER
-----	-----	BOLLARD	⊙	⊙	WATER METER
-----	-----	MAIL BOX	⊙	⊙	WELL
-----	-----	SIGN	⊙	⊙	

GENERAL NOTES:

- THIS IS A STANDARD LEGEND AND ABBREVIATION LIST. THEREFORE, NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT.
- EXISTING UNDERGROUND UTILITIES SHOWN ARE FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER AT: 1-800-424-5555.

GENERAL DESIGN DESIGNATIONS:



PROJECT NOTES:

SPECIFICATIONS:
MATERIALS AND CONSTRUCTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-03 (U.S. CUSTOMARY UNITS), AS MODIFIED BY THE SUPPLEMENTAL SPECIFICATIONS.

DESIGN SPECIFICATION:
DESIGNS SHALL CONFORM TO HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th EDITION WITH CURRENT INTERIMS.

HYDROLOGY & HYDRAULICS:
THIS STRUCTURE WAS DESIGNED TO PASS THE 100-YEAR FLOOD EVENT OF 110 CFS WITH A MINIMUM OF TWO FEET OF FREEBOARD. FOR THIS SITE, THE 2-YEAR AND THE 10-YEAR EVENTS WERE ESTIMATED AT 16.3 CFS AND 49 CFS, RESPECTIVELY.

CORRUGATED STEEL PIPE-ARCH:
THE CORRUGATED STEEL PIPE-ARCH SHALL BE 137" SPAN, 87" RISE, 3" X 1" CORRUGATIONS WITH GALVANIZED STEEL OF 0.138" THICKNESS.

CLEARING AND GRUBBING:
CLEARING AND GRUBBING WILL BE PAID UNDER ITEM 20102. CONTRACTOR SHALL DISPOSE OF CLEARING AND GRUBBING MATERIAL PER FSSS 203.

CONTRACTOR QUALITY CONTROL:
CONTRACTOR IS REQUIRED TO PROVIDE DENSITY TESTING ON STRUCTURAL BACKFILL MATERIAL. REFER TO FP-03 SECTION 153 AND SUPPLEMENTAL SPECIFICATION 153 FOR TESTING AND SUBMITTAL REQUIREMENTS.

EROSION CONTROL:
SUBMIT AN EROSION CONTROL PLAN TO THE OWNER FOR REVIEW PRIOR TO BEGINNING ANY WORK. PROVIDE METHODS TO PREVENT RUNOFF FROM THE CONSTRUCTION SITE FROM DIRECTLY ENTERING INTO LIVE STREAMS.

90% SUBMITTAL

NO.	REVISION DESCRIPTION	DATE

PROJECT: 1-16263	DESIGNED: JRW	DRAWN: JRW	CHECKED: RME	APPROVED: JRW	DATE: NOVEMBER 17, 2017
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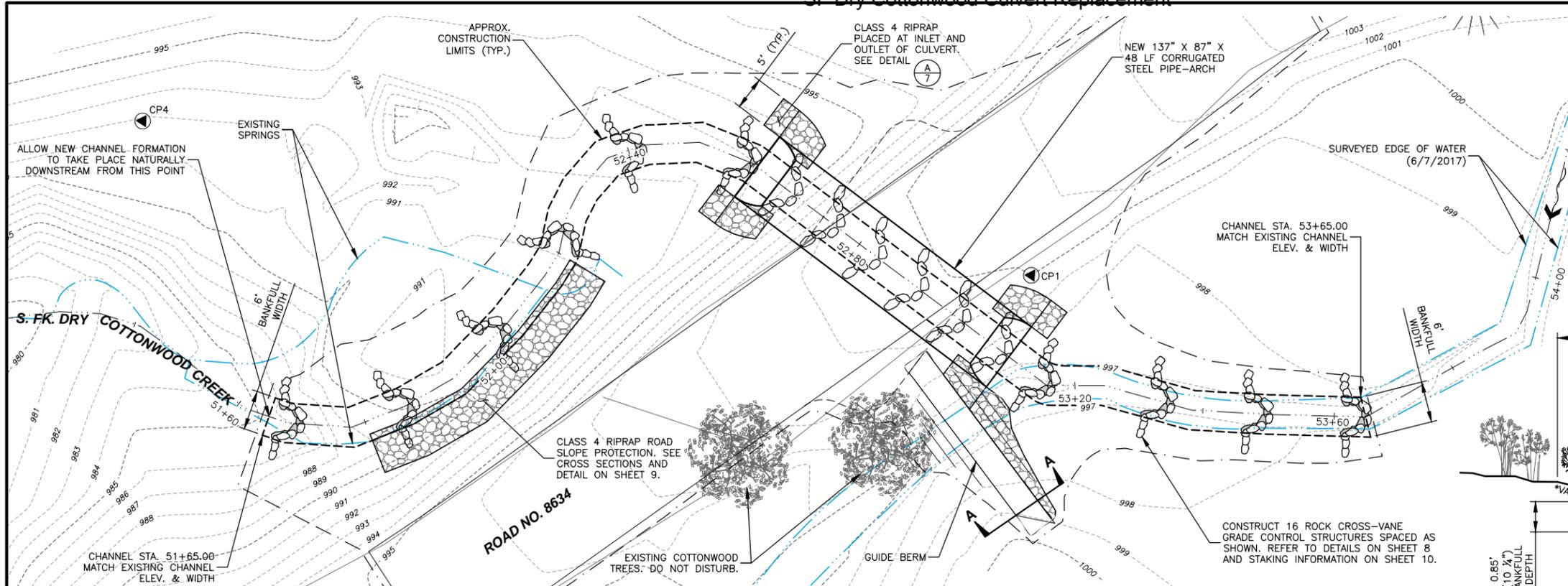
CLARK FORK COALITION

S. FK. DRY COTTONWOOD CREEK

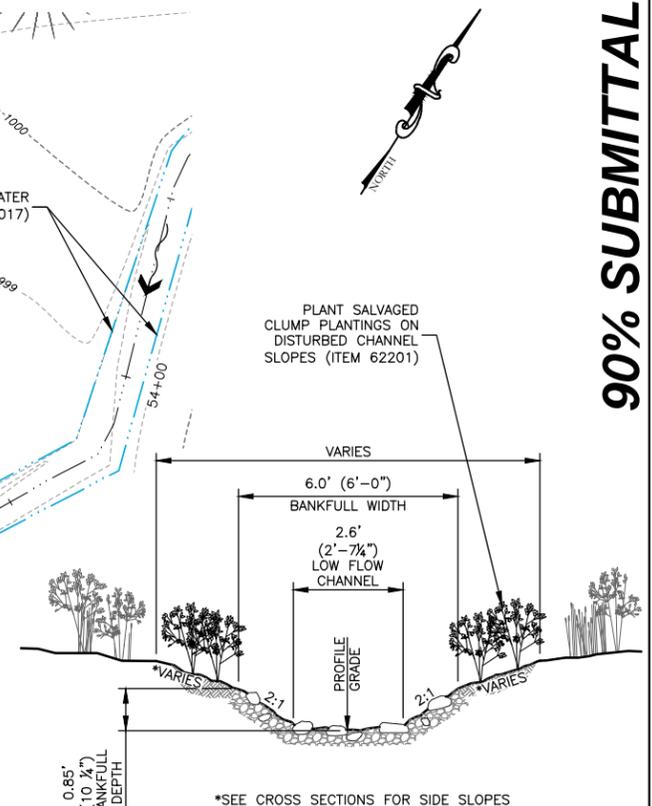
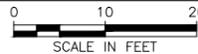
CULVERT REPLACEMENT

GENERAL NOTES AND LEGEND

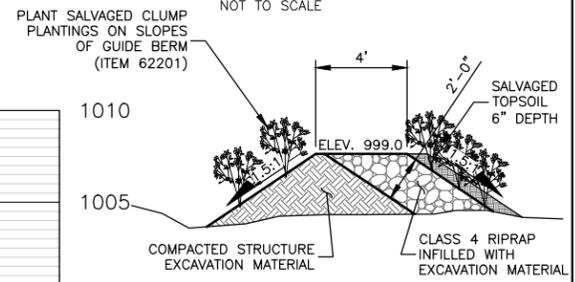
SF Dry Cottonwood Culvert Replacement



PLAN VIEW OF S. FK. DRY COTTONWOOD CREEK - STA. 51+55 TO STA. 53+80

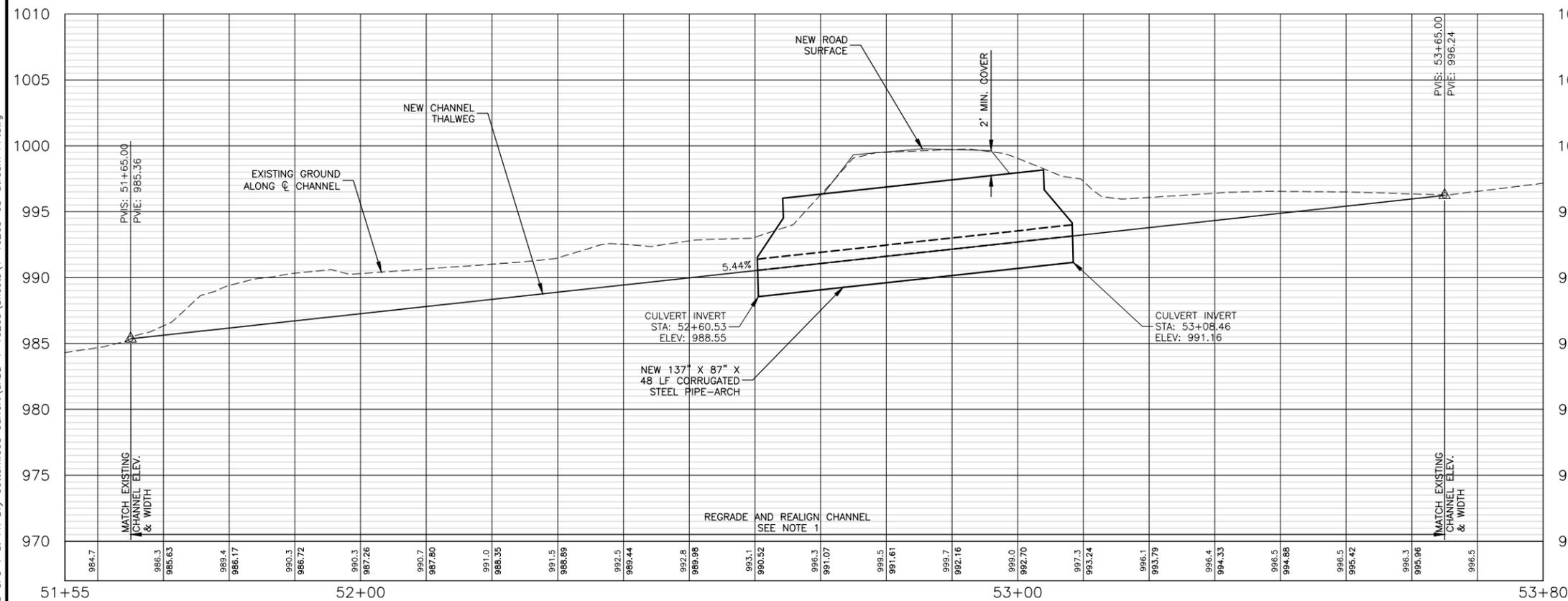


TYPICAL CHANNEL SECTION



GUIDE BERM SECTION A-A

- NOTES:**
1. UTILIZE NATIVE STREAMBED MATERIAL TO REGRADE AND SHAPE THE CHANNEL WITHIN THE CULVERT PER THE DETAILS ON SHEET 7. REGRADE AND SHAPE THE CHANNEL OUTSIDE THE CULVERT PER THE TYPICAL CHANNEL SECTION DETAIL ON THIS SHEET AND THE STREAM CHANNEL CROSS SECTIONS ON SHEETS 9 - 10. THIS WORK IS PAID UNDER ITEM 64808.
 2. CONTRACTOR SHALL SALVAGE RIPARIAN VEGETATED SOILS MATS, OTHER RIPARIAN VEGETATION, AND TOP SOIL PRIOR TO CLEARING AND GRUBBING AS DIRECTED BY THE OWNER. VEGETATION WILL BE PLACED AS DIRECTED IN THE FIELD BY THE OWNER. REPLACING TOPSOIL, SOIL MATS, AND RIPARIAN VEGETATION SHALL BE PAID UNDER ITEM 62201.
 3. TO OPTIMIZE TRANSPLANT SUCCESS, OVER-EXCAVATE A DIVOT FOR SOIL MAT OR OTHER RIPARIAN VEGETATION. PLACE FILL MATERIAL IN DIVOT HOLE SURROUNDING PLANT TO NATURAL CONTOUR. COMPACT THOROUGHLY. WATER IMMEDIATELY WITH EXCAVATOR BUCKET.
 4. SEE SHEETS 9 - 10 FOR STREAM CHANNEL STAKING INFORMATION.



PROFILE VIEW OF S. FK. DRY COTTONWOOD CREEK - STA. 51+55 TO STA. 53+80

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'

90% SUBMITTAL

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT: 1-16263
DESIGNED: JRW
DRAWN: JRW
CHECKED: RME
APPROVED: JRW
DATE: NOVEMBER 17, 2017



CLARK FORK COALITION
S. FK. DRY COTTONWOOD CREEK
CULVERT REPLACEMENT

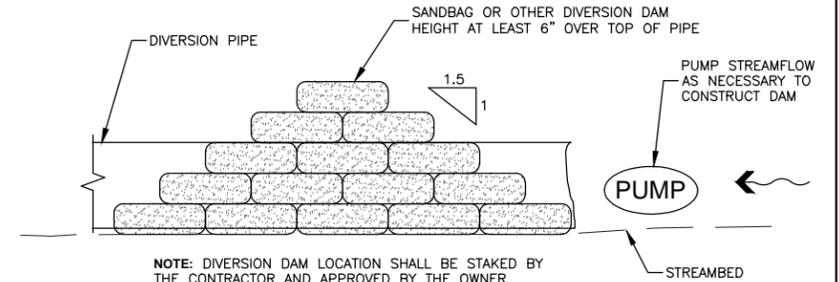
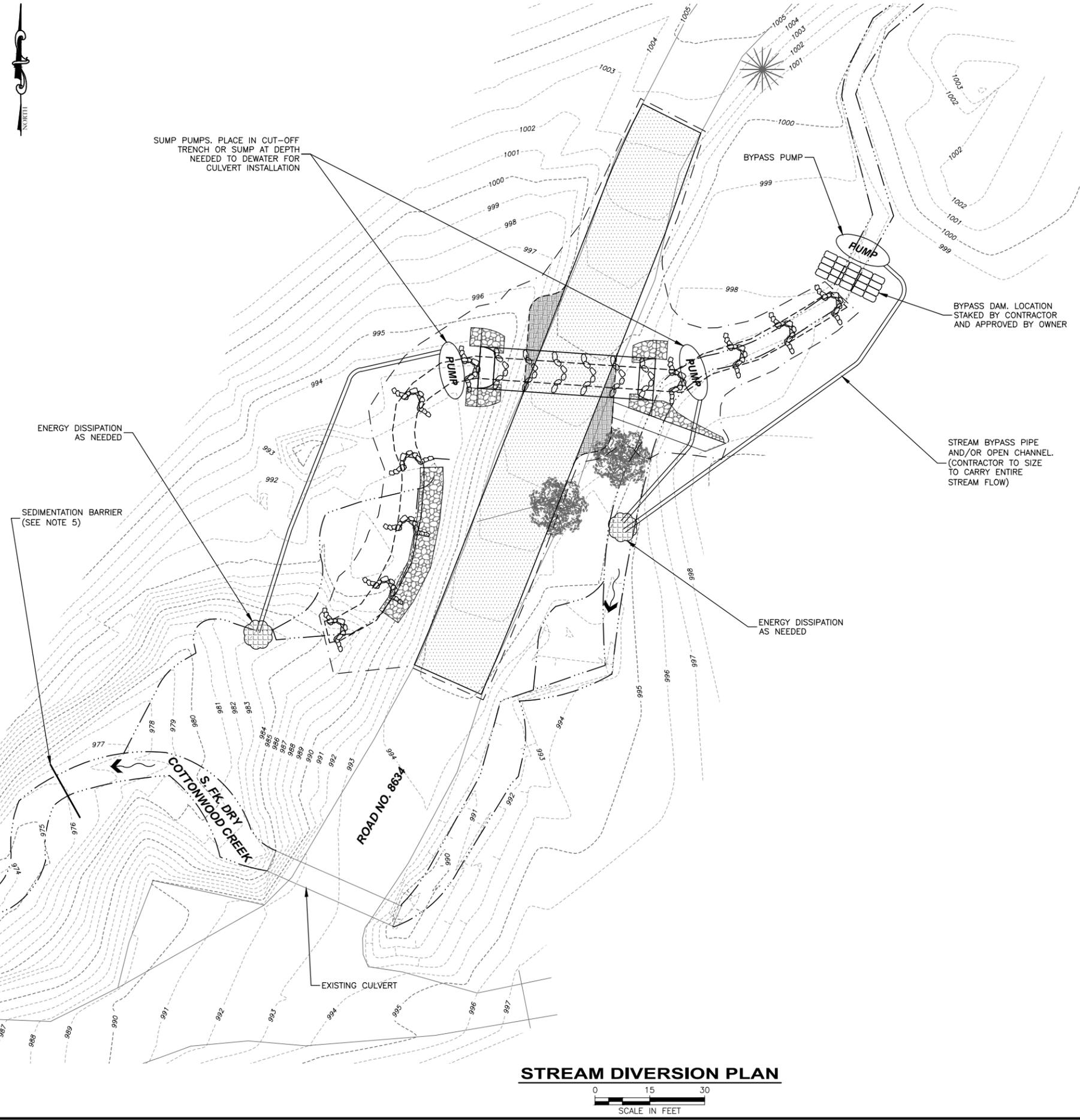
STREAM PLAN AND PROFILE

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SF Dry Cottonwood Culvert Replacement

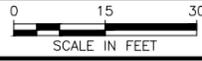
NOTES:

1. DE-WATER THE EXCAVATIONS IN ACCORDANCE WITH FP-03 SECTIONS 157, 208, 209 AND THE REQUIREMENTS ON THIS SHEET.
2. DE-WATERING IS THE RESPONSIBILITY OF THE CONTRACTOR AND CONTRACTOR SHALL SUBMIT A DE-WATERING PLAN TO THE OWNER FOR APPROVAL ALONG WITH THE EXCAVATION PLAN. THIS SHEET ILLUSTRATES GENERIC DE-WATERING REQUIREMENTS AND POSSIBLE METHODS AND EQUIPMENT. CONTRACTOR SHALL DEVELOP THEIR OWN PROJECT SPECIFIC DE-WATERING PLANS AND SHALL INCLUDE DRAWINGS AND A WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED LAYOUT, METHODS, EQUIPMENT, AND ANTICIPATED STREAM FLOW VOLUMES. APPROVAL OF THE DE-WATERING PLAN BY THE OWNER DOES NOT RELIEVE THE CONTRACTOR FROM COMPLETING THE WORK AS SPECIFIED. IF CONTRACTOR'S IDENTIFIED DE-WATERING METHODS ARE NOT PRODUCING DESIRED RESULTS, CONTRACTOR SHALL RE-EVALUATE AND SUBMIT ANOTHER PLAN TO OWNER FOR APPROVAL. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS WORK. ALL WORK RELATING TO THE STREAM DIVERSION IS PAID UNDER ITEM 15713.
3. CONTRACTOR IS RESPONSIBLE FOR SIZING ALL PUMPS, DAMS, BYPASS PIPES, OPEN CHANNELS, ETC.
4. SOIL EROSION AND SEDIMENT CONTROL MEASURES SPECIFIC TO THE DE-WATERING PLAN SHALL BE INCLUDED AND SHALL BE IN CONFORMANCE WITH PROJECT PERMITS.
5. INSTALL SEDIMENTATION BARRIER DOWNSTREAM OF WORK. THE BARRIER MAY CONSIST OF EITHER ONE OR A COMBINATION OF THE FOLLOWING: STRAW BALES OR SILT FENCE. INSTALL BARRIER PRIOR TO COMMENCEMENT OF WORK. THE LOCATION OF THE BARRIER WILL BE LOCATED BY THE CONTRACTOR AND APPROVED BY THE OWNER THIS WORK IS INCIDENTAL ITEM 15713.
6. CLEARING LIMITS WILL VARY DEPENDING ON THE DIVERSION PLAN SUBMITTED BY THE CONTRACTOR. CONTRACTOR TO SUBMIT PROPOSED CLEARING LIMITS WITH DIVERSION PLAN.



DIVERSION DAM DETAIL
NOT TO SCALE

STREAM DIVERSION PLAN

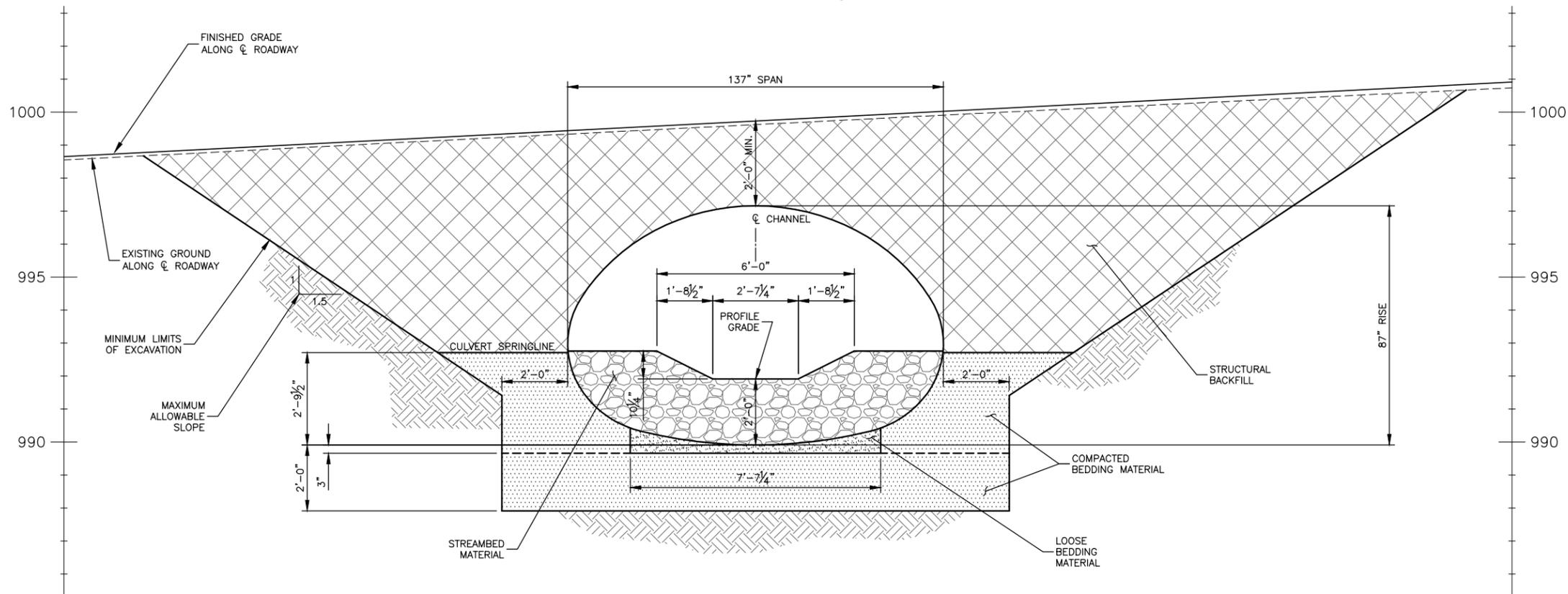


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NO.	REVISION DESCRIPTION	BY	DATE



CLARK FORK COALITION
S. FK. DRY COTTONWOOD CREEK
CULVERT REPLACEMENT
STREAM DIVERSION PLAN



SECTION VIEW DETAIL - CORRUGATED STEEL PIPE-ARCH
SCALE: 1" = 4'

STRUCTURE EXCAVATION NOTES:

1. STRUCTURE EXCAVATION SHALL BE COMPLETED IN ACCORDANCE WITH FP-03, SECTION 208. SUITABLE STRUCTURAL EXCAVATION SHALL BE USED FOR STRUCTURAL BACKFILL AND FOR EMBANKMENT TO CONSTRUCT THE GUIDE BERM. IT IS ESTIMATED THAT 75% OF THE STRUCTURE EXCAVATION MATERIAL IS SUITABLE.
2. LIMITS SHOWN ARE MINIMUM EXCAVATION REQUIREMENTS BASED ON ENGINEER'S DETERMINATION OF OSHA SOIL TYPE C AND OSHA EXCAVATION REQUIREMENTS. DETERMINATION IS BASED ON LIMITED DATA AND ACTUAL SITE CONDITIONS MAY VARY.
3. STRUCTURE EXCAVATION QUANTITY SHOWN IS FOR INFORMATION ONLY BASED ON THE LIMITS SHOWN. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES BASED ON THEIR OWN EXCAVATION PLAN.
4. CONTRACTOR SHALL SUBMIT EXCAVATION PLAN TO OWNER FOR APPROVAL. PLAN SHALL INCLUDE DRAWINGS AND WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED EXCAVATION LIMITS, METHODS, EQUIPMENT, LOCATION OF STOCKPILES, AND ESTIMATED QUANTITIES AND COMPLY WITH OSHA EXCAVATION SOIL TYPING AND REQUIREMENTS. CHANGES TO THE EXCAVATION LIMITS SHOWN ON THIS SHEET FOR CONTRACTOR'S DEWATERING METHODS OR OTHER CONTRACTOR CONVENIENCE, MUST BE SHOWN ON THE CONTRACTOR'S PLAN AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK IS INDIRECTLY PAID BY ITEM 20806.

DEWATERING AND EROSION CONTROL:

1. PROTECT AGAINST SOIL EROSION AND SEDIMENTATION DURING CONSTRUCTION IN ACCORDANCE WITH FP-03, SECTION 157 AND THE PROJECT PERMITS. CONTRACTOR SHALL PREPARE AND SUBMIT A SOIL EROSION AND SEDIMENT CONTROL PLAN TO OWNER FOR APPROVAL. PLAN SHALL INCLUDE DRAWINGS AND A WRITTEN OUTLINE ILLUSTRATING AND DESCRIBING PROPOSED LAYOUT, METHODS, AND EQUIPMENT.
2. DEWATER THE EXCAVATION IN ACCORDANCE WITH FP-03 SECTIONS 208, 209, 157 AND THE REQUIREMENTS ON SHEET 6.
3. CONTRACTOR SHOULD ANTICIPATE WATER INFILTRATING THE EXCAVATIONS.
4. SUBGRADE EXCAVATION, RIPRAP PLACEMENT, BEDDING INSTALLATION AND BACKFILL ARE TO BE COMPLETED PER THE CONTRACT SPECIFICATIONS, AND STANDING OR RUNNING WATER IN THE WORK AREA DOES NOT RELIEVE THE CONTRACTOR FROM MEETING THE SPECIFICATIONS.

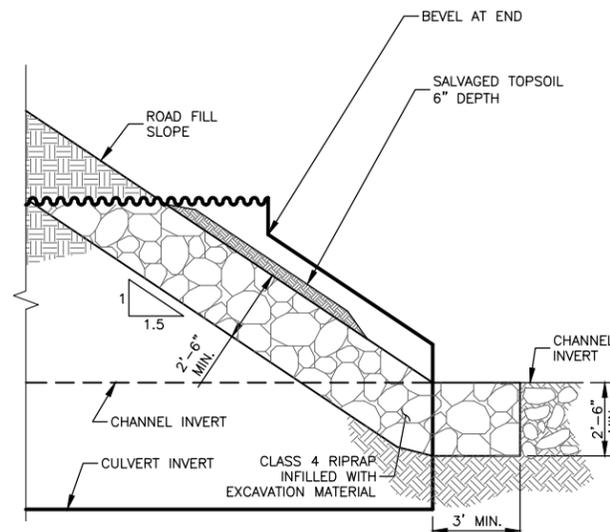
STRUCTURAL BACKFILL:

1. UTILIZE SUITABLE STRUCTURE EXCAVATION MATERIAL FOR STRUCTURAL BACKFILL.
2. STRUCTURAL BACKFILL QUANTITIES ARE FOR INFORMATION ONLY. CONTRACTOR TO VERIFY QUANTITIES WITH AN EXCAVATION PLAN PRIOR TO BEGINNING CONSTRUCTION.
3. STRUCTURAL BACKFILL LIMITS SHOWN ARE MINIMUM REQUIREMENTS. ANY BACKFILL OUTSIDE THE SHOWN LIMITS SHALL BE CONSIDERED ROADWAY EMBANKMENT AND MUST MEET THE REQUIREMENTS OUTLINED IN FSSS SECTION 204.

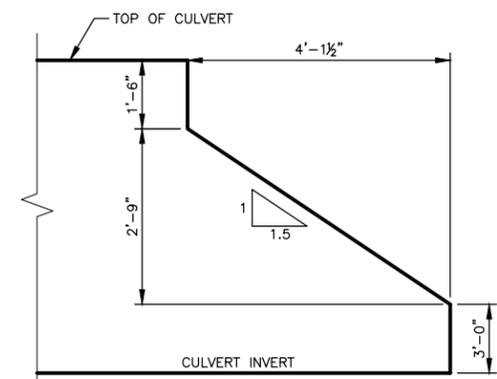
ESTIMATED QUANTITIES	
STRUCTURE EXCAVATION	422 CY
ESTIMATED SUITABLE STRUCTURE EXCAVATION MATERIAL (75%)	317 CY
STRUCTURAL BACKFILL	225 CY
GUIDE BERM	15 CY
STREAM CHANNEL EXCAVATION	120 CY

COMPACTION:

1. STRUCTURAL BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH FP-03 SECTION 208 OR MANUFACTURERS RECOMMENDATIONS. THE PROCTOR DENSITY FOR STRUCTURAL BACKFILL MATERIAL SHALL BE OBTAINED IN ACCORDANCE WITH AASHTO T99, METHOD C. SAMPLING AND TESTING IS REQUIRED PER FSSS TABLE 208-1.
2. PLACE STRUCTURAL BACKFILL IN HORIZONTAL LAYERS THAT DO NOT EXCEED 6 INCHES IN COMPACTED THICKNESS.
3. COMPACTION TESTING SHALL BE PERFORMED FOR EVERY 500 SQUARE FEET PER LIFT FOR STRUCTURAL BACKFILL.



RIPRAP AT INLET & OUTLET
NOT TO SCALE



CULVERT END TREATMENT
NOT TO SCALE

90% SUBMITTAL

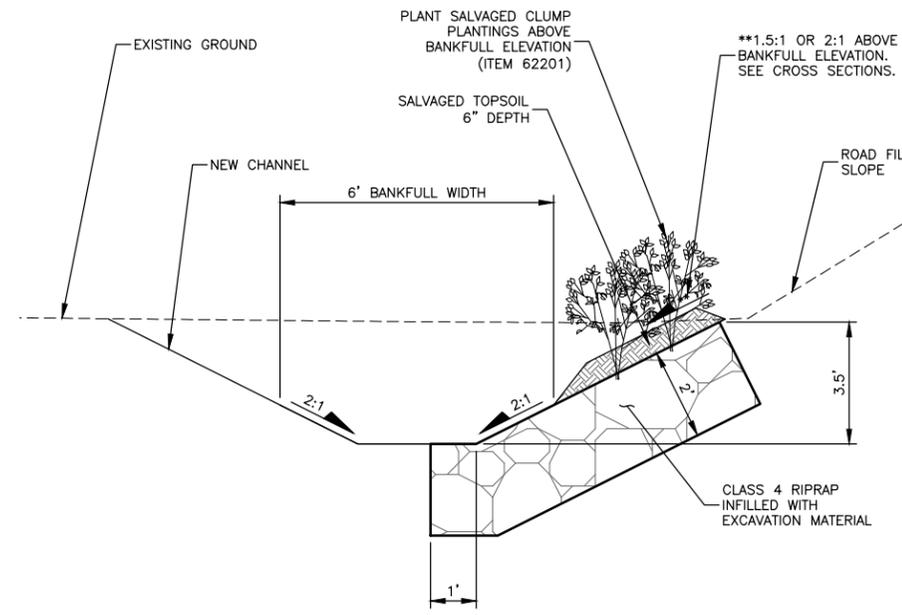
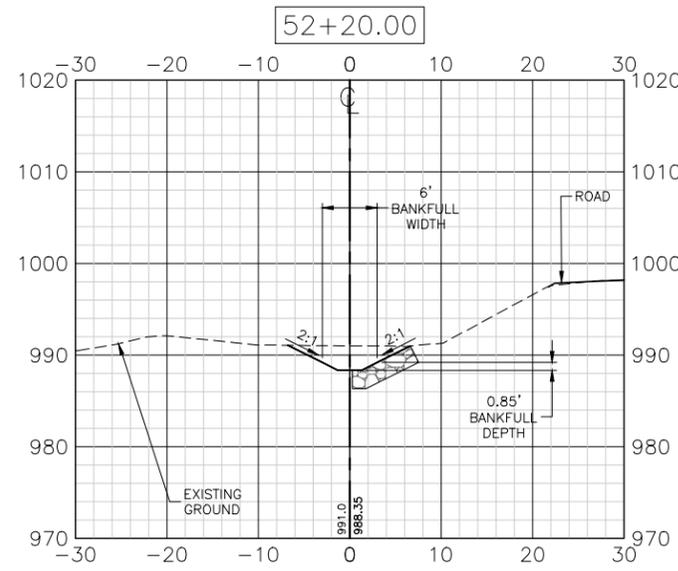
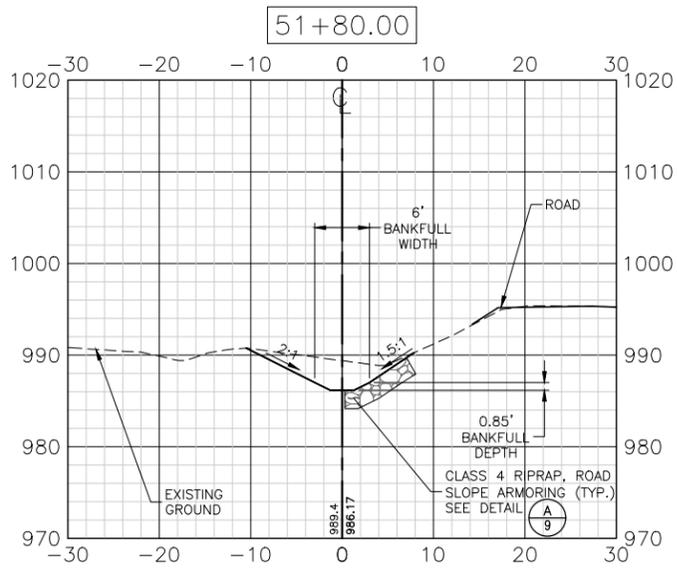
NO.	REVISION DESCRIPTION	BY	DATE



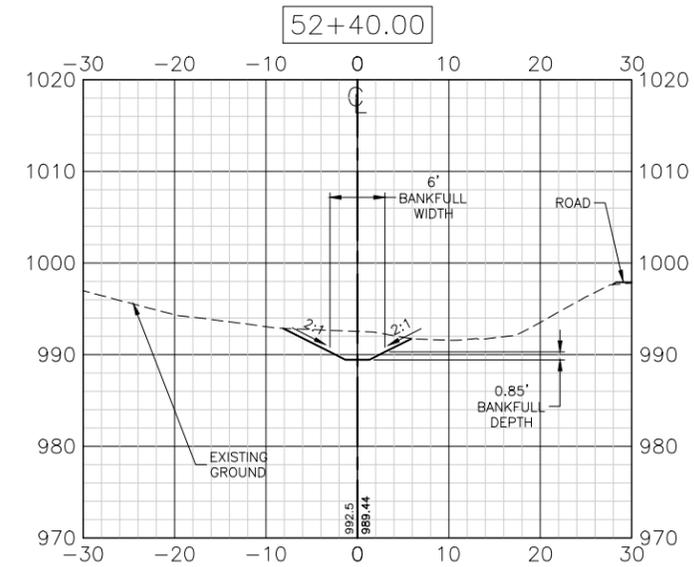
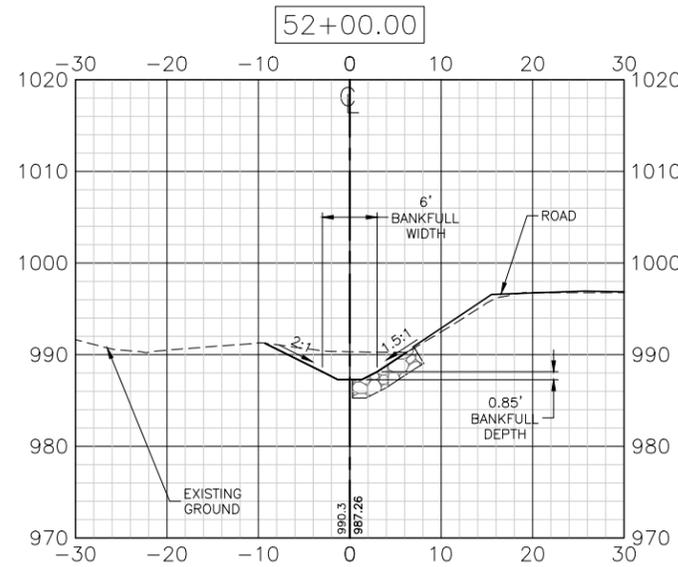
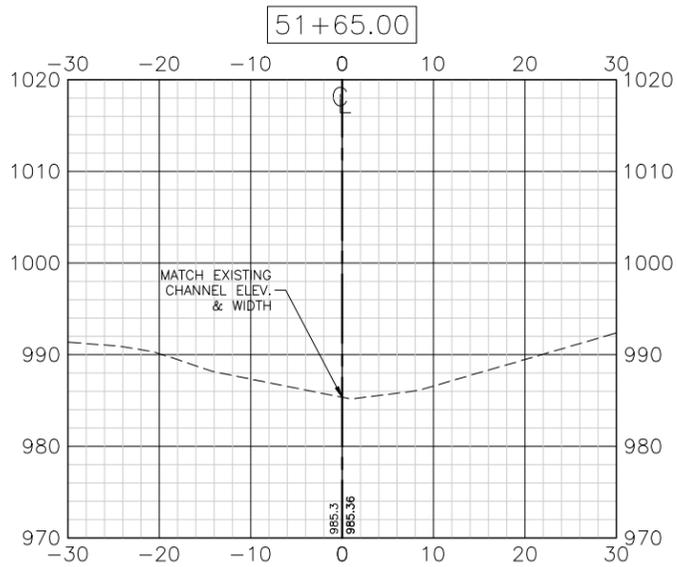
**CLARK FORK COALITION
S. FK. DRY COTTONWOOD CREEK
CULVERT REPLACEMENT**

CULVERT DETAILS

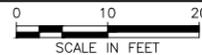
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A 9 ROAD SLOPE ARMORING
NOT TO SCALE



STREAM CHANNEL CROSS SECTIONS



90% SUBMITTAL

NO.	REVISION DESCRIPTION	BY	DATE



CLARK FORK COALITION
S. FK. DRY COTTONWOOD CREEK
CULVERT REPLACEMENT
STREAM CROSS SECTIONS

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SF Dry Cottonwood Culvert Replacement

From: Hooper, Paul -FS
To: [McGree, Michelle](#)
Cc: [Will McDowell](#)
Subject: SF Dry Cottonwood
Date: Thursday, November 30, 2017 1:50:07 PM

Hi Michelle. I am in between office and meetings and could not get a formal letter to you about this sf aop. I have reviewed all the plans and proposals for the project. It is a great project and we are in full support of this proposal. This will help restore the cutthroat population up there by allowing migration and genetic drift. Hope this helps.
Paul Hooper
Pintler District Fish Bio
Sent from my iPhone

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