

Western Native Trout Initiative
Big Blackfoot Chapter of Trout Unlimited
Sucker Creek Westslope Cutthroat Trout Passage Project Report

Sucker Creek is a third-order tributary to Keep Cool Creek in the upper Blackfoot River watershed north of Lincoln, Montana. The stream supports westslope cutthroat trout which have been identified as a pure strain. This project was identified as a priority under the ***Collaborative Forest Landscape Restoration Program***—a program identified in 2009 by the Secretary of Agriculture to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes. This project addressed the existing stream crossing near stream-mile 3.3 on United States Forest Service lands that was undersized, restricted fish passage during high flow periods and caused channel impairments. This project is part of a larger effort in the Blackfoot Watershed to work collaboratively across the watershed with a diverse group of stakeholders and supports several goals/objectives identified in the WNTI strategic plan including restoring westslope cutthroat trout by eliminating a threat to their existence (barriers) and following up with monitoring (as-built survey and electrofishing).

The existing culvert impacting Sucker Creek was replaced in August 2016 with a pipe-arch following Stream Simulation methods and principles that allows uninhibited aquatic organism passage and replicates the stream bed up and down stream of the crossing. Big Blackfoot Chapter of Trout Unlimited (BBCTU) entered into a Participating Agreement with the US Forest Service which allowed BBCTU to contract with local, qualified contractors and engineers to install and oversee the new culvert and associated stream and road work. By implementing this project, connectivity was restored to 1.5 miles of habitat for pure westslope cutthroat trout populations and other aquatic organisms. Several tours will be led to the project site and will include local schools and members of the community to talk about the importance of native trout and limitations to their recovery.

Included in this report are a series of photo-points and the as-built record drawings. BBCTU would like to recognize and thank the project partners including Western Native Trout Initiative, US Forest Service, and Montana Fish, Wildlife & Parks.



Photos 1-2: Photo point showing existing condition of the culvert outlet compared with upgraded pipe arch. Project was completed in mid-August, 2016.



Photos 3-4: Construction progress showing site condition once culvert was removed and the placement of new pipe arch.



Photos 5-6: Backfill and armoring of the culvert and contractor watering transplants and sod mats to complete finish work on the riparian area.



Photos 7-8: Sucker Creek culvert inlet pre and post-project.



Photos 1-2: Photo point showing existing condition of the culvert outlet compared with upgraded pipe arch. Project was completed in mid-August, 2016.



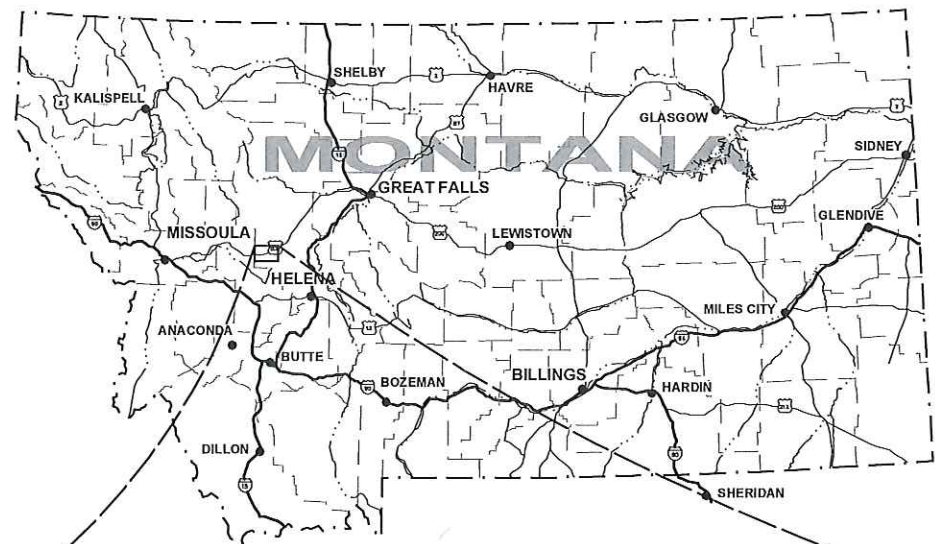
Photos 3-4: Construction progress showing site condition once culvert was removed and the placement of new pipe arch.



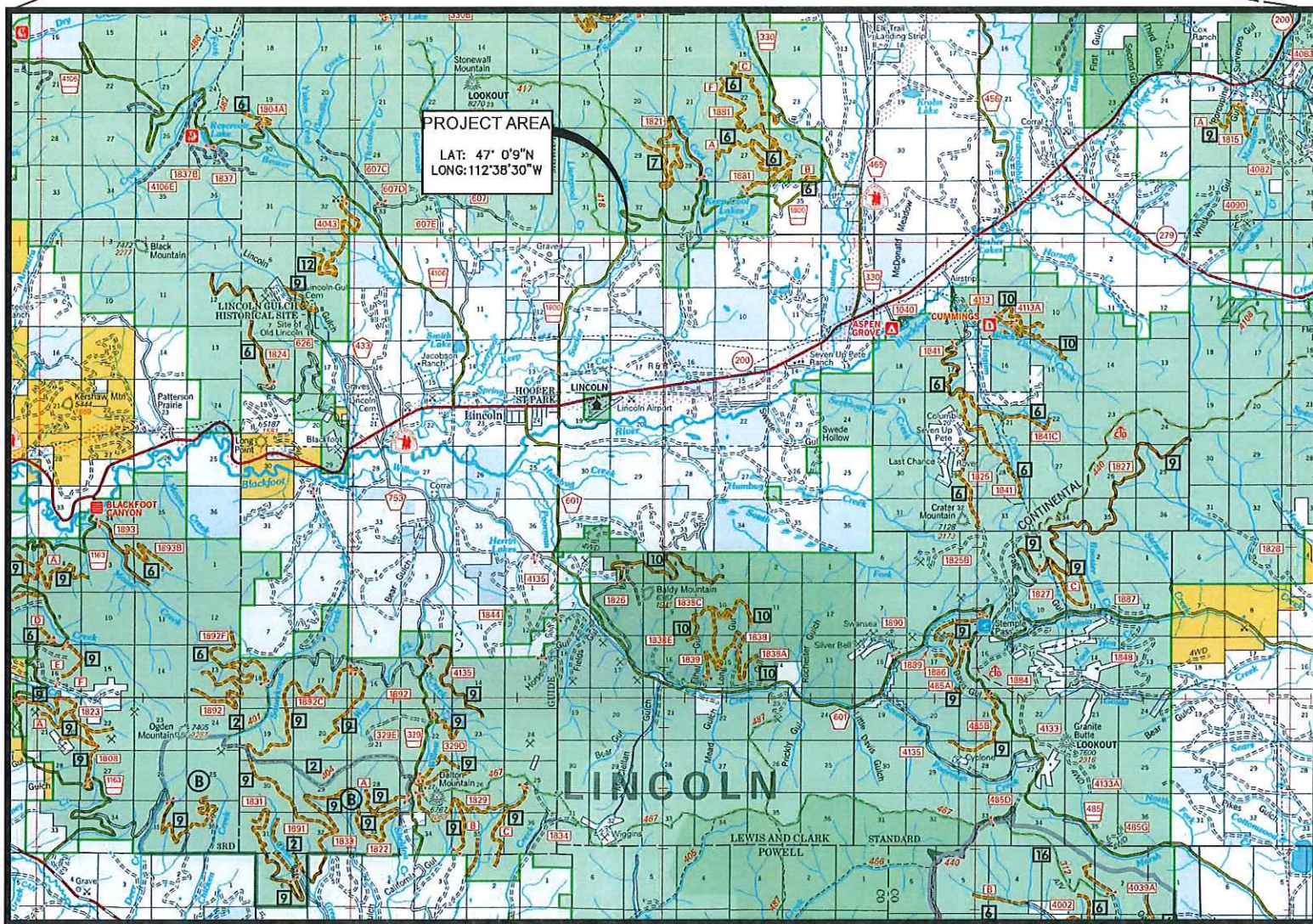
Photos 5-6: Backfill and armoring of the culvert and contractor watering transplants and sod mats to complete finish work on the riparian area.



Photos 7-8: Sucker Creek culvert inlet pre and post-project.



SUCKER CREEK AQUATIC ORGANISM PASSAGE CULVERT REPLACEMENT LINCOLN, MONTANA



NOT TO SCALE

PREPARED FOR:
BIG BLACKFOOT CHAPTER
OF TROUT UNLIMITED
P.O. BOX 1
OVANDO, MONTANA



PREPARED BY:



SHEET INDEX

| SHEET NO. | TITLE |
|-----------|---|
| G1 | COVER SHEET |
| G2 | QUANTITY SUMMARY, GENERAL NOTES, AND CONTROL POINTS |
| PP1 | ROAD PLAN AND PROFILE |
| PP2 | STREAM PLAN AND PROFILE |
| D1 | STREAM SIMULATION DETAILS |
| D2 | CONCEPTUAL STREAM DIVERSION DETAILS |
| XS1 | ROAD CROSS SECTIONS |

RECOMMENDED:

DISTRICT RANGER
LINCOLN RANGER DISTRICT
Date

REVIEWED:

FOREST ENGINEER
HELENA NATIONAL FOREST
Date

APPROVED:

FOREST SUPERVISOR
HELENA NATIONAL FOREST
Date

APPROVED:



Jeffrey K. Olsson, P.E. 18998
PROJECT MANAGER
DOWL
Date

REVIS: 07/11/2016
COORDINATE CORRECTION SHEET PP-2

RECORD DRAWING
07-28-2016

PROJECT 4626.11478.01
DATE SEPTEMBER 2015

SHEET

G1

ESTIMATED QUANTITY SUMMARY

| Item No. | Item Description | Measurement | | Total |
|----------|---|-------------|------|-------|
| | | Method | Unit | |
| 15101 | Mobilization | LSQ | LS | 1.0 |
| 15201 | Construction Survey and Staking | LSQ | LS | 1.0 |
| 20301 | Removal of Existing Culvert, Method A | AQ | EA | 1.0 |
| 20906 | Structure Excavation | LSQ | LS | 1.0 |
| 25101(A) | Placed Riprap, Class 4 (Commercial Source) | CQ | CY | 42.0 |
| 25117(A) | Rock Weir Grade Control Structure | AQ | EA | 3.0 |
| 25117(B) | Wood Weir Grade Control Structure | AQ | EA | 2.0 |
| 60202 | 142" Span, 91" Rise, Corrugated Steel Pipe Arch, 0.138" Thickness | CQ | LF | 47.0 |
| 62503 | Seeding Dry Method | LSQ | LS | 1.0 |
| 62601 | Clump Planted Vegetation | AQ | EA | 10.0 |

ALL QUANTITIES PROVIDED IN THE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL DETERMINE OR VERIFY QUANTITIES USED AS THE BASIS FOR BIDDING.
 CQ = CONTRACT QUANTITY; AQ = ACTUAL QUANTITY; LSQ = LUMP SUM QUANTITY

| POINT # | NORTHING | EASTING | ELEV. (FT) | DESCRIPTION |
|---------|-------------|-------------|------------|---------------------------------|
| 1 | 1019251.700 | 1185292.787 | 4986.33 | SURV PPC |
| 2 | 1019322.124 | 1185291.027 | 4986.87 | SURV REB SET 1/2" DIA DWN 0.1FT |
| 3 | 1019042.854 | 1185203.680 | 4983.94 | SURV SPIKE DWN 0.2FT |
| 4 | 1019361.158 | 1185194.738 | 4992.62 | SURV HUB W/MAG |
| 5 | 1019269.225 | 1185380.136 | 4974.01 | SURV HUB W/MAG |

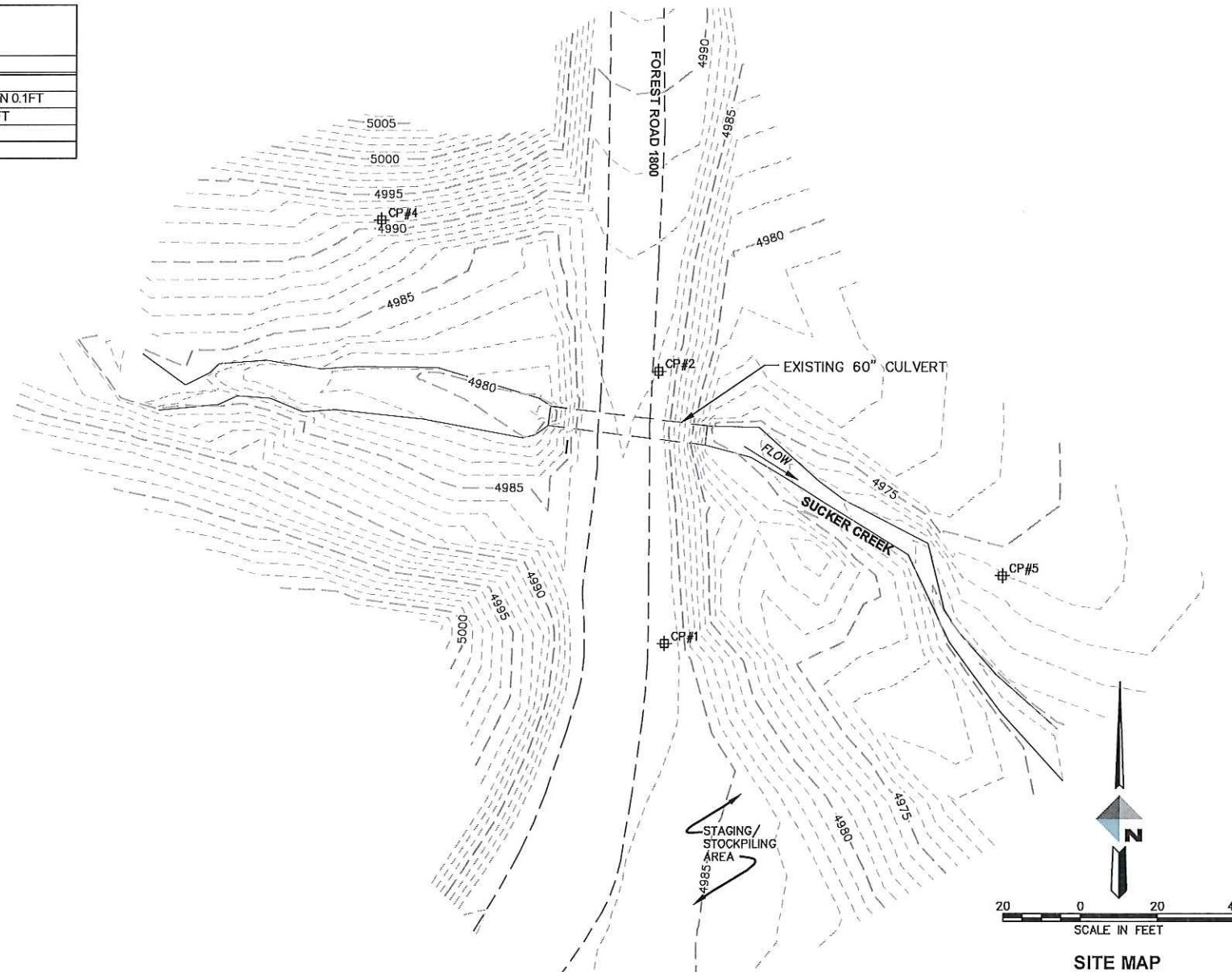
BASIS OF CONTROL

HORIZONTAL DATUM: NAD83 (NA2011) (EPOCH 2010.0000). MONTANA STATE PLANE COORDINATE SYSTEM INTERNATIONAL FEET
 ALL DISTANCES, BEARINGS AND COORDINATES ARE GRID VALUES

VERTICAL DATUM: NAVD88 US SURVEY FEET

GENERAL NOTES:

- SPECIFICATIONS:** CONSTRUCTION SHALL COMPLY WITH FEDERAL HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROAD AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND APPLICABLE FOREST SERVICE SUPPLEMENTAL SPECIFICATIONS.
- HYDROLOGY AND HYDRAULICS:** THIS STRUCTURE IS DESIGNED TO PASS THE 100-YEAR FLOOD WHILE MAINTAINING STREAM DEPTH AND VELOCITY WITHIN OR NEAR THE RANGES THAT WOULD NATURALLY OCCUR IN THE VICINITY OF THE PROJECT. THE PEAK DISCHARGE FOR FLOODS OF 2-YEAR AND 100-YEAR RECURRENCE INTERVALS ARE ESTIMATED TO BE 20 CFS AND 341 CFS, RESPECTIVELY.
- CLEARING AND GRUBBING:** CLEARING AND GRUBBING IS CONSIDERED INCIDENTAL.
- CORRUGATED PIPE-ARCH:** THE CORRUGATED STEEL PIPE-ARCH SHALL BE 142" SPAN, 91" RISE, 3" X 1" CORRUGATIONS WITH GALVANIZED STEEL OF 0.138" THICKNESS.
- FOUNDATION INVESTIGATION:** A FOUNDATION INVESTIGATION HAS NOT BEEN CONDUCTED AT THIS SITE. IF BEDROCK OR VERY SOFT CLAY SOILS ARE ENCOUNTERED WITHIN THE LIMITS OF THE EXCAVATION SHOWN ON THE DRAWINGS, NOTIFY THE CO IMMEDIATELY. IN NO CASE SHOULD THE PIPE-ARCH BE PLACED DIRECTLY ON LARGE BOULDERS, RANDOM OUTCROPPINGS OF BEDROCK, OR SOFT SOILS WITHOUT PRIOR APPROVAL.
- SURVEY:** HORIZONTAL DATUM: NAD83 (NA2011) (EPOCH 2010.0000). MONTANA STATE PLANE COORDINATE SYSTEM INTERNATIONAL FEET. ALL DISTANCES, BEARINGS AND COORDINATES ARE GRID VALUES. VERTICAL DATUM: NAVD88 US SURVEY FEET
- NATIVE STREAMBED MATERIAL:** IT IS ANTICIPATED THAT NATIVE STREAMBED MATERIAL WILL BE FOUND UNDER THE EXISTING PIPE AND PROPOSED CHANNEL EXCAVATIONS. CONTRACTOR SHALL PRESERVE AND PROTECT THE MATERIAL AND USE IT FOR INFILL FOR THE PIPE. MATERIAL SHOULD BE CONSISTENT WITH TYPE AND GRADATION OF THE NATIVE STEAM MATERIAL AND WELL-GRADED TO PRODUCE A DENSE, WELL INTERLOCKED BED WITH LOW PERMEABILITY AND APPROVED BY THE CO PRIOR TO PLACEMENT. CONTRACTOR IS RESPONSIBLE FOR INSURING STREAM FLOW DOES NOT GO SUBSURFACE THROUGH THE CULVERT DURING A 48 PERIOD AFTER RE-WATERING.
- UTILITIES:** EXISTING UTILITIES ARE NOT SHOWN; THERE IS A KNOWN ELECTRICAL LINE WITHIN THE PROJECT AREA. EXACT LOCATION IS UNKNOWN. OTHER UTILITIES MAY ALSO BE PRESENT. LOCATION AND PROTECTION OF UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.



RECORD DRAWING

| REV | DATE | DESCRIPTION | BY |
|-----|---------|--------------|-----|
| 1 | 8/17/15 | RECORD NOTES | JKB |



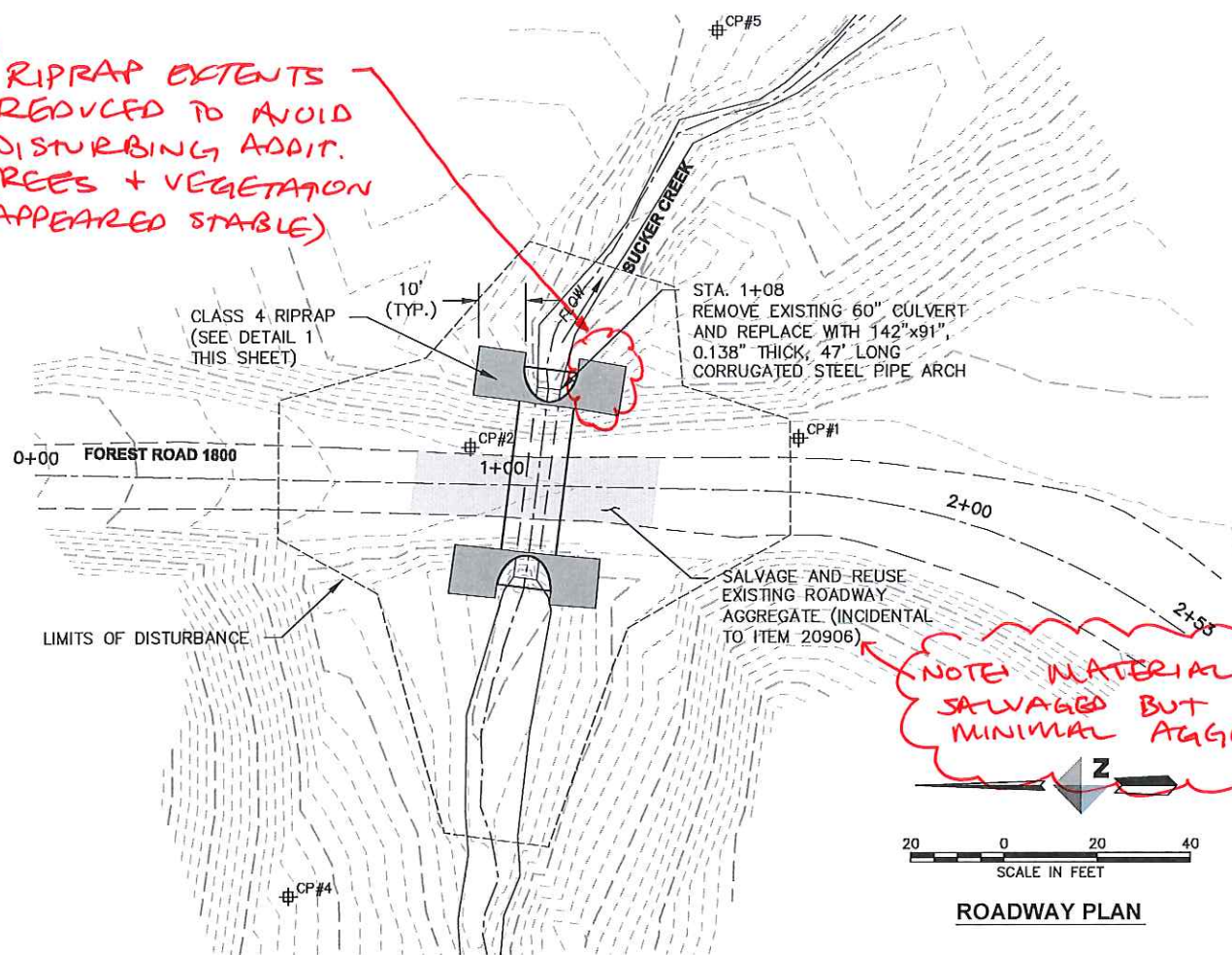
DOWL
 1300 Cedar Street
 Helena, Montana 59601
 408-442-0370

SUCKER CREEK AQUATIC ORGANISM PASSAGE
 LINCOLN, MONTANA
 QUANTITY SUMMARY, GENERAL NOTES,
 AND CONTROL POINTS

PROJECT 4626.11478.01
 DATE SEPTEMBER 2015

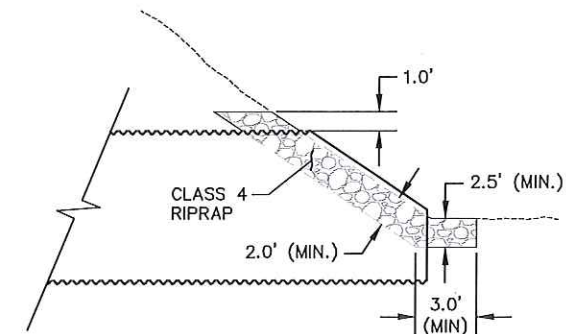
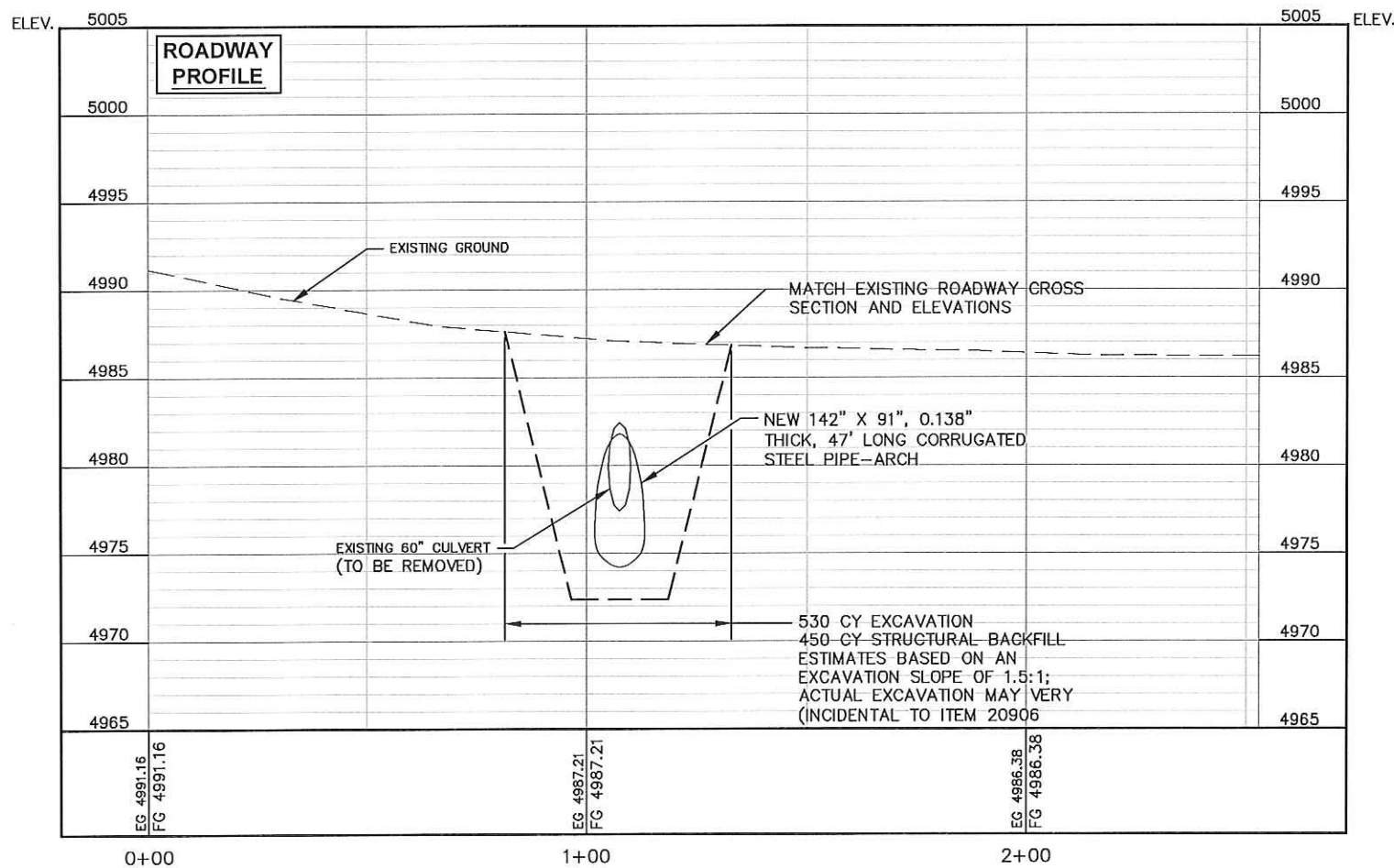
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 SHEET
G2

R RIPRAP EXTENTS REDUCED TO AVOID DISTURBING ADJ. TREES + VEGETATION (APPEARED STABLE)

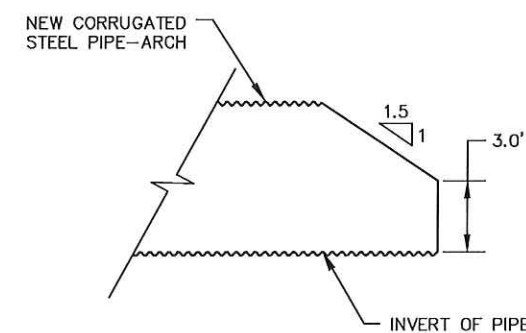


R NOTE MATERIAL WAS SALVAGED BUT INCLUDED MINIMAL AGGREGATE

ROADWAY PLAN



1 DETAIL
PP1 END PROTECTION
NOT TO SCALE



2 DETAIL
PP1 END TREATMENT
NOT TO SCALE

| REV | DATE | DESCRIPTION | BY |
|-----|----------|--------------|-----|
| R | 07/20/16 | RECORD NOTES | JJP |



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 Helena, Montana 59601
 406-442-0370

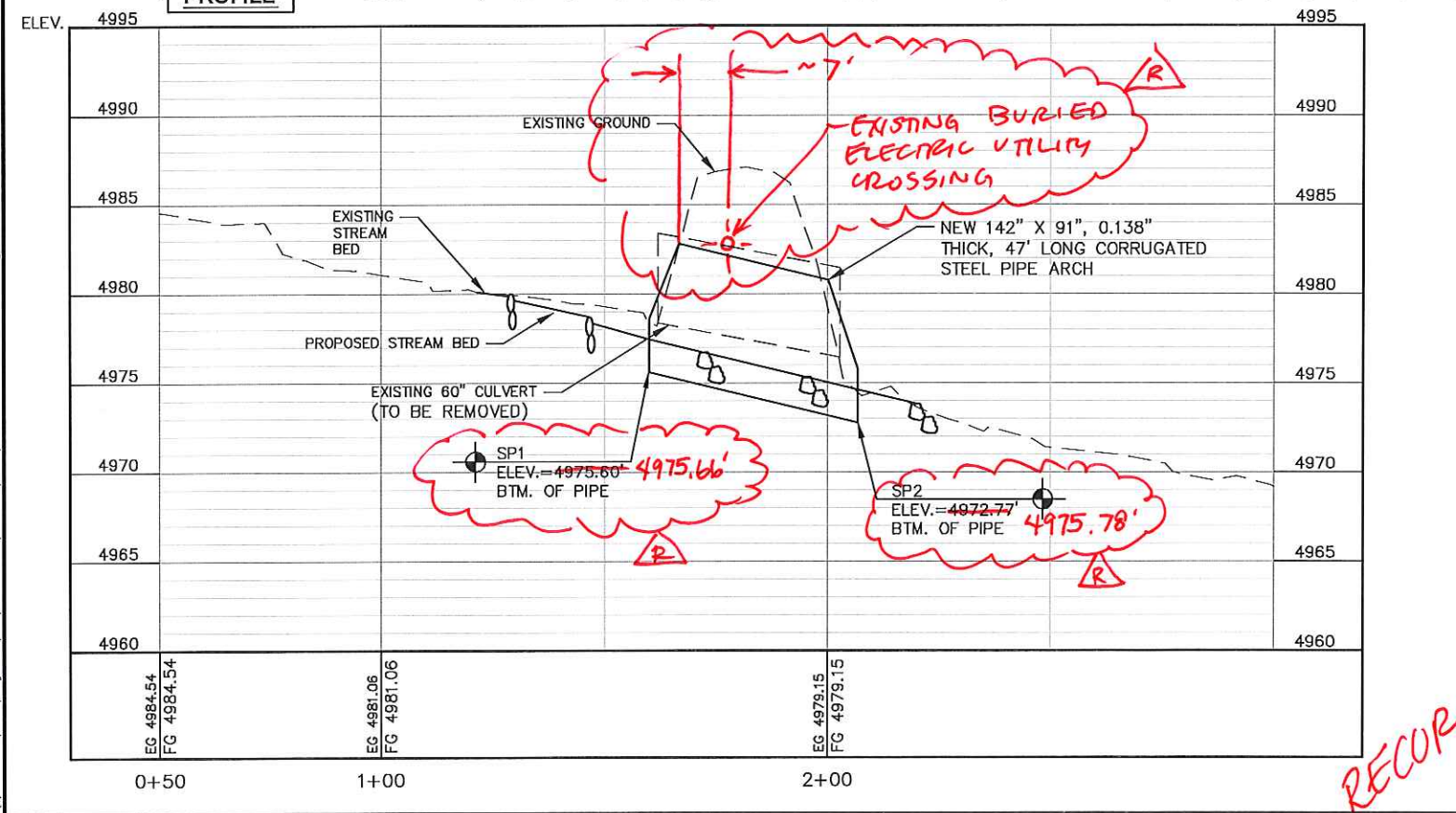
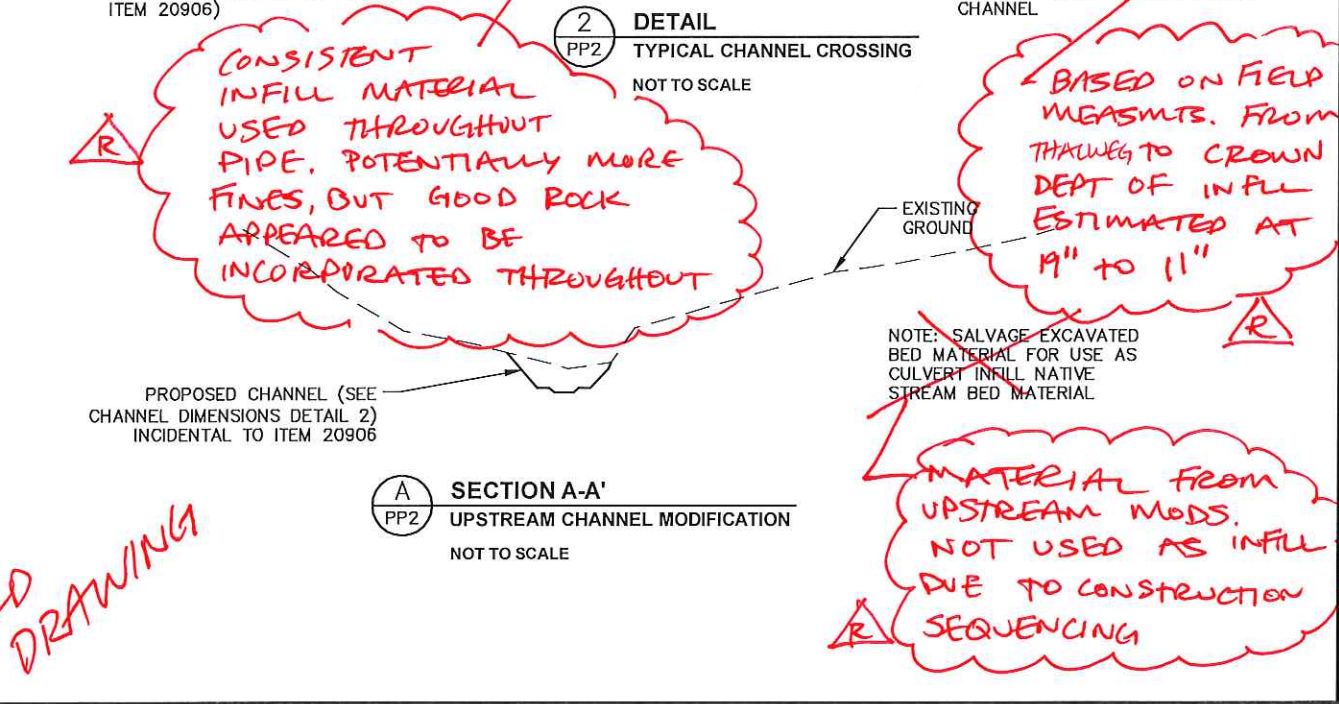
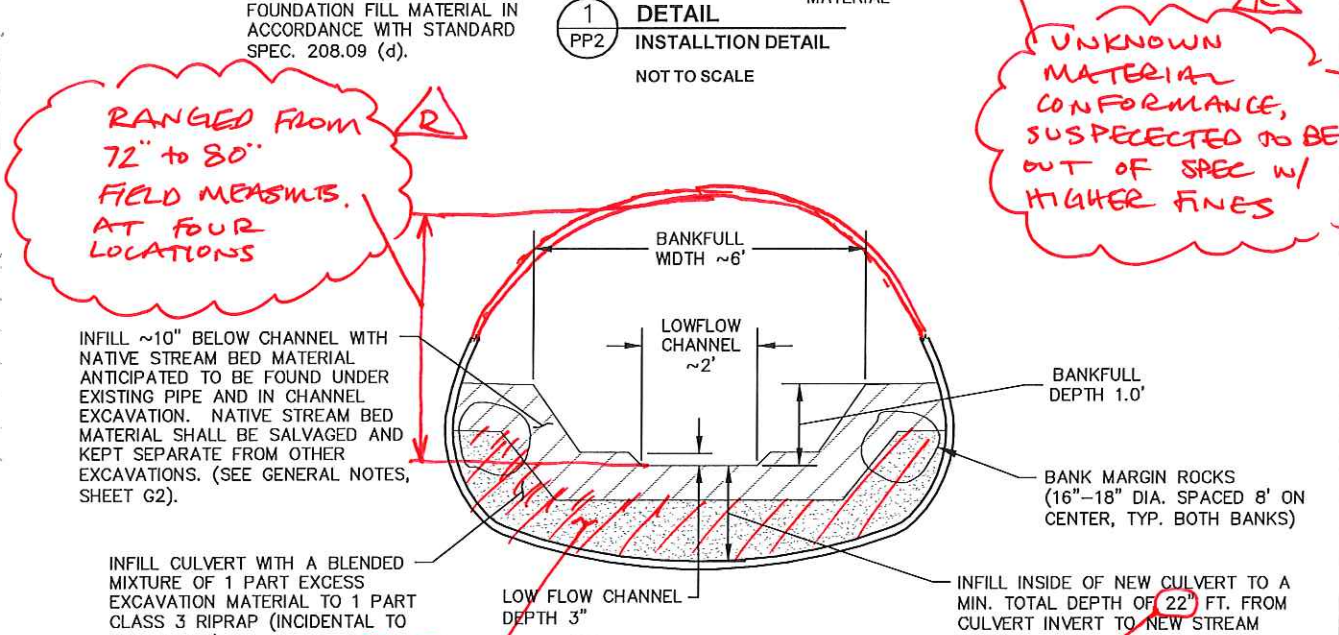
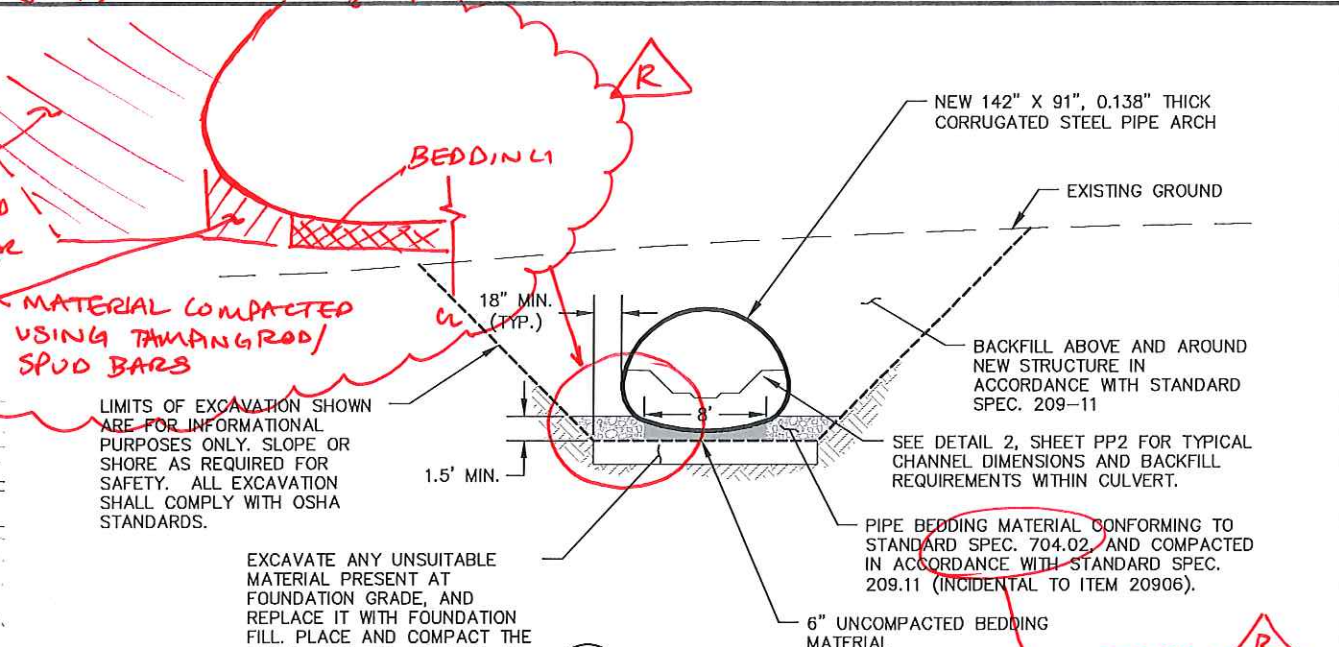
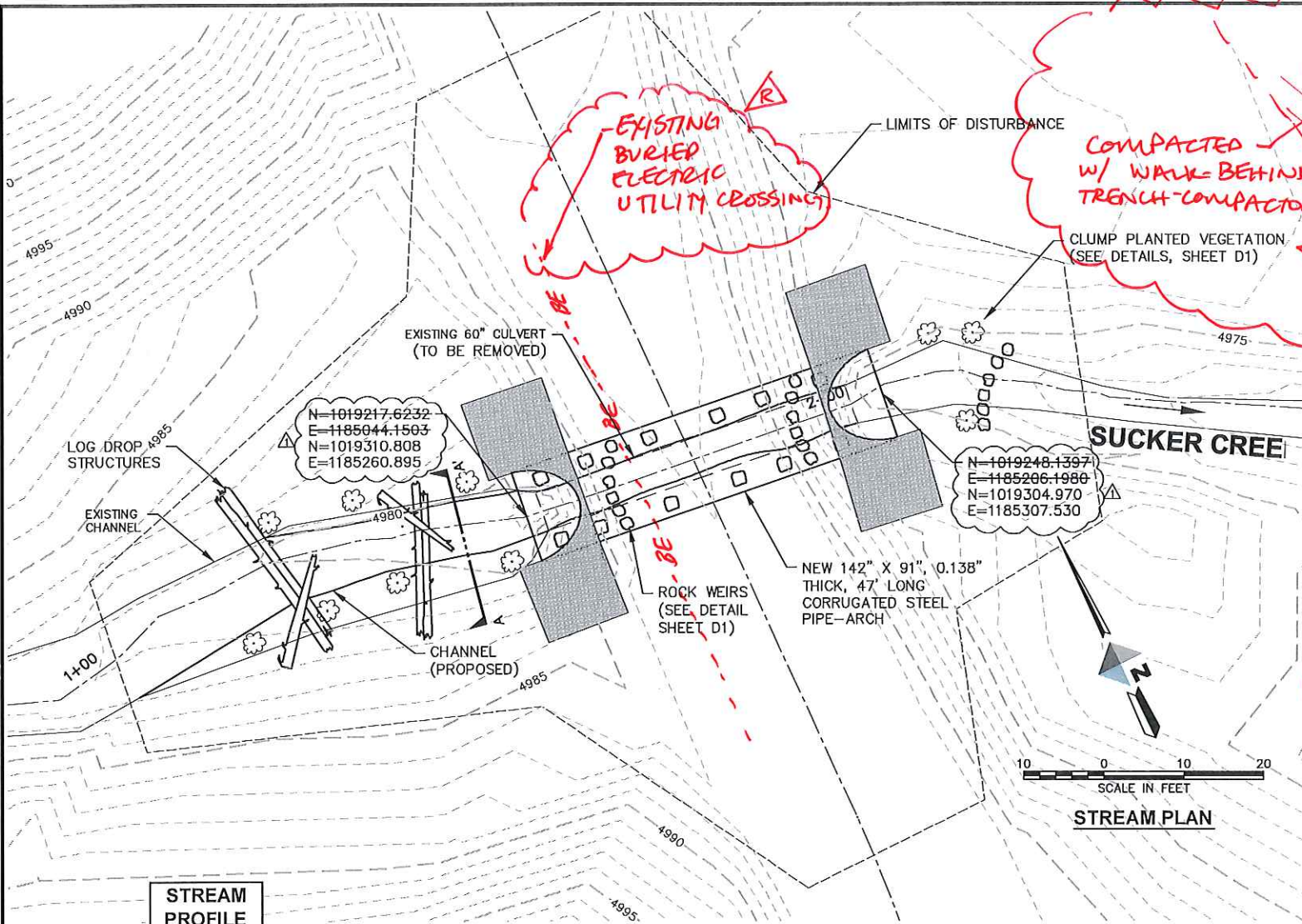
SUCKER CREEK AQUATIC ORGANISM PASSAGE
 LINCOLN, MONTANA

ROAD PLAN AND PROFILE

PROJECT 4626.11478.01
 DATE SEPTEMBER 2015

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 SHEET
PP1

RECORD DRAWING



RECORD DRAWING

REVISIONS

| REV | DATE | DESCRIPTION |
|-----|----------|-----------------------|
| 1 | 07/11/16 | COORDINATE CORRECTION |

BY: JKO
DATE: JKO
RECORD NOTES

MONTANA PROFESSIONAL ENGINEER
JEFFREY KARL OLSON
No. 19896P

DOWL
1300 Cedar Street
Helena, Montana 59601
408-442-0370

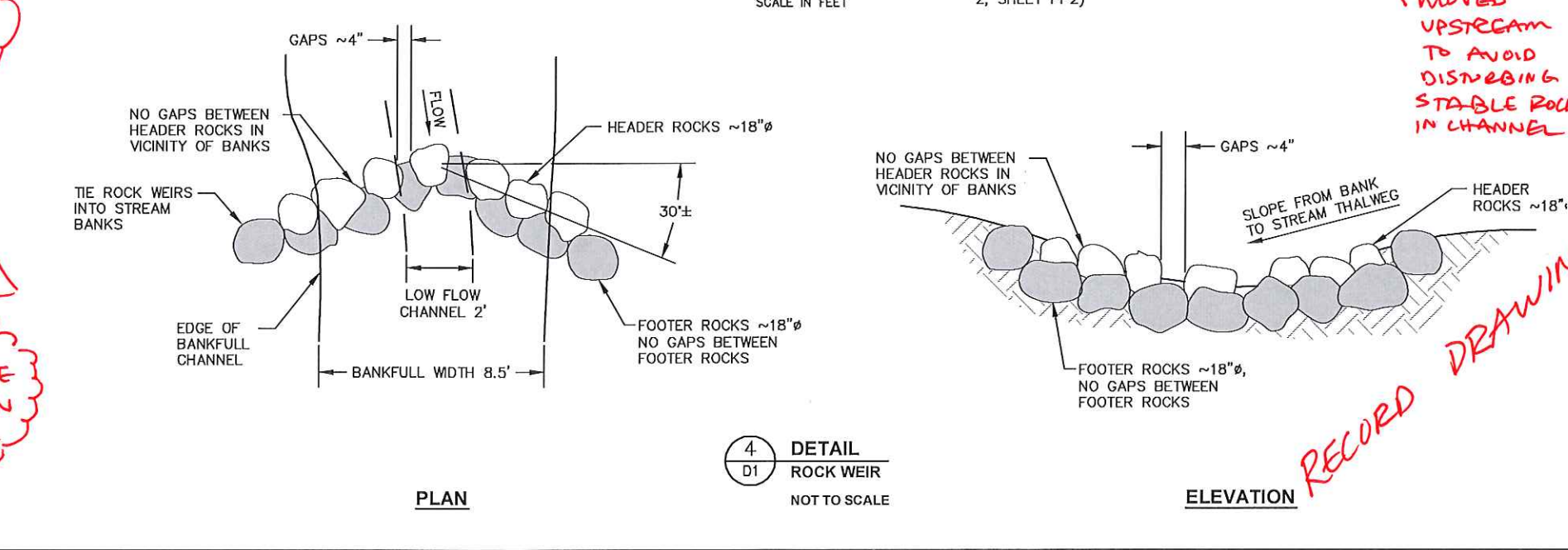
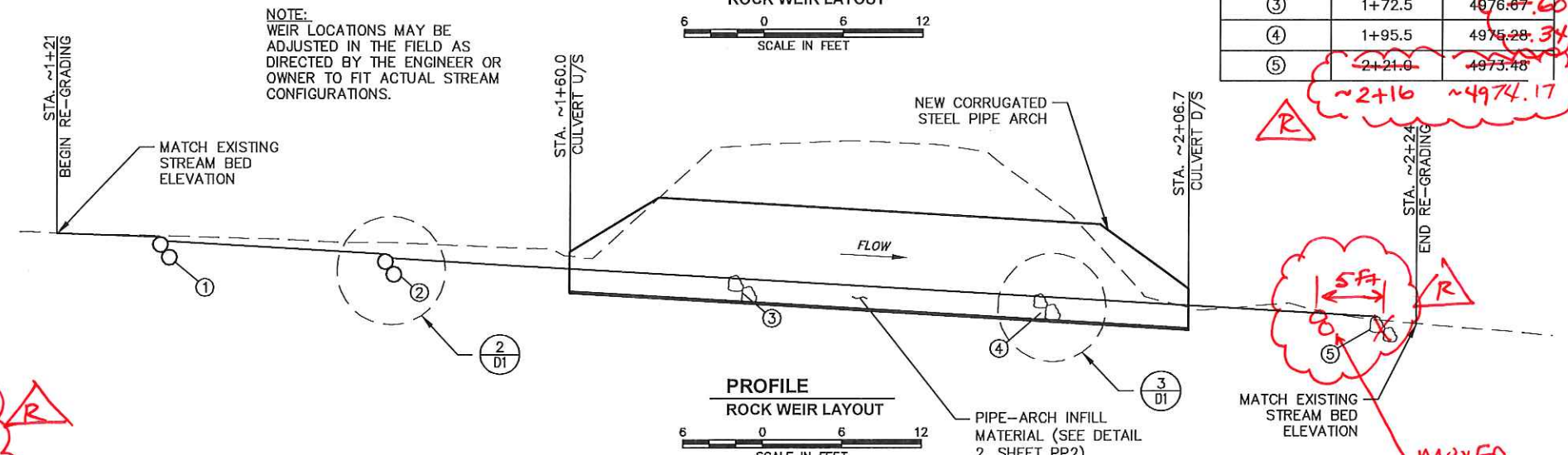
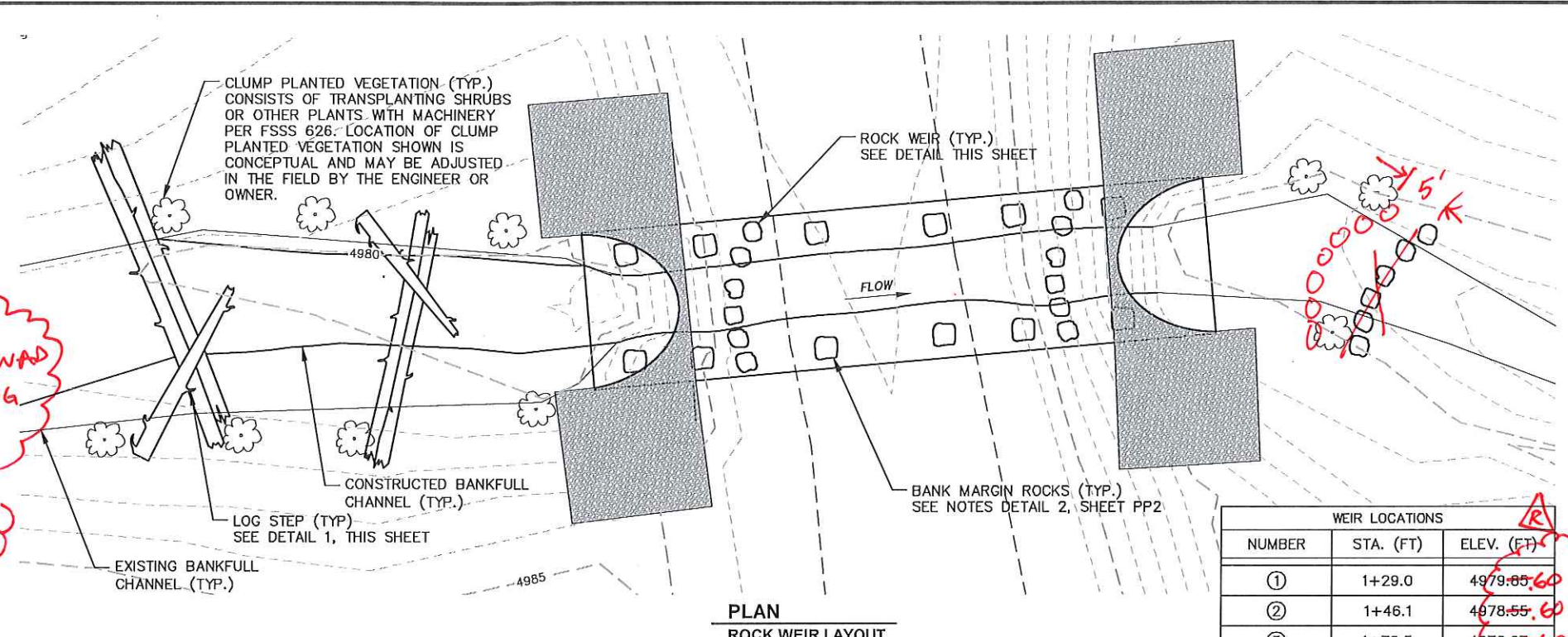
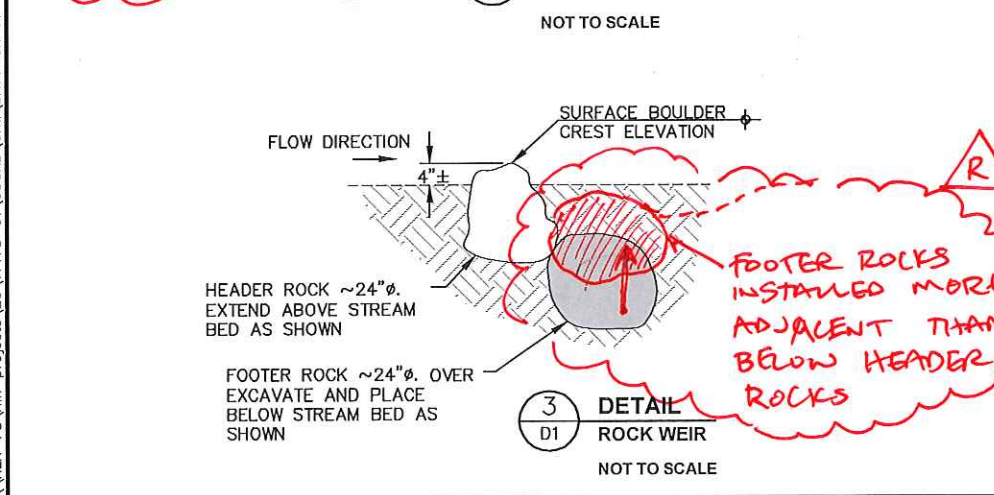
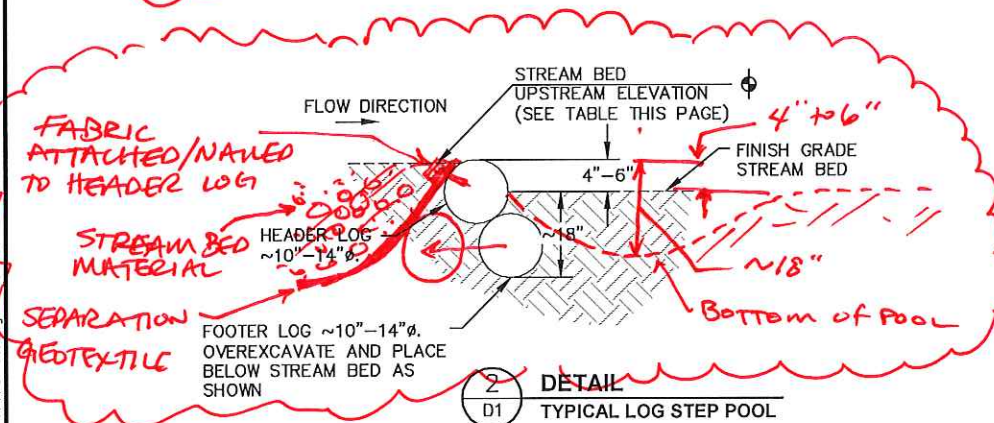
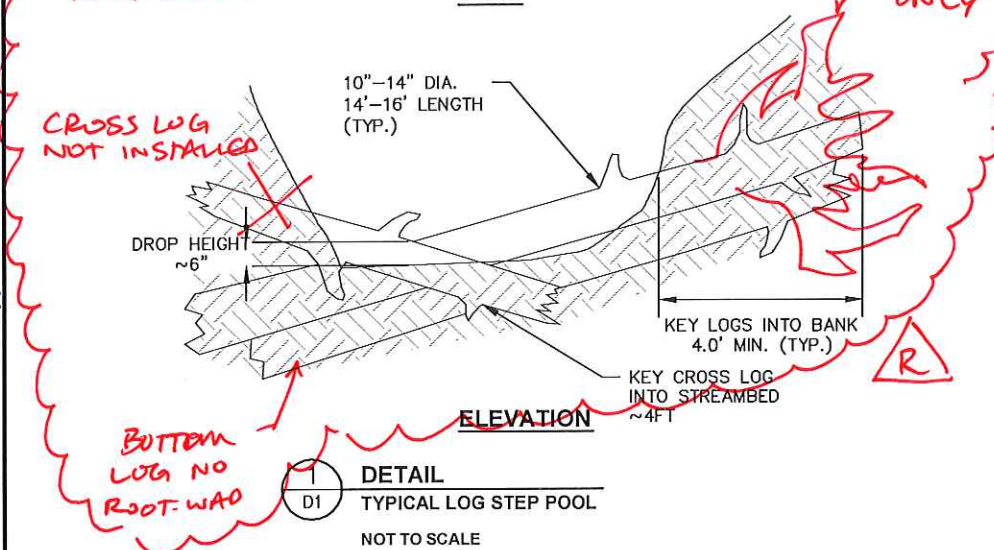
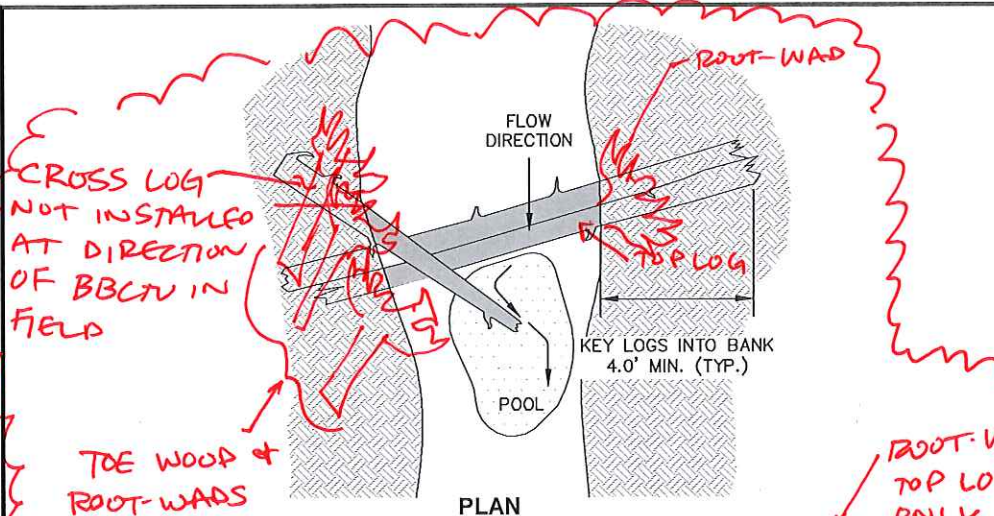
SUCKER CREEK AQUATIC ORGANISM PASSAGE
LINCOLN, MONTANA

STREAM PLAN AND PROFILE

PROJECT 4626.11478.01
DATE SEPTEMBER 2015

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SHEET
PP2

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REVISIONS

| REV | DATE | DESCRIPTION | BY |
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| R | 07/28/15 | RECORD NOTES | JKG |

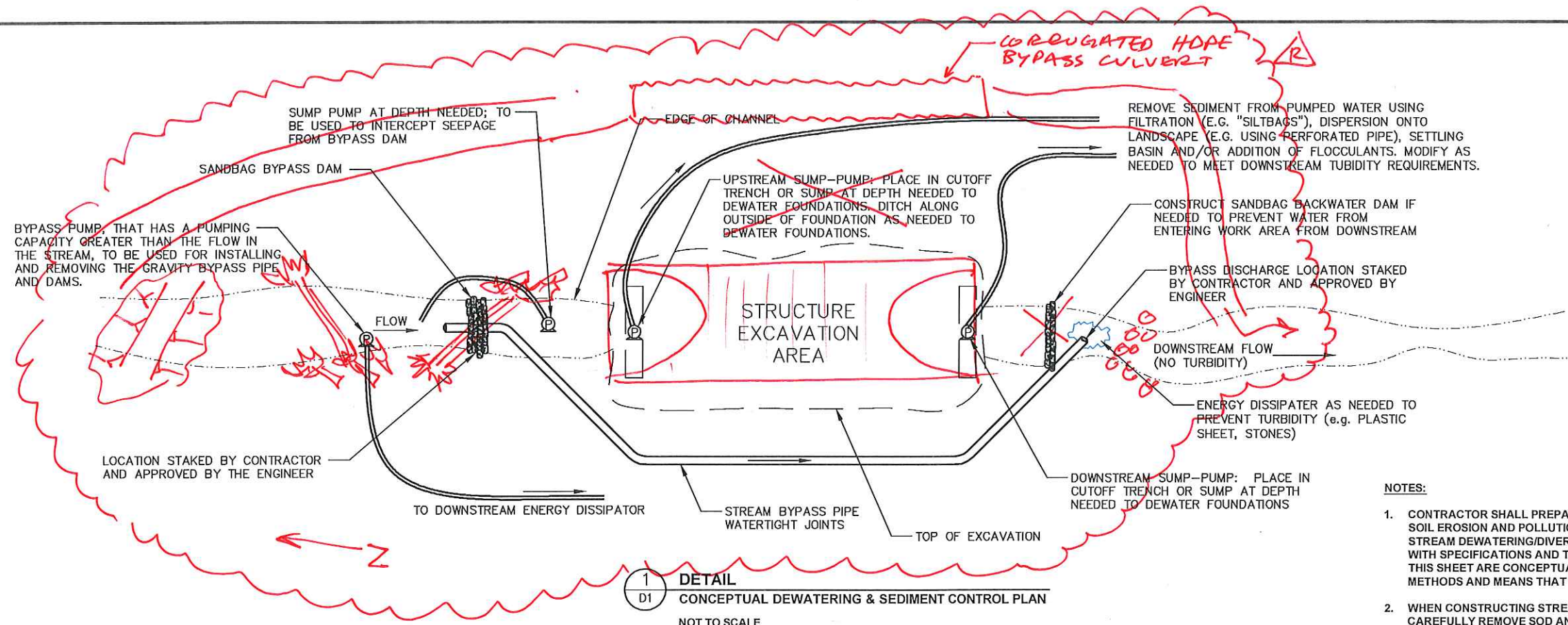
MONTANA PROFESSIONAL ENGINEER
JEFFREY KARL OLSSON
No. 18809PE

DOWL
1300 Cedar Street
Helena, Montana 59601
406-442-0370

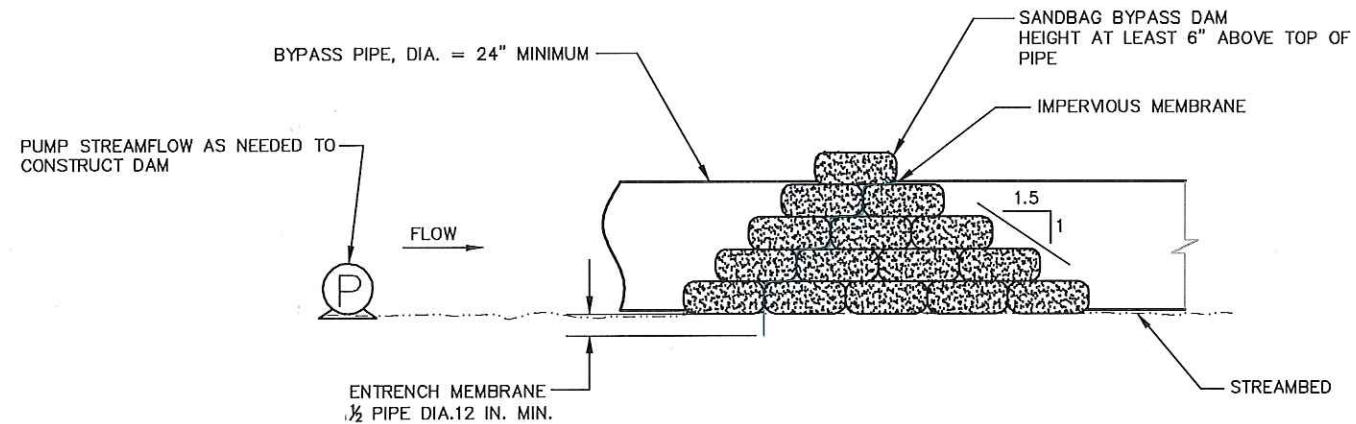
SUCKER CREEK AQUATIC ORGANISM PASSAGE
LINCOLN, MONTANA
STREAM SIMULATION
DETAILS

PROJECT 4626.11478.01
DATE SEPTEMBER 2015

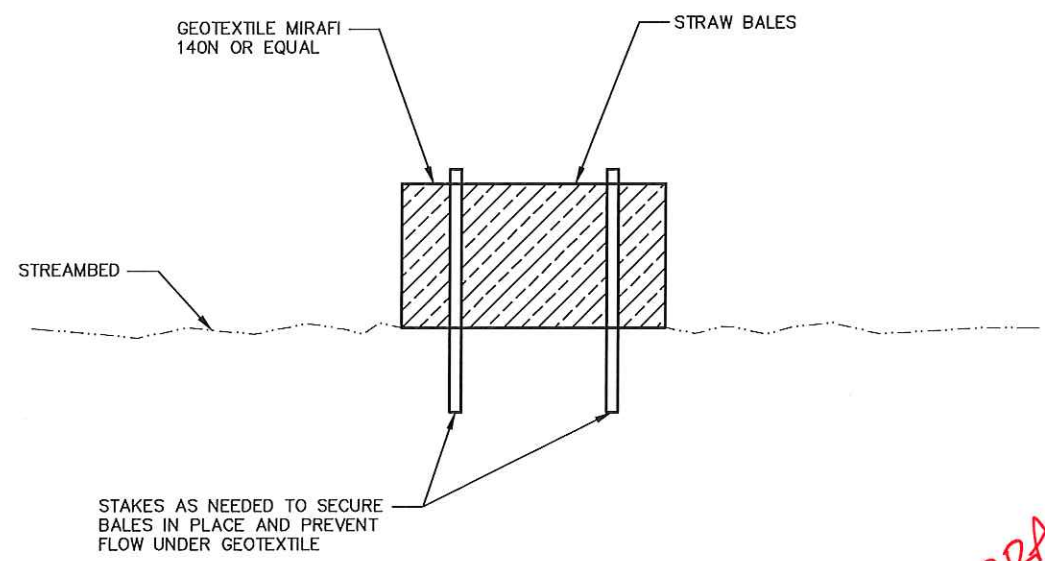
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SHEET
D1



1
D1
DETAIL
CONCEPTUAL DEWATERING & SEDIMENT CONTROL PLAN
NOT TO SCALE



2
D2
DETAIL
SANDBAG BYPASS DAM
NOT TO SCALE



3
D2
DETAIL
GEOTEXTILE-WRAPPED STRAW BALE DAM
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL PREPARE FOR REVIEW AND APPROVAL A SOIL EROSION AND POLLUTION CONTROL PLAN TO INCLUDE STREAM DEWATERING/DIVERSION METHODS IN ACCORDANCE WITH SPECIFICATIONS AND THESE PLANS. DETAILS SHOWN ON THIS SHEET ARE CONCEPTUAL AND PROVIDE GUIDANCE OF METHODS AND MEANS THAT WOULD BE ACCEPTABLE.
2. WHEN CONSTRUCTING STREAM DIVERSION CONTRACTOR SHALL CAREFULLY REMOVE SOD AND TOPSOIL THAT LIES ALONG THE DIVERSION PATH AND STOCKPILE IN A LOCATION APPROVED BY THE ENGINEER. AFTER REMOVING THE DIVERSION STRUCTURE AND BACKFILLING THE TRENCH, CONTRACTOR SHALL CAREFULLY REPLACE THIS STOCKPILED MATERIAL. PRIORITY AREAS FOR REPLACEMENT OF VEGETATION ARE STREAMBANKS AND FLOODPLAINS.
3. CONSTRUCT TEMPORARY SEDIMENT EROSION CONTROLS AROUND TEMPORARY STOCKPILES AND STAGING AREAS. TEMPORARY CONTROLS MAY INCLUDE SILT FENCES, STRAW WADDLES OR BALES, EROSION CONTROL MATTING OR MULCH.

CORROGATED HDPE BYPASS CULVERT

| REV | DATE | DESCRIPTION | BY |
|-----|---------|--------------|-----|
| R | 7/20/14 | RECORD NOTES | JLB |



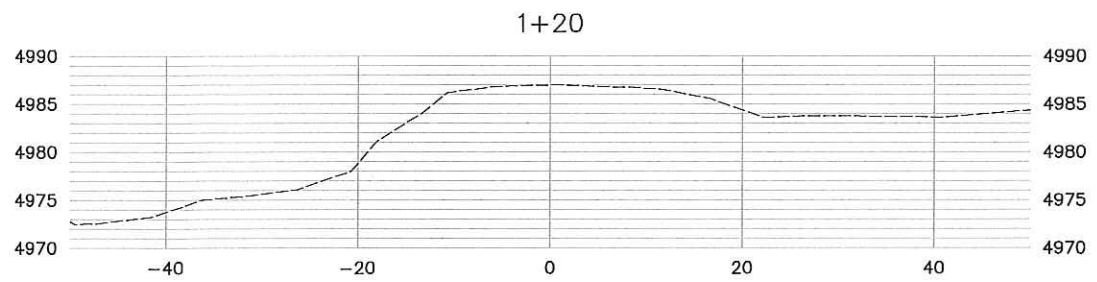
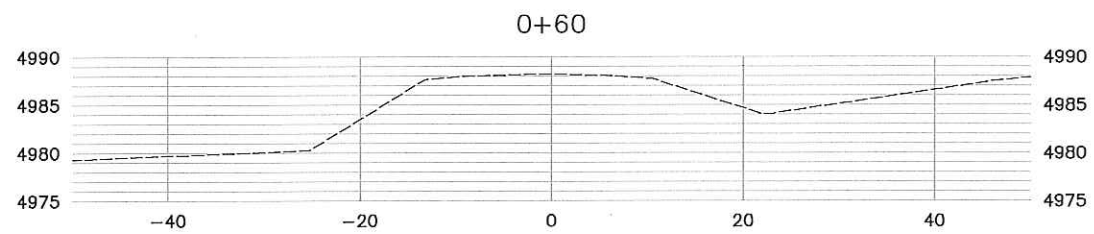
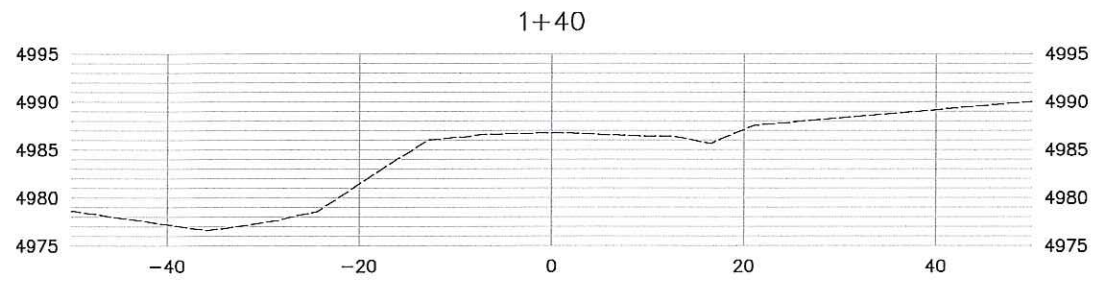
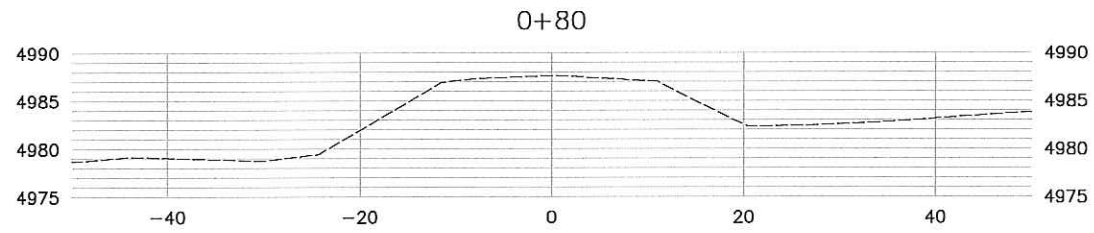
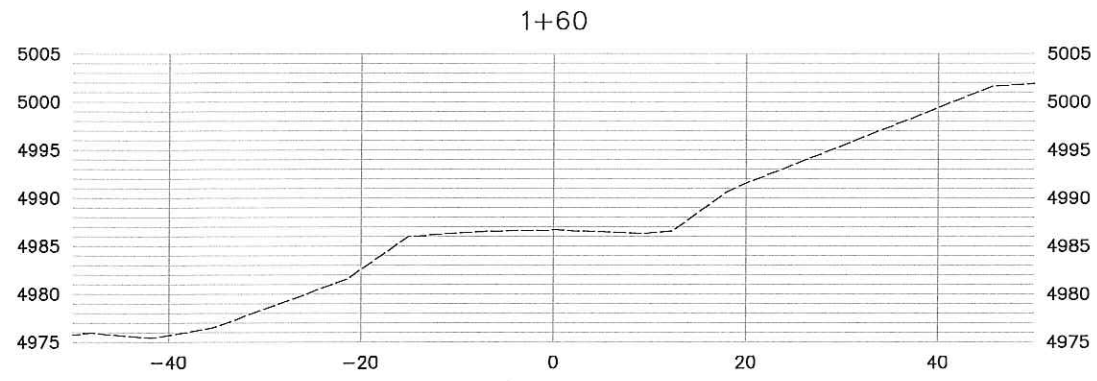
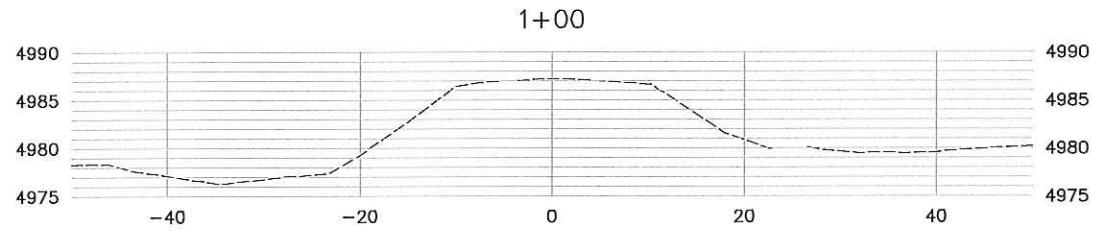
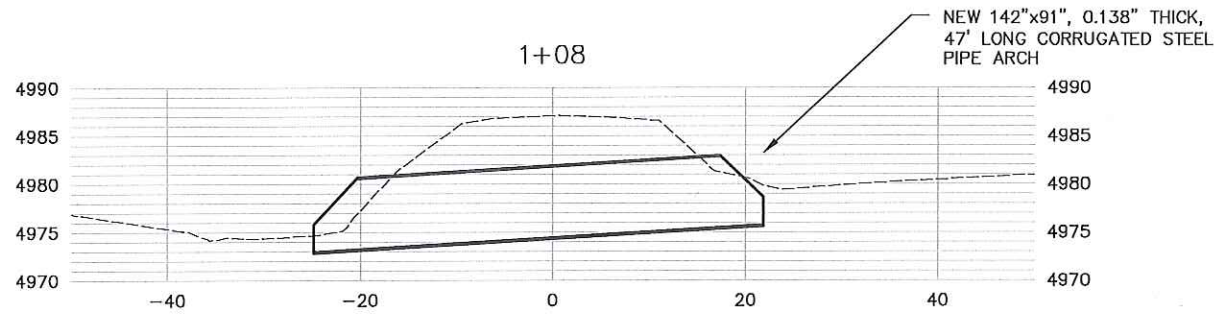
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SUCKER CREEK AQUATIC ORGANISM PASSAGE
LINCOLN, MONTANA
CONCEPTUAL STREAM DIVERSION DETAILS

PROJECT 4626.11478.01
DATE SEPTEMBER 2015

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SHEET
D2

RECORD DRAWING



RECORD DRAWING

| REV | DATE | DESCRIPTION | BY |
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| R | 7/29/15 | RECORD NOTES | JK |



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SUCKER CREEK AQUATIC ORGANISM PASSAGE
LINCOLN, MONTANA
ROAD CROSS SECTIONS

PROJECT 4626.11478.01
DATE SEPTEMBER 2015

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XS1