

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: Austin McCullough
- B. Mailing Address: 730 N. Montana St.
- C. City: Dillon State: MT Zip: 59725
- Telephone: (406) 925-1938 E-mail: amccullough@mt.gov
- D. Contact Person: Austin McCullough
- Address if different from Applicant: _____
- City: _____ State: _____ Zip: _____
- Telephone: _____ E-mail: _____
- E. Landowner and/or Lessee Name (if other than Applicant): Vince Husted
- Mailing Address: PO box 815
- City: Jackson State: MT Zip: 59736
- Telephone: (406) 925-2042 E-mail: y_mhusted@yahoo.com

II. PROJECT INFORMATION*

- A. Project Name: Husted channel split
- River, stream, or lake: Big Hole River
- Location: Township: T5S Range: R15W Section: 15
Latitude: 45.39154 Longitude: -113.43727 *within project (decimal degrees)*
- County: Beaverhead
- B. Purpose of Project:
- The purpose of this project is to realign the Big Hole River into its former channel to improve fish habitat, specifically for Arctic Grayling, and to facilitate irrigation water to points-of-diversion (POD) owned by landowners enrolled in the CCAA program.
- C. Brief Project Description: _____

Big Hole River Husted channel improvement

Husted Ranches, Inc. and Dick Hirschy Cattle Inc. are enrolled in the Candidate Conservation Agreement with Assurances for Arctic Grayling in the upper Big Hole River Program (CCAA). In cooperation with the CCAA program, both property owners have agreed to manage irrigation water withdrawals in compliance with their water rights and a CCAA stream flow agreement to benefit Arctic Grayling. In 2007, a CCAA project constructed a rock weir diversion, headgate, and measuring device on a point-of-diversion (POD) that is shared by Husted Ranches, Inc. and Dick Hirschy Cattle, Inc. In recent years, stream flows in the Big Hole River have migrated progressively toward an alternative (west) channel immediately upstream of the POD. Investigation into what caused the predominate flow to shift between the channels suggested that the rock weir and measuring device, which was perched ~1 foot higher than the stream bed, backed up stream flows and reduced the streams energy to move bed load. Furthermore, the rock weir was also acting as a physical impediment to moving bed load. As a result, the (east) channel upstream of the POD aggraded considerably, thus reducing the channel's capacity. Water that was backed up from the rock weir, measuring device, and aggraded channel prompted stream flows to go down the west channel. In 2017, base flows solely used the west channel, which prevented Husted Ranches, Inc. and Dick Hirschy Cattle, Inc. from diverting water at the shared POD and a Dick Hirschy Cattle, Inc. POD located downstream.

The east channel offers well-established fisheries habitat (some of the highest relative abundances of salmonids among reaches sampled in the CCAA project area) relative to the west channel that is still adjusting to accommodate increased stream flows. Although grayling are captured infrequently in or around the project reach during electrofishing surveys, angler reports (with pictures) of grayling being caught in nearby reaches have become common. Presumably, the increased presence of grayling in this part of the watershed is the result of RSI introductions in recent years. Furthermore, a habitat restoration project (1.75 miles) located about one mile downstream of the channel split was also completed in 2007; the west channel by-passes the upper ~0.4 miles of the restoration reach, thus negating quality fish habitat within that section of the Big Hole River.

Montana Fish, Wildlife, and Parks contracted Confluence Consulting to design a solution to return base flows to the east channel (\$29,288.40 to date). The design will construct a rock structure at the head of the west channel that will allow high flows to utilize both channels, but restricts stream flow at discharges less than 100 cfs to only use the east channel. Under this design, the west channel is expected to remain active from alternative upstream channels, ground water, and irrigation return flows. The design will also replace the rock weir diversion with a pin-and-plank diversion to improve the stream's ability to move bedload, reset the measuring device at or below the elevation of the stream channel, and excavate deposited bedload from the east channel to increase capacity to its former condition. This FFIP grant application requests funds for project permitting, oversight, and construction, with construction expected to take place during autumn of 2018.

(See attached pictures)

D. Length of stream or size of lake that will be treated:

Project will treat ~500 feet of stream bank, but will improve fish habitat on 1.6 miles of the Big Hole River

E. Project Budget:

Grant Request (Dollars): \$ 78,649.60

Contribution by Applicant (Dollars): \$ 29,288.40

In-kind \$

(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): \$

In-kind \$

Big Hole River Husted channel improvement

(attach verification - [See page 2 budget template](#))

Total Project Cost: \$ 107,938.00

F. Attach itemized (line item) budget – see template

G. Attach **specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support and fish biologist support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete a *supplemental questionnaire*** (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).

H. **Attach land management & maintenance plans that will ensure protection of the reclaimed area.**

III. PROJECT BENEFITS*

A. What species of fish will benefit from this project?:

Arctic grayling, mountain whitefish, burbot, mottled sculpin, longnose dace, white and longnose suckers, brook trout, brown trout, and rainbow trout.

B. How will the project protect or enhance wild fish habitat?:

This project will return stream flows to well-established riparian and instream habitat on a 1.6-mile reach of the Big Hole River.

C. Will the project improve fish populations and/or fishing? To what extent?:

This project is expected to protect and enhance existing fish populations and promote the continued expansion of Arctic grayling into the upper reaches of the Big Hole River.

D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

The 1.6-mile reach of the Big Hole River that will be impacted by this project is bisected by a county road that allows upstream and downstream access for angling. While this project will not increase fishing opportunity, it will maintain and protect an existing opportunity.

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

The landowners (Vince Husted and Heidi Hirschy) affected by this project support its implementation. Each landowner has signed a 10-year CCAA conservation agreement for their respective property and several 10-year landowner agreements that protect other CCAA projects.

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

Degradation was caused by a headgate, diversion, and measuring device that were installed in cooperation with the CCAA program in 2007. This project will replace the weir and reset the measuring device to allow the stream to move bedload, and thus maintain channel capacity.

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

This project will protect with quality of the existing fishery and related fishing opportunities. Additionally, the CCAA program, and specifically projects like this that allow landowners to implement their property-specific conservation plan, contributed to a not-warranted ESA listing decision for Arctic grayling in Montana in 2014.

Big Hole River Husted channel improvement

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

No.

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?:

No.

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:

11/30/2017

Sponsor (if applicable):

***Highlighted boxes will automatically expand.**

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.*****

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Both tables must be completed or the application will be returned

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	30	HR	\$100.00	\$ 3,000.00	-			\$ -
Design	155	HR	\$80.00	\$ 12,400.00	-			\$ -
Engineering	100	HR	\$100.00	\$ 10,000.00	-			\$ -
Permitting	125	HR	\$100.00	\$ 12,500.00	9,630.00			\$ 9,630.00
Oversight	65	HR	\$100.00	\$ 6,500.00	6,500.00			\$ 6,500.00
				\$ -				\$ -
			Sub-Total	\$ 44,400.00	\$ 16,130.00	\$ -	\$ -	\$ 16,130.00
Travel								
Mileage	3400	mile	\$0.54	\$ 1,836.00	1,101.60			\$ 1,101.60
Per diem	6	day	\$142.00	\$ 852.00	568.00			\$ 568.00
			Sub-Total	\$ 2,688.00	\$ 1,669.60	\$ -	\$ -	\$ 1,669.60
Construction Materials****								
Large Riprap	240	CY	\$55.00	\$ 13,200.00	13,200.00			\$ 13,200.00
Class II Riprap	55	CY	\$40.00	\$ 2,200.00	2,200.00			\$ 2,200.00
Gravel	7	CY	\$30.00	\$ 210.00	210.00			\$ 210.00
Geotextile	300	SY	\$2.50	\$ 750.00	750.00			\$ 750.00
Seed	78	LB	\$5.00	\$ 390.00	390.00			\$ 390.00
Pin and Plank Structure	1	LS	\$7,500.00	\$ 7,500.00	7,500.00			\$ 7,500.00
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 24,250.00	\$ 24,250.00	\$ -	\$ -	\$ 24,250.00
Equipment and Labor								
Excavator	60	HR	\$160.00	\$ 9,600.00	9,600.00			\$ 9,600.00
Trucks (2)	100	HR	\$130.00	\$ 13,000.00	13,000.00			\$ 13,000.00
Labor	60	HR	\$50.00	\$ 3,000.00	3,000.00			\$ 3,000.00
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 25,600.00	\$ 25,600.00	\$ -	\$ -	\$ 25,600.00
Mobilization								
Mobilization/Demobilization	1	LS	\$9,500.00	\$ 9,500.00	9,500.00			\$ 9,500.00
Access Improvements	1	LS	\$1,500.00	\$ 1,500.00	1,500.00			\$ 1,500.00
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 11,000.00	\$ 11,000.00	\$ -	\$ -	\$ 11,000.00
TOTALS				\$ 107,938.00	\$ 78,649.60	\$ -	\$ -	\$ 78,649.60

OTHER REQUIREMENTS:

Big Hole River Husted channel improvement



HUSTED FLOW SPLIT PROJECT

PROJECT SPECIFICATIONS

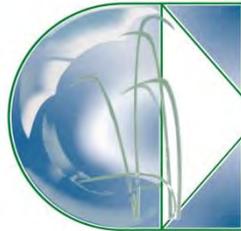
PREPARED FOR:



***Montana Fish,
Wildlife & Parks***

Dillon Field Office
610 N Montana St CL10
Dillon MT 59725

PREPARED BY:



CONFLUENCE

Confluence Consulting
P.O. Box 1133
Bozeman, MT 59771

November 2017

TABLE OF CONTENTS

Bidding and Contract Requirements are according to Montana Public Works Standard Specifications, Sixth Edition, April, 2010 (MPWSS).

DIVISION 0 – BIDDING AND CONTRACT REQUIREMENTS

00100	- Invitation to Bid
00200	- Instruction to Bidders
00300	- Bid Form
00500	- Agreement Form
00700	- Standard General Conditions of the Contract (from MFWP, not reproduced for these Contract Documents)
Form C-410	- Suggested Bid Bond (Not Required)
Form C-430	- Bid Bond penal Sum Form (Not Required)
Form C-510	- Notice of Award (from MPWSS, not reproduced for these Contract Documents)
Form C-520	- Suggested Form of Agreement between Owner and Contractor, Stipulated Price (from MPWSS, not reproduced for these Contract Documents)
Form C-550	- Notice to Proceed (from MPWSS, not reproduced for these Contract Documents)
Form C-610	- Performance Bond (from MPWSS, not reproduced for these Contract Documents)
Form C-615	- Payment Bond (from MPWSS, not reproduced for these Contract Documents)
Form C-620	- Contractor's Application for Payment (from MPWSS, not reproduced for these Contract Documents)
Form C-625	- Certificate of Substantial Completion (from MPWSS, not reproduced for these Contract Documents)
Form C-940	- Work Change Directive (from MPWSS, not reproduced for these Contract Documents)
Form C-941	- Change Order (from MPWSS, not reproduced for these Contract Documents)
Form C-942	- Field Order (from MPWSS, not reproduced for these Contract Documents)

DIVISION 1 – GENERAL REQUIREMENTS

01010	- Summary of Work
01050	- Field Engineering
01060	- Permits

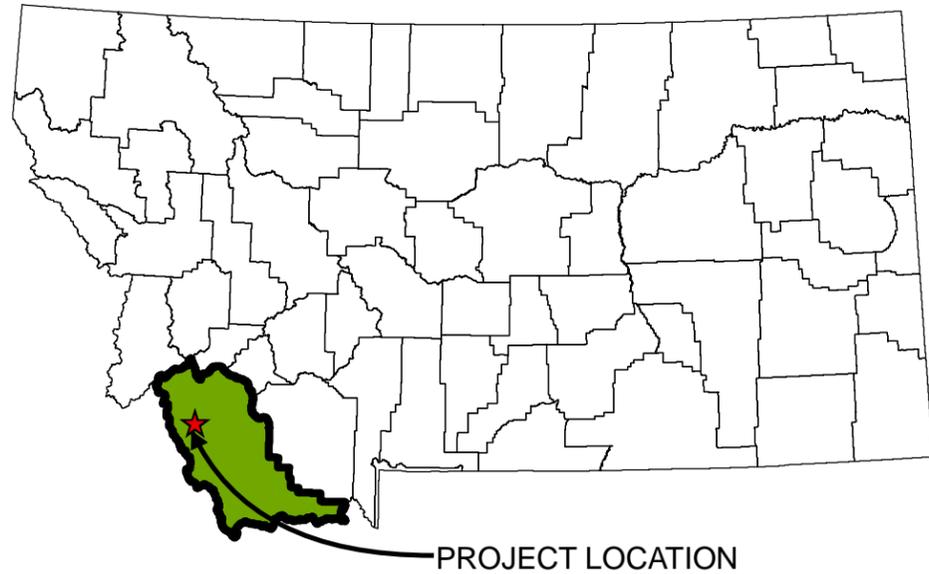
Big Hole River Husted channel improvement

- 01150 - Measurement and Payment
- 01300 - Submittals
- 01400 - Quality Control

DIVISION 2 – SITEWORK

- 02110 - Geotextiles
- 02910 - Restoration, Topsoiling, and Seeding
- 02950 - Open Channel Stream Work
- 02960 - Rock Ramp Construction
- 02970 - RipRap

MONTANA



HUSTED FLOW SPLIT

BEAVERHEAD COUNTY, MONTANA

FINAL DESIGN PLANS

PREPARED FOR:

MONTANA FISH WILDLIFE AND PARKS



*Montana Fish,
Wildlife & Parks*

1420 EAST SIXTH AVENUE
HELENA, MT 59620
(406) 444-4952

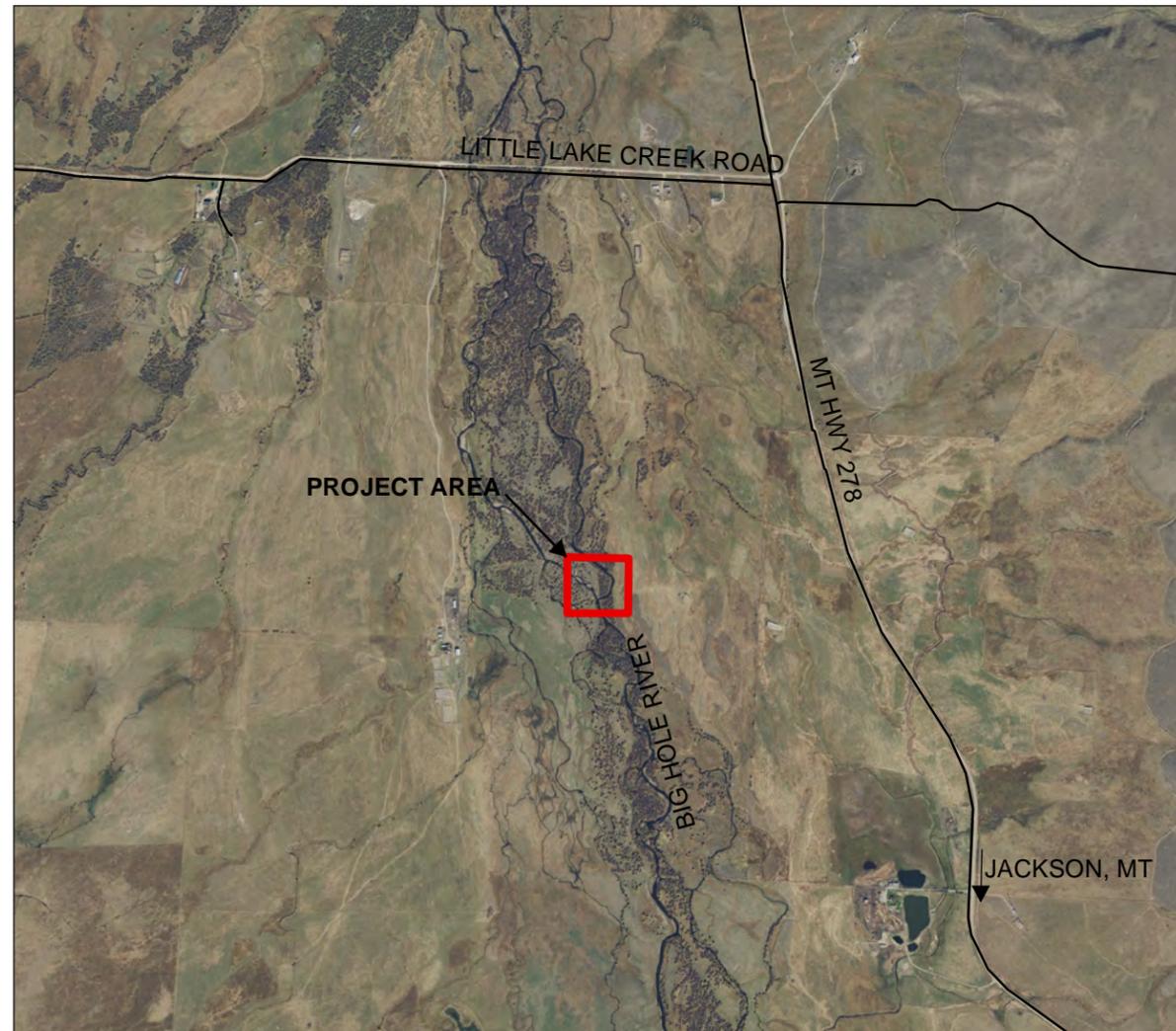
PREPARED BY:

CONFLUENCE CONSULTING, INC.



CONFLUENCE
consulting incorporated
RESTORING RIVERS, WETLANDS, HABITAT
www.confluenceinc.com

P.O. BOX 1133
BOZEMAN, MT 59771
(406) 585-9500



PROJECT VICINITY MAP

SHEET INDEX

1. COVER SHEET
2. CONSTRUCTION ACCESS SITE PLAN
3. SITE OVERVIEW
4. DETAILED UPPER CHANNEL SITE PLAN
5. DETAILED LOWER CHANNEL SITE PLAN
6. CROSS SECTIONS
7. DETAILED ROCK RAMP SITE PLAN
8. PIN AND PLANK DETAILS
9. PIN AND PLANK PROFILE

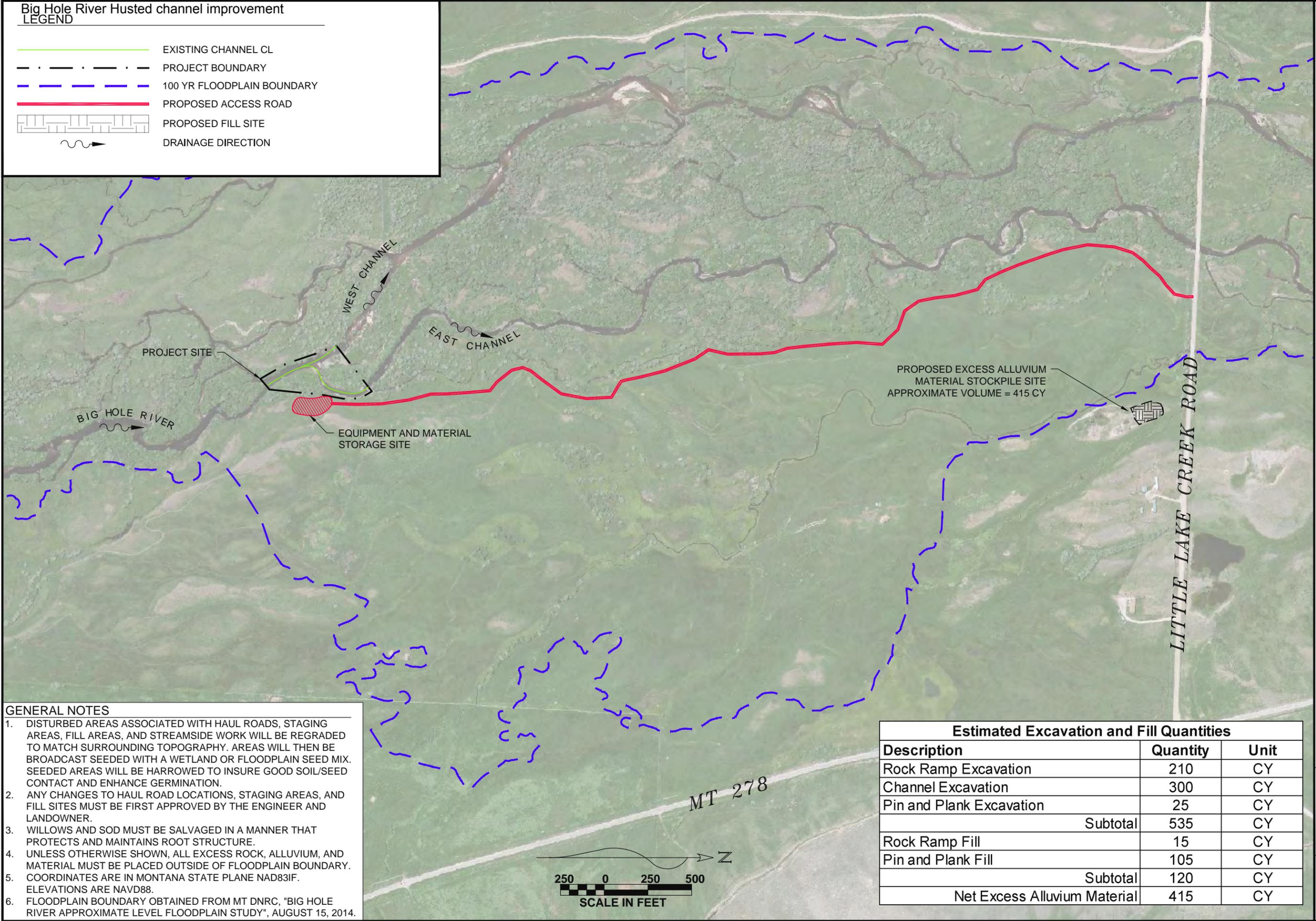
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COVER SHEET

SHEET: **1**

Big Hole River Husted channel improvement
LEGEND

-  EXISTING CHANNEL CL
-  PROJECT BOUNDARY
-  100 YR FLOODPLAIN BOUNDARY
-  PROPOSED ACCESS ROAD
-  PROPOSED FILL SITE
-  DRAINAGE DIRECTION



GENERAL NOTES

1. DISTURBED AREAS ASSOCIATED WITH HAUL ROADS, STAGING AREAS, FILL AREAS, AND STREAMSIDE WORK WILL BE REGRADED TO MATCH SURROUNDING TOPOGRAPHY. AREAS WILL THEN BE BROADCAST SEEDING WITH A WETLAND OR FLOODPLAIN SEED MIX. SEEDING AREAS WILL BE HARROWED TO INSURE GOOD SOIL/SEED CONTACT AND ENHANCE GERMINATION.
2. ANY CHANGES TO HAUL ROAD LOCATIONS, STAGING AREAS, AND FILL SITES MUST BE FIRST APPROVED BY THE ENGINEER AND LANDOWNER.
3. WILLOWS AND SOD MUST BE SALVAGED IN A MANNER THAT PROTECTS AND MAINTAINS ROOT STRUCTURE.
4. UNLESS OTHERWISE SHOWN, ALL EXCESS ROCK, ALLUVIUM, AND MATERIAL MUST BE PLACED OUTSIDE OF FLOODPLAIN BOUNDARY.
5. COORDINATES ARE IN MONTANA STATE PLANE NAD83IF. ELEVATIONS ARE NAVD88.
6. FLOODPLAIN BOUNDARY OBTAINED FROM MT DNRC, "BIG HOLE RIVER APPROXIMATE LEVEL FLOODPLAIN STUDY", AUGUST 15, 2014.

Estimated Excavation and Fill Quantities		
Description	Quantity	Unit
Rock Ramp Excavation	210	CY
Channel Excavation	300	CY
Pin and Plank Excavation	25	CY
Subtotal	535	CY
Rock Ramp Fill	15	CY
Pin and Plank Fill	105	CY
Subtotal	120	CY
Net Excess Alluvium Material	415	CY

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DESIGNED BY: REL/TT	FILE NAME: M:\Projects\2017\20170116\20170116.dwg			
REV	DATE	DESCRIPTION	BY	APPD
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2	-	-	-	-



**HUSTED FLOW SPLIT
FINAL DESIGN
JACKSON, MONTANA**

**CONSTRUCTION
ACCESS
SITE PLAN**

SHEET: 2

Big Hole River Husted channel improvement

LEGEND

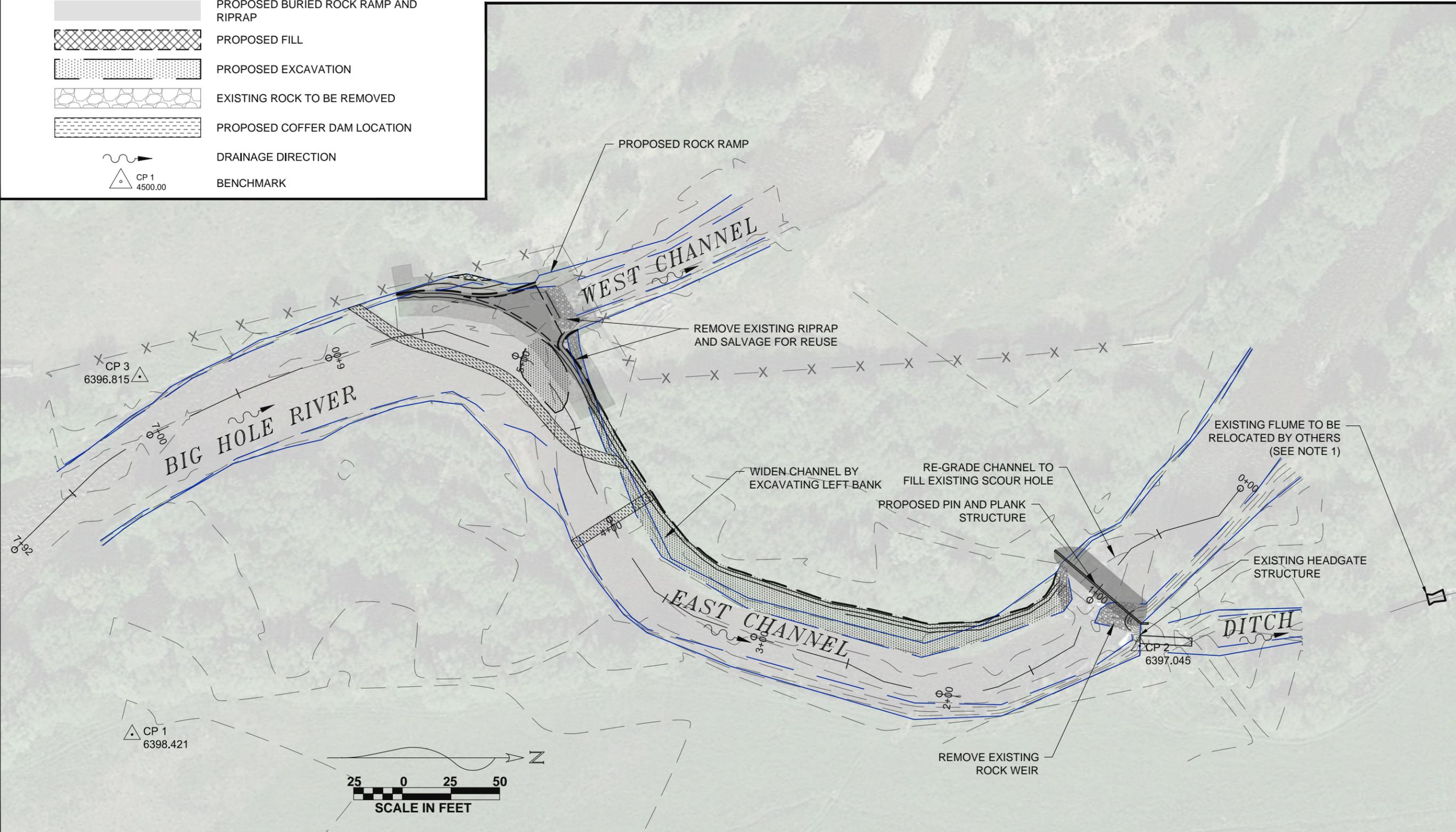
- — — — — EXISTING CHANNEL CL
- — — — — PROPOSED CHANNEL CL
- X -X -X -X - EXISTING FENCELINE
- - - 4500 - - - EXISTING CONTOUR (1')
- - - 4500 - - - PROPOSED CONTOUR (1')
- — — — — EXISTING TOP OF BANK
- — — — — EXISTING BOTTOM OF BANK
- - - - - PROPOSED TOP OF BANK
- - - - - PROPOSED TOP OF WEIR
- ■ ■ ■ ■ PROPOSED ROCK RAMP AND RIPRAP
- ■ ■ ■ ■ PROPOSED BURIED ROCK RAMP AND RIPRAP
- ▨ ▨ ▨ ▨ ▨ PROPOSED FILL
- ▨ ▨ ▨ ▨ ▨ PROPOSED EXCAVATION
- ▨ ▨ ▨ ▨ ▨ EXISTING ROCK TO BE REMOVED
- ▨ ▨ ▨ ▨ ▨ PROPOSED COFFER DAM LOCATION
- ~> DRAINAGE DIRECTION
- △ CP 1 4500.00 BENCHMARK

NOTES:

1. EXISTING FLUME TO BE RELOCATED DOWNSTREAM BY OTHERS. DESIGN ASSUMES BACKWATER CREATED BY FLUME WILL HAVE NO INFLUENCE ON HEAD GATE.
2. PROPOSED PIN AND PLANK STRUCTURE LOCATION SHOWN. TIE RIGHT BANK WING WALL INTO BANK PARALLEL TO EXISTING CULVERT.
3. SEQUENCE DEWATERING PRACTICES SUCH THAT WATER IS DIVERTED DOWN THE WEST CHANNEL DURING THE CONSTRUCTION OF THE PIN/PLANK STRUCTURE AND DOWN THE EAST CHANNEL WHEN CONSTRUCTING THE ROCK RAMP. ADJUST COFFER DAM LOCATIONS TO MEET SITE CONDITIONS.

PROJECT CONTROL POINTS			
POINT ID	NORTHING	EASTING	ELEVATION
CP 1	441461.34	957796.37	6398.42
CP 2	441978.93	957750.93	6397.04
CP 3	441465.30	957613.11	6396.82

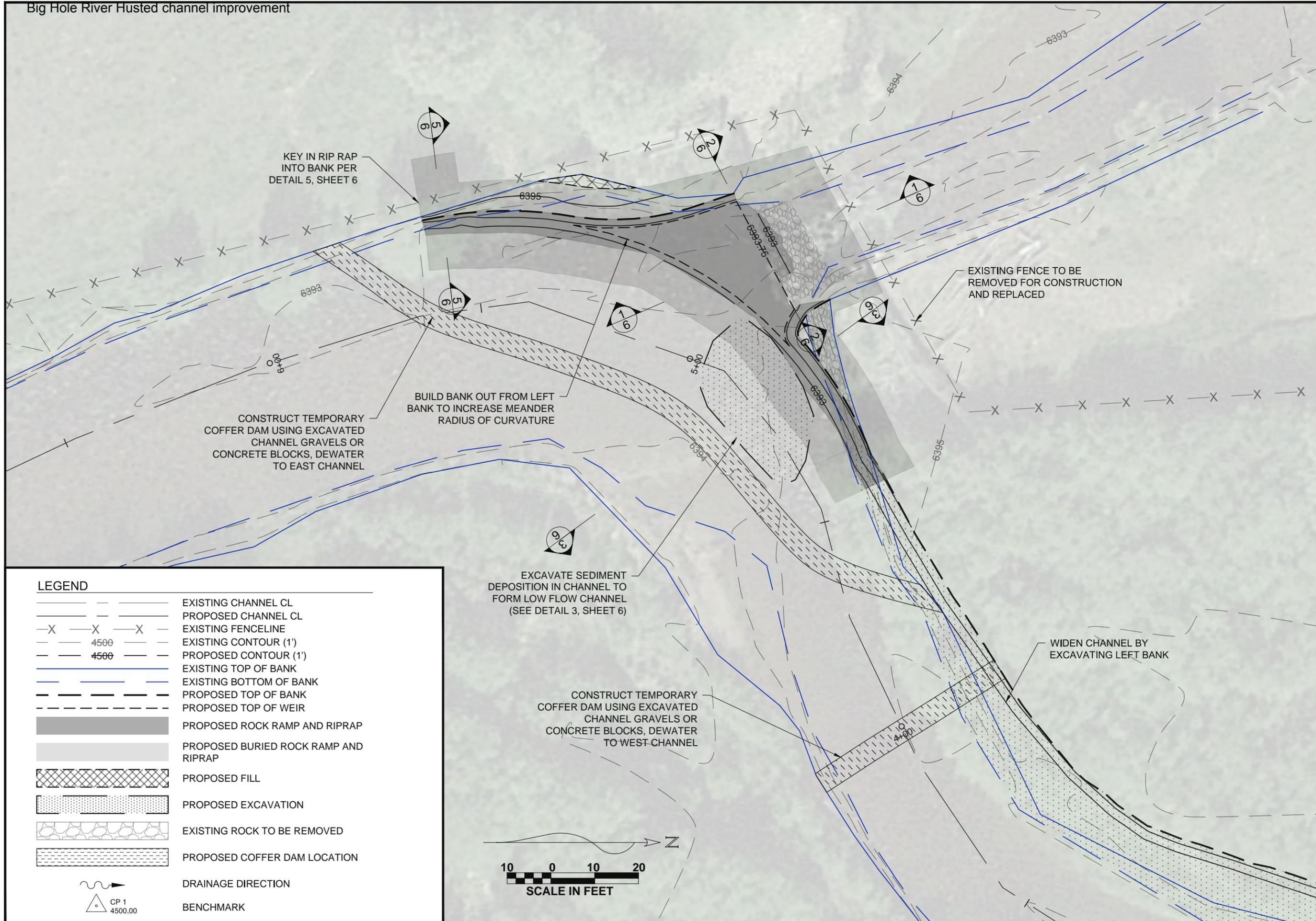
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REV.	DATE	DESCRIPTION
1		
2		
		BY
		APPD



HUSTED FLOW SPLIT
FINAL DESIGN
JACKSON, MONTANA

SITE OVERVIEW

SHEET: 3



LEGEND

- EXISTING CHANNEL CL
- PROPOSED CHANNEL CL
- EXISTING FENCELINE
- EXISTING CONTOUR (1')
- PROPOSED CONTOUR (1')
- EXISTING TOP OF BANK
- EXISTING BOTTOM OF BANK
- PROPOSED TOP OF BANK
- PROPOSED TOP OF WEIR
- PROPOSED ROCK RAMP AND RIPRAP
- PROPOSED BURIED ROCK RAMP AND RIPRAP
- PROPOSED FILL
- PROPOSED EXCAVATION
- EXISTING ROCK TO BE REMOVED
- PROPOSED COFFER DAM LOCATION
- DRAINAGE DIRECTION
- BENCHMARK
CP 1
4500.00

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CHECKED BY: RLBITT	DATE: 11/16/2017	BY: AP/PPD
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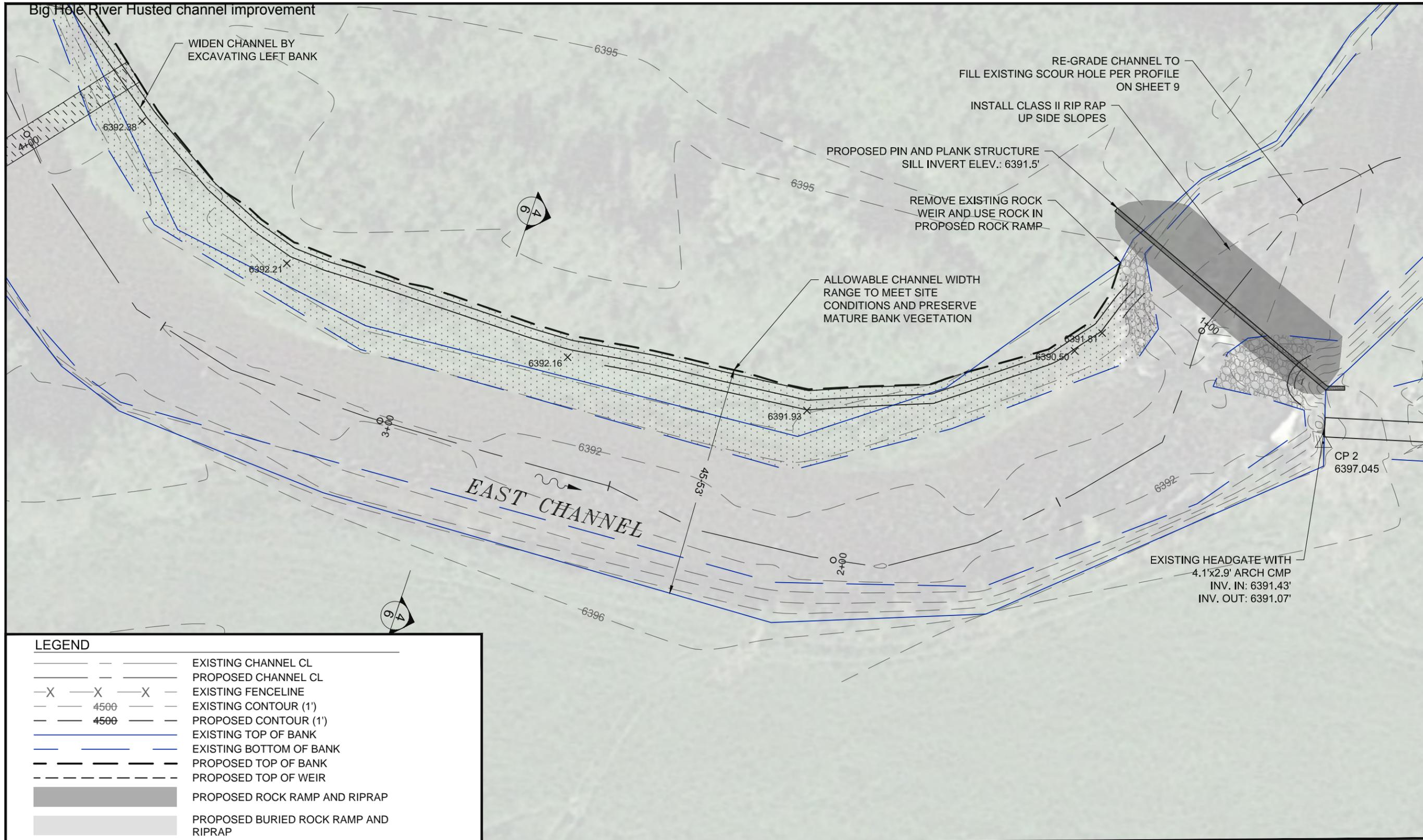


**HUSTED FLOW SPLIT
FINAL DESIGN
JACKSON, MONTANA**

**DETAILED UPPER
CHANNEL
SITE PLAN**

SHEET: 4

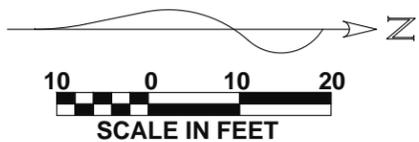
Big Hole River Husted channel improvement



LEGEND

- EXISTING CHANNEL CL
- PROPOSED CHANNEL CL
- EXISTING FENCELINE
- EXISTING CONTOUR (1')
- PROPOSED CONTOUR (1')
- EXISTING TOP OF BANK
- EXISTING BOTTOM OF BANK
- PROPOSED TOP OF BANK
- PROPOSED TOP OF WEIR
- PROPOSED ROCK RAMP AND RIPRAP
- PROPOSED BURIED ROCK RAMP AND RIPRAP
- PROPOSED FILL
- PROPOSED EXCAVATION
- EXISTING ROCK TO BE REMOVED
- PROPOSED COFFER DAM LOCATION
- DRAINAGE DIRECTION
- BENCHMARK

CHANNEL EXCAVATION ESTIMATED QUANTITIES		
DESCRIPTION	QUANTITY	UNIT
EXCAVATION	300	CY



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REV. 1	DATE	DESCRIPTION
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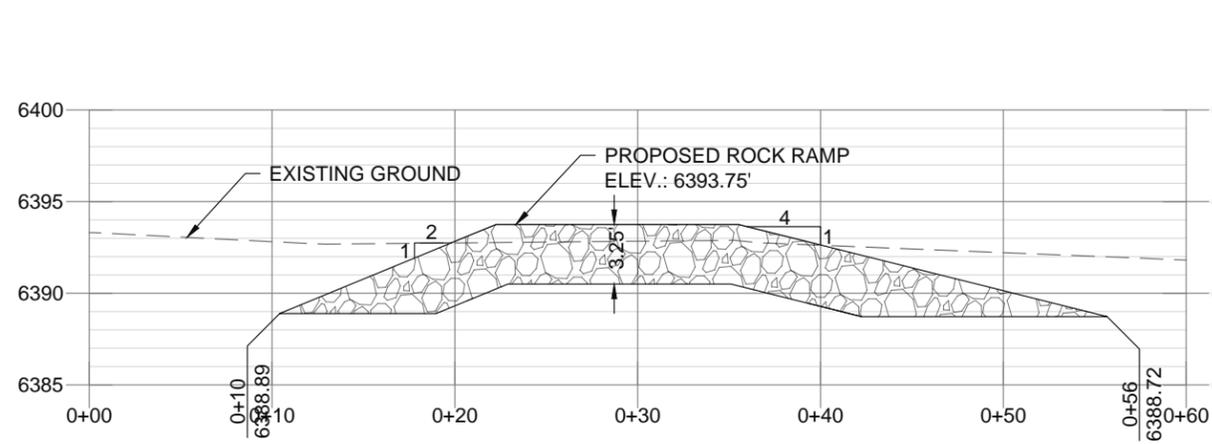


HUSTED FLOW SPLIT
FINAL DESIGN
JACKSON, MONTANA

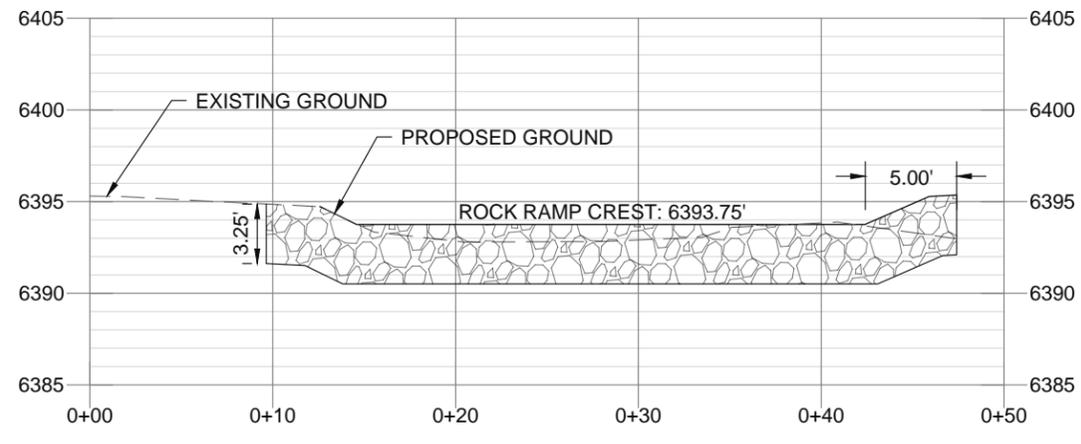
DETAILED LOWER
CHANNEL
SITE PLAN

SHEET: 5

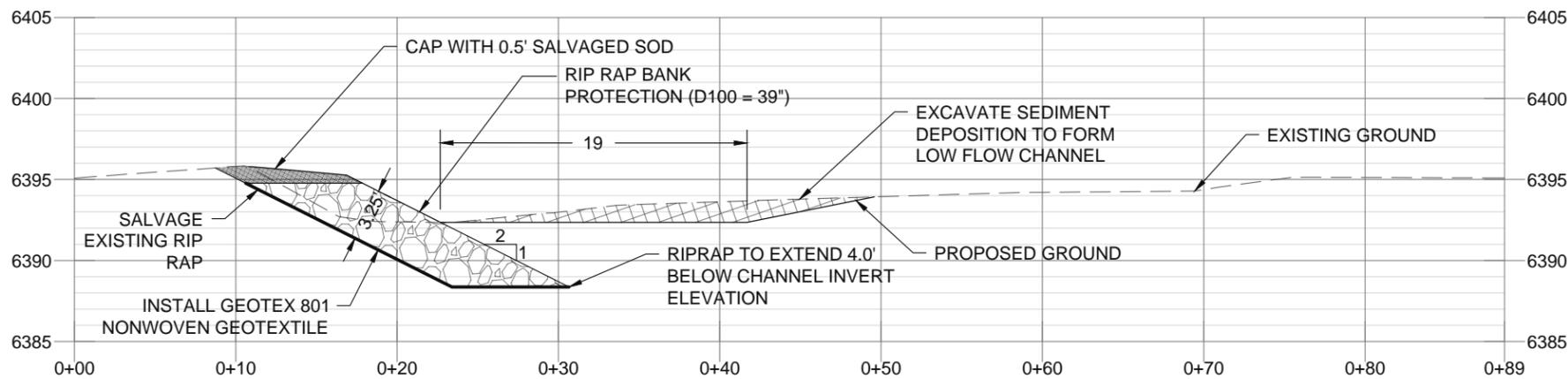
Big Hole River Husted channel improvement



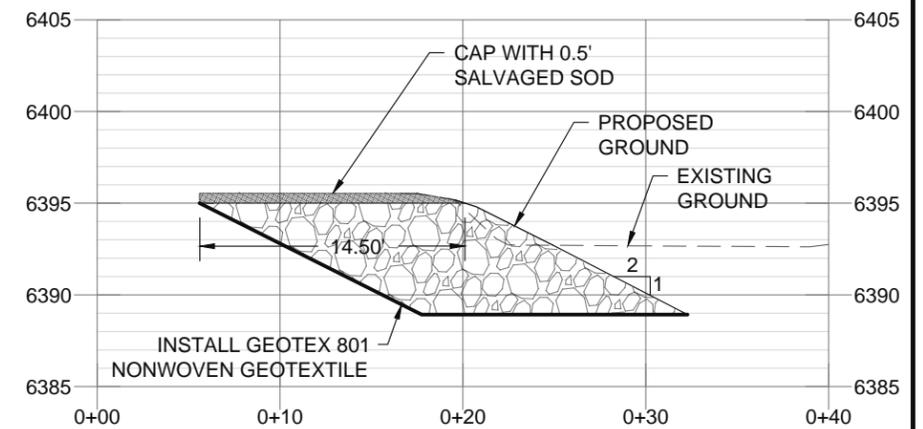
1
6 ROCK RAMP PROFILE
1" = 10'



2
6 ROCK RAMP CROSS SECTION
1" = 10'



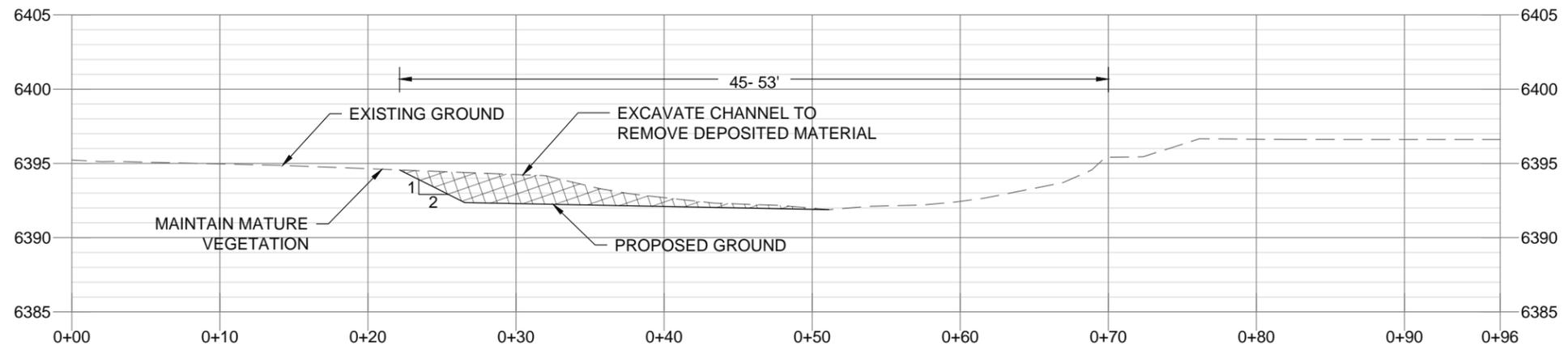
3
6 TYPICAL RIP RAP BANK PROTECTION
1" = 10'



5
6 UPSTREAM RIP RAP KEY IN
1" = 10'

NOTES:

- EXISTING BANK MATERIAL MAY BE SUITABLE AS FILTER MATERIAL BEHIND RIPRAP. GEOTEXTILE FABRIC MAY BE ELIMINATED WITH ENGINEER APPROVAL.



4
6 TYPICAL CHANNEL WIDENING
1" = 10'

DATE: 11/16/2017	PROJECT: CCL OBS NO. MFWP/07			
DESIGNED BY: RLBITT	FILE NAME: HustedChannelImprovement.rvt			
CHECKED BY: RLBITT	FILE NAME: HustedChannelImprovement.rvt			
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1				
2				



HUSTED FLOW SPLIT
FINAL DESIGN
JACKSON, MONTANA

CROSS SECTIONS

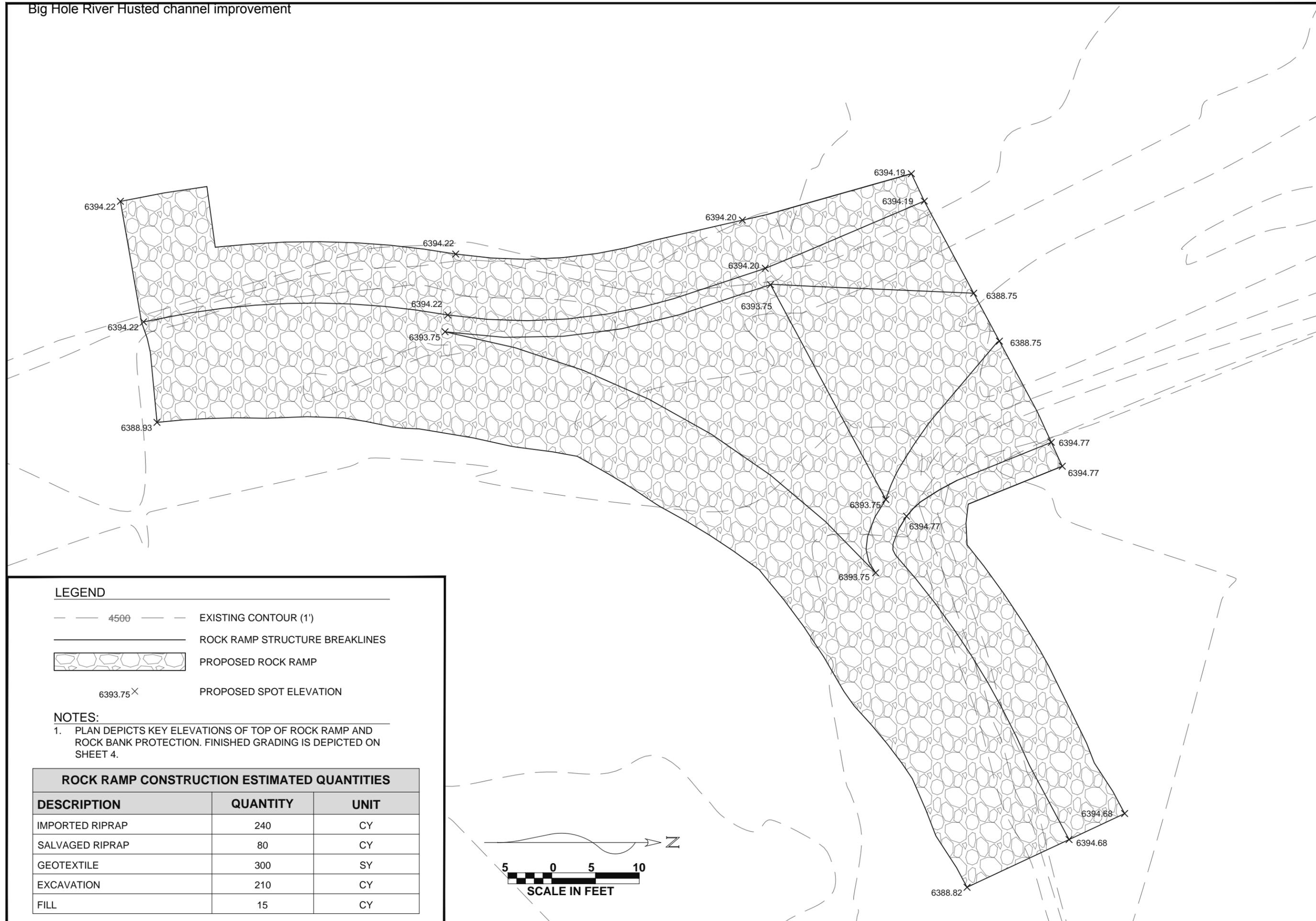
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REV. 2	DATE: -



**HUSTED FLOW SPLIT
FINAL DESIGN
JACKSON, MONTANA**

**DETAILED
ROCK
RAMP SITE
PLAN**



LEGEND

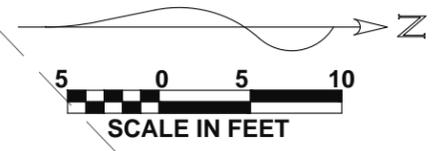
- 4500 EXISTING CONTOUR (1')
- ROCK RAMP STRUCTURE BREAKLINES
- PROPOSED ROCK RAMP
- 6393.75 PROPOSED SPOT ELEVATION

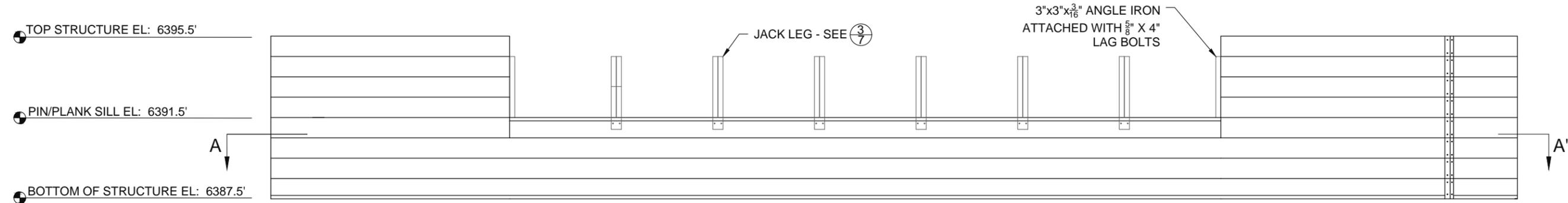
NOTES:

1. PLAN DEPICTS KEY ELEVATIONS OF TOP OF ROCK RAMP AND ROCK BANK PROTECTION. FINISHED GRADING IS DEPICTED ON SHEET 4.

ROCK RAMP CONSTRUCTION ESTIMATED QUANTITIES

DESCRIPTION	QUANTITY	UNIT
IMPORTED RIPRAP	240	CY
SALVAGED RIPRAP	80	CY
GEOTEXTILE	300	SY
EXCAVATION	210	CY
FILL	15	CY



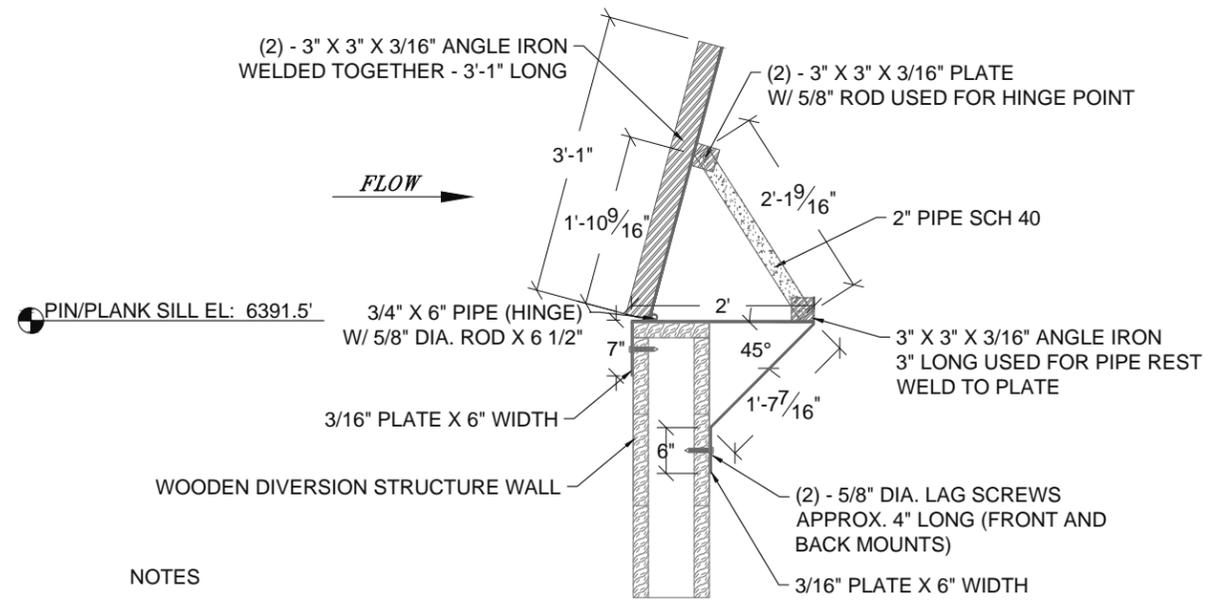


1
8 DIVERSION STRUCTURE FACING DOWNSTREAM
3/16" = 1'

2
8 SECTION A - A'
3/16" = 1'

- NOTES:
1. USE CA (GREEN TREAT) FULL DIMENSION PRESSURE TREATED LUMBER FOR STRUCTURES OR EPA APPROVED EQUIVALENT.
 2. ALL FASTENERS SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.
 3. BOLT 6"x6" POSTS TOGETHER WITH 1/2" DIAMETER BOLTS, 3 FOR EACH POST.
 4. ATTACH 2" BOARDS TO POSTS USING 2 - 1/2"x4" LAG SCREWS AT EACH BOLT CONNECTION.
 5. BOARDS SHALL BE INSTALLED SUCH THAT BOLT ENDS DO NOT ALIGN VERTICALLY AT ANY BOARD/POST CONNECTION.
 6. SUBGRADE SHALL BE INSPECTED BY ENGINEER PRIOR TO PLACEMENT OF PIN/PLANK.

PIN AND PLANK STRUCTURE INSTALLATION ESTIMATED QUANTITIES		
DESCRIPTION	QUANTITY	UNIT
CLASS II RIPRAP	55	CY
GRAVEL	7	CY
EXCAVATION	25	CY
FILL	105	CY



- NOTES
- 1) USE 2 EA. 3" X 3" X 3/16" ANGLES (SIDE PANELS) - 3' LENGTH ON DIVERSION SIDEWALLS - LAG SCREW TO SIDE WALLS
 - 2) SPACE JACK LEGS AS SHOWN ON PLAN VIEW
 - 3) CHECK BOARDS SHALL BE 2" TREATED WOOD. BOARD WIDTHS MAY VARY BASED ON DESIRED CHECKED WATER SURFACE ELEVATION.

3
8 JACK LEG FOR PIN PLANK DIVERSION STRUCTURE - SIDE VIEW DETAIL
1/2" = 1'

Drawn by: GMACTS
 Checked by: RLBITT
 Date: 11/6/2017
 CCL JOB NO: MFWP/07
 FILE NAME: HustedChannel.dwg
 CONFLUENCE consulting incorporated

REV.	DATE	DESCRIPTION	BY	APPD
1				
2				

HUSTED FLOW SPLIT
 FINAL DESIGN
 JACKSON, MONTANA

PIN &
 PLANK
 DETAILS

