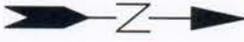
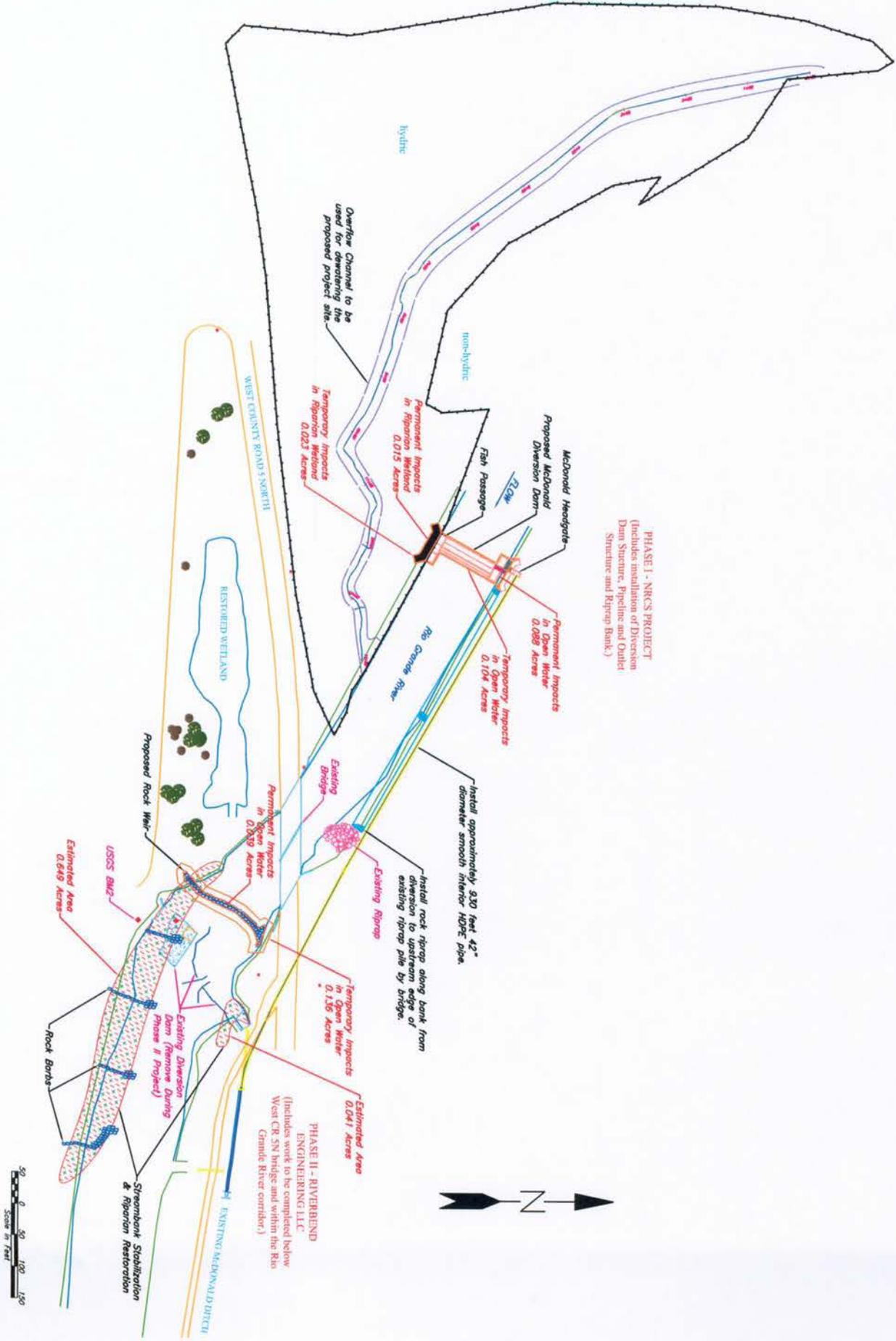




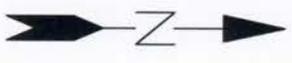
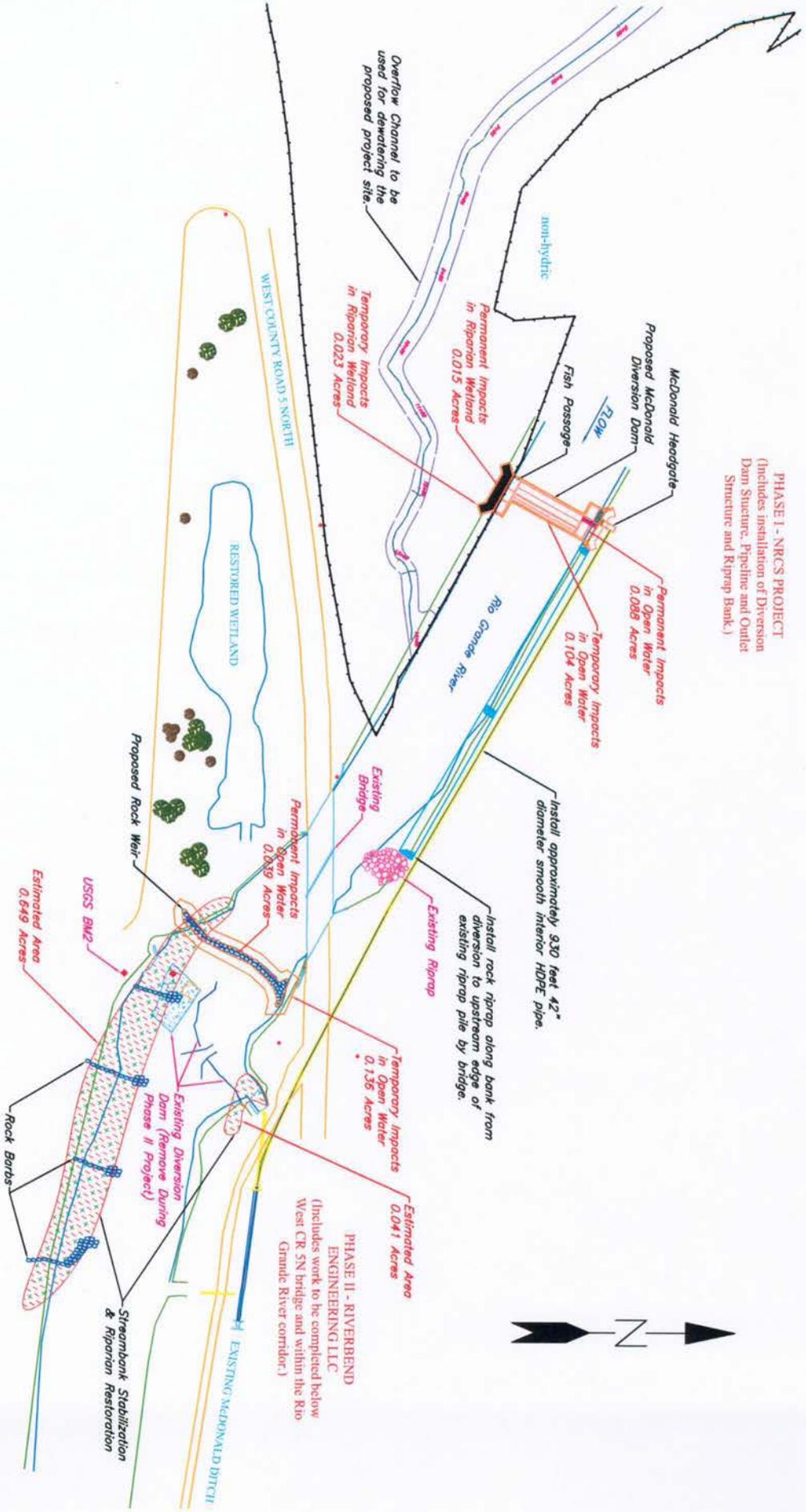
**PHASE I - NRCS PROJECT**  
 (Includes installation of Diversion Dam Structure, Pipeline and Outlet Structure and Riprap Bank.)



**PHASE II - RIVERBEND ENGINEERING LLC**  
 (Includes work to be completed below West CR 5th bridge and within the Rio Grande River corridor.)

**Streambank Stabilization & Riprap Restoration**

**PHASE I - NRCS PROJECT**  
 (Includes installation of Diversion Dam Structure, Pipeline and Outlet Structure and Riprap Bank.)



# MCDONALD DITCH COMPANY PLANS FOR THE CONSTRUCTION OF STRUCTURE FOR WATER CONTROL RIO GRANDE COUNTY, COLORADO

Practice Code 348 - Diversion Dam  
Engineering Job Class VII

## UTILITIES STATEMENT

"I realize that as a landowner, I and/or the contractor I hire, may be liable for any damage to utilities during construction. NRCS makes no representation that utilities shown on the plans are exactly located or that all utilities present are shown."

"I will provide NRCS with the Utility Notification Center of Colorado (UNCC) ticket number my contractor has acquired prior to start of construction."

LAND OWNER OR AGENT	DATE
UNCC TICKET NUMBER	
"CALL UTILITY NOTIFICATION CENTER OF COLORADO @ 1-800-922-1987. CALL TOWN (2) BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES."	

### INDEX OF DRAWINGS

SHEET NO.	TITLE
1.	COVER SHEET
2.	OVERALL PROJECT PLAN VIEW
3.	STRUCTURE PLAN VIEW
4.	DIMENSIONS AND CONTROL JOINT DETAILS
5.	STRUCTURE PLAN VIEW AND SECTION VIEWS
6.	SECTION VIEWS AND DETAILS
7.	SECTION VIEWS AND DETAILS
8.	SECTION VIEWS AND DETAILS
9.	SECTION VIEWS AND DETAILS
10.	SECTION VIEWS AND DETAILS
11.	SCREEN REINFORCEMENT DETAILS
12.	SCREEN STRUCTURE & MISC. DETAILS
13.	HANDRAIL AND ROCK RIPRAP DETAILS
14.	PIPELINE PLAN AND PROFILE VIEWS
15.	PIPELINE INLET DETAILS AND CS DETAILS
16.	PIPELINE CROSS SECTION DETAILS
17.	PIPELINE CROSS SECTION DETAILS
18.	PIPELINE OUTLET STRUCTURE DETAILS



**PROJECT LOCATION**  
Sections 5 & 6, T39N, R7E

SECTION OR DETAIL  
SHEET WHERE SECTION OR  
DETAIL IS SHOWN  
SECTION OR DETAIL  
SHEET WHERE SECTION OR  
DETAIL WAS TAKEN

- ### CONSTRUCTION NOTES
- Installation shall meet the requirements of NRCS plans and specifications. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both.
  - Reinforced bar spacing is center to center of bars. Bar cover is clear distance between surface of bar and face of concrete and shall be 2" for formed or top surfaces and 3" for surfaces placed against earth, unless otherwise shown.
  - Stationing refers to centerline of construction and is the measured horizontal distance.
  - The contractor shall provide all traffic control and such plans shall meet Rio Grande County Specifications.
  - Ingress and egress routes shall be designated by the McDonald Ditch Company or as shown on the drawings.
  - The contractor shall perform all excavations in conformance with OSHA Part 1926, Subpart P.
  - The contractor shall complete the work as shown on the construction drawings and according to the accompanying specifications. Deviations to the plans will not be allowed unless written permission is granted from the owner, the Sponsor, and NRCS.
  - If archeological resources are encountered during construction, the contractor shall notify NRCS immediately.
  - Any fill material placed in open water, below the high water line, or within the floodplain shall be removed and restored back to pre-construction conditions.
  - Unless otherwise shown on the drawings, where it is necessary to splice longitudinal reinforcing bars, provide lap splices as necessary. All such splices shall be staggered between layers of rebar and side to side. All lap splices shall be approved by the engineer and shall be lapped a minimum of 25" for #4 bars, 31" for #5 bars and 37" for #6 bars.

### OWNERS STATEMENT

"THIS PLAN HAS BEEN REVIEWED WITH ME AND I AM IN AGREEMENT WITH THE CALCULATIONS AND DESIGN."

OWNER OR AGENT	DATE
COMPANY OR AGENCY	

### TABLE OF ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Excavation for Structural Works	Cu Yds	1634
Earthfill for Structural Works	Cu Yds	817
Screen/Overflow Struc. Concrete	Cu Yds	72
Radial Gate Structure Concrete	Cu Yds	52
Diversion Dam Structure Concrete	Cu Yds	235
Fish Passage Structure Concrete	Cu Yds	123
Head Gate Structure Concrete	Cu Yds	32
Pipe Outlet Structure Concrete	Cu Yds	4
42" Smooth Interior HDPE Pipe	Ln Ft	930
Loose Rock Rip Rap	Cu Yds	1276
4" High x 10" Wide Radial Gate	Ea	1
3" High x 5" Wide Slide Gate	Ea	1
9" High x 3" Wide Auto. Gate	Ea	1
1" High x 2" Wide Slide Gate	Ea	1
16" Long x 6" Wide Punch Plate	Ea	1

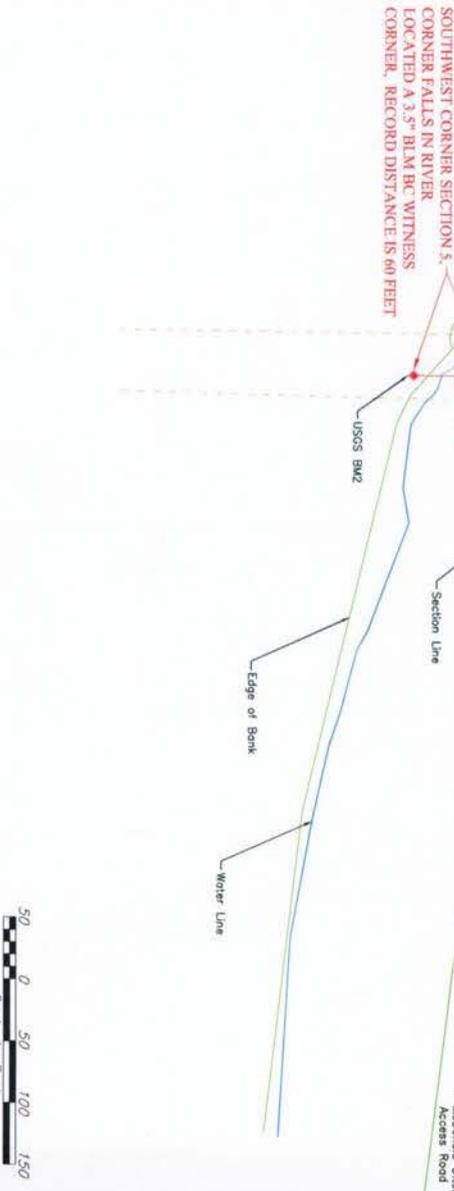
MCDONALD DITCH COMPANY  
Cover Sheet

	Designed	Date
	L. Clark	02/14
	Drawn	L. Clark
	Checked	
	Approved	

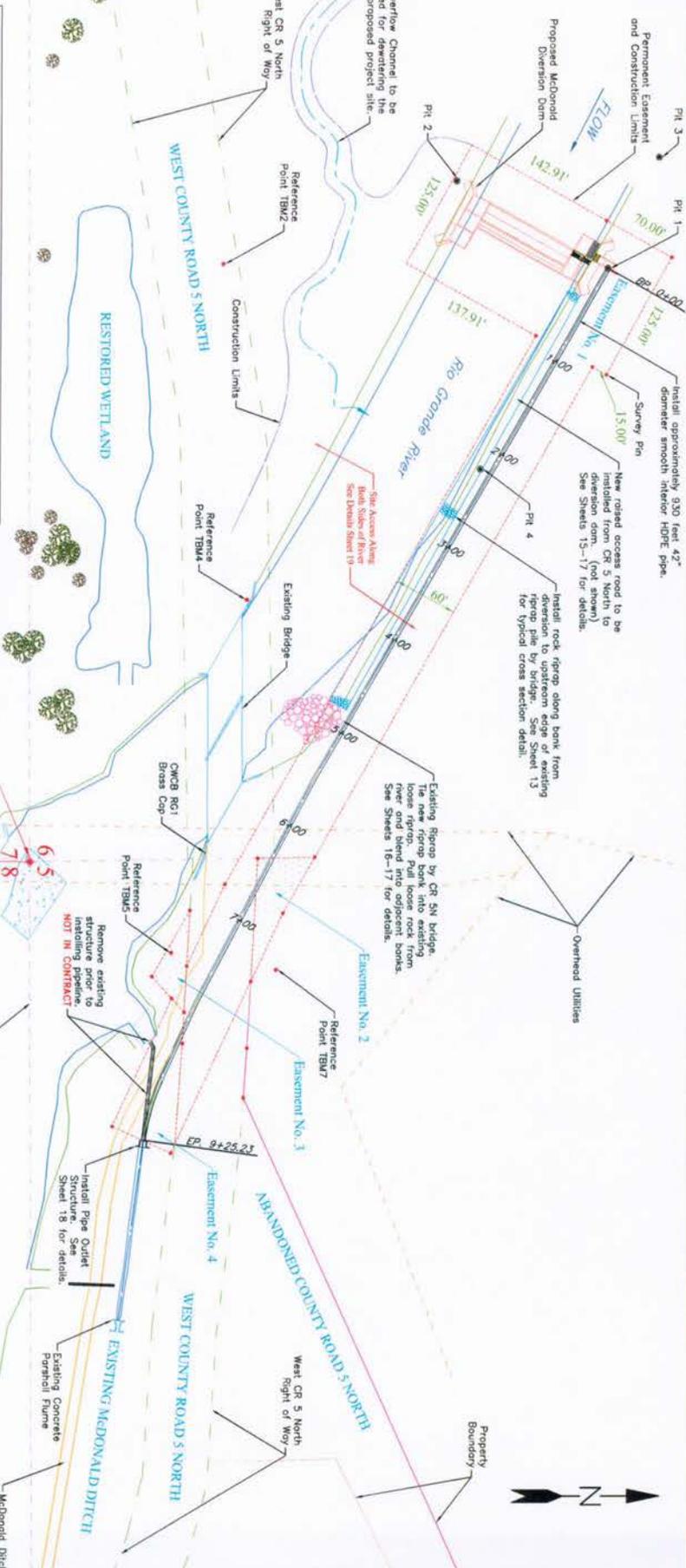


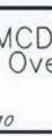
THE NS-04-14  
DRAWING NO.  
3/6/2014

NO.	ELEV.	BENCH MARK DESCRIPTION
TBM2	7765.52	Top of 1x2 wooden hub located approximately 325 feet west of bridge and north of CR 5N.
TBM4	7765.80	Top of rebar at northwest buttress of bridge and north of CR 5N.
TBM5	7763.62	Top of 1x2 wooden hub located approximately 115 feet east of bridge and south of CR 5N.
TBM7	7774.12	Top of rebar located approximately 150 east of bridge and north of CR 5N.
RC1	7766.39	Small Brass Cap on southeast buttress of bridge.
BM2	7761.675	USGS Brass Cap located at corner of CR 5W and south of the Rio Grande River.



DESIGNED	L. Clark	DATE	02/14
DRAWN	L. Clark	DATE	02/14
CHECKED		DATE	
APPROVED		DATE	





NRCS  
Natural Resources Conservation Service  
United States Department of Agriculture

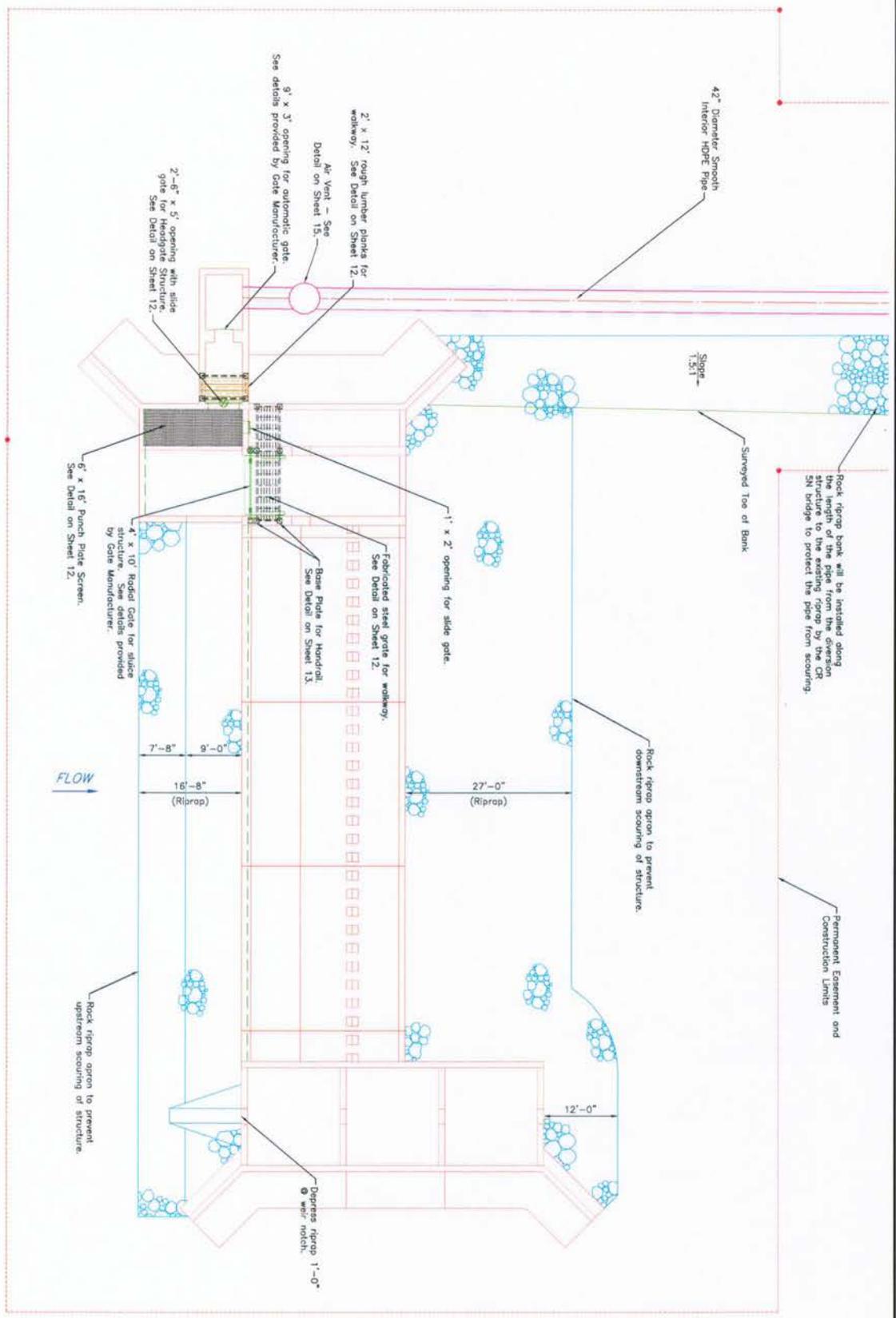
MCDONALD DITCH COMPANY  
Overall Project Plan View

EQIP, FY2010

Rio Grande County, Colorado

Scale in Feet  
0 50 100 150

Sheet 2 of 18



Rock riprap bank will be installed along the length of the pipe from the diversion structure to the existing riprap by the CR SN bridge to protect the pipe from scouring.

Permanent Equipment and Construction Limits

Slope 1.5:1

Surveyed Toe of Bank

Rock riprap apron to prevent downstream scouring of structure.

12'-0"

27'-0"  
(Riprap)

1' x 2' opening for slide gate.

Fabricated steel grate for walkway.  
See Detail on Sheet 12.

Base Plate for Handrail.  
See Detail on Sheet 13.

3' x 3' opening for automatic gate.  
See details provided by Gate Manufacturer.

Air Vent - See Detail on Sheet 15.

2'-6" x 5' opening with slide gate for Headgate Structure.  
See Detail on Sheet 12.

4' x 10' Radial Gate for slide structure. See details provided by Gate Manufacturer.

6' x 16" Punch Plate Screen.  
See Detail on Sheet 12.

FLOW

7'-8"

9'-0"

16'-8"  
(Riprap)

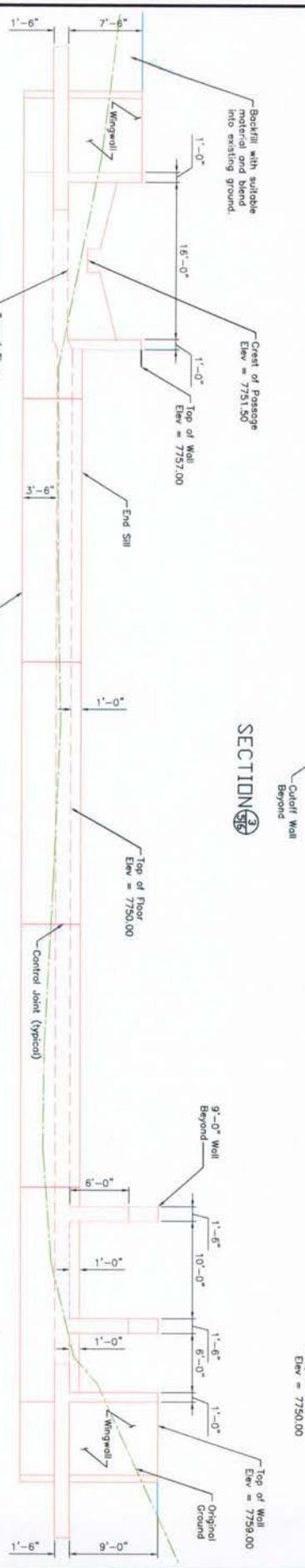
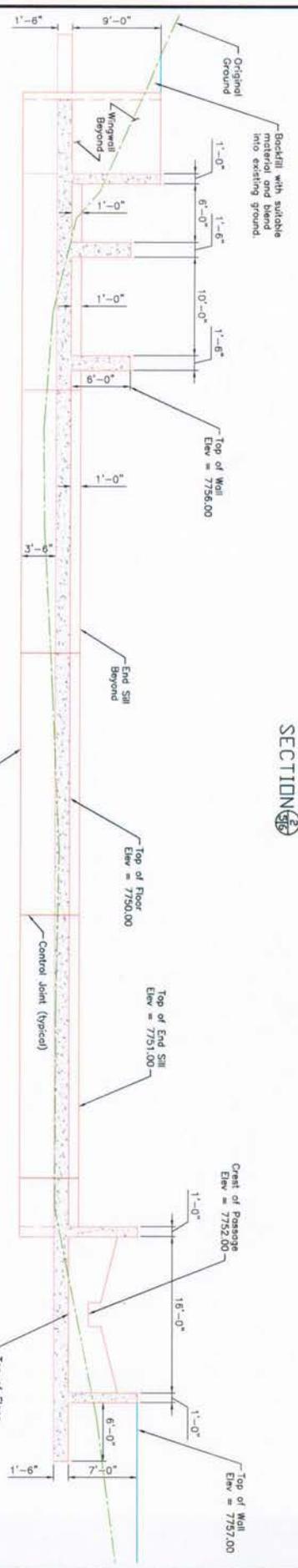
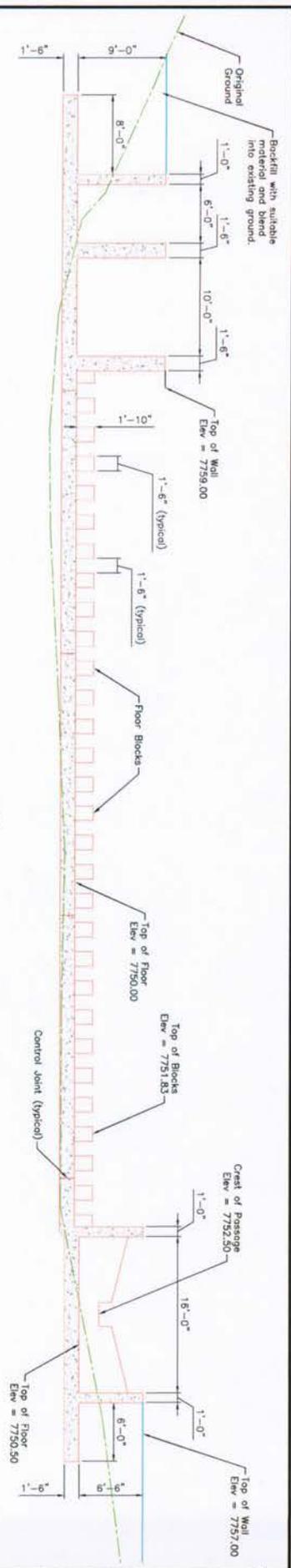
Disperse riprap 1'-0"  
w/ notch.

Rock riprap apron to prevent upstream scouring of structure.

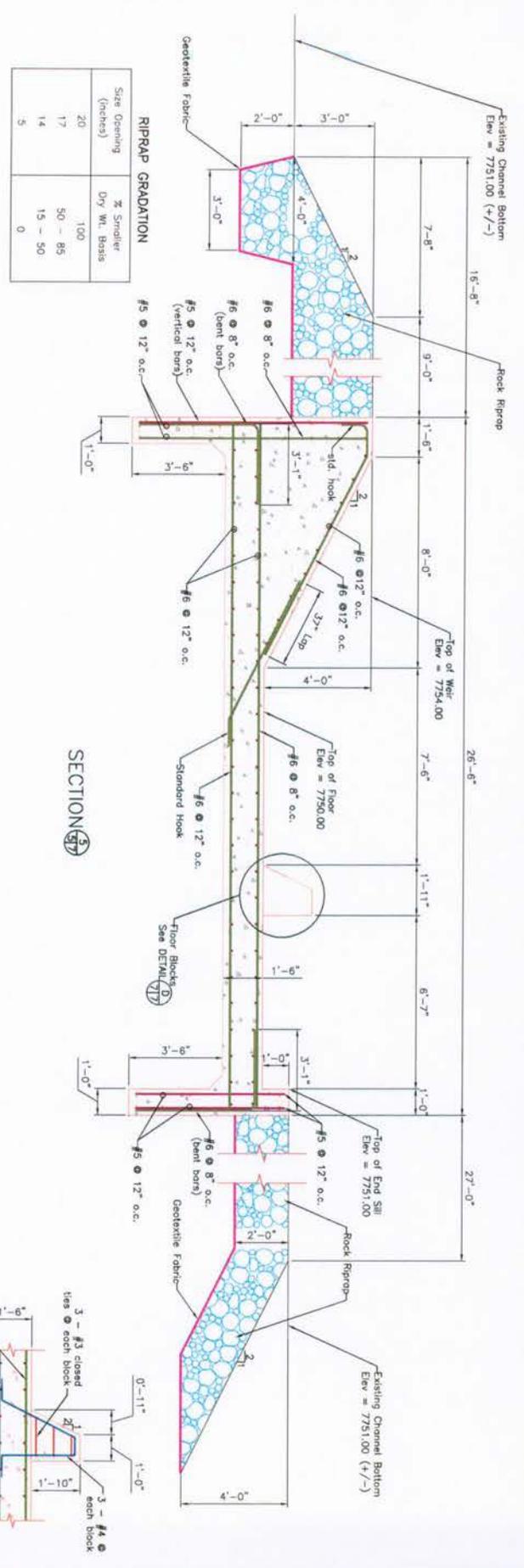


 <p>National Resources Conservation Service United States Department of Agriculture</p>	<p>MCDONALD DITCH COMPANY Structure Plan View</p>		<p>Designed <u>L. Clark</u> Date <u>02/14</u></p>
			<p>Drawn <u>L. Clark</u> Date <u>02/14</u></p>
			<p>Checked _____</p>
			<p>Approved _____</p>

EQIP, FY2010 Rio Grande County, Colorado

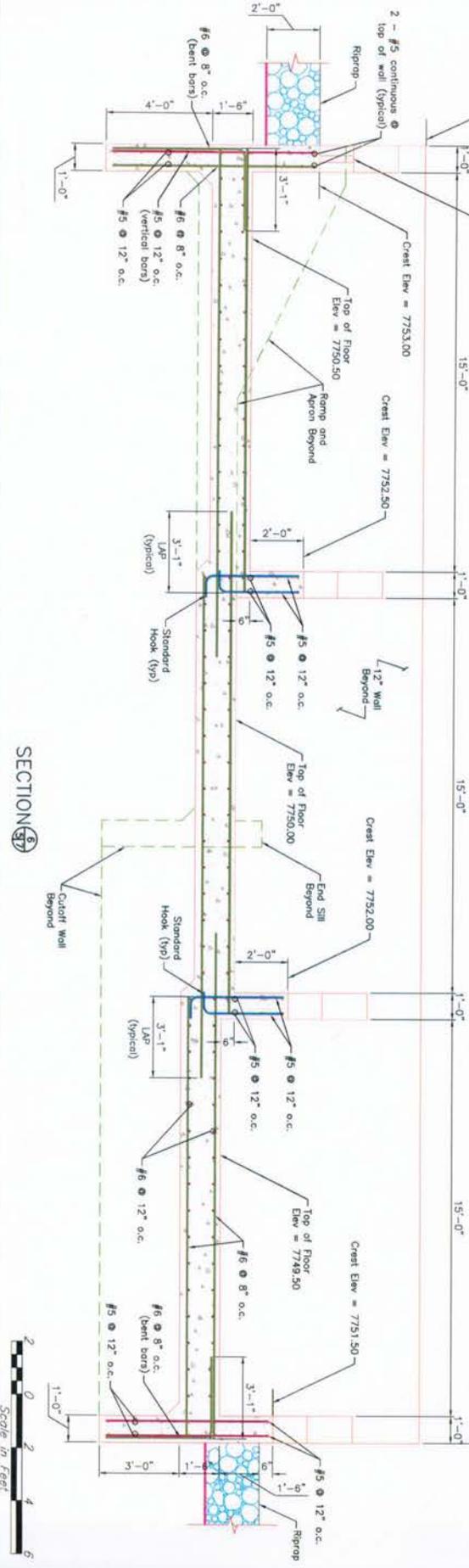


 <p>File No. <b>FP_03-04-14</b>          Drawing No. <b>3/6/2014</b>          Sheet 6 of 18</p>	<b>MCDONALD DITCH COMPANY</b> Structure Section Views		Date <b>02/14</b> Designed <b>L. Clark</b> Drawn <b>L. Clark</b> Checked _____ Approved _____	
	EQUIP, FY2010		Rio Grande County, Colorado	
	National Conservation Swamps Wetland Determination of Agriculture			



**RIPRAP GRADATION**

Size Opening (Inches)	% Smaller Dry Wt. Basis
20	100
17	50 - 85
14	15 - 50
5	0



# McDonald Ditch Grade Control Structure

## Rio Grande

Rio Grande near Del Norte, CO

PREPARED FOR:  
Rio Grande Restoration Foundation



LOCATION MAP



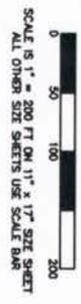
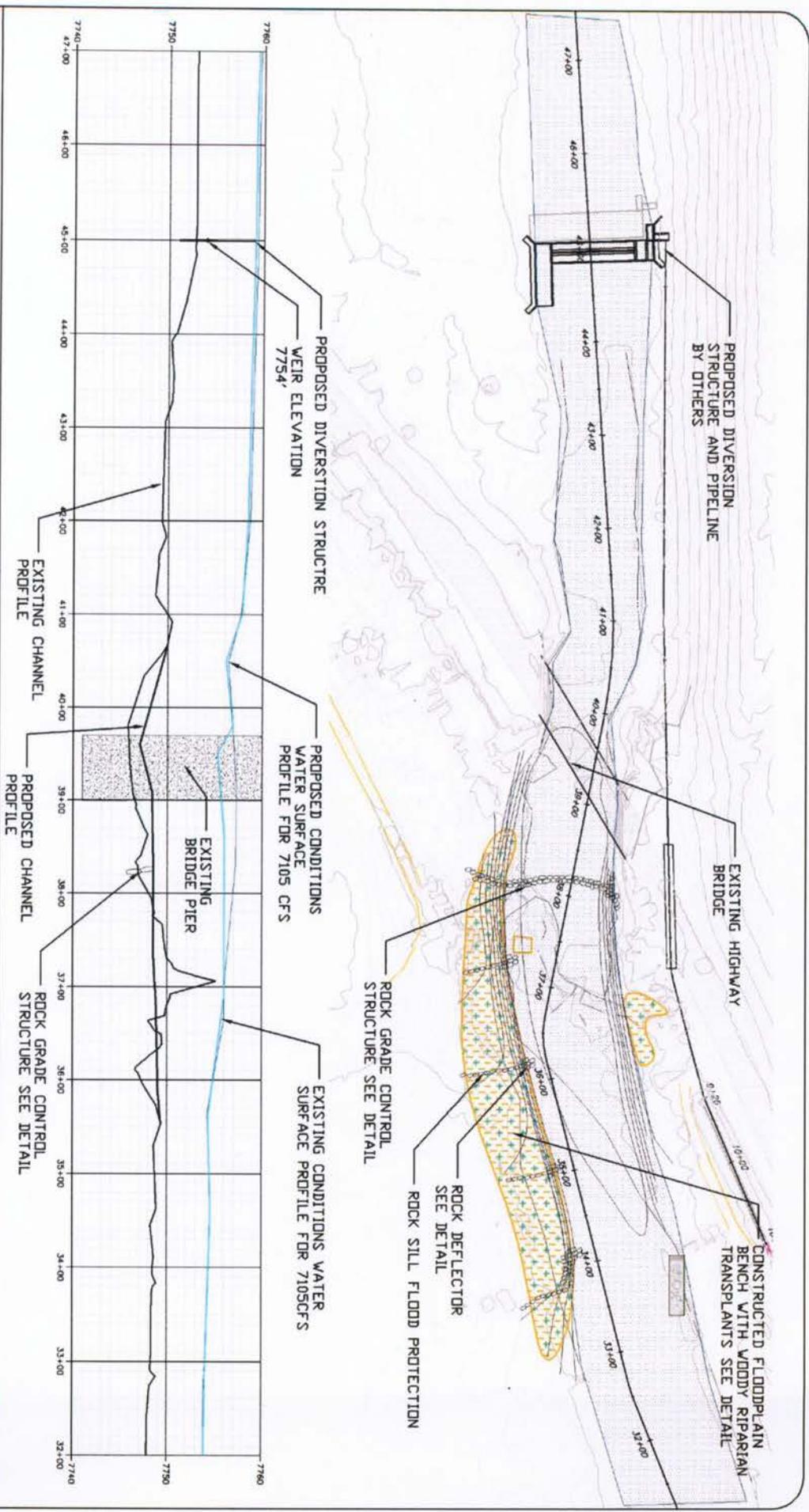
- SHEET INDEX
1. COVER SHEET, LOCATION MAP, SHEET INDEX
  2. PLAN & PROFILE
  3. CHANNEL SHAPING AND REMOVAL PLAN
  4. PROPOSED ROCK GRADE CONTROL STRUCTURE
  5. CONSTRUCTION DETAILS

RIVEREND ENGINEERING, LLC



102 Third St., P. O. Box 2879, Pogoos Springs, CO 81147  
Tel: 970.284.1195 Fax: 970.284.1196 Email: info@riverendeng.com

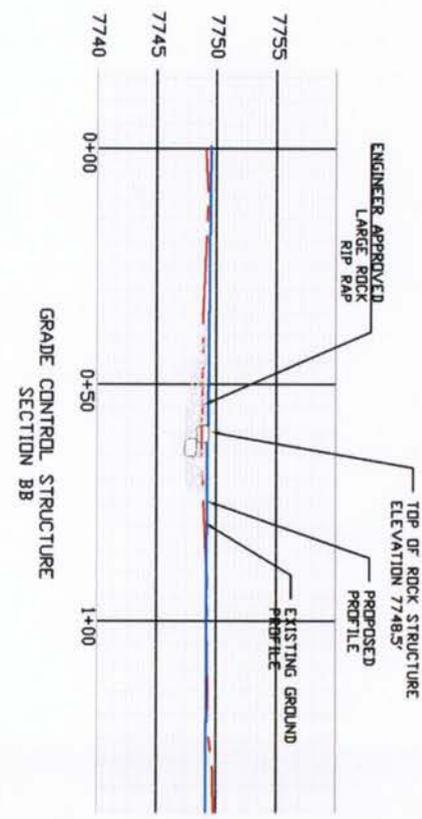
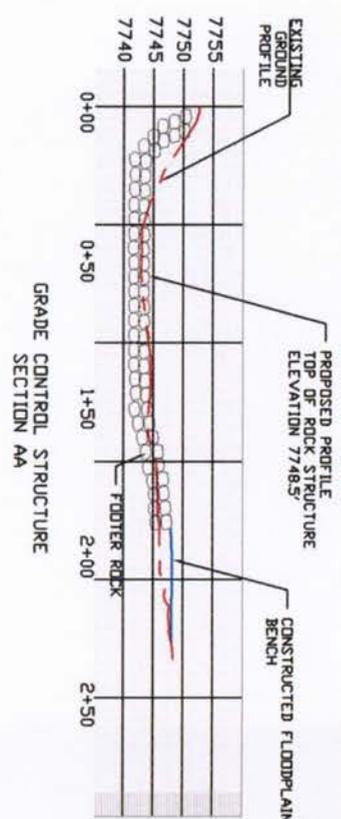
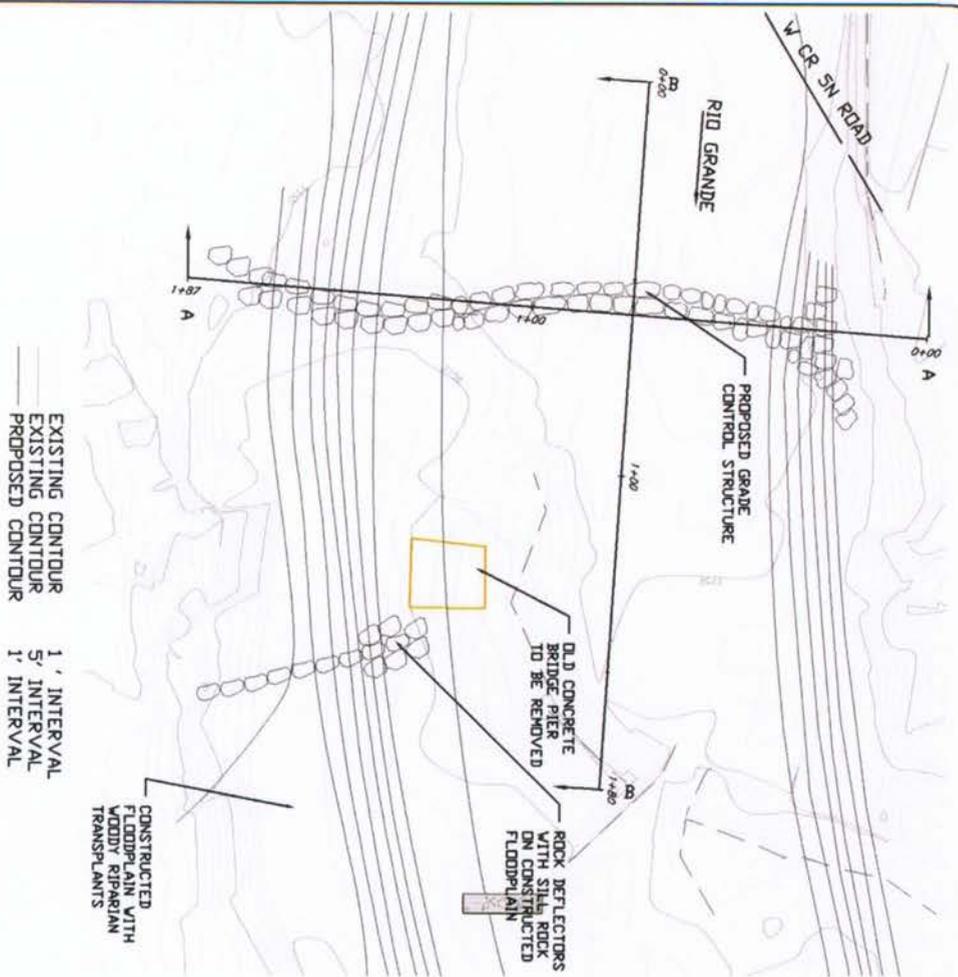
McDonald Ditch Grade Control Structure  COVER SHEET  PRELIMINARY DESIGN	Sheet 1 of 5
SCALE: NTS	2/7/2014



RIVERBEND ENGINEERING, LLC  
 102 Third St., P. O. Box 2878, Pagosa Springs, CO 81147  
 THE PROFESSIONAL SEAL OF RIVERBEND ENGINEERING, LLC

McDonnell Ditch Grade Control Structure PROPOSED GRADE CONTROL STRUCTURE PLAN & PROFILE PRELIMINARY DESIGN	SCALE: 1" = 100' 2/7/2014
---------------------------------------------------------------------------------------------------------------------	------------------------------

Sheet	2
of	5




  
 RIVERBEND ENGINEERING, LLC
   
 102 Third St., P. O. Box 2079, Pagosa Springs, CO 81147
   
 THE PROFESSIONAL SEAL IS AVAILABLE FROM: [www.riverbendeng.com](http://www.riverbendeng.com)

McDonald Ditch Grade Control Structure
   
 PROPOSED ROCK GRADE CONTROL STRUCTURE SECTION VIEWS
   
 PRELIMINARY DESIGN
   
 SCALE: 1" = 30'
   
 2/7/2014

Sheet	4
of	5