DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

STEVE BULLOCK
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
http://www.dnrc.mt.gov

1424 9TH AVENUE
PO BOX 201601
HELENA, MONTANA 59620-1601

Cover Letter

June 2nd, 2014

TO: Governor's Office, Tim Burton, Rm. 204, State Capitol, P.O. Box 200801, Helena, MT 59620-0801
Environmental Quality Council, Capitol Building, Room 106, P.O Box 201704, Helena, MT 59620
Dept. of Environmental Quality, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901
Director's Office
Dept. of Natural Resources and Conservation, 1625 11th Ave. Helena, MT 59620
Director's Office
Information Services Section
Water Resources Division, 1424 9th Ave., P.O. Box 201601, Helena, MT 59620-1601
Kim Overcast, DNRC Water Resources Div., Billings Regional Office, Airport Business Park, 1371 Rimtop Dr., Billings, MT 59105-1978
Montana Department of Fish, Wildlife & Parks, 1420 E. 6th Ave. Helena, MT 59620
Director's Office
Gary Hammon, DFWP Region 5 Office, 2300 Lake Elmo Dr., Billings, MT 59105
MT State Library, 1515 E. Sixth Ave., P.O. Box 201800, Helena, MT 59620
Allen Bell, President, Rock Creek Water Users Association, 53 Bell Rd. Roberts, MT 59070
Montana Environmental Information Center, P.O. Box 1184, Helena, MT 59624
Montana Audubon Council, P.O. Box 595, Helena, MT 59624
Carbon County Commissioners, County Administration Building, 17 West 11th Street, PO Box 887 Red Lodge, MT 59068
Wildlife Federation, P.O. Box 1175, Helena, MT 59624
Trout Unlimited, P.O. Box 7186, Missoula, MT 59807
Northern Plains Resource Council, 2401 Montana Ave. Suite 200, Billings, MT 59626-2336
U.S. Army Corps of Engineers, 10 W. 15th St. Suite 2200, Helena, MT 59626
U.S. Fish and Wildlife Service, MT Field Office, 584 Shepard Way, Suite 1, Helena, MT 59601

Ladies and Gentlemen:

The enclosed Environmental Assessment (EA) has been prepared for the Cooney Dam Outlet Weir Replacement and Instrumentation Project and is submitted for your consideration. Please feel free to contact James P. Domino at (406) 444-6622, jdomino@mt.gov should you have any questions or comments about the project. Comments will be accepted until 5:00 p.m., Tuesday, July 1, 2014. Comments can also be mailed to the Montana Department of Natural Resources and Conservation, State Water Projects Bureau, 1424 9th Ave., P.O. Box 201601, Helena, MT 59620-1601, attention James P. Domino. The EA can also be viewed on the DNRC webpage at www.dnrc.mt.gov. Copies of the EA are also available upon request. Thank you for your interest.

Sincerely,

Tim Davis
Administrator,
Water Resources Division

Cooney Dam Outlet Weir Replacement and Instrumentation Project

Montana Environmental Policy Act
ENVIRONMENTAL ASSESSMENT

Montana Department of Natural Resources and Conservation,
State Water Projects Bureau,
1424 9th Ave. P.O. Box 201601, Helena, MT 59620
May, 2014

Existing Weir at Cooney Dam

MEPA CHECKLIST

Part I. Proposed Action Description

1. **Type of Proposed State Action:** Replacement of the Outlet Weir at Cooney Dam and the installation of automated monitoring equipment.

2. **Agency authority for the proposed action:**

Owner: MT Dept. of Natural Resources and Conservation;
The Montana Legislature enacted statute 85-1- 101(1) through (6) MCA, which states: "It is hereby declared as follows:"

> (a) The general welfare of the people of Montana, in view of the state's population growth and expanding economy, requires that water resources of the state be put to optimum beneficial use and not wasted.
>
> (b) The public policy of the state is to promote the conservation, development, and beneficial use of the state's water resources to secure maximum economic and social prosperity for its citizens.
>
> (c) The state, in the exercise of its sovereign power, acting through the Department of Natural Resources and Conservation, shall coordinate the development and use of the water resources of the state so as to effect full utilization, conservation, and protection of its water resources.
>
> (d) The development and utilization of water resources and the efficient, economic distribution thereof is vital to the people in order to protect existing uses and to assure adequate future supplies for domestic, industrial, agricultural, and other beneficial uses.
>
> (e) The water resources of the state must be protected and conserved to assure adequate supplies for public recreational purposes and for the conservation of wildlife and aquatic life.
>
> (f) The public interest requires the construction, operation, and maintenance of a system of works for the conservation, development, storage, distribution, and utilization of water, which construction, operation, and maintenance is a single object and is in all respects for the welfare and benefit of the people of the state.
>
> 85-2-113 (2) MCA states:
> (b) require the owner or operator of appropriation facilities to install and maintain suitable controlling and measuring devices, except that the department may not require a meter on a water well outside of a controlled ground water area or proposed controlled ground water area unless the maximum appropriation of the well is in excess of the limitation contained in Sec. 85-2-

306; (c) require the owner or operator of appropriation facilities to report to the department the readings of measuring devices at reasonable intervals and to file reports on appropriations;

3. Name of Project Cooney Dam Outlet Weir Replacement and Instrumentation Project

4. Name, Address and Phone Number of Project Sponsor (if other than the agency)

MT. Dept. of Natural Resources & Conservation, 1424 9th Ave., P.O. Box 201601, Helena, MT 59620-1601 (406) 444-6646

5. If Applicable: Estimated Construction/Commencement Date September 1, 2014
Estimated Completion Date December 31, 2014
Current Status of Project Design (% complete) 90%

Note: A detailed project schedule is included in Appendix A.

6. Location Affected by Proposed Action (county, range and township)

Carbon County - Township 4S, Range 20E, Sec. 25 and 36.

7. Project Size: Estimate the number of acres that would be directly affected that are currently:

(a) Developed:
Residential ..... acres
Industrial ..... acres
Open Space/
Woodlands /
Recreation..... acres

(b) Wetlands/Riparian
Areas.....acres

(c) Floodplain..... acres

(d) Productive:
Irrigated cropland..... acres
Dry cropland ..... acres
Forestry ..... acres
Rangeland..... acres
Other..... acres

(e) Other: earthen dam.....1/2 acre

8. Map/site plan:

Maps and construction diagrams are attached (see Appendix A).

9. Narrative Summary of the Proposed Action or Project Including the Benefits and Purpose of the Proposed Action.

Cooney Dam and Reservoir are located on Red Lodge Creek in Carbon County, approximately 7 miles west of Boyd, Montana. The dam is owned by the Montana Department of Natural Resources and Conservation. The earthfill dam is 102 feet high, has a crest length of 2369 feet, and impounds 28,230 acre-feet of water at full pool. The water is used for supplemental irrigation on approximately 20,000 acres. Additional benefits include recreational use and flood control, although no specific allocations to these uses currently exist. The original dam was completed in 1937. The dam was raised five feet in 1982. In addition to raising the dam crest elevation, the dam was rehabilitated to meet current dam safety standards. Cooney Dam is classified as a high hazard dam. A dam is classified as high hazard if failure of the dam would endanger lives and property downstream.

The measuring weir immediately downstream of the dam's outlet is 75 years old and needs replacement because it is severely dilapidated and in a state of eminent failure. The weir is essential for operating the dam safely and efficiently. Releases must be measured to safely manage the reservoir and to accurately deliver stored irrigation water. Weir replacement enhances dam safety. Non-action could result in weir failure with subsequent damage to the dam. Dam failure potentially results in downstream loss of life and infrastructure devastation.

State statute requires SWPB to maintain suitable measuring devices on the dam. This project replaces the failed weir with a new measuring structure and automated instrumentation to measure and record weir flows and reservoir elevation, making dam operation more efficient. It enhances Montana's renewable resources by managing and preserving tributary storage; conserving water and soil; preserving cropland, natural resource-based recreation, and fish and aquatic habitat; and by improving water use efficiency by replacing a failing water measuring device required under Sec. 85-2-113.

10. Listing of any other Local, State or Federal agency that has overlapping or additional jurisdiction.

(a) Agency Name:	**Type of Responsibility**
Corps of Engineers	regulatory/technical
Montana Dept. of Fish, Wildlife & Parks	regulatory/technical
Montana Dept. of Environmental Quality	regulatory/technical
Montana Historical Preservation Office	advisory
Montana Natural Heritage Program	advisory

10. (continued)

(b) Permits Required:

The following permits will be needed for the project:

PERMIT	ISSUING AGENCY	STATUS
Clean Water Act, 404-Permit	U.S. Army Corps of Engineers	Pending
MT Stream Protection Act (124) Permit	MT DFWP	Pending
Cultural Clearance	MT SHPO	Pending
Short-Term Exemption from Surface Water Quality Standards (318 Authorization)	MT DEQ	Pending

(c) Funding:

Proposed Project Budget		
Funding Source (grant/loan or cash reserves)	**Amount**	**Committed/Uncommitted**
RRGL Grant	$100,000.00	Committed
Water Users In Kind	$140,000.00	Committed
DNRC In-Kind Services	$ 20,000.00	Committed
TOTAL	$260,000.00	

Note: Committed monies must have a written letter committing funds to the project.

Estimated Total Project Cost $ 260,000.00

11. List of Agencies Consulted during Preparation of the EA:

MT Dept. of Environmental Quality

MT Dept. of Fish, Wildlife & Parks

MT State Historic Preservation Office

MT Natural Heritage Program

PART II. ENVIRONMENTAL CHECKLIST REVIEW

I. PHYSICAL ENVIRONMENT

	IMPACTS					
	Unknown *	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
1. LAND RESOURCES						
Will the proposed action result in:						
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?			X			1b.
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?			X			1d.
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other: _____						

1 b.) Site disturbance would occur during construction. Some soil compaction may occur due to heavy equipment operation. Approximately 250 cubic yards of material would be removed from a 1/2 acre area immediately east and north of the primary spillway. Excavation will also occur below the high water level of the reservoir (but above standing water levels) to install the automated monitoring equipment. Effects are negligible in the long-term because of reclamation of all disturbed areas. No adverse or significant impacts are anticipated.

1d.) The upstream and downstream face of the dam (adjacent to the primary spillway) will be modified to allow for the placement of the new weir and monitoring equipment. Impacts are anticipated to be minor and non-significant in the short and long-term.

PHYSICAL ENVIRONMENT (Continued)

IMPACTS

	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
2. AIR						
Will the proposed action result in:						
a. Emission of air pollutants or deterioration of ambient air quality?			X			2a
b. Creation of objectionable odors?			X			2b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Other: _____						

2 a. & b.) During construction, heavy equipment emissions will contain some pollutants and odor

PHYSICAL ENVIRONMENT

IMPACTS

	Unknown*	No Impact	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
3. WATER						
Will the proposed action result in:						
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X			3a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of flood water or other flows?			X			3c.
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in the risk of contamination of surface or groundwater?			X			3h.
i. Violation of the Montana Non-Degradation Statute?		X				
j. Effects on any existing water right or reservation?		X				
k. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
l. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				

3 a, c & h) All construction within the reservoir will occur above any water levels and in dry conditions. The excavation and construction associated with the weir will involve the installation of a temporary coffer dam to divert flows and dewater the site around the work location. A minimum of 15cfs will be flowing through the outlet during construction. Impacts will be minor, short-term and end with project completion. Minor downstream turbidity may be experienced during construction, however, no long-term adverse affects will occur to downstream water users or to fisheries habitat. Any temporary minor impacts will be mitigated by the implementation of appropriate erosion control measures. The potential exists for contamination of surface water from construction equipment fluid leaks. In order to reduce this likelihood, on-site equipment will be required to be inspected prior to use,properly maintained and leak free. Refueling will be required to take place away from any watercourse. All adverse, minor impacts are temporary, non-significant and will end with the completion of the project.

PHYSICAL ENVIRONMENT (Continued)

IMPACTS

	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be mitigated*	Comment Index
4. VEGETATION						
Will the proposed action result in:						
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered plant species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?			X			4e
f. Other: _____						

4 e.) An increase in noxious weeds may occur due to soil disturbance and equipment operation. Effects are negligible in the long-term because of reclamation and weed control implementation.

PHYSICAL ENVIRONMENT (Continued)

IMPACTS

	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
5. FISH/WILDLIFE						
Will the proposed action result in:						
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X			5b.
c. Changes in the diversity or abundance of nongame species?		X				
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?			X			5g.
h. Other: _____						

5b & g)

Local wildlife within the vicinity of the project would most likely avoid the immediate work site during construction. This impact would be minor, non-significant and end upon project completion.

A species of special concern file search was conducted by the Montana Natural Heritage Program. Listed wildlife and fish species include Bald Eagle, Ferruginous Hawk, Golden Eagle, Black-tailed Prairie Dog and Northern Redbelly Dace. There have been no observed nesting raptors in the immediate vicinity. No significant impacts are anticipated to any wildlife or fish species as a result of the project.

All non-significant or potentially adverse impacts to fish and wildlife resources will be temporary, minor, short-term and end upon completion of the project.

2. HUMAN ENVIRONMENT

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
6. NOISE/ELECTRICAL EFFECTS						
Will the proposed action result in:						
a. Increases in existing noise levels?			X			6a
b. Exposure of people to severe or nuisance noise levels?			X			6b
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other: _____						

6 a & b.) Noise levels will increase temporarily during the construction period.

HUMAN ENVIRONMENT
(Continued)

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
7. LAND USE						
Will the proposed action result in:						
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other: _____						

HUMAN ENVIRONMENT
(Continued)

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
8. RISK/HEALTH HAZARDS						
Will the proposed action result in:						
a. Risk of an explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. Other: _____						

HUMAN ENVIRONMENT
(Continued)

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
9. COMMUNITY IMPACTS						
Will the proposed action result in:						
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other: _____						

HUMAN ENVIRONMENT
(Continued)

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
10. PUBLIC SERVICES/ TAXES/UTILITIES						
Will the proposed action:						
a. Have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: parks/recreational facilities		X				
b. Have an effect upon the local or state tax base and revenues?		X				
c. Result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Result in increased use of any energy source?		X				
e. Other: _____						

HUMAN ENVIRONMENT
(Continued)

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
11. AESTHETICS/ RECREATION						
Will the proposed action result in:						
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?			X			11a
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational opportunities and settings?			X			11c
d. Other: _____						

11 a & c.) Cooney State Park is immediately adjacent to the dam and construction will temporarily affect the aesthetics of the area in the short-term. Some anglers, picnickers or campers may be impacted. The quality of the recreational opportunities and setting will be temporarily impacted during construction. The effects will be short-term and end with the completion of the project. No significant impacts are anticipated.

IMPACTS

HUMAN ENVIRONMENT
(Continued)

	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
12. CULTURAL/ HISTORICAL RESOURCES						
Will the proposed action result in:						
a. Destruction or alteration of any site, structure or object of prehistoric, historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Other: _____						

3. SIGNIFICANCE CRITERIA

	IMPACTS					
	Unknown*	No Impacts	Minor Impacts*	Potentially Significant Impacts*	Can Impacts be Mitigated*	Comment Index
13. SUMMARY EVALUATION OF SIGNIFICANCE						
Will the proposed action, considered as a whole:						
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)			X			13a
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. Other: _____						

13 a.) Short-term, temporary impacts will occur in the quality of the recreational opportunities and experience. All impacts are temporary, non-significant, will end with the completion of the project, and will be mitigated by reclamation of any disturbed areas.

Part III. Alternatives and Evaluation

1. Description and analysis of reasonable alternatives (including the no action alternative) to the proposed action whenever alternatives are reasonably available and prudent to consider and a discussion of how the alternatives would be implemented:

A. No action - This would not allow for adequate monitoring of current conditions at the reservoir, and could result in a delay to address any potentially unsafe conditions at a designated high hazard dam. This could affect the integrity of the dam itself and increase the risk to the public and property downstream. In addition, the supply of irrigation water could be negatively affected, resulting in potentially severe economic hardship to the agricultural economy of the area. The recreational use of the reservoir would also be negatively affected if the dam cannot be safely operated. This would be a violation of 85-2-113 (2) MCA

B. Proceed as planned with the project - This will have the beneficial effects of reducing the likelihood of any serious conditions being overlooked due lack of adequate monitoring information, thus helping to protect the integrity of the dam. Downstream public and property risks associated with a high hazard dam would be reduced. The action alternative would also meet the full requirements of Sec. 85-2-113 (2).

2. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

All impacts cited are minor. Any areas disturbed by the construction would be reclaimed.

3. Based on the significance criteria evaluated in this EA, is an EIS required? YES / NO If an EIS is not required, explain why.

The EA is the appropriate level of analysis for this proposed action.

Because of the short-term nature of the actual construction impacts associated with this project and the beneficial, long-term affects to the required monitoring of flows at the dam and to public safety, an EA is the appropriate level of analysis for this proposed action.

4. Describe the level of public involvement for this project if any and, given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances?

The appropriate level of public involvement for this proposal is the distribution of the EA to those listed on the cover page, and publication on the DNRC website. This is an appropriate level of public involvement considering the minor, non-significant impacts of the environmental issues associated with the proposed action.

5. Duration of comment period if any: A 30 day comment period will be provided. Copies of the EA can be obtained from the address listed in paragraph 6. The EA can also be viewed on the DNRC website at www.dnrc.state.mt.us.

6. Name, title, addresses and telephone number of the Person(s) Responsible for Preparing the EA, and comment submission information is listed below:

James P. Domino, Environmental Science Specialist, Department of Natural Resources and Conservation, Water Resources Division, State Water Projects Bureau, 1424 9th Ave., P.O. Box 201601, Helena, MT 59620-1601, (406) 444-6622. E-mail: jdomino@mt.gov

Comments can be mailed, e-mailed or submitted by telephone. Comments will be accepted until the closing date listed on the EA cover page.

Part IV. Narrative Evaluation and Comment

The project as proposed will not have any significant impacts. The impacts associated with the actual construction will be short-term and end with the completion of the project. Impacts associated with weed proliferation and the quality of the recreational experience will be mitigated by reclamation and weed control efforts. Any impacts to recreationists will end with the completion of the project. All of the work is being performed above the reservoir water level, and proper precautions will be implemented to protect Red Lodge Creek water resources, so no significant water quality impacts will be experienced. The long-term public benefits, including enhanced public safety and the protection of property downstream from a high hazard dam, outweigh any minor short-term, temporary impacts.

Appendix A:

* Project Photographs
* Detailed Project Schedule
* Location Map and Construction Diagrams

Project Photographs:

Upstream side of existing weir

Downstream side of existing weir

Damaged concrete

Cooney Weir Project Schedule

July 2013	Finish WUA Agreement w/Dnrc Write, review and edit RFP
August 2013	Advertise RFP for 3 weeks Distribute for review last week of August
September 2013	Review Proposals and hire Consultant
October 2013	Begin Design
April 2014	Advertise Project for Construction – 3 weeks Bid opening – Award Contract last week of April
May 2014 to August 2014	Hire Contractor – Documentation, submittal review and approval Procure Materials for Instrumentation
September 2014	Begin Construction
October 2014	Install Instrumentation
November 2014	Complete Project
December 2014	Close-out Project

CONSTRUCTION DRAWINGS FOR

COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY, MONTANA

APRIL 2014

LOCATION MAP
NO SCALE

PREPARED FOR:

MONTANA DNRC

PREPARED BY:

MORRISON MAIERLE, INC.
Engineers
Surveyors
Scientists
Planners
An Employee-Owned Company
3011 Palmer Street, Missoula, MT 59801
Phone: (406) 542-6080 Fax: (406) 542-4801
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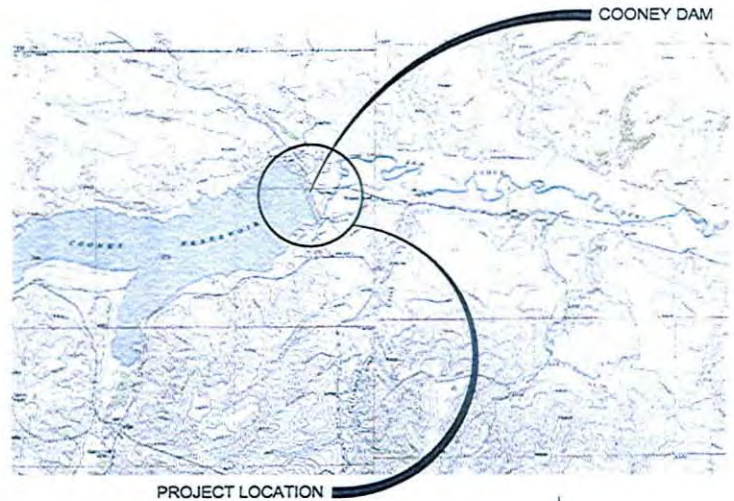

VICINITY MAP
NO SCALE

APPROVED BY: _____
MOLLY SKORPIK, PE
Project Manager

APPROVED BY: _____
DAVID C. LARSON, PE
DNRC STATE WATER PROJECTS BUREAU

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

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90% DESIGN - NOT FOR CONSTRUCTION

SET NO. _____
MMI PROJECT NO. 1447.034

DRAWING INDEX	
DRAWING No	TITLE
G-1	GENERAL NOTES & EROSION NOTES
C-1	SITE PLAN
C-2	GRADING PLAN AND PROFILE
C-3	IRRIGATION LETERAL PLAN AND PROFILE
D-1	DETAILS
S-1	STRUCTURAL NOTES
S-2	STRUCTURAL FOUNDATION AND SLAB PLAN
S-3	STRUCTURAL SECTIONS
S-4	STRUCTURAL SECTIONS AND DETAILS

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES) STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND NOTICE OF INTENT (NOI) IF APPLICABLE

DIVERSION AND CARE OF WATER

1. SCOPE

A. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN DIVERSIONS AND/OR SUCH OTHER WORKS NECESSARY TO PERMIT CONSTRUCTION IN THE DRY AND TO PROTECT ALL PERMANENT WORK UNDER THIS CONTRACT

B. THE REQUIREMENTS OF THIS SECTION SHALL APPLY TO ALL SOURCES OF WATER WHETHER FROM FLOWING STREAMS GROUND WATER OR SURFACE WATER

C. UNLESS OTHERWISE SPECIFICALLY AUTHORIZED IN WRITING, ALL PERMANENT STRUCTURES SHALL BE CONSTRUCTED IN AREAS FREE FROM WATER. THE NECESSARY MEANS OF DEWATERING PERMANENT WORK AREAS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUCH PERMANENT WORK IS COMPLETE AND ACCEPTED

D. CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF SURFACE WATER AND/OR GROUNDWATER AS REQUIRED TO PERFORM HIS WORK IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THIS INCLUDES CONSTRUCTION AND MAINTENANCE OF TEMPORARY CHANNELS AND DIVERSIONS AND ALSO THE FURNISHING, INSTALLING AND OPERATING OF PUMPS, PIPING AND OTHER DEWATERING FACILITIES TO FACILITATE A DEWATERED EXCAVATION THROUGHOUT CONSTRUCTION AND PERMITTING IF REQUIRED

2. PLAN OF OPERATIONS

A. THE CONTRACTOR, UPON REQUEST FROM THE ENGINEER, SHALL SUBMIT FOR APPROVAL DRAWINGS AND/OR A DESCRIPTION OF THE PLAN OF OPERATION THAT THE CONTRACTOR PROPOSES TO USE. NO WORK UNDER THIS SECTION SHALL COMMENCE PRIOR TO APPROVAL OF THE PLAN, IF REQUESTED. HOWEVER, SUCH APPROVAL WILL NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR THE ADEQUACY AND SUCCESSFUL FUNCTIONING OF THE WORKS

3. REMOVAL OF TEMPORARY WORKS

A. FTER COMPLETION OF THE PERMANENT WORKS, TEMPORARY WORKS SHALL BE COMPLETELY REMOVED AND THE AREA LEFT IN GOOD CONDITION SATISFACTORY TO THE OWNER, ENGINEER AND PERMITTING AGENCIES

4. DAMAGE TO WORK

A. LOSS OF ANY PERMANENT WORKS OR LOSS OF ANY TEMPORARY WORKS WILL NOT BE REASON FOR CLAIM AGAINST THE OWNER. ANY SUCH LOSSES OR DAMAGE TO ANY PART OF THE WORK, PERMANENT OR TEMPORARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WHO SHALL REPLACE OR REPAIR AS REQUIRED TO THE SATISFACTION OF THE ENGINEER

5. EXCAVATION PROTECTION

A. CONTRACTOR SHALL PREVENT SURFACE WATER AND SUBSURFACE GROUND WATER FLOWING INTO EXCAVATIONS FROM FLOODING PROJECT SITE AND SURROUNDING AREA. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. PROVIDE AND MAINTAIN PUMPS, SUMPS, SUCTION AND DISCHARGE LINES, AND OTHER DEWATERING SYSTEM COMPONENTS NECESSARY TO CONVEY WATER AWAY FROM EXCAVATIONS

A1. CONVEY BOTH WATER REMOVED FROM EXCAVATIONS AND RAINWATER TO COLLECTION OR RUNOFF AREAS. PROVIDE AND MAINTAIN TEMPORARY DRAINAGE DITCHES AND OTHER DIVERSIONS OUTSIDE EXCAVATION LIMITS. DO NOT USE TRENCH EXCAVATIONS AS TEMPORARY DRAINAGE DITCHES. DO NOT DISCHARGE DEWATERING WATER DIRECTLY INTO WATERWAYS

A2. DISPOSE OF WATER SO AS NOT TO CAUSE A PUBLIC HEALTH NUISANCE OR INJURE PROPERTY. WHERE POINTS OF DRAINAGE DISCHARGE ARE IN QUESTION, APPROVAL SHALL BE OBTAINED FROM ENGINEER BEFORE SUCH DISCHARGE IS MADE

EROSION NOTES:

UNLESS OTHERWISE EXPRESSLY STATED, THE CONTRACTOR IS RESPONSIBLE FOR THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION PLAN. IF AREA OF DISTURBANCE EXCEED 1.0 ACRE THE CONTRACTOR SHALL PREPARE AND SUBMIT A STORM WATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY. REGARDLESS OF DISTURBANCE AREA, CONTRACTOR SHALL ADHERE TO EROSION CONTROL PLAN AS OUTLINED BELOW

1. GENERAL STORM WATER POLLUTION PREVENTION METHODS AND PROCEDURES

A. ALL MATERIALS NEEDED TO COMPLETELY CONSTRUCT AN EROSION CONTROL FACILITY SHALL BE AVAILABLE ON SITE PRIOR TO THE ANTICIPATED DISTURBANCE OF ANY DRAINAGE AREA TO BE IMPACTED BY THE PROJECT WORK

B. EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS, INCLUDING CLEARING AND GRUBBING, WITHIN THE TRIBUTARY AREAS OF THOSE FACILITIES

C. STOCKPILE AREAS ARE TO HAVE SIDE SLOPES OF 2H:1V OR FLATTER. IMMEDIATELY APPLY TEMPORARY STABILIZATION MEASURES TO ALL STOCKPILE AREAS

D. AT NO TIME WILL SEDIMENT OR SEDIMENT LADEN RUNOFF BE ALLOWED TO LEAVE THE SITE AND ENTER WATERWAYS WITHOUT FIRST PASSING THROUGH A SEDIMENT FILTERING DEVICE. SHOULD SITE CONDITIONS, CONSTRUCTION PROCEDURES, ETC. ALTER THE APPROVED PLAN TO THE POINT WHERE SEDIMENT AND SEDIMENT LADEN RUNOFF IS NOT BEING CONTROLLED AND FILTERED BEFORE IT LEAVES THE SITE, ADDITIONAL EROSION CONTROL FACILITIES ARE TO BE IMPLEMENTED. INSTALL EROSION CONTROL FACILITIES AT THE DIRECTION OF THE ENGINEER TO PROVIDE COMPREHENSIVE CONTROL OF SEDIMENT BEFORE IT LEAVES THE SITE

E. EROSION CONTROL MATTING SHALL BE USED ON ALL PERMANENT SLOPES STEEPER THAN 3H:1V. SHOULD CONSTRUCTION PROCEDURES AND/OR SITE RESTRAINTS REQUIRE ADDITIONAL TEMPORARY SLOPES STEEPER THAN 3H:1V, THESE SLOPES WILL ALSO BE PROTECTED WITH EROSION CONTROL MATTING

F. ANY EROSION OR SEDIMENT FACILITY REQUIRED OR NECESSARY TO PROTECT AREAS FROM EROSION DURING THE STABILIZATION PERIOD SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION OF THE CONTRIBUTING DRAINAGE AREAS IS COMPLETED. UPON COMPLETION OF THE PERMANENT STABILIZATION, ALL UNNECESSARY OR UNUSABLE CONTROL MEASURE OR FACILITIES SHALL BE REMOVED. THE DISTURBED AREAS CREATED BY THIS ACTIVITY SHALL BE BROUGHT TO FINAL GRADE AND THE SOILS SHALL BE IMMEDIATELY STABILIZED

G. TEMPORARY STABILIZATION, AS REFERRED TO IN THESE NOTES, INVOLVES PREPARING THE SOIL SURFACE, SPREADING SOIL SUPPLEMENTS, SPREADING TEMPORARY SEED MIXTURE, AND PROVIDING AN ANCHORED MULCH OR EROSION CONTROL MATTING IF APPLICABLE. IF TEMPORARY STABILIZATION ACTIVITIES FALL OUTSIDE OF THE ALLOWABLE SEEDING DATES, AN ANCHORED MULCH IS TO BE PLACED WITHOUT SEEDING

H. PERMANENT SURFACE RESTORATION, AS REFERRED TO IN THESE NOTES, INVOLVES SPREADING TOPSOIL (SIX-INCH MIN. DEPTH), SPREADING SOIL SUPPLEMENTS, SEEDING AND PROVIDING AN ANCHORED MULCH OR EROSION CONTROL MATTING IF SLOPES ARE STEEPER THAN 3H:1V. PERMANENT STABILIZATION IS CONSIDERED TO BE A UNIFORM EROSION RESISTANT PERENNIAL VEGETATION ESTABLISHED TO THE POINT WHERE THE SURFACE SOIL IS CAPABLE OF RESISTING EROSION DURING RUNOFF EVENTS. THE STANDARD FOR THIS VEGETATIVE COVER WILL BE A UNIFORM COVERAGE OF 70% ACROSS THE ENTIRE DISTURBED AREAS. THE ENGINEER SHALL DETERMINE IF PERMANENT STABILIZATION HAS BEEN ESTABLISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESEEDING AND REMULCHING AS NEEDED TO ESTABLISH THE UNIFORM 70% COVERAGE RATE. THESE ACTIVITIES SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER

I. WHERE IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA IMMEDIATELY AFTER FINAL EARTH MOVING HAS BEEN COMPLETED OR WHERE CONSTRUCTION ACTIVITIES CEASE, TEMPORARY STABILIZATION MEASURES SHALL BE IMMEDIATELY IMPLEMENTED

J. THE CONTRACTOR SHALL PREPARE A SITE SPECIFIC EROSION CONTROL PLAN FOR EACH PHASE OF THE PROJECT. THIS EROSION CONTROL PLAN SHALL BE SUBMITTED TO THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY FOR REVIEW AND APPROVAL PRIOR TO THE START OF CONSTRUCTION, IF AGENCY REVIEW IS APPLICABLE

2. STAGING OF EARTH MOVING ACTIVITIES

A. THE INTENT OF THIS ITEM TO DESCRIBE THE CRITICAL EARTH MOVING/CONSTRUCTION ACTIVITIES WHICH MUST OCCUR IN ORDER TO PROVIDE A COMPREHENSIVE PLAN FOR THE CONTROL OF SEDIMENT LADEN RUNOFF FROM THE PROJECT AREAS AND FOR THE BYPASS OF OFFSITE CLEAN WATER THROUGH THE WORK AREA. THIS PLAN IS NOT INTENDED TO DESCRIBE ALL WORK ACTIVITIES ASSOCIATED WITH THIS PROJECT. MEANS AND METHODS DURING THE PREPARATION, EXECUTION, AND ADMINISTRATION OF THIS WORK IS THE RESPONSIBILITY OF THE CONTRACTOR

A1. STAGE I: CLEARING ACTIVITIES

a. CONTRACTOR SHALL PROVIDE APPROPRIATE EROSION CONTROL MEASURES TO ADEQUATELY CONTROL SEDIMENT LADEN RUNOFF FROM ALL AREAS TO BE CLEARED. THESE EROSION CONTROL FACILITIES SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO THE START OF CLEARING ACTIVITIES

b. GRUBBING ACTIVITIES SHALL NOT OCCUR UNTIL THE AREAS ARE READY TO BE WORKED AND ALL OTHER EROSION CONTROL FACILITIES ARE IN PLACE

c. IMMEDIATELY APPLY TEMPORARY STABILIZATION MEASURES TO ALL DISTURBED AREAS

A2. STAGE II: SITE PREPARATION AND INSTALLATION OF STORM WATER POLLUTION PREVENTION MEASURES

a. INSTALL SILT FENCE RUNS. INSTALL THE SEDIMENT BASINS AND DISCHARGE CHANNELS

A3. STAGE III: DIVERSION OF WATER

a. INSTALL TEMPORARY UPSTREAM DIVERSION INLET/PIPING, DIVERSION PIPING AND EQUIPMENT, AND DOWNSTREAM DIVERSION OUTLET/PIPING. INSTALL RIPRAP APRON OUTLET AT THE DOWNSTREAM DIVERSION OUTLET. INSTALL SAND BAG DIVERSIONS UPSTREAM AND DOWNSTREAM AND DIVERT STREAM FLOWS THROUGH THE DIVERSION PIPING

b. DEWATER EACH SITE AREA WITHIN UPSTREAM AND DOWNSTREAM TEMPORARY STREAM DIVERSION COFFERDAMS. DISCHARGE DEWATER INTO SEDIMENT BASINS. DEWATER FLOW RATE SHALL NOT EXCEED THE CAPACITY OF THE SEDIMENT BASINS

A4. STAGE IV: CLEANUP ACTIVITIES

a. REMOVE UPSTREAM DIVERSION INLET PIPING, DIVERSION PIPING AND EQUIPMENT, DOWNSTREAM DIVERSION OUTLET PIPING, SAND BAGS AND SEDIMENT DEPOSITS COLLECTED WHILE THE TEMPORARY STREAM DIVERSION FACILITIES WERE IN PLACE. RETURN THESE AREAS TO ORIGINAL GRADE (UNLESS OTHERWISE SHOWN ON THE DRAWINGS). PERMANENTLY STABILIZE ALL AREAS DISTURBED BY THESE ACTIVITIES

b. DRAIN AND REMOVE SEDIMENT BASINS AND DISCHARGE CHANNELS. RETURN AREAS TO ORIGINAL GRADE AND PERMANENTLY STABILIZE ALL AREAS DISTURBED BY THESE ACTIVITIES

c. REMOVE ALL SEDIMENT DEPOSITS COLLECTED BEHIND THE SILT FENCING, AND EITHER USE FOR ONSITE GRADING OR PLACE IN SPOIL AREA

d. REMOVE TOPSOIL AND SPOIL AREAS AND RETURN TO ORIGINAL GRADE. RETROFIT EXISTING SOIL (IF NECESSARY) AND PERMANENTLY STABILIZE ALL DISTURBED AREAS

e. REMOVE ALL SILT FENCING

f. PERMANENTLY STABILIZE ALL AREAS DISTURBED BY THE CONSTRUCTION ACTIVITIES

3. MAINTENANCE/CONTRACTOR'S RESPONSIBILITIES

A. ALL PERMANENTLY SEEDED AREAS THAT BECOME ERODED SHALL HAVE THE TOPSOIL REPLACED, THE EROSION CONTROL MATTING REPLACED (IF APPLICABLE), THE GRASS RESOWN AND MULCH REAPPLIED AND ANCHORED. IF EROSION PERSISTS, THE AREA SHALL BE EITHER LINED WITH SOD OR STABILIZED WITH ROCK RIPRAP AT THE DISCRETION OF THE ENGINEER

B. A COPY OF THE APPROVED EROSION CONTROL PLAN AND STORM WATER POLLUTION PREVENTION PLAN SHALL BE KEPT AVAILABLE ON THE CONSTRUCTION SITE AT ALL TIMES THROUGHOUT THE TERM OF THE PROJECT

C. THE INTENT IS TO INDICATE GENERAL MEANS OF COMPLIANCE WITH THE APPLICABLE REQUIREMENTS OF THE RULES AND LAWS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT THESE METHODS, PLUS ADDITIONAL METHODS, AS MAY BE NECESSARY DUE TO CONDITIONS CREATED BY LOCALIZED SITE CONDITIONS AND/OR CONSTRUCTION PROCEDURES IN ORDER TO ASSURE COMPLIANCE WITH APPLICABLE LAW. IT WILL FURTHER BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL STORM WATER POLLUTION PREVENTION AND EROSION CONTROL FACILITIES SO THAT THEY PERFORM AS REQUIRED BY APPLICABLE LAW

D. FINES AND RELATED COSTS RESULTING FROM THE CONTRACTOR'S FAILURE TO PROVIDE ADEQUATE PROTECTION AGAINST SOIL EROSION AND FOR ANY VIOLATION OF THE CLEAN STREAMS LAW AND THE RULES AND REGULATION PROMULGATED THEREUNDER SHALL BE BORNE BY THE CONTRACTOR

E. THE CONTRACTOR SHALL CONTROL DUST FROM THE PROJECT AREA BY APPLYING WATER OR IMPLEMENTING OTHER METHODS AS APPROVED BY THE ENGINEER

F. PER THE PROJECT ACCEPTANCE, ALL EROSION AND SEDIMENT CONTROL FACILITIES MUST BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL FACILITIES AFTER EACH RAINFALL EVENT AND ON A WEEKLY BASIS. THE CONTRACTOR SHALL MAINTAIN WRITTEN INSPECTION LOGS OF ALL INSPECTIONS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING, MUST BE PERFORMED IMMEDIATELY

GENERAL ABBREVIATIONS

CONC	- CONCRETE
CP	- CONTROL POINT
CPP	- CORRUGATED PLASTIC PIPE
DIA	- DIAMETER
ELEV	- ELEVATION
IE	- INVERT ELEVATION
IN	- INCH
LF	- LINEAR FOOT
MIN	- MINIMUM
NIC	- NOT IN CONTRACT
NTS	- NOT TO SCALE
OPC	- ORANGE PLASTIC CAP
SCH	- SCHEDULE
STA	- STATION
TYP	- TYPICAL

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MORRISON MAIERLE, INC. An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St. Missoula, MT 59808
Phone (406) 542-8880 Fax (406) 542-4801

DRAWN BY: MDH
DSGN BY: MDB
APPR BY: MRS
DATE: 3/2014

CARBON COUNTY
COONEY DAM OUTLET WEIR REPLACEMENT
MONTANA
GENERAL NOTES & EROSION NOTES

PROJECT NUMBER 1447.034
SHEET NUMBER 1
DRAWING NUMBER G-1

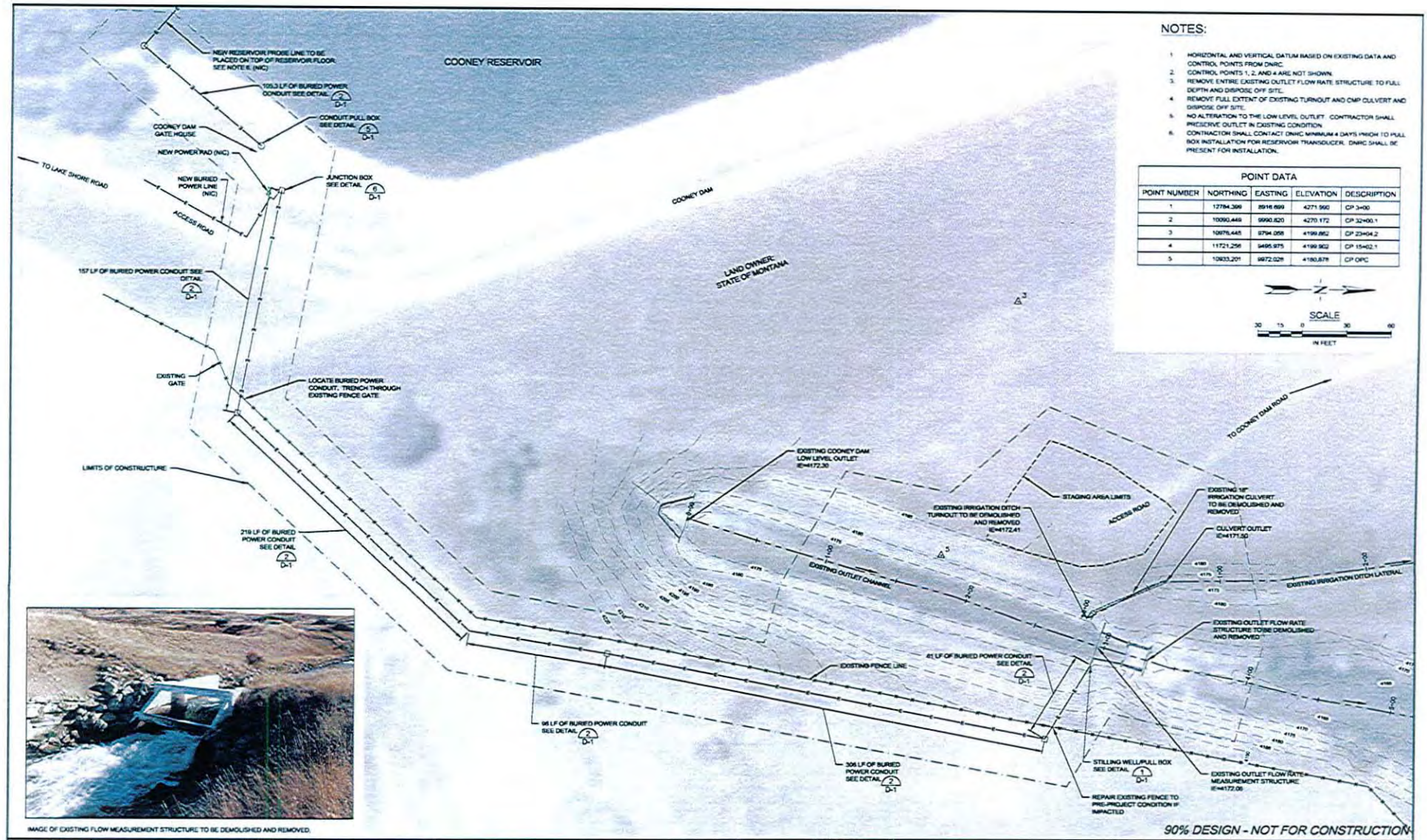

IMAGE OF EXISTING FLOW MEASUREMENT STRUCTURE TO BE DEMOLISHED AND REMOVED.

NOTES:

1. HORIZONTAL AND VERTICAL DATUM BASED ON EXISTING DATA AND CONTROL POINTS FROM DNRC.
2. CONTROL POINTS 1, 2, AND 4 ARE NOT SHOWN.
3. REMOVE ENTIRE EXISTING OUTLET FLOW RATE STRUCTURE TO FULL DEPTH AND DISPOSE OFF SITE.
4. REMOVE FULL EXTENT OF EXISTING TURNOUT AND CMP CULVERT AND DISPOSE OFF SITE.
5. NO ALTERATION TO THE LOW LEVEL OUTLET. CONTRACTOR SHALL PRESERVE OUTLET IN EXISTING CONDITION.
6. CONTRACTOR SHALL CONTACT DNRC MINIMUM 4 DAYS PRIOR TO PULL BOX INSTALLATION FOR RESERVOIR TRANSDUCER. DNRC SHALL BE PRESENT FOR INSTALLATION.

POINT DATA

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	12784.399	8916.699	4271.990	CP 3+00
2	10090.449	9990.820	4270.172	CP 32+00.1
3	10976.445	9794.058	4199.862	CP 23+04.2
4	11721.256	9495.975	4199.902	CP 15+02.1
5	10933.201	9972.028	4180.878	CP OPC

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MORRISON MAIERLE, INC.
An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St.
Missoula, MT 59808
Phone: (406) 542-8880
Fax: (406) 542-4801
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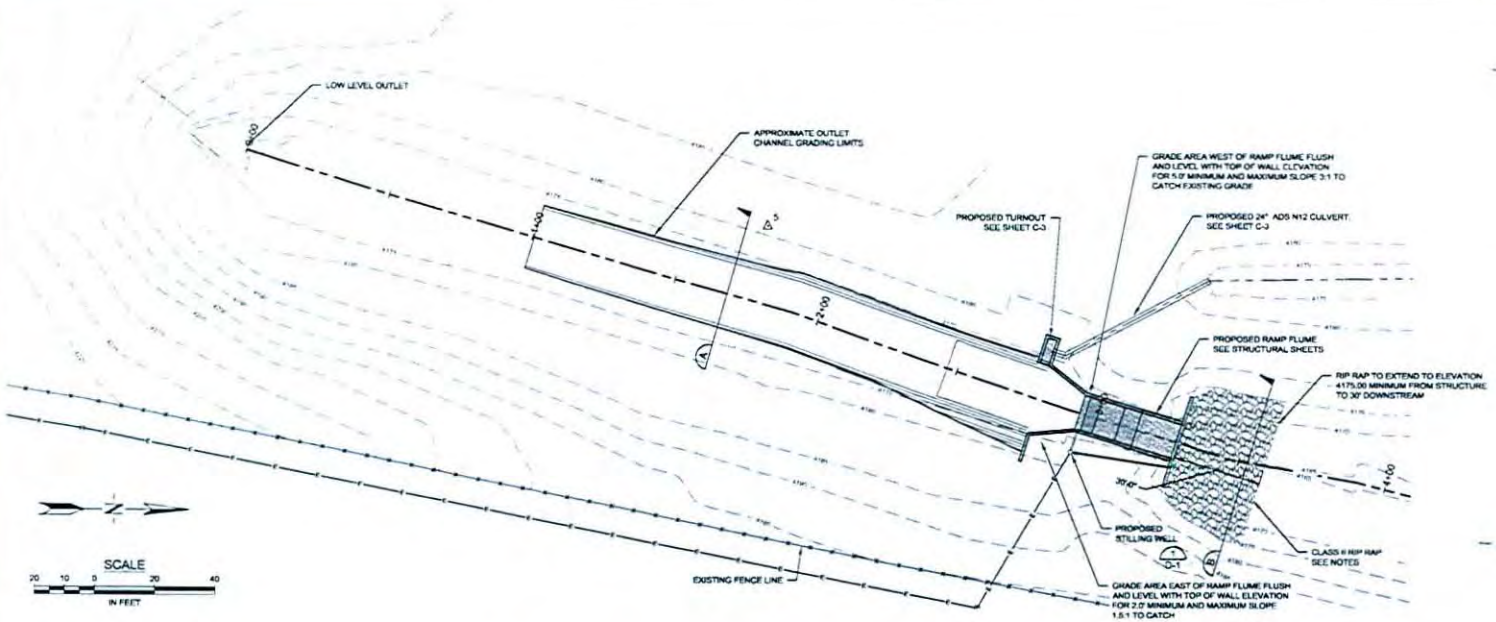
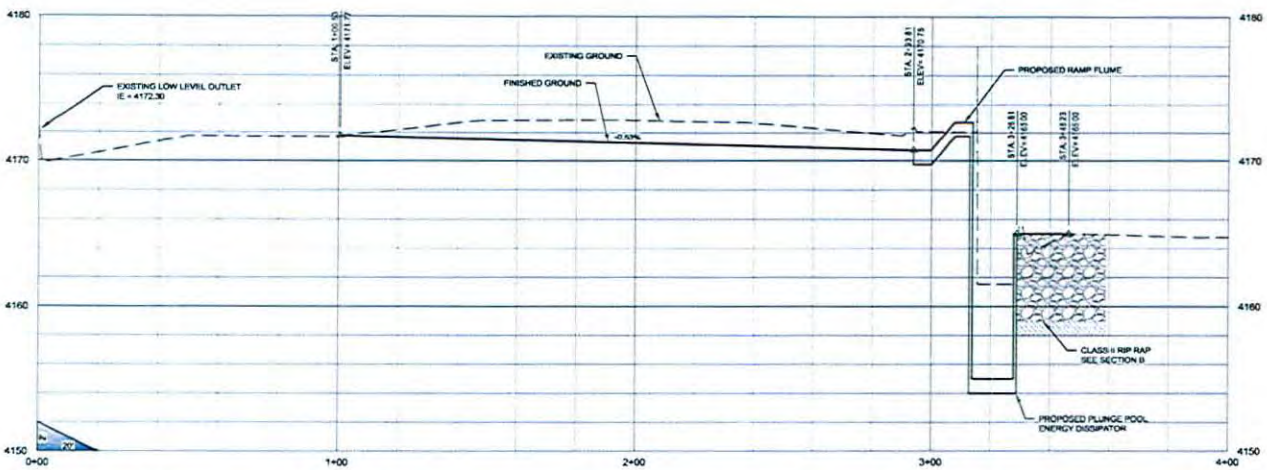
APPR. BY: MRS
DATE: 3/2014
Q.C. REVIEW BY:
DATE:

COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY MONTANA
SITE PLAN

PROJECT NUMBER 1447.034
SHEET NUMBER 2
DRAWING NUMBER C-1

M:\1447\034\ACAD\SHEETSHEET PLAN.DWG PLOTTED BY CHRISTOPHER HAWKINS ON Apr22/2014



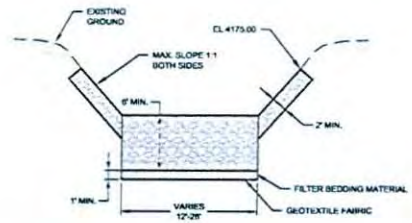


CUT SECTION A

NOTES:

1. DO NOT DISTURB EXISTING RIP RAP ON SIDE SLOPES.
2. SALVAGE AND REPLACE EXISTING RIP RAP ON BOTTOM OF OUTLET CHANNEL TO MINIMUM DEPTH OF 2.0'.

CHANNEL GRADING SECTION DETAIL (A)
SCALE: NTS



NOTES:

1. SEE STRUCTURAL SHEETS FOR RAMP FLUME ELEVATIONS AND DIMENSIONS.
2. CLASS II RIP RAP SHALL EXTEND 6 FEET BELOW CHANNEL ELEVATION AND 30 FEET DOWNSTREAM OF CONCRETE SILL TO PROVIDE TRANSITION TO OUTLET CHANNEL CROSS SECTION. SEE SHEET S-2 FOR RIP RAP SIZE.
3. FILTER BEDDING MATERIAL SHALL BE ¾" MINUS CRUSHED GRAVEL.

OUTLET CHANNEL SECTION DETAIL (B)
SCALE: NTS

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Engineers Surveyors Scientists Planners
3011 Palmer St. Missoula, MT 59808
Phone: (406) 542-8880 Fax: (406) 542-4801
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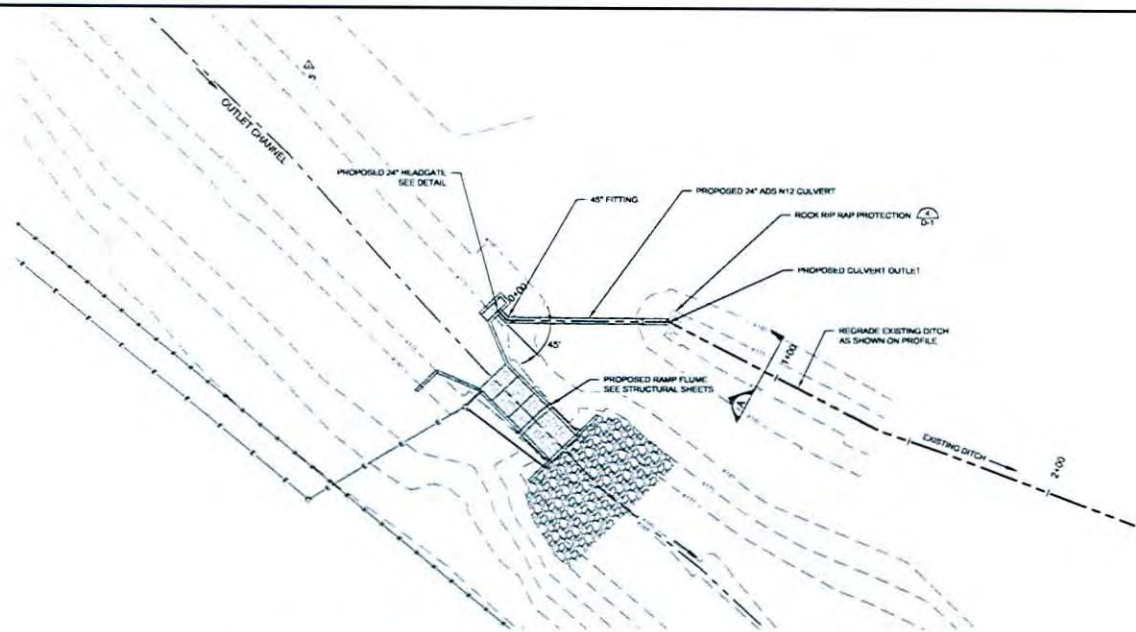
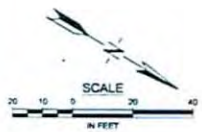
DATE: 3/2014
Q.C. REVIEW BY:
DATE:

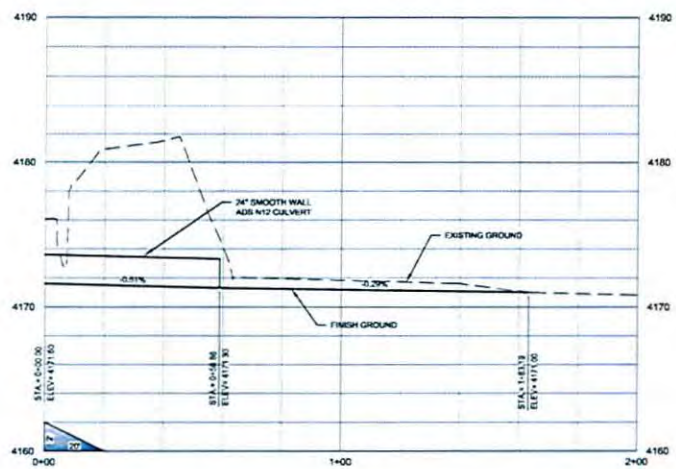
CARBON COUNTY — COONEY DAM OUTLET WEIR REPLACEMENT — MONTANA

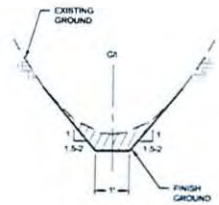
GRADING PLAN AND PROFILE

PROJECT NUMBER 1447.034
SHEET NUMBER 3
DRAWING NUMBER C-2



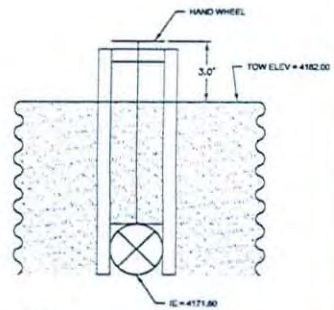






SECTION VIEW A-A

DITCH REGRADING DETAIL
SCALE: NTS



NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

HEADGATE DETAIL
SCALE: NTS

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M:\1447034\ACAD\SHEETS\TURNOUT PLAN AND PROFILE.DWG PLOTTED BY:CHRISTOPHER HAWKINS ON April22/2014

MORRISON MAIERLE, INC.
An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St.
Missoula, MT 59808
Phone: (406) 542-6880
Fax: (406) 542-4801

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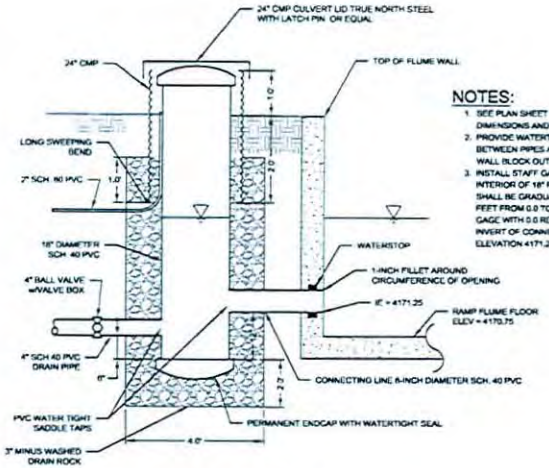
DATE: 3/2014
Q.C. REVIEW BY:
DATE:

COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY MONTANA
IRRIGATION LATERAL PLAN AND PROFILE

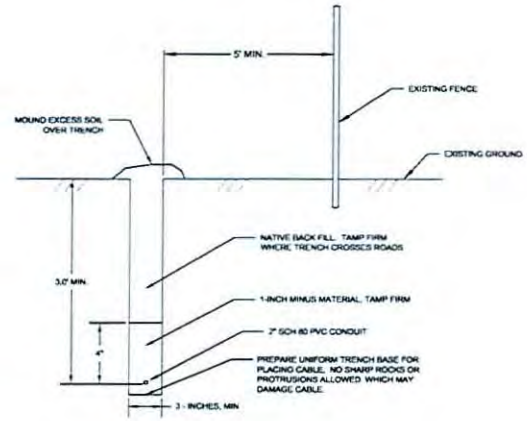
PROJECT NUMBER 1447.034
SHEET NUMBER 4
DRAWING NUMBER C-3



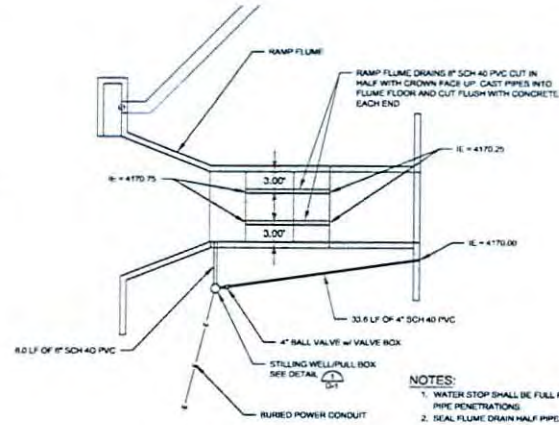
NOTES:

1. SEE PLAN SHEET S-1 FOR PLAN DIMENSIONS AND ORIENTATION.
2. PROVIDE WATERTIGHT SEAL BETWEEN PIPES AND AT CONCRETE WALL BLOCK OUTS.
3. INSTALL STAFF GAGE SECURED TO INTERIOR OF 18" PVC. STAFF GAGE SHALL BE GRADUATED IN TENTHS OF FEET FROM 0.0 TO 10.0. SET STAFF GAGE WITH 0.0 READING FLUSH WITH INVERT OF CONNECTING PIPE AT ELEVATION 4171.25

STILLING WELL DETAIL (1 / D-1)
SCALE: NTS



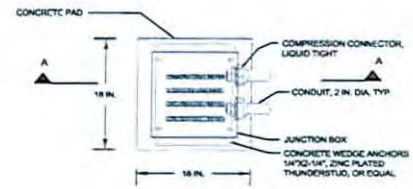
BURIED POWER CONDUIT & TRENCH (2 / D-1)
SCALE: NTS

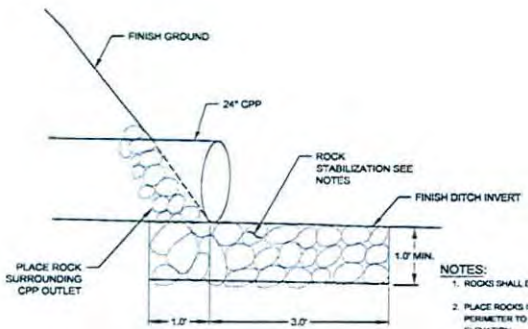


NOTES:

1. WATER STOP SHALL BE FULL PERIMETER ON PIPE PENETRATIONS.
2. SEAL FLUME DRAIN HALF PIPES WITH GEO-MEMBRANE WRAP.

STILLING WELL PIPING AND RAMP FLUME DRAINS (3 / D-1)
SCALE: 1"=10'

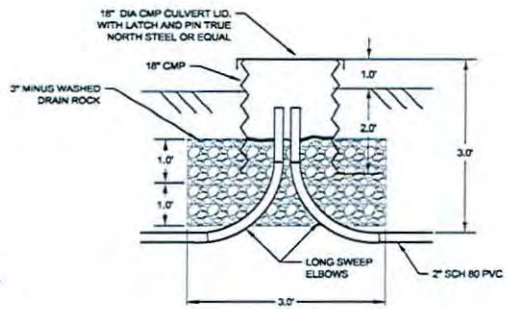




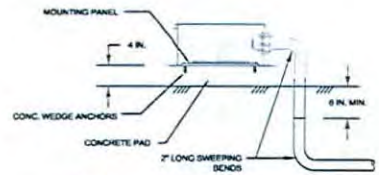
NOTES:

1. ROCKS SHALL BE 1.0' - 0.5' AVERAGE DIAMETER.
2. PLACE ROCKS IN CONTINUOUS MAT FULL DITCH PERIMETER TO 2.0' MINIMUM ABOVE DITCH INVERT ELEVATION.

ROCK OUTFALL PROTECTION (4 / D-1)
SCALE: NTS



CONDUIT PULL BOX (5 / D-1)
SCALE: NTS



NOTES:

1. PREPARE FOUNDATION BENEATH CONCRETE PAD. REMOVE LOOSE SOIL AND VEGETATION AND LEVEL. COMPACT FIRM.
2. PROVIDE POSITIVE DRAINAGE AWAY FROM CONCRETE PAD.
3. JUNCTION BOX SHALL BE:
   HOFFMAN A-1212 CHN F
   12"X12"X6" WITH TYPE A HINGED COVER
   OR APPROVED EQUAL

JUNCTION BOX (6 / D-1)
SCALE: NTS

90% DESIGN - NOT FOR CONSTRUCTION

VERIFY SCALE! THESE PRINTS MAY BE REDUCED - USE BELOW MEASURES ONE INCH ON ORIGINAL DRAWINGS.	REVISIONS			
	NO	DESCRIPTION	DATE	BY
MODIFY SCALE ACCORDINGLY!				

M:\1447\DWG\ACADSHEETS\DETAILS.DWG PLOTTED BY CHRISTOPHER HAMRINN ON April 22,2014

MORRISON MAIERLE, INC.
An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St. Missoula, MT 59808
Phone: (406) 542-4990 Fax: (406) 542-4801
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DSGN. BY: JOX
APPRL BY: JOX
DATE: 3/2014
Q.C. REVIEW BY: —
DATE: —

COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY — MONTANA
DETAILS

PROJECT NUMBER: 1447.034
SHEET NUMBER: 5
DRAWING NUMBER: D-1

GENERAL STRUCTURAL NOTES:

DESIGN CODES AND STANDARDS:

1. 2012 INTERNATIONAL BUILDING CODE (IBC)
2. ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
3. ACI 318-08 BUILDING CODE REQUIREMENTS FOR CONCRETE STRUCTURES
4. AMERICAN WELDING SOCIETY (AWS) D1.1-04 "STRUCTURAL WELDING CODE"

DESIGN LOADS:

1. DEAD LOADS: CONCRETE = 150 PCF
2. LIVE LOADS/WATER = 62.4 pcf
3. WIND LOADS: BASIC WIND SPEED (3-SECOND GUST) = 90 MPH
   WIND IMPORTANCE FACTOR = 1.0
   WIND EXPOSURE = C
4. SEISMIC LOADS: SEISMIC DESIGN CATEGORY = B
   - OCCUPANCY CATEGORY = I
   - MAPPED ACCELERATION PARAMETER: Ss = 0.301, S1 = 0.101
   - SOIL SITE CLASS = C
   - DESIGN SPECTRAL ACCELERATION PARAMETER, SDS = 0.241, SD1 = 0.114
5. EARTH PRESSURES:
   ABOVE GROUND WATER
   LATERAL ACTIVE EARTH PRESSURE (EQUIV. FLUID WT.) = 38PCF

   BELOW GROUND WATER
   LATERAL ACTIVE EARTH PRESSURE (EQUIV. FLUID WT.) = 45 PCF

   FRICTION COEFFICIENT BETWEEN FOOTING BASE AND SUPPORTING SOIL = 0.4

   LATERAL EARTH BEARING RESISTANCE (PASSIVE) = 300 PSF/FT.

MISCELLANEOUS:

1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH OTHER DISCIPLINES FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO BIDDING AND CONSTRUCTION.
2. SEE OTHER DISCIPLINE DRAWINGS FOR NON-STRUCTURAL ELEMENTS. STRUCTURAL DRAWINGS SHOW THIS INFORMATION FOR COORDINATION PURPOSES ONLY.
3. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.
4. ENGINEER SHALL REVIEW SHOP DRAWINGS ONLY FOR THE CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND FOR COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. DIMENSIONS AND QUANTITIES NOTED ON THE SHOP DRAWINGS ARE NOT GUARANTEED BY THE ENGINEER, AND THEREFORE, MUST BE VERIFIED BY THE GENERAL CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR INFORMATION THAT PERTAINS TO THE FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION, AND FOR COORDINATION OF THE WORK OF ALL TRADES. SHOP DRAWINGS MUST BE REVIEWED, STAMPED, AND SIGNED BY THE CONTRACTOR PRIOR TO THE REVIEW BY THE ENGINEER.
5. THE STRUCTURE SHALL BE ADEQUATELY BRACED FOR SOIL, WIND, EARTHQUAKE AND CONSTRUCTION LOADS UNTIL ALL FLOOR, ROOF, AND WALL UNITS HAVE BEEN PERMANENTLY ATTACHED THERETO.

REQUIRED SPECIAL INSPECTIONS AND TESTING:

1. IN ADDITION TO REGULAR INSPECTIONS, THE FOLLOWING ITEMS WILL ALSO REQUIRE SPECIAL INSPECTIONS AND TESTING IN ACCORDANCE WITH SECTION 1704, 1707, AND 1708 OF THE 2012 INTERNATIONAL BUILDING CODE.

   a) SPECIAL INSPECTIONS (1704):
   - INSPECTION OF FABRICATORS (1704.2)
   - CONCRETE CONSTRUCTION (1704.4)

   b) STRUCTURAL TESTING FOR SEISMIC RESISTANCE (1708):
   - REINFORCING STEEL (1708.3)
2. THE CONTRACTOR OR ITS AUTHORIZED AGENT SHALL EMPLOY A QUALIFIED TESTING AGENCY TO PROVIDE INSPECTION AND TESTING OF REQUIRED STRUCTURAL ITEMS IN ACCORDANCE WITH THE STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE STRUCTURAL ENGINEER OF RECORD.
3. IN ACCORDANCE WITH SECTION 1706.1 OF THE IBC, THE CONTRACTOR IS REQUIRED TO ACKNOWLEDGE THEIR AWARENESS OF AND THEIR PLANS FOR OBTAINING CONFORMANCE WITHIN THEIR OWN ORGANIZATION TO THE STATEMENT OF SPECIAL INSPECTIONS. A FORM OUTLINING THE CONTRACTOR'S RESPONSIBILITIES WILL BE PROVIDED BY THE STRUCTURAL ENGINEER OF RECORD FOR THE CONTRACTOR'S USE IN MEETING THE REQUIREMENTS OF IBC SECTION 1706.1

EARTHWORK:

1. FOUNDATIONS HAVE BEEN BASED ON AN ALLOWABLE BEARING PRESSURE PER IBC TABLE 1804.2. ALLOWABLE SOIL BEARING CAPACITY OF WALL FOOTINGS SUPPORTED ON NATIVE SOIL MATERIAL IS 2000 PSF.
2. DATA ON INDICATED SUBSURFACE CONDITIONS ARE NOT INTENDED AS REPRESENTATIONS OR WARRANTIES OF CONTINUITY OF SUCH CONDITIONS. IT IS EXPRESSLY UNDERSTOOD THAT OWNER AND ENGINEER WILL NOT BE RESPONSIBLE FOR INTERPRETATIONS OR CONCLUSIONS DRAWN THEREFROM BY THE CONTRACTOR. THE DATA ARE MADE AVAILABLE FOR CONVENIENCE OF THE CONTRACTOR.
3. STABILITY OF CONSTRUCTION EXCAVATION AND WORKER SAFETY ARE THE RESPONSIBILITY OF THE CONTRACTOR. TEMPORARY CONSTRUCTION EXCAVATIONS, ABOVE GROUNDWATER, TO BE PLANNED IN ACCORDANCE WITH OSHA PROVISIONS.
4. GROUNDWATER MAY BE PRESENT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DEWATERING.
5. KEEP EXCAVATIONS FREE OF STANDING WATER. REMOVE AND REPLACE MATERIAL THAT IS NOT WITHIN 3% OF OPTIMUM MOISTURE PRIOR TO PLACING ADDITIONAL FILL OR CONCRETE.
6. PROPER DRAINAGE SHALL BE MAINTAINED DURING CONSTRUCTION TO KEEP SURFACE RUNOFF FROM ENTERING THE EXCAVATIONS AND DIRECTED AWAY FROM THE STRUCTURE.
7. USE ONLY HAND OPERATED COMPACTION EQUIPMENT WITHIN 5 FT. OF STRUCTURES.
8. DO NOT PLACE BACKFILL UNTIL ALL SUPPORTING STRUCTURES ARE IN PLACE AND CONCRETE WALLS AND SLABS HAVE ACHIEVED THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH UNLESS OTHERWISE NOTED ON DRAWINGS.
9. WHERE STRUCTURAL FILL IS NOTED ON THE PLANS, IT SHALL BE PLACED 6 INCHES MINIMUM IN DEPTH AND COMPACTED TO MINIMUM 95% DRY DENSITY PER ASTM D-698. STRUCTURAL FILL SHALL CONFORM TO THE FOLLOWING GRADATION.

SCREEN OR SIEVE SIZE	PERCENT PASSING BY WEIGHT
3/4"	100
NO. 4	85
NO. 200	<20

CONCRETE:

1. CONCRETE PROPERTIES (SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS).

CAST-IN-PLACE CONCRETE	FOOTINGS/ FOUNDATION WALLS
MINIMUM 28 DAY COMPRESSIVE STRENGTH	4000 PSI
MAXIMUM WATER-CEMENT RATIO (BY WT.)	0.43
MAXIMUM AGGREGATE SIZE	¾"
PERCENT RANGE OF AIR CONTENT	6.0% ± 1.5%**
MAXIMUM SLUMP	4" ***

*** MAXIMUM SLUMP MAY BE INCREASED TO 8" W/ THE USE OF WATER-REDUCING ADMIXTURES TO MAINTAIN THE SPECIFIED W/C RATIO.

2. ALL CONCRETE REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT FOR REINFORCING INDICATED AS REQUIRING WELDING, WHICH SHALL CONFORM TO ASTM A706, GR.60.
3. CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
   WHEN PLACED ON GROUND: — 3" INTERIOR DRY SURFACES:
   EXPOSED TO WATER, WEATHER, SLABS —— 3/4"
   BACKFILL OR CONDENSATION: BEAMS —— 1-1/2"
   #5 BAR OR SMALLER —1-1/2" COLUMNS —— 1-1/2"
   #6 BAR OR LARGER ——2" WALLS —— 1"
4. ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE A 90 DEGREE STANDARD HOOK AS DEFINED IN THE LATEST EDITION OF ACI 318. DETAIL ALL REINFORCEMENT IN ACCORDANCE WITH ACI 315.
5. ALL REINFORCEMENT LAPS, UNLESS OTHERWISE NOTED, SHALL BE AS FOLLOWS:

DETAIL OF REINFORCEMENT - LAP LENGTHS **

BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
CONCRETE DESIGN STRENGTH		4000 PSI								
GR 60	TOP BAR *	1'-6"	2'-0"	3'-0"	3'-7"	5'-3"	6'-0"	6'-9"	7'-7"	8'-6"
	OTHER BAR	1'-0"	1'-6"	2'-4"	2'-8"	4'-0"	4'-7"	5'-2"	5'-10"	6'-7"

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR, IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

** INCREASE LAP LENGTHS SHOWN ABOVE BY 25% WHERE BARS ARE SPACED CLOSER THAN 6" O.C. OR WHERE EDGE OF BAR MEASURED IN DIRECTION OF SPACING IS LESS THAN 3" FROM FACE OF MEMBER.

6. TOLERANCES IN PLACING REINFORCEMENT SHALL BE: +/- 3/8 IN. FOR MEMBERS WITH D LESS THAN 8 IN. +/- 1/2 IN. FOR MEMBERS WITH D GREATER THAN 8 IN. WHERE D IS THE DISTANCE FROM THE OPPOSITE FACE OF CONCRETE TO THE CENTER OF THE REINFORCING.
7. METAL CLIPS OR SUPPORTS SHALL NOT BE PLACED IN CONTACT WITH THE FORMS OR THE SUBGRADE. CONCRETE BLOCKS OR DOBBICS SUPPORTING BARS ON SUBGRADE SHALL BE IN SUFFICIENT NUMBERS TO SUPPORT THE BARS WITHOUT SETTLEMENT, BUT IN NO CASE SHALL SUCH SUPPORT BE CONTINUOUS.
8. DOWELS SHALL BE THE LENGTH INDICATED. DOWELS SHALL BE WIRED IN POSITION PRIOR ACCESSORIES SHALL BE WIRED IN PLACE PRIOR TO FOUNDATION INSPECTION AND CONCRETE TO POURING CONCRETE.
9. AT ALL FOUNDATION/CONCRETE WALL AND FOOTING CORNERS AND WALL INTERSECTIONS, CORNER BARS SHALL BE PROVIDED TO MATCH THE HORIZONTAL BARS. SEE FOUNDATION DETAILS.
10. UNLESS INDICATED OTHERWISE, ALL ANCHOR BOLTS, HOLDOWNS AND OTHER REQUIRED PLACEMENT. DO NOT STAB THE ABOVE LISTED ITEMS INTO FRESH CONCRETE AFTER PLACEMENT. PROPERLY VIBRATE AROUND INSTALLED ITEMS TO ENSURE PROPER CONSOLIDATION OF CONCRETE.
11. WHERE SLAB OR WALL CONSTRUCTION REQUIRES CONSTRUCTION JOINTS PROVIDE A ROUGHENED BONDED SURFACE WITH LAPPED REINFORCEMENT AS INDICATED IN DETAILS.
12. WHERE "DRILLING & EPOXYING" OF REINFORCING STEEL OR THREADED ANCHOR RODS (ASTM A36, U.N.O.) IS INDICATED, UNLESS NOTED OTHERWISE, PROVIDE THE FOLLOWING SYSTEM OR APPROVED EQUIVALENT

APPLICATION	EPOXY SYSTEM
NEW OR EXISTING CONCRETE.	HILTI HIT HY150

CLASS II RIP RAP:

1. FURNISH STONE THAT HARD, DURABLE, AND ANGULAR IN SHAPE. RESISTANT TO WEATHERING AND WATER ACTION, FREE FROM OVERBURDEN, SPOIL, SHALE, STRUCTURAL DEFECTS, AND ORGANIC MATERIAL.
2. EACH STONE MUST HAVE ITS GREATEST DIMENSION NOT GREATER THAN THREE TIMES ITS LEAST DIMENSION.
3. DO NOT USE ROUNDED STONE OR BOULDERS FROM STREAMBED SOURCE AS RIP RAP. DO NOT USE SHALE OR STONE WITH SHALE SEAMS.
4. FURNISH RIP RAP MEETING TABLE AS FOLLOWS:

WEIGHT OF STONE	EQUIVALENT SPHERICAL DIAMETER*	% OF TOTAL SMALLER THAN GIVEN SIZE
700 LBS	2.00 FT	100
500 LBS	1.79 FT	70-90
200 LBS	1.32 FT	40-80
20 LBS	0.61 FT	0-10

*ASSUMES UNIT WT OF STONE 165 LBS PER CUBIC FOOT

5. PARTICLES CREATED FROM ONSITE EXCAVATION MAY NOT BE USED AS RIP RAP.

STRUCTURAL ABBREVIATIONS

ABUT	- ABUTMENT	MK.	- MARK
A.C.I.	- AMERICAN CONCRETE INSTITUTE	M.O.	- MASONRY OPENING
A.F.F.	- ABOVE FINISHED FLOOR	MTD.	- MOUNTED
A.I.S.C.	- AMERICAN INSTITUTE OF STEEL CONSTRUCTION	MTL.	- METAL
A.N.S.I.	- AMERICAN NATIONAL STANDARDS INSTITUTE	N.	- NORTH
A.W.S.	- AMERICAN WELDING SOCIETY	OPP.	- OPPOSITE
		O.W.J.	- OPEN WEB JOIST
B.B.	- BACK TO BACK		
BLKG.	- BLOCKING	P.A.F.	- POWDER ACTUATED FASTENERS
BSMT.	- BASEMENT	PCS.	- PIECES
B.U.	- BUILT-UP	PSF	- POUNDS PER SQ. FT.
		PSI	- POUNDS PER SQ. INCH
CCJ	- CONCRETE CONTROL JOINT	P.T.	- PRESSURE TREATED
CEJ	- CONCRETE EXPANSION JOINT		
CIJ	- CONCRETE CONSTRUCTION JOINT	R.	- RISER
CJ	- CONCRETE ISOLATION JOINT	RD.	- ROUND
CH.PL.PL.	CHECKERED FLOOR PLATE	RM.	- ROOM
CTRD	- CENTERED		
		S.	- SOUTH
°	- DEGREE	S.F.	- SQUARE FEET
DWL.	- DOWEL	SFC.	- SURFACE
D.O.	- DOOR OPENING	S.G.T.	- STRUCTURAL GLAZED TILE
		SHTG.	- SHEATHING
E.	- EAST	S.I.	- SQUARE INCHES
		S.I.P.	- STRUCTURAL INSULATED PANEL
GL.	- GLUE LAMINATED	S.L.V.	- SHORT LEG VERTICAL
G.L.B.	- GLUE LAMINATED BEAM	SPA.	- SPACES
GR.	- GRADE	SST	- STAINLESS STEEL
G.W.	- GROUND WATER	STIRR.	- STIRRUP
		STR.	- STRAIGHT
H.C.M.	- HOLLOW CLAY MASONRY	S.Y.	- SQUARE YARD
I.B.C.	- INTERNATIONAL BUILDING CODE	T.	- TREAD OR TON
I.C.B.O.	- INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS	THD.	- THREAD
		T.J.	- TRUSS JOIST
INV.	- INVERT	TMBR.	- TIMBER
		T.O.D.	- TOP OF DECK/SHEATHING
KIP	- 1000 POUNDS	T.O.F.	- TOP OF FOOTING
		T.O.SL.	- TOP OF SLAB
LAM.	- LAMINATED	T.O.W.	- TOP OF WALL
L.L.V.	- LONG LEG VERTICAL		
L.L.H.	- LONG LEG HORIZONTAL	U.N.O.	- UNLESS NOTED OTHERWISE
L.V.L.	- LAMINATED VENEER LUMBER		
		W.	- WEST
		W.I.	- WROUGHT IRON
		W.P.	- WORKING POINT

90% DESIGN - NOT FOR CONSTRUCTION

VERIFY SCALE!
THESE PRINTS MAY BE REDUCED. USE RULER MEASURES ONE INCH ON ORIGINAL DRAWING.
MODIFY SCALE ACCORDINGLY!

REVISIONS			
NO	DESCRIPTION	DATE	BY

MORRISON MAIERLE, INC.
An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St.
Missoula, MT 59808
Phone: (406) 542-8860
Fax: (406) 542-4801

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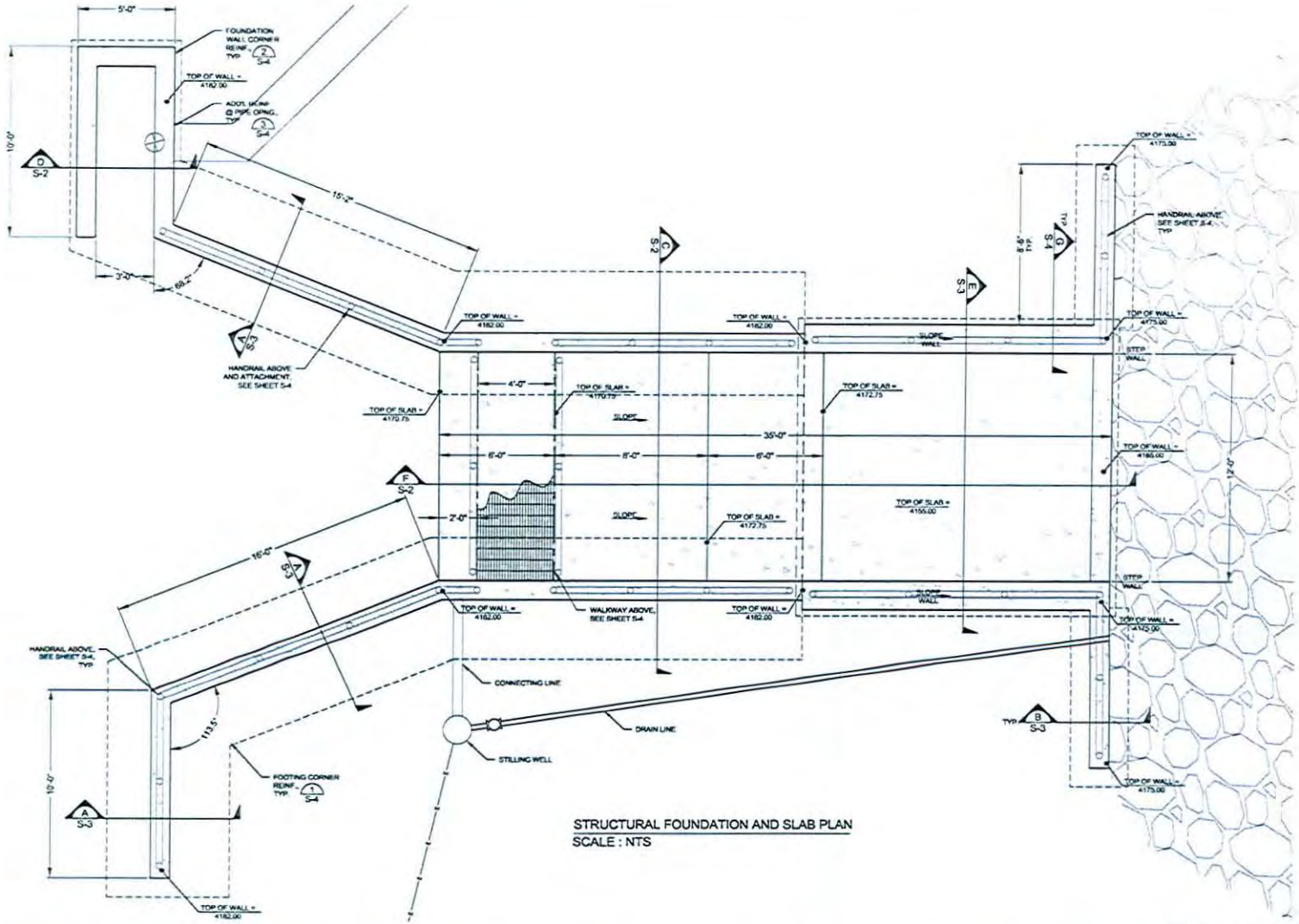
APPR. BY: XX
DATE: 3/2014
Q.C. REVIEW BY: —
DATE: —

COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY MONTANA
STRUCTURAL NOTES

PROJECT NUMBER 1447.034
SHEET NUMBER 6
DRAWING NUMBER S-1



STRUCTURAL FOUNDATION AND SLAB PLAN
SCALE : NTS

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NO	DESCRIPTION	DATE	BY

M:\1447\DWG\ACAD\SHEETS\S-2.DWG PLOTTED BY CHRISTOPHER HAWKINS ON Apr/23/2014

MORRISON MAIERLE, INC.
An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St. Missoula, MT 59808
Phone: (406) 542-6500 Fax: (406) 542-4801
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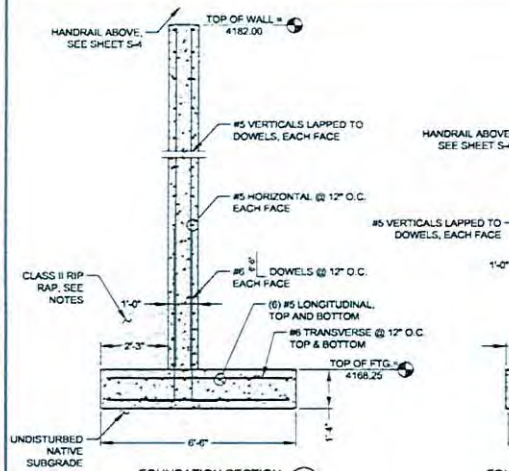
APPR. BY: XX
DATE: 3/2014
Q.C. REVIEW BY: ___
DATE: ___

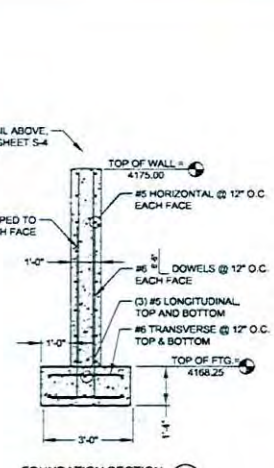
CARBON COUNTY — COONEY DAM OUTLET WEIR REPLACEMENT — MONTANA

STRUCTURAL FOUNDATION AND SLAB PLAN

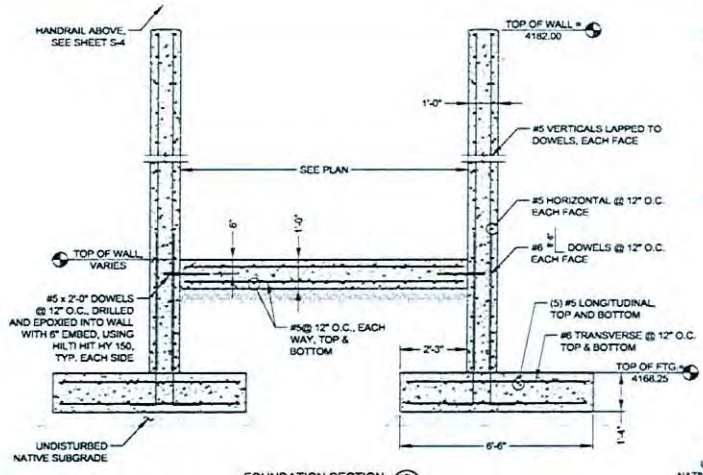
PROJECT NUMBER 1447.034
SHEET NUMBER 7
DRAWING NUMBER S-2



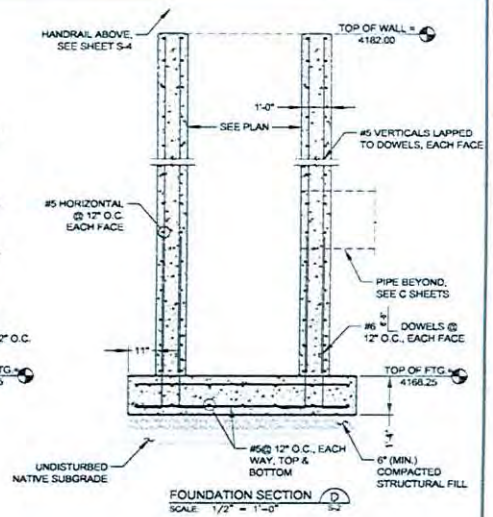
FOUNDATION SECTION A
SCALE: 1/2" = 1'-0"



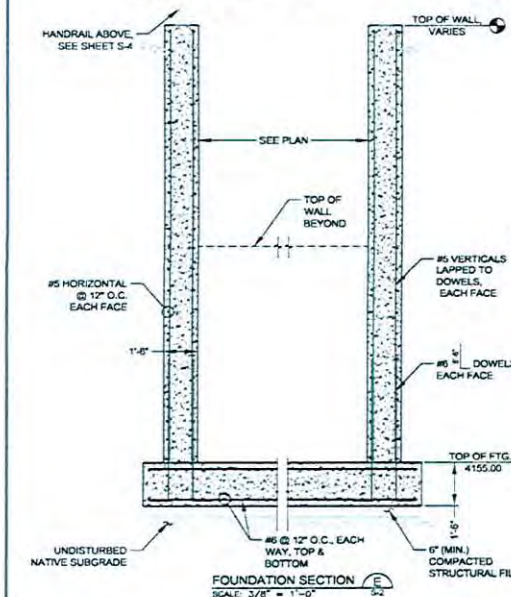
FOUNDATION SECTION B
SCALE: 1/2" = 1'-0"



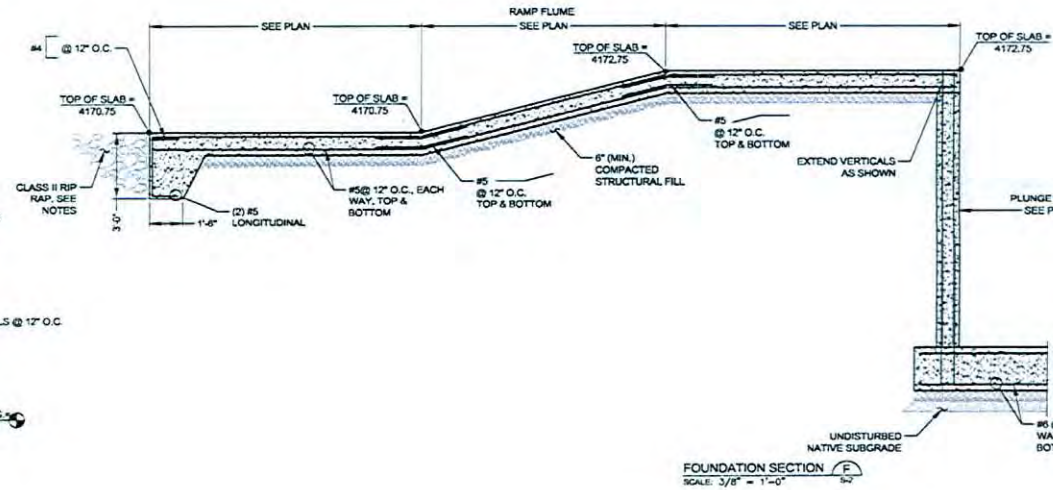
FOUNDATION SECTION C
SCALE: 1/2" = 1'-0"



FOUNDATION SECTION D
SCALE: 1/2" = 1'-0"



FOUNDATION SECTION E
SCALE: 3/8" = 1'-0"



FOUNDATION SECTION F
SCALE: 3/8" = 1'-0"

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MODIFY SCALE ACCORDINGLY!

REVISIONS			
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Engineers Surveyors Scientists Planners
3011 Palmer St. Missoula, MT 59808
Phone: (406) 542-6580
Fax: (406) 542-4801
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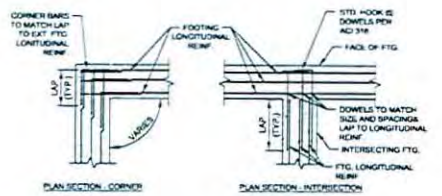
APPR. BY: XX
DATE: 3/2014
Q.C. REVIEW BY:
DATE:

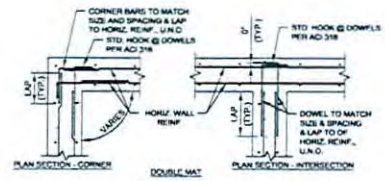
COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY MONTANA
STRUCTURAL SECTIONS

PROJECT NUMBER 1447.034
SHEET NUMBER
DRAWING NUMBER S-3



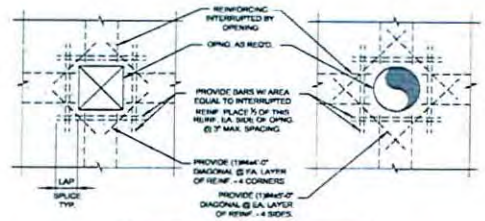
NOTES:
1. TRANSVERSE & DOWEL REINF. NOT SHOWN, PROVIDE PER FDN. DETAILS.
2. SEE GENERAL STRUCTURAL NOTES FOR LAP LENGTHS.

FTG. CORNER/INTS. REINF. DETAIL (1)
SCALE: 3/4" = 1'-0"



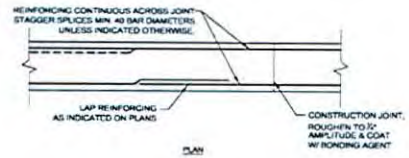
NOTES:
1. SEE GENERAL STRUCTURAL NOTES FOR LAP LENGTHS

FDN. WALL CORNER/INTS. REINF. (2)
SCALE: 3/4" = 1'-0"

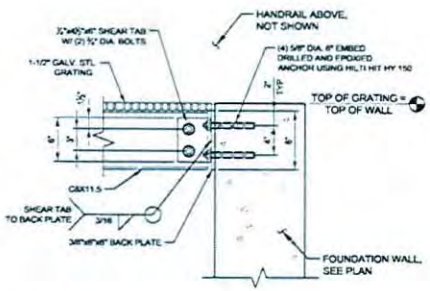


NOTE:
OMIT ADDITIONAL REINF. FOR OPENING DIAMETER < 12"

OPENING REINFORCING DETAIL (3)
SCALE: NTS



VERTICAL CONSTRUCTION JOINT (4)
SCALE: NTS



BEAM EMBED PLATE CONNECTION (5)
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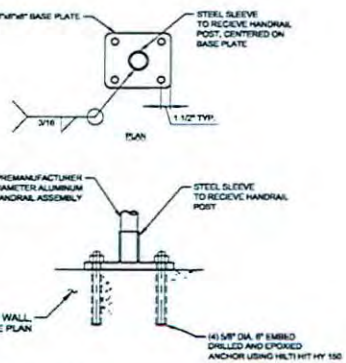
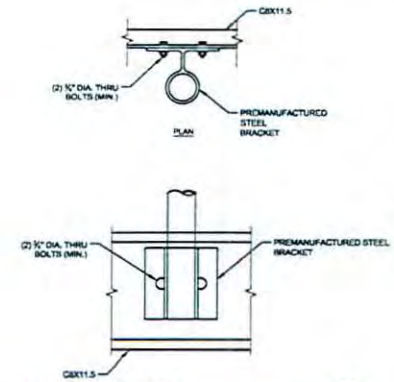
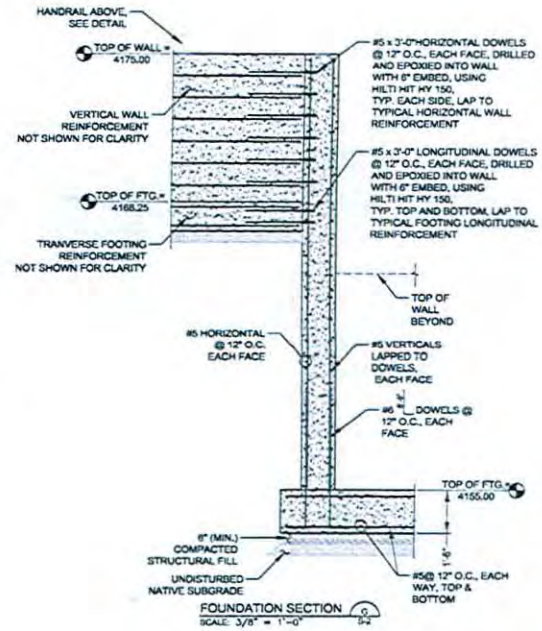


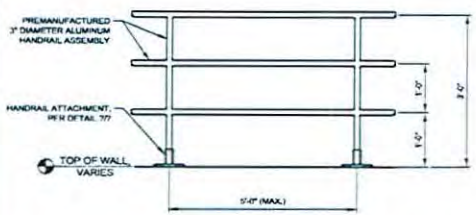
HANDRAIL ATTACHMENT (6)
SCALE: NTS



HANDRAIL ATTACHMENT (7)
SCALE: NTS



FOUNDATION SECTION (0)
SCALE: 3/8" = 1'-0"



SCHEMATIC HANDRAIL ELEVATION (8)
SCALE: NTS

90% DESIGN - NOT FOR CONSTRUCTION

VERIFY SCALE!
THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING.
MODIFY SCALE ACCORDINGLY!

REVISIONS

NO	DESCRIPTION	DATE	BY

MORRISON MAIERLE, INC.
An Employee-Owned Company
Engineers Surveyors Scientists Planners
3011 Palmer St.
Missoula, MT 59808
Phone: (406) 542-4660
Fax: (406) 542-4601

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DSGN. BY: XX
APPR. BY: XX
DATE: 3/2014
Q.C. REVIEW BY: —
DATE: —

COONEY DAM OUTLET WEIR REPLACEMENT
CARBON COUNTY MONTANA
STRUCTURAL SECTIONS AND DETAILS

PROJECT NUMBER 1447.034
SHEET NUMBER 9
DRAWING NUMBER S-4

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Montana Department of Natural Resources and Conservation
Water Resources Division
1424 9th Ave. P.O. Box 201601
Helena, MT 59620-1601
Telephone (406) 444-6646
Fax (406) 444-0533