SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Owner and Contractor Responsibilities

B. Contractor use of site and premises.

C. Scope of Work

1.2 Owner and Contractor Responsibilities

A. Owners Responsibilities:

1. Responding to project questions
2. Final Acceptance and inspections.
3. Submittal and material review.

B. Contractors Responsibilities:

1. Quality control of work.
2. Completion of project as bid.
3. Survey and Layout of Piers and Pathway.
4. Coordination with FWP Personnel

1.3 CONTRACTOR USE OF SITE

A. Limit use of site to allow:

1. Coordinate with FWP to limit public usage in work areas as necessary.

1.4 SCOPE OF WORK

A. Project Objective: The project generally includes the repair and expansion of a concrete weir and diversion structure.

B. Scope of Work: Work includes the following but is not limited to the general description contained herein:

1. Mobilization

- General: This bid item shall include the costs associated with mobilizing to the project site, insurance, bonding, permitting, and submittals.

- Work Included:
  - Follow Specification Section 01450;
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Transport and set up all equipment, materials, and other items needed to complete the project;
  - All permits, coordination, and compliance inspections required for the work;
  - Installation of all BMP's and BMP plans;
  - Insurance and bonding;
  - Prepare and provide submittals, construction schedule, and all other paperwork required by the contract documents prior to construction startup.

- Measurement: No measurement shall be taken for this item.

- Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal on the schedule shown in Section 01450.

2. Concrete

- General: This bid item shall include the costs associated with the supply and pouring of the concrete for the structure walls.

- Work Included:
  - Supply concrete that meets Specification Section 03300.

- Measurement: Measurement shall be taken per complete concrete volume provided and poured according to plans and specifications.

- Payment: Payment shall be by the price bid per "Concrete" installed as listed in the proposal.

3. Wall Forming and Reinforcing

- General: This bid item shall include the costs associated with the forming and concrete reinforcement installed for the concrete walls.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Follow Specification Sections 03100 & 03200.

- Measurement: Measurement shall be taken per linear foot of complete length of wall forming installed according to plans and specifications. Reinforcing steel will not be measured and will be considered incidental to this item.
- Payment: Payment shall be by the price bid per "Wall Forming and Reinforcing" installed as listed in the proposal.

4. Concrete Pad

- General: This bid item shall include the costs associated with preparing, reinforcing, and pouring the concrete pad that will cap the fill placed inside the new concrete walls.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Follow Specification Sections 03200 & 03300;
  - Install concrete pad on the fill placed within the new concrete walls.

- Measurement: Measurement shall be taken per complete square footage of concrete pad installed according to plans and specifications.

- Payment: Payment shall be by the price bid per "Concrete Pad" installed as listed in the proposal.

5. Fill

- General: This bid item shall include the costs associated with

the fill supplied and placed within the new concrete walls formed and poured.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - ¾" crushed gravel be used within new concrete walls and covered with concrete pad.
  - Compaction of fill to 90% proctor. Contractor testing is not required, but owner reserves the right to hire independent testing company at their own cost, if needed.

- Measurement: Measurement shall be taken per complete fill volume installed according to plans and specifications.

- Payment: Payment shall be by the price bid per "Fill" installed as listed in the proposal.

6. Rip-Rap

- General: This bid item shall include the costs associated with the rip-rap installed to stabilize the bank downstream of the new diversion additions.

- Work Included:
  - Supply rip-rap and place below new concrete walls installed in accordance with specification 02240.
  - Install rip-rap in location shown on plans. Lay fabric beneath a minimum of 18" lift.

- Measurement: Measurement shall be taken per complete installation of rip-rap installed according to plans and specifications.

- Payment: Payment shall be by the price bid per "Rip-Rap" installed as listed in the proposal.

7. Dewatering

- General: This bid item shall include the costs associated with diverting the water and dewatering the working area.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Divert water and dewater area for repair of the weir and installation of the new diversion addition;
  - Retore river to pre-construction condition and remove all diversion used for dewatering.

- Measurement: No measurement will be taken for this item.

- Payment: Payment shall be by the price bid per "Dewatering" completed as listed in the proposal.

8. Weir Repair

- General: This bid item shall include the costs associated with the repair of the crest of the weir.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified.

- Measurement: No measurement will be taken for this item.

- Payment: Payment shall be by the price bid per "Weir Repair" completed as listed in the proposal.

C. CONTRACTS:

All work shall be done under one general contract provided by the Montana Department of Fish Wildlife and Parks Design and Construction.

D. PROPOSAL:

Proposal shall include all costs to complete the work as described in the plans and specifications, utility locates, required mobilization and insurance costs and, where applicable, State of Montana Prevailing Wage Rates and Contractor Gross Receipts Tax of 1%.

END OF SECTION

SECTION 01450

MOBILIZATION

PART 1 GENERAL

1.1 DESCRIPTION

A. This item shall consist of the prepatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.

B. Contractor's cost for administration, bonding, insurance, and site documents shall be included in mobilization and shall not be paid as a separate item.

C. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other fuel leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.

D. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of weed seeds. Equipment removed from the sites may not be returned to the sites again until it is thoroughly cleaned again.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. There will be no direct measurement of this item.

4.2 PAYMENT

B. Partial payments for mobilization/demobilization will be made based on the lump sum bid price as follows:

- 25% of the amount bid for mobilization/demobilization when the Contractor has moved on-site and begun construction activities.
- 50% of the amount bid for mobilization/demobilization when 25% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 75% of the amount bid for mobilization/demobilization when 50% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 100% of the amount bid for mobilization/demobilization when 75% of the contract amount (exclusive mobilization/demobilization) has been completed.

END OF SECTION 01450

SECTION 01750

FINAL CLEANUP

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of final cleanup of the project site prior to final acceptance.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONTRACTOR RESPONSIBILITES

The contractor shall be responsible for final clean up at the end of the project to a level satisfactory to the owner. All construction debris, no mater how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Re-seeding or re-sodding, or other re-surfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess pavement, concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

All final slopes shall be dressed manually to remove woody debris, accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. The contractor shall dress all gravel, pavement and concrete edges to eliminate abrupt edges and provide a smooth transition. All construction related temporary sediment control devices shall be removed as soon as practical.

PART 4 MEASUREMENT AND PAYMENT

4.1 PAYMENT

Unless specifically noted otherwise, all final cleanup work shall be incidental to other work items in the contract and no separate payment shall be made.

END OF SECTION 01750

SECTION 02240

RIPRAP

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, placing, and finishing riprap rock placement at designated areas on the project drawings.

PART 2 PRODUCTS

2.1 RIPRAP GRADATION

A. Furnish hard, durable, angular rock that is resistant to weathering and water action and free of organic or other unsuitable material. Do not use shale, rock with shale seams, or other fissle or fissured rock that may break into smaller pieces in the process of handling and placing. Incorporate the following gradation for riprap installations as shown in Table 1:

Table 1. Riprap Gradation

Percent of Rock by Mass	Approximate Cubic Dimension (inches)
<10	16 to 24
<50	6 to 12
<10	0 to 6

PART 3 EXECUTION

3.1 GENERAL

A. Place riprap to form a well-graded mass to its full thickness in operation to avoid displacing the underlying geotextile or other material. Do not place riprap material by methods that cause segregation or damage to the prepared surface. Place or rearrange individual rocks by mechanical or hand methods to obtain a dense uniform blanket with a reasonably smooth surface.

B. Install conserved and/or imported riprap according to the project drawings or as directed by the Project Representative.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement will be taken by the cubic yard of rip rap placed according to the plans or as directed by the project manager. Measurement will not be taken for rip rap installed not according to the plans or as directed by the project manager.

3.2 Payment

B. Payment will be at the unit price listed in the proposal for “Rip-Rap”. Payment will be made for completed work.

END OF SECTION 02240

SECTION 03100

CONCRETE FORMWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Form work for cast-in place concrete, with shoring, bracing and anchorage.

B. Form accessories.

C. Form stripping.

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Section 03300 - Cast-In-Place Concrete: Supply of concrete accessories for placement by this section.

1.3 RELATED SECTIONS

A. Section 03200 - Concrete Reinforcement.

B. Section 03300 - Cast-in-Place Concrete.

1.4 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 318 - Building Code Requirements for Reinforced Concrete.

C. ACI 347 - Recommended Practice For Concrete Form work.

D. PS 1 - Construction and Industrial Plywood.

1.5 DESIGN REQUIREMENTS

A. Construct form work, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable code for fabrication, erection and removal of formwork.

1.7 COORDINATION

A. Coordinate this Section with other Sections of work which require attachment of components to form work.

B. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Project Manager.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Form Materials: At the discretion of the Contractor.

2.2 FORMWORK ACCESSORIES

A. Form Release Agent: Colorless vegetable oil, approved for use in fresh water which will not stain concrete, or absorb moisture.

B. Nails, Spikes, Lag Bolts, Through Bolts, Anchors: Sized as required, of sufficient strength and character to maintain form work in place while placing concrete.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

A. Earth forms are not permitted.

3.3 ERECTION - FORMWORK

A. Erect form work, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to over stressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

3.4 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated with form release agent prior to placement of concrete.

3.5 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by Section 03300 - Cast-in-Place Concrete.

3.6 FIELD QUALITY CONTROL

A. Inspect erected form work, shoring, and bracing to ensure that work is in accordance with design, and that supports, fastenings, wedges, ties, and items are secure.

3.7 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

PART 4 METHODS OF MEASUREMENT

4.1 Measurement will be taken as described in Section 01010: Summary of Work.

PART 5 BASIS OF PAYMENT

5.1 Payment will be made as described in Section 01010: Summary of Work.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel, fibermesh and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

A. Section 03100 - Concrete Formwork.

B. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

A. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.

B. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.

C. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Fibermesh micromesh reinforcement: Fibrillate polypropylene olefin fibermesh or approved equal.

B. Reinforcement bars shall conform to ASTM Specification A-615-68, "Deformed Billet Steel Bars for Concrete Reinforcement." The size shall be shown on the Plans.

3.1 STEEL REINFORCEMENT

A. Steel reinforcement shall be carefully cut to proper length and accurately bent before placement. Cold bends shall be made around a pin having a minimum diameter eight times the diameter of the bar being bent.

B. Placing Reinforcement Steel. Reinforcing steel delivered or stored at the site of the work shall be neatly piled on blocks or timbers in such a way as to keep it off the ground, and shall be covered to prevent intrusion of moisture.

C. Before being placed, all steel shall be thoroughly cleaned of mill scale, rust, grease, or other coatings that will destroy the bond.

D. Reinforcement shall be carefully placed as indicated on the Plans. Bars shall not be bent or straightened in a manner that will injure the material.

E. Bars shall be accurately and rigidly secured in position by use of such approved metal clips, spacers, bar supports, or hychairs as may be necessary.

F. Splices in reinforcing bars shall be lapped at least 12 inches.

G. Reinforcement shall be secured in position, inspected, and approved before concrete is placed. In no case shall reinforcement be allowed to be in contact with the ground or touch from work once installed.

H. All main reinforcement shall have the following cover unless otherwise shown on the Plans. The reinforcement of footings and other principal structural members in which the concrete is deposited against the ground contact surface shall be placed three inches from the contact surface. If contact surfaces after removal of the forms are to be exposed to the weather or are to be in contact with the ground, the reinforcement shall be protected with not less than 1 1/2 inches for #5 bars or smaller.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

A. Field inspection of the reinforcement shall be performed by the Project Manager.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHODS OF MEASUREMENT

A. Measurement will be taken as described in Section 01010: Summary of Work.

4.2 BASIS OF PAYMENT

A. Payment will be made as described in Section 01010: Summary of Work.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Control, expansion and contraction joint devices associated with concrete work.

1.2 RELATED SECTIONS

A. Section 03100 - Concrete Formwork: Formwork and accessories.

B. Section 03200 - Concrete Reinforcement: Reinforcement

1.3 MEASUREMENT AND PAYMENT

A. Concrete:

1. Basis of Measurement: Measurement will be taken as described in Section 01010: Summary of Work.

2. Basis of Payment: Payment will be made as described in Section 01010: Summary of Work.

1.4 REFERENCES

A ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

B. ACI 305R - Hot Weather Concreting.

C. ACI 306R - Cold Weather Concreting.

D. ACI 308 - Standard Practice for Curing Concrete.

E. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

F. ASTM C33 - Concrete Aggregates.

G. ASTM C94 - Ready-Mixed Concrete.

H. ASTM C150 - Portland Cement.

I. ASTM C260 - Air Entraining Admixtures for Concrete.

J. ASTM C494 - Chemicals Admixtures for Concrete.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: ASTM C150, Type IA - Air Entraining - Portland type.

B. Fine and Coarse Aggregates: ASTM C33.

C. Water: Clean and not detrimental to concrete.

D. Micromesh reinforcement shall be fibrillate polypropylene olefin fibermesh.

2.2 ADMIXTURES

A. Air Entrainment: ASTM C260.

2.3 JOINT DEVICES AND FILLER MATERIALS

A. Joint Filler Type B ASTM D1752; Closed cell polyvinyl chloride foam, resiliency recovery of 95 percent if not compressed more than 50 percent of original thickness. It shall be equal to Rodofoam grade #327 as manufactured by W.R. Grace & Company.

2.4 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94, Alternative No. 3.

B. Select proportions for normal weight concrete in accordance with ACI 301 Method 3.

C. Provide concrete to the following criteria:

Unit	Measurement
Compressive Strength (7 day)	2000 psi
Compressive Strength (28 day)	4000 psi
Micromesh Reinforcement	1 1/ lbs/cu. yard
Water/Cement Ratio (maximum)	6 gal/bag
Aggregate Size (minimum)	3/4 inch
Air Entrained	3 - 6 percent
Slump (maximum)	3 - 4 inches

D. Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.

E. Use set retarding admixtures during hot weather only when approved by Engineer.

F. Add air entraining agent to normal weight concrete mix for work exposed to exterior.

G. Use of calcium chloride as an admixture is prohibited!

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that reinforcement and other items to be cast into concrete are accurately placed, positioned securely.

B. Verify requirements for concrete cover over reinforcement.

3.2 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

3.3 PLACING CONCRETE

A. Place concrete in accordance with ACI 301.

B. Notify Engineer minimum 72 hours prior to commencement of operations. The forms and steel reinforcement shall be inspected or approved by the Engineer before concrete may be placed.

C. Ensure reinforcement, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. The contractor shall not allow cold joints to occur within continuous sections of concrete.

F. Tolerance:

1. Horizontal alignments on all work shall be such that the concrete serves the function intended and presents a clean, even, regular appearance. Lines intended to be straight shall be within a tolerance of plus or minus 2 inches in 100 feet.

2. Elevation shall be plus or minus .05 feet of staked elevation.

3.4 CONCRETE FINISHING

A. All exposed edges shall receive a one inch chamfer.

B. All tooled joints shall have a ½ inch chamfer.

C. Sawcut joints across the slab within 24 hours of pouring to a depth of 2" and at a maximum spacing of 15'.

3.5 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Concrete placed during cold weather shall be protected in accordance with ACI 306R - Cold Weather Concreting.

3.6 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed by the Engineer.

B. Contact engineer 72 hours prior to placement of concrete in forms.

C. Provide free access to Work and cooperate with testing firm.

D. Submit proposed mix design of concrete to the Engineer for review 72 hours prior to commencement of Work.

E. Tests of cement and aggregates may be performed at the Engineers direction to ensure conformance with specified requirements.

3.7 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

C. Patch imperfections as directed.

3.8 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. The repair or replacement of defective concrete will be determined by the Engineer.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

END OF SECTION