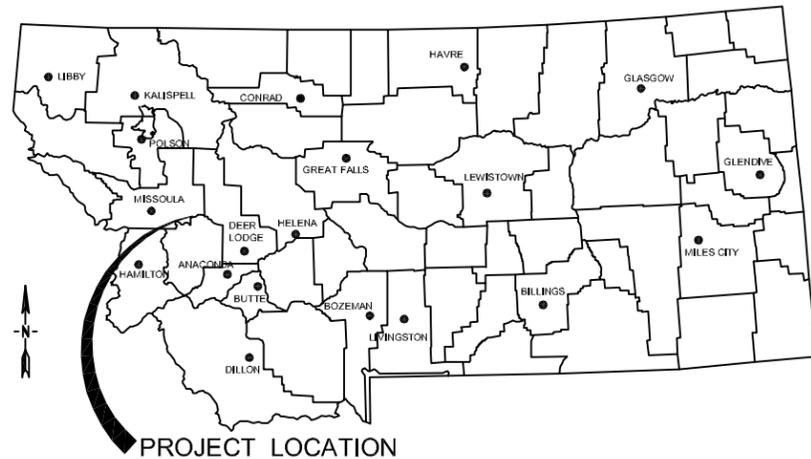


PRELIMINARY DRAWINGS FOR HARVEY CREEK FISH PASSAGE MISSOULA COUNTY, MONTANA

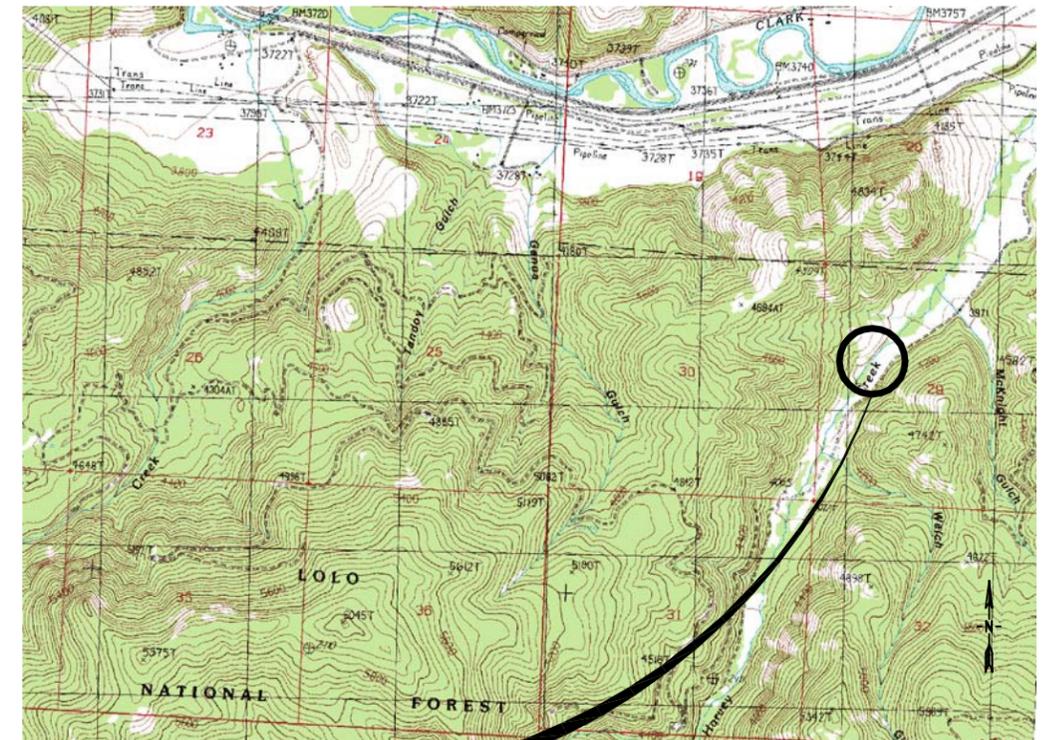
NOVEMBER, 2013



LOCATION MAP
NO SCALE

PREPARED BY:
MORRISON MAIERLE, INC.
An Employee-Owned Company
3011 Palmer Street, Missoula, MT 59801
Phone: (406) 542-8880 Fax: (406) 542-4801
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*Engineers
Surveyors
Scientists
Planners*



PROJECT LOCATION **VICINITY MAP**
NO SCALE

APPROVED BY: _____
RUSSEL J. ANDERSON
Project Manager

APPROVED BY: _____
CLIENTS NAME
CLIENTS POSITION

APPROVED BY: _____
AGENCY NAME
AGENCY POSITION

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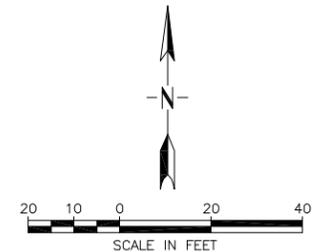
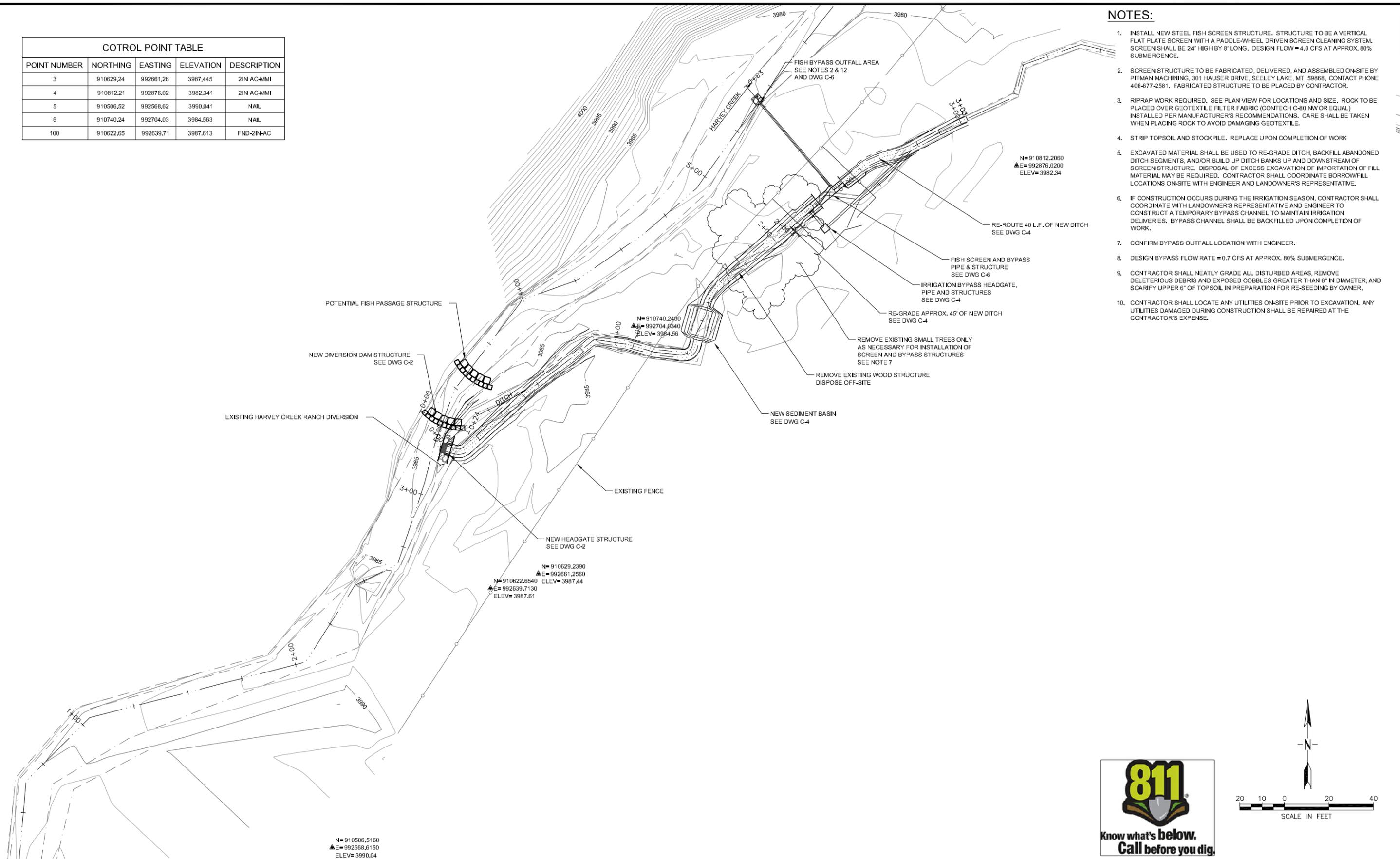
MORRISON MAIERLE, INC. QUALITY ASSURANCE
Project Manager
Office Manager or Q.A. Coordinator
Peer Reviewer
Q.A. Approval Date
Q.A. Project No.

SET NO. _____
MMI PROJECT NO. 4772.006

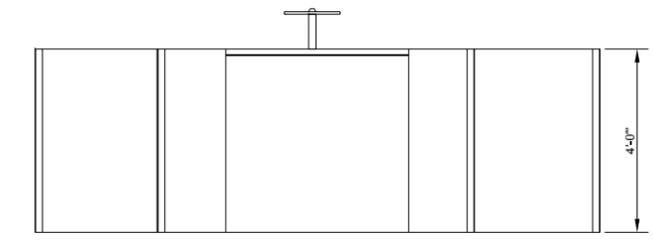
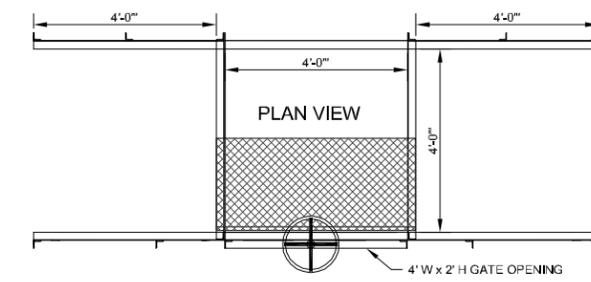
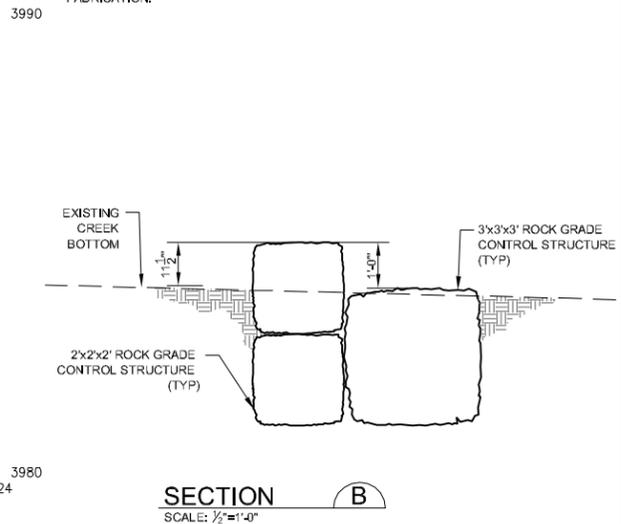
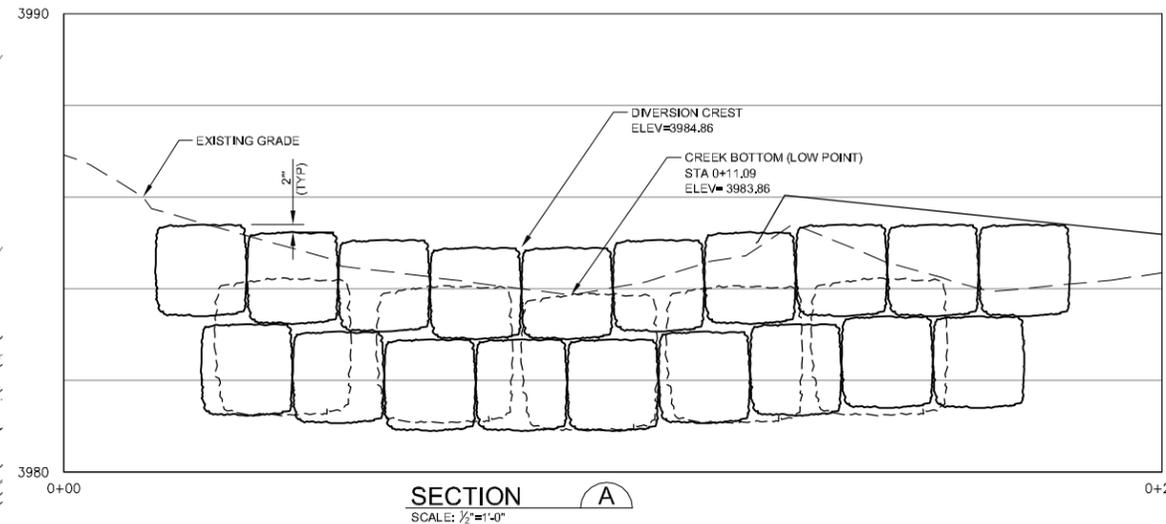
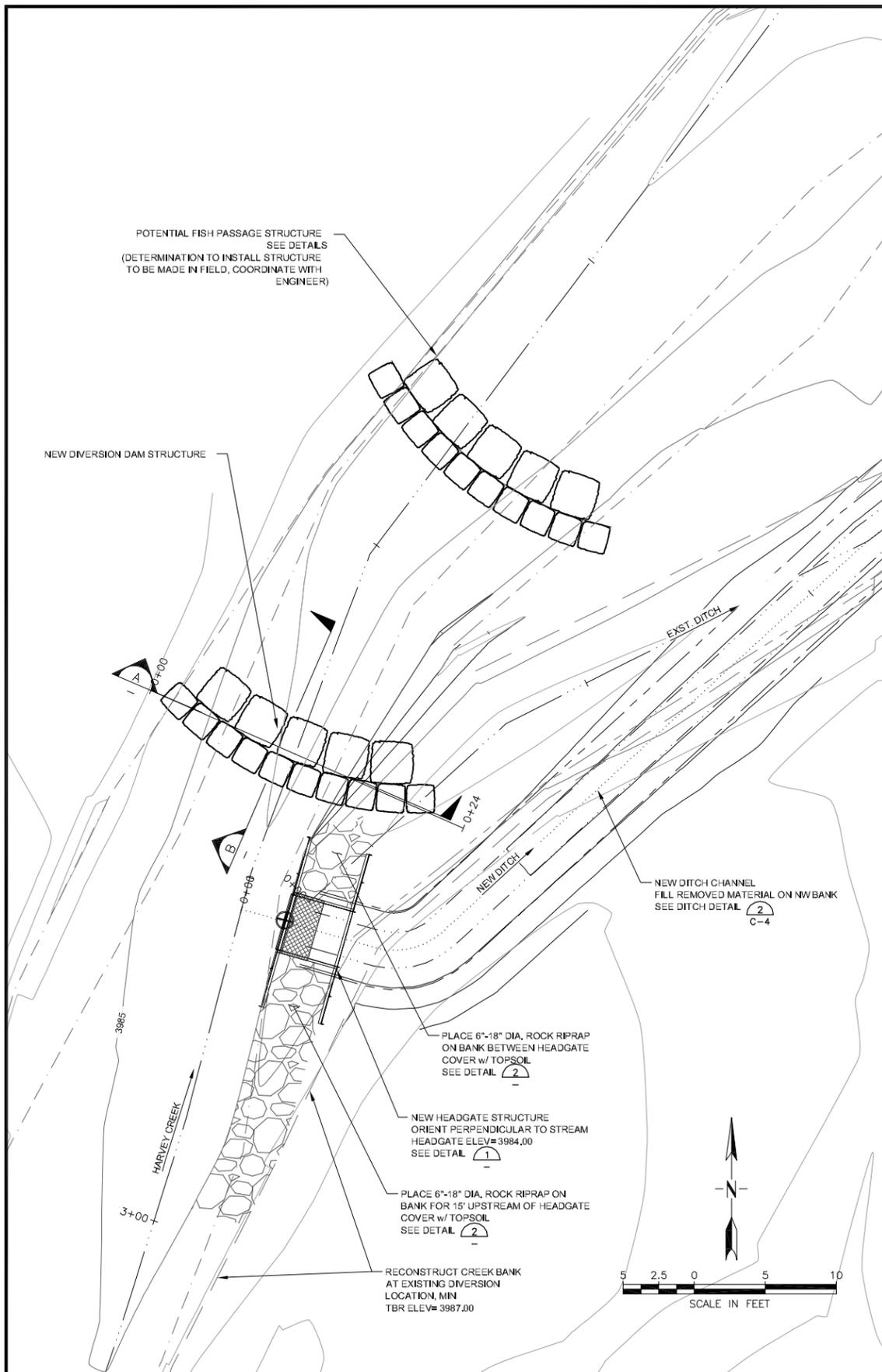
CONTROL POINT TABLE				
POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
3	910629.24	992661.26	3987.445	2IN AC-MMI
4	910812.21	992876.02	3982.341	2IN AC-MMI
5	910506.52	992568.62	3990.041	NAIL
6	910740.24	992704.03	3984.563	NAIL
100	910622.65	992639.71	3987.613	FND-2IN-AC

NOTES:

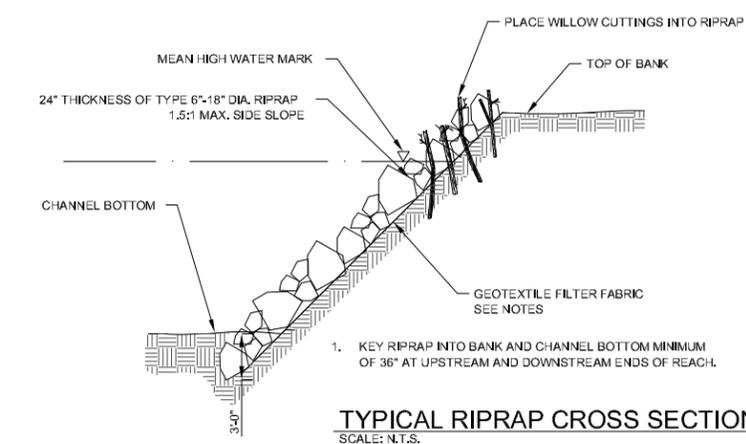
- INSTALL NEW STEEL FISH SCREEN STRUCTURE. STRUCTURE TO BE A VERTICAL FLAT PLATE SCREEN WITH A PADDLE-WHEEL DRIVEN SCREEN CLEANING SYSTEM. SCREEN SHALL BE 24" HIGH BY 8' LONG. DESIGN FLOW = 4.0 CFS AT APPROX. 80% SUBMERGENCE.
- SCREEN STRUCTURE TO BE FABRICATED, DELIVERED, AND ASSEMBLED ON-SITE BY PITMAN MACHINING, 301 HAUSER DRIVE, SEELEY LAKE, MT 59868. CONTACT PHONE 406-677-2581. FABRICATED STRUCTURE TO BE PLACED BY CONTRACTOR.
- RIPRAP WORK REQUIRED. SEE PLAN VIEW FOR LOCATIONS AND SIZE. ROCK TO BE PLACED OVER GEOTEXTILE FILTER FABRIC (CONTECH C-80 NW OR EQUAL) INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN WHEN PLACING ROCK TO AVOID DAMAGING GEOTEXTILE.
- STRIP TOPSOIL AND STOCKPILE. REPLACE UPON COMPLETION OF WORK
- EXCAVATED MATERIAL SHALL BE USED TO RE-GRADE DITCH, BACKFILL ABANDONED DITCH SEGMENTS, AND/OR BUILD UP DITCH BANKS UP AND DOWNSTREAM OF SCREEN STRUCTURE. DISPOSAL OF EXCESS EXCAVATION OF IMPORTATION OF FILL MATERIAL MAY BE REQUIRED. CONTRACTOR SHALL COORDINATE BORROW/FILL LOCATIONS ON-SITE WITH ENGINEER AND LANDOWNER'S REPRESENTATIVE.
- IF CONSTRUCTION OCCURS DURING THE IRRIGATION SEASON, CONTRACTOR SHALL COORDINATE WITH LANDOWNER'S REPRESENTATIVE AND ENGINEER TO CONSTRUCT A TEMPORARY BYPASS CHANNEL TO MAINTAIN IRRIGATION DELIVERIES. BYPASS CHANNEL SHALL BE BACKFILLED UPON COMPLETION OF WORK.
- CONFIRM BYPASS OUTFALL LOCATION WITH ENGINEER.
- DESIGN BYPASS FLOW RATE = 0.7 CFS AT APPROX. 80% SUBMERGENCE.
- CONTRACTOR SHALL NEATLY GRADE ALL DISTURBED AREAS, REMOVE DELETERIOUS DEBRIS AND EXPOSED COBBLES GREATER THAN 6" IN DIAMETER, AND SCARIFY UPPER 6" OF TOPSOIL IN PREPARATION FOR RE-SEEDING BY OWNER.
- CONTRACTOR SHALL LOCATE ANY UTILITIES ON-SITE PRIOR TO EXCAVATION. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.



VERIFY SCALE! THESE PRINTS MAY BE REDUCED. 1"=10' BELOW MEASURES ONE INCH ON ORIGINAL DRAWING. MODIFY SCALE ACCORDINGLY! <small>R:\4772\006\ACAD\Sheets\C-1.dwg Plotted by david hallsten on Nov/21/2013</small>	REVISIONS						1 Engineering Place Helena, MT 59602 Phone: (406) 442-3050 Fax: (406) 442-7862 <small>COPYRIGHT MORRISONMAIERLE, INC. 2013</small>	DRAWN BY: <u>DAH</u> DSGN. BY: <u>KKM</u> APPR. BY: <u>RJA</u> DATE: <u>11/20/13</u>	DRUMMOND HARVEY CREEK FISH SCREEN MONTANA	PROJECT NUMBER 4772.006
	NO. DESCRIPTION DATE BY	Q.C. REVIEW BY: <u>-</u> DATE: <u>-</u>	SHEET NUMBER 3							
OVERALL SITE PLAN								FIGURE NUMBER C-1		



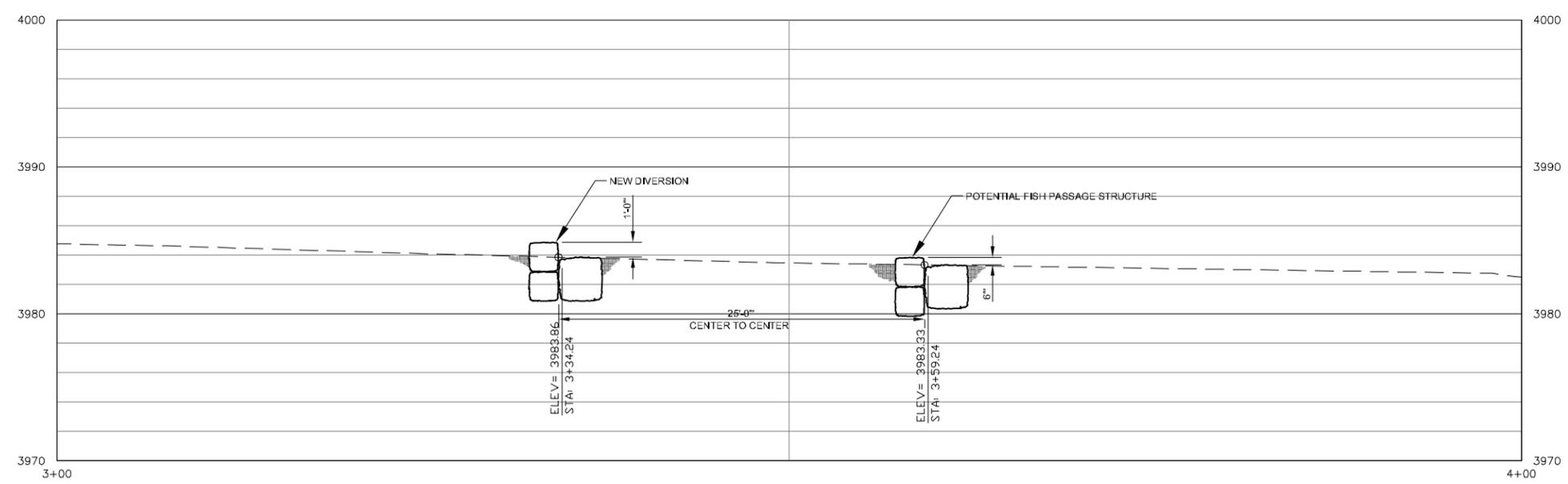
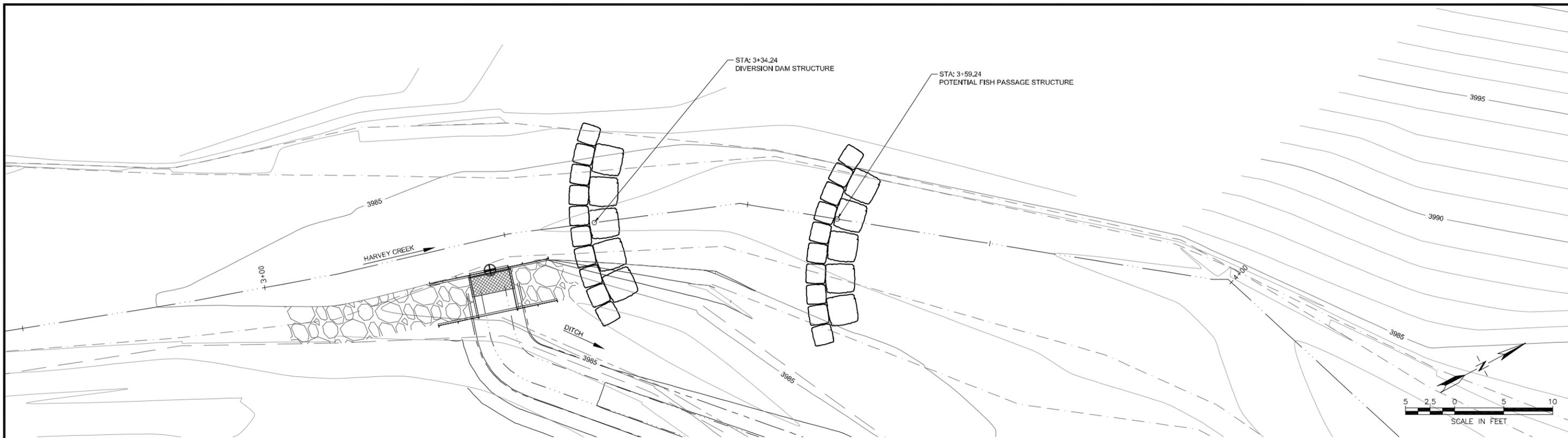
HEADGATE STRUCTURE DETAIL 1
SCALE: 1/2\"/>



TYPICAL RIPRAP CROSS SECTION DETAIL 2
SCALE: N.T.S.

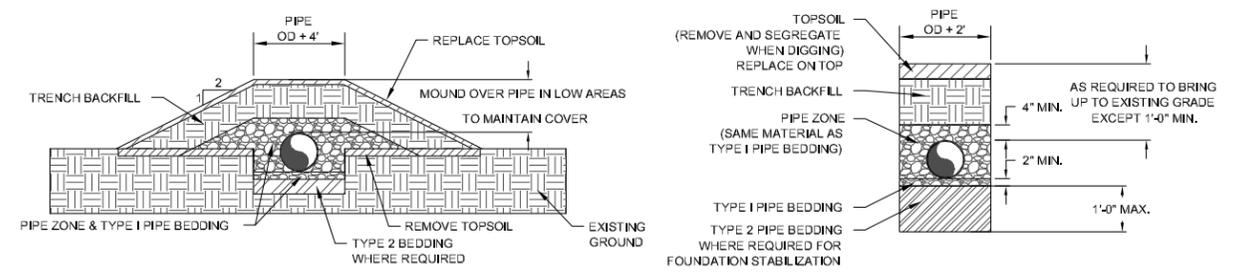
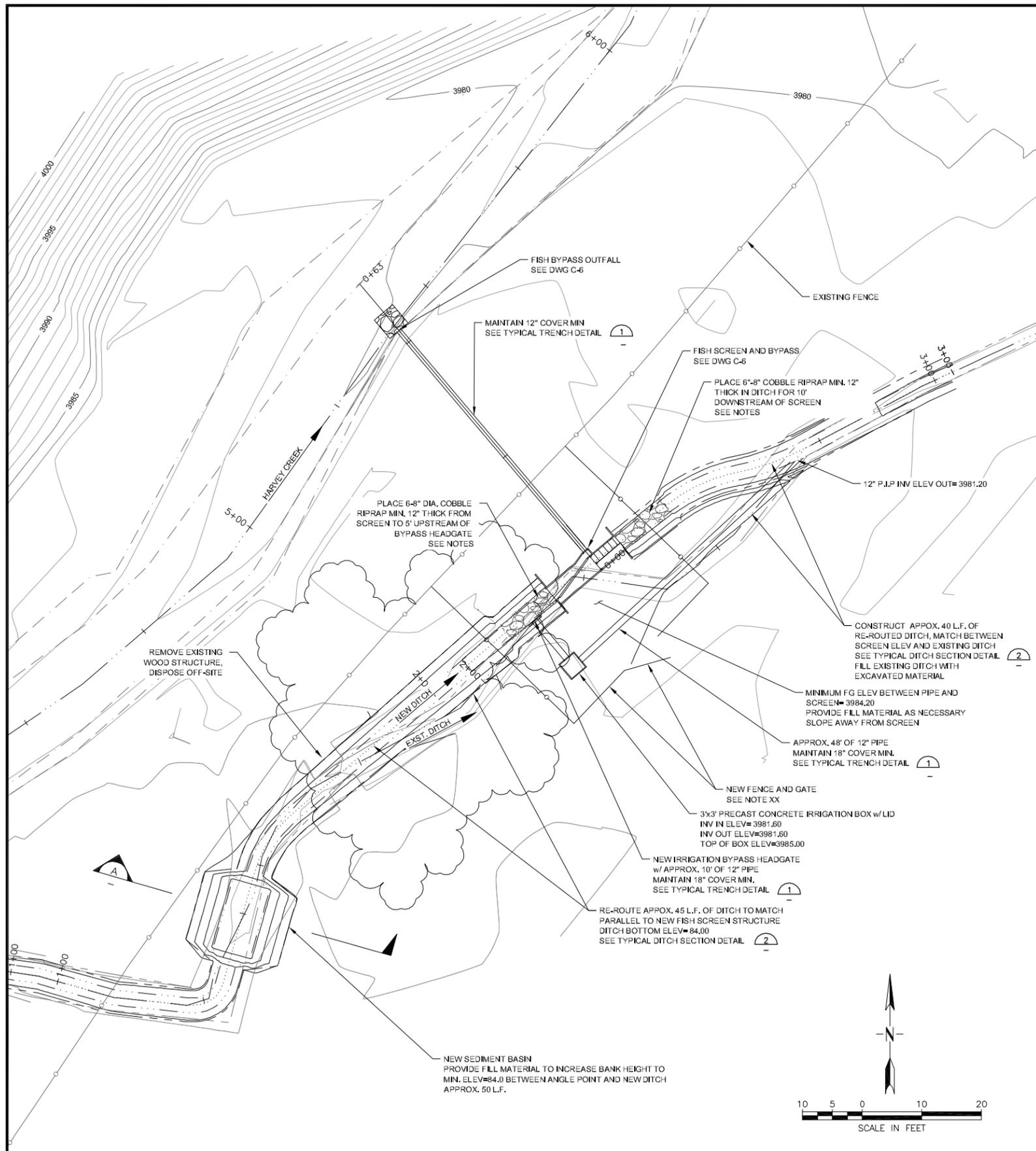
- NOTES:**
1. HEADGATE STRUCTURE TO BE FABRICATED FROM MILD STEEL OFF-SITE AND INSTALLED BY CONTRACTOR.
 2. HEADGATE COMPONENTS TO BE OF SUFFICIENT RIGIDITY TO ALLOW FOR BACKFILL TO BE PLACED WITHOUT DEFORMATION OF STRUCTURE.
 3. GATE SHALL BE CONSTRUCTED WITH NEOPRENE SEALS AND/OR SEATING WEDGES FOR SEALING WHEN CLOSED.
 4. GATE LIFT MECHANISM SHALL BE VIA THREADED RISING STEM WITH HANDWHEEL.
 5. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.

<p>VERIFY SCALE! THESE PRINTS MAY BE REDUCED. 1/8\"/> </p>	<p>REVISIONS</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:5%;">NO.</th> <th style="width:15%;">DESCRIPTION</th> <th style="width:10%;">DATE</th> <th style="width:10%;">BY</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	NO.	DESCRIPTION	DATE	BY														<p>MORRISON MAIERLE, INC. <i>An Employee-Owned Company</i></p> <p>Engineers Surveyors Scientists Planners</p> <p>1 Engineering Place Helena, MT 59602 Phone: (406) 442-3050 Fax: (406) 442-7862</p>	<p>DRAWN BY: DAH DSGN. BY: KKM APPR. BY: RJA DATE: 11/2013 G.C. REVIEW BY: - DATE: -</p>	<p>DRUMMOND</p> <p>HARVEY CREEK FISH SCREEN</p> <p>MONTANA</p> <p>CREEK DIVERSION AND DAM DETAILS</p>	<p>PROJECT NUMBER 4772.006</p> <p>SHEET NUMBER 4</p> <p>FIGURE NUMBER C-2</p>
NO.	DESCRIPTION	DATE	BY																			
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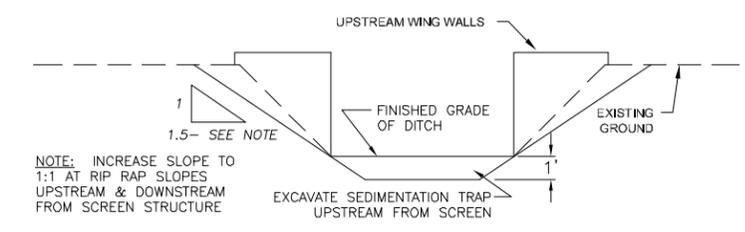
HARVEY CREEK FLOW LINE FROM STA. 3+00 TO STA. 4+00

<p>VERIFY SCALE! THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING.</p> <p>MODIFY SCALE ACCORDINGLY:</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">REVISIONS</th> </tr> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS				NO.	DESCRIPTION	DATE	BY														<p>MORRISON MAIERLE, INC. An Employee-Owned Company</p> <p>Engineers Surveyors Scientists Planners</p> <p>1 Engineering Place Helena, MT 59602 Phone: (406) 442-3050 Fax: (406) 442-7862</p> <p><small>COPYRIGHT MORRISONMAIERLE, INC. 2013</small></p>	<p>DRAWN BY: <u>DAH</u> DSGN. BY: <u>KKM</u> APPR. BY: <u>RJA</u> DATE: <u>11/2013</u></p> <p>Q.C. REVIEW BY: <u> </u> DATE: <u> </u></p>	<p>HARVEY CREEK FISH SCREEN</p> <p>DRUMMOND MONTANA</p> <p>HARDY CREEK DIVERSION DAM PLAN AND PROFILE FROM STA. 3+00 TO STA. 4+00</p>	<p>PROJECT NUMBER 4772.006</p> <p>SHEET NUMBER 5</p> <p>FIGURE NUMBER C-3</p>
REVISIONS																										
NO.	DESCRIPTION	DATE	BY																							
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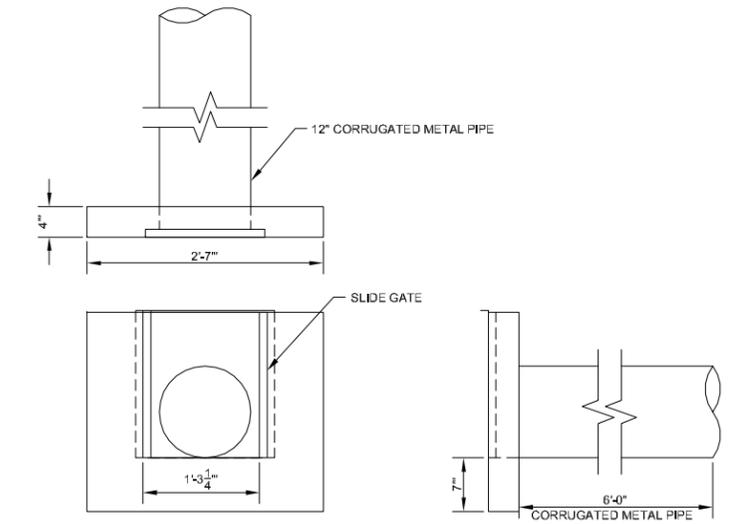


- NOTES:
- WHERE PIPE GRADE WILL LEAVE LESS THAN REQUIRED MIN. COVER OVER PIPE, MOUND TRENCH BACKFILL AND TOPSOIL OVER PIPE AND COMPACT AS SPECIFIED.
 - PIPE ZONE AND PIPE BEDDING MATERIAL SHALL BE IMPORTED UNLESS NATIVE MATERIAL IS APPROVED ON SITE BY ENGINEER.
 - ALL BACKFILL, IMPORTED OR NATIVE, SHALL BE COMPACTED AS SPECIFIED.

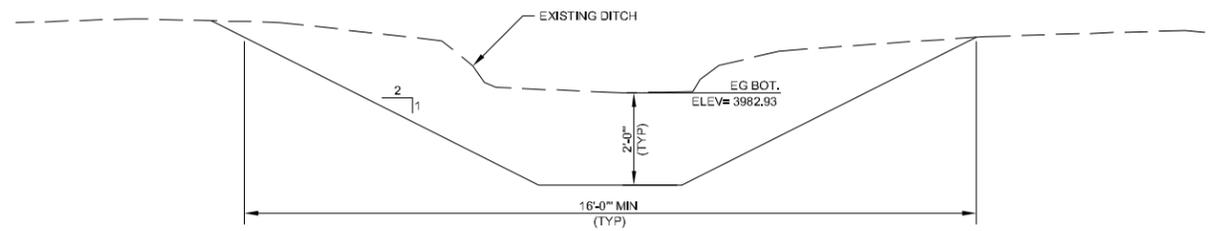
TYPICAL TRENCH DETAIL 1
SCALE: 1/2"=1'-0"



TYPICAL DITCH SECTION 2
SCALE: 1/2"=1'-0"



IRRIGATION BYPASS HEADGATE DETAIL 3
SCALE: 1"=1'-0"

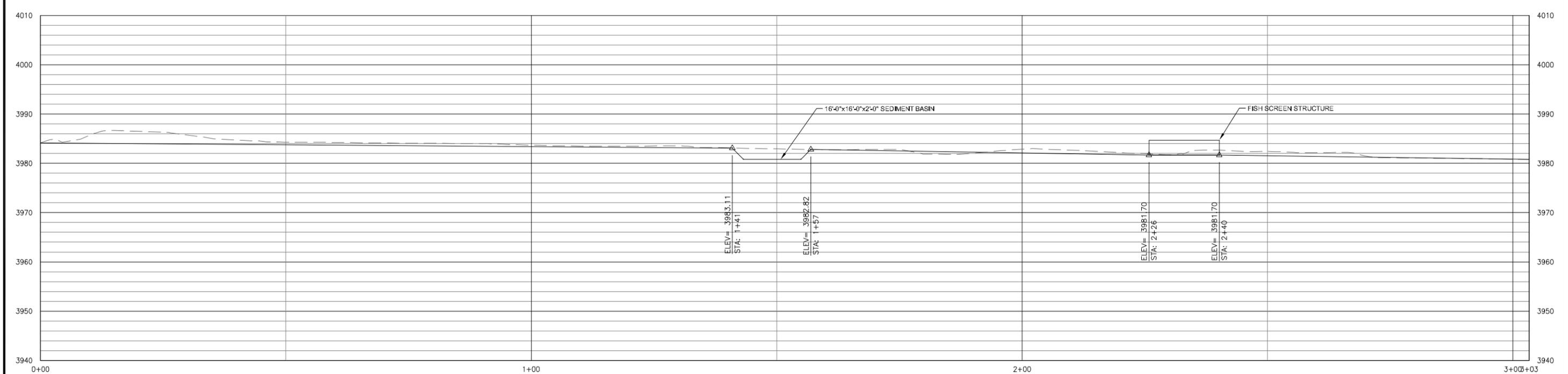
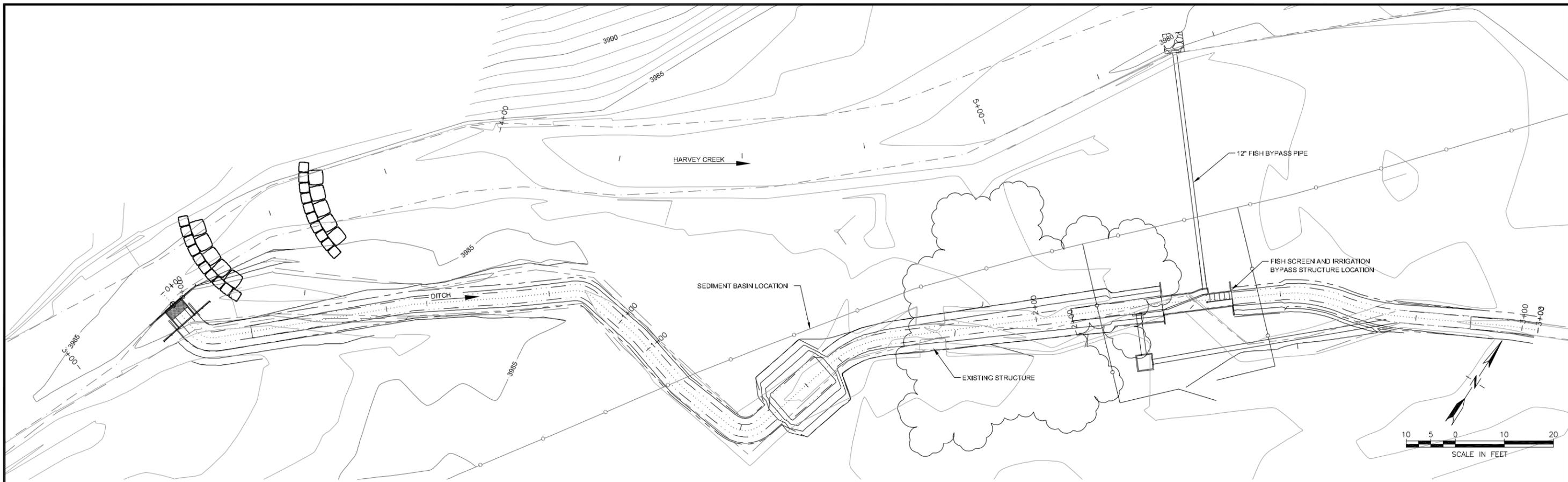


SEDIMENT BASIN SECTION A
SCALE: 1/2"=1'-0"

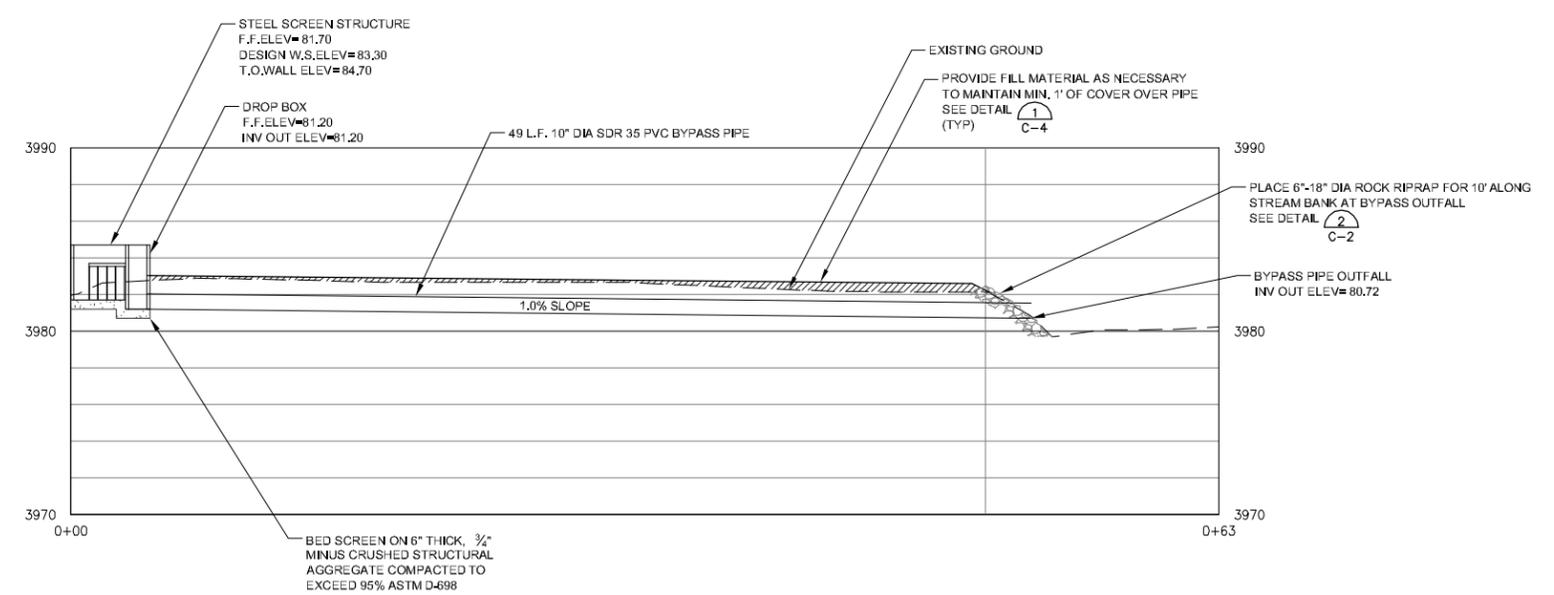
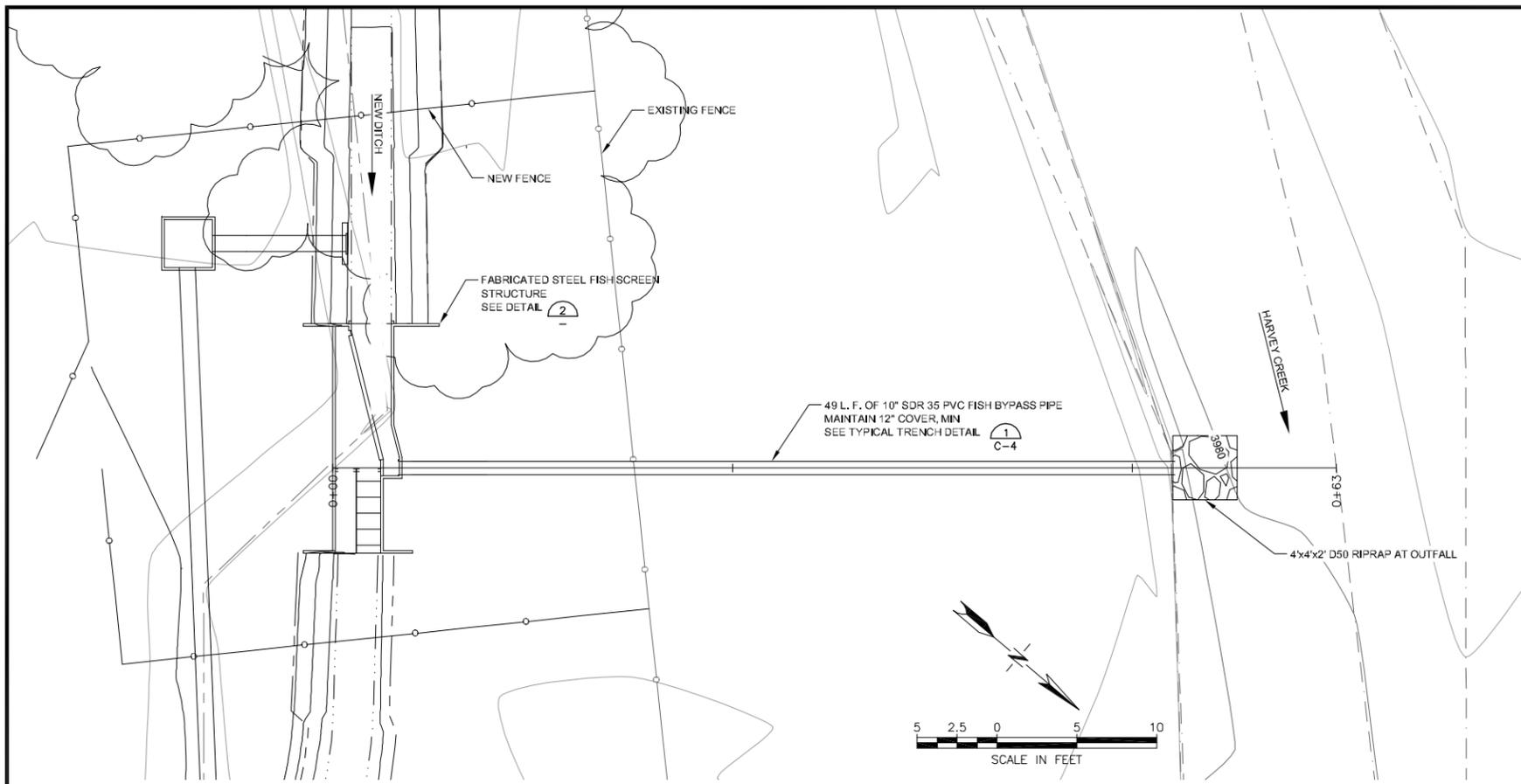
VERIFY SCALE! THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING. MODIFY SCALE ACCORDINGLY!	REVISIONS						1 Engineering Place Helena, MT 59602 Phone: (406) 442-3050 Fax: (406) 442-7862	DRAWN BY: DAH DSGN. BY: KKM APPR. BY: RJA DATE: 11/2013 Q.C. REVIEW BY: - DATE: -	PROJECT NUMBER 4772.006 SHEET NUMBER 6 FIGURE NUMBER C-4
	NO.	DESCRIPTION	DATE	BY					

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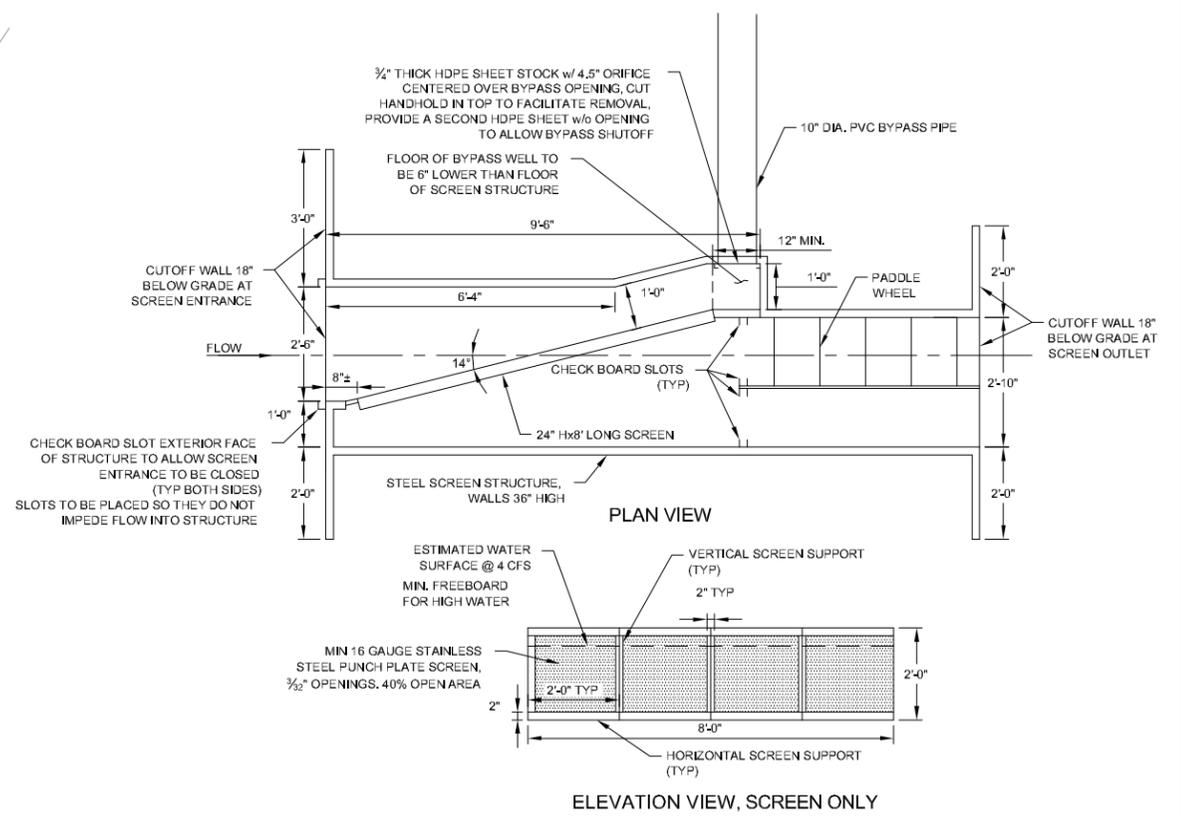
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REVISIONS																						
NO.	DESCRIPTION	DATE	BY																			



FISH DIVERSION STA. 0+00 TO STA. 0+54



FISH SCREEN AND STRUCTURE DETAIL (2)
SCALE: 1/2"=1'-0"

REVISIONS				
NO.	DESCRIPTION	DATE	BY	

VERIFY SCALE!
THESE PRINTS MAY BE REDUCED. 1"=1'-0" MEASURES ONE INCH ON ORIGINAL DRAWING.
MODIFY SCALE ACCORDINGLY!

R:\4772\006\ACAD\Sheets\C-6.dwg Plotted by david hallsten on Nov/21/2013



MORRISON MAIERLE, INC.
An Employee-Owned Company

Engineers
Surveyors
Scientists
Planners

1 Engineering Place
Helena, MT 59602
Phone: (406) 442-3050
Fax: (406) 442-7862

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DSGN. BY: KKM
APPR. BY: RJA
DATE: 11/20/13
Q.C. REVIEW BY: -
DATE: -

DRUMMOND HARVEY CREEK FISH SCREEN MONTANA

FISH PASSAGE PLAN AND PROFILE FROM STA. 0+00 TO STA. 0+54

PROJECT NUMBER 4772.006
SHEET NUMBER 8
FIGURE NUMBER C-6