ADDENDUM NO. 1

TO: ALL BIDDERS OF RECORD

PROJECT: Bearpaw Lake FAS Road and Parking Improvement

FWP PROJECT #: 7113721

DATE: August 27, 2013

FROM: Kevin McDonnell.

Acknowledge receipt of this addendum by inserting its number and date in the Proposal Form and on the Bid Envelope. Failure to do so may subject bidder to disqualification.

This Addendum forms a part of the Contract Documents. Clarification and/or modifications are as follows:

MODIFICATIONS

Changes to the Specifications

- Revised Specifications to include the following sections:

INDEX TO
TECHNICAL SPECIFICATIONS
BEARPAW FAS ROAD IMPROVEMENT

FWP # 7113721

DIVISION 1 GENERAL REQUIREMENTS

- Section 01010 - Summary of Work
- Section 01019 - Contract Considerations
- Section 01025 - Measurement and Payment
- Section 01029 - Utilities within Work Area
- Section 01039 - Coordination and Meetings
- Section 01300 - Required Submittals
- Section 01400 - Quality Control
- Section 01410 - Testing Laboratory Services
- Section 01560 - Temporary Controls
- Section 01600 - Material & Equipment
- Section 01700 - Contract Closeout

DIVISION 2 SITE WORK

- Section 02110 - Site Clearing & Grubbing
- Section 02207 - Aggregate Material
- Section 02211 - Rough Grading
- Section 02231 - Aggregate Courses
- Section 02240 – Rock Bar Removal
- Section 02250 – Crib Step Access
- Section 02251 – Piezometer Repair Assistance
- Section 02936 – Seeding
- Section 02950 – Straw Wattle

TECHNICAL SPECIFICATIONS

INDEX TO
TECHNICAL SPECIFICATIONS
BEARPAW FAS ROAD IMPROVEMENT

FWP# 7113721

DIVISION 1 GENERAL REQUIREMENTS

DIVISION 2 SITE WORK

PLAN SHEETS

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. Staking of radius points, parking area corners barrier locations, culvert locations and reference elevations.
2. Coordination of site access.

B. Contractors Responsibilities:

1. Quality control of work.
2. Coordination with FWP Engineer Kevin McDonnell

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.

1.3 SCOPE OF WORK

A. <u>Project Objective</u>: Repair of existing and construction of new access roads and parking areas, installation of new barrier posts and culverts, seeding of all areas disturbed during construction, construction of crib step access, piezometer repair assistance and rock bar removal.

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B. Scope of Work:

Work includes the following but is not limited to the general description contained herein:

BASE BID ITEMS:

1. Mobilization
2. Excavation – Includes all unclassified excavation, rough grading, removal of spoils, excavation for piezometer repair, removal of 12 wooden barrier posts at Camp Site 1, and improving existing drainage ditches.
3. Base Course – Includes all materials and labor to install 3" minus base course for roads and parking areas.
4. Crushed Top Surfacing – Includes all materials and labor to install 1" crushed top surfacing for roads and parking areas.
5. Culverts – Includes all labor and material for complete installation of HDPE culverts with flared end sections per manufacturers' recommendations.
6. Barriers – Includes all labor and materials to install wooden barrier posts as specified.
7. Seeding – Includes all labor and materials to seed areas disturbed during construction, vegetated parking Island, and spoils deposit area per plans and specifications.
8. Crib Step Access – Includes all work and materials to construct crib step access per plans and specification.
9. Piezometer Repair Assistance – Includes all work and materials required to perform the piezometer repair assistance as described in the specifications.
10. Rock Bar Removal – Includes all work and materials required o perform the rock bar removal per plans and specifications.
11. Straw Wattle – Includes all material and work required to install staw wattle to plans and specifications.
12. Compaction Testing Allowance - $1000.00 allowance for compaction testing to be performed per specified frequency and at FWP engineers request.

ADDITIVE ALTERNATE BID ITEMS:

1. Crushed Top Surfacing – Includes all materials and labor to install 1" crushed top surfacing on Main Loop Road.

C. CONTRACTS:

All work shall be done under one general contract.

END OF SECTION

SECTION 01019 - CONTRACT CONSIDERATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Inspection and Testing Allowances
B. Application for Payment
C. Change procedures
D. Project Staking
E. Environmental Considerations

1.2 RELATED SECTIONS

A. Section 01025 - Measurement and Payment.
B. Section 01400 - Quality Control

1.3 INSPECTION AND TESTING ALLOWANCES

A. Testing costs paid for by Contractor:
   1. Costs of incidental labor and facilities required to assist inspection or testing firm.
   2. Costs of retesting due to failure of previous tests as determined by FWP Engineer.

1.4 APPLICATIONS FOR PAYMENT

A. Submit 1 copy of each application on Department Fish, Wildlife and Parks Form 101.

B. Content and Format: Utilize Schedule of Values on proposal form for listing items in Application for Payment.

C. Payment Period: 30 days.

1.5 CHANGE ORDER PROCEDURES

A. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by State of Montana, General Conditions of the Contract.

B. The Engineer may issue a Change Directive, which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within 5 days.

C. The Contractor may propose changes by submitting a request for change to the Engineer describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors.

D. Unit Price Change Order: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units, which are not pre-determined, execute Work under a Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.6 PROJECT STAKING

A. Construction staking provided by the owner

1. Staking of radius points, locations of barriers and culverts, and parking area corners.
2. If owners staking is destroyed through careless actions of the Contractor, the staking may be replaced by the owner and the cost of replacement deducted from the Contractor's contract.

B. Construction staking provided by the Contractor

1. All staking desired by the Contractor in addition to that noted above shall be provided by the Contractor.

1.7 ENVIRONMENTAL CONSIDERATIONS

A. The Contractor shall use best management practices to prevent silt, soil and debris from entering the water. This may include straw, gravel or fabric. Temporary dikes to divert rainwater may be used, provided they are removed and the gravel or soil returned to the original condition. Exposed soil may require straw or similar cover to minimize erosion caused by rain. Other appropriate methods may be used at the Contractors' discretion or as directed by the owner.

B. Equipment used in or near water shall not leak fluids. It shall be power washed before use on the site and examined by the engineer.

C. All material removed from the site will be disposed of in a safe and legal manner.

END OF SECTION

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Measurement and payment criteria applicable to the Work performed under a unit price payment method.

B. Defect assessment and non-payment for rejected work.

1.2 AUTHORITY

A. Measurement methods delineated in the individual specification sections are intended to complement the criteria of this section. In the event of conflict, the requirements of the individual specification section shall govern.

B. Take all measurements and compute quantities. The Engineer will verify measurements and quantities.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.3 UNIT QUANTITIES SPECIFIED

A. Unit price quantities and measurements indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment. Lump sum bid item quantities will not be measured. Payment for these lump sum bid items will be per bid form.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.4 MEASUREMENT OF QUANTITIES

A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

B. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

A. Payment Includes: Full compensation for all required labor, Products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Architect/Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.

1.6 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Engineer it is not practical to remove and replace the Work, the Engineer will direct one of the following remedies:

1. The defective Work will be repaired to the instructions of the Montana Department of Fish, Wildlife and Parks Engineer and the unit sum/price will be adjusted to a new sum/price at the discretion of the Montana Department of Fish, Wildlife and Parks Project Engineer.

2. The defective work will not be repaired. The Project Engineer will adjust the unit sum/price of the work to reflect the degree of defectiveness and subsequent serviceability.

C. The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.

D. The authority of the Montana Department of Fish, Wildlife and Park Project Engineer to assess the defect and identify payment adjustment, is final.

1.7 NON-PAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from the transporting vehicle.
4. Products placed beyond the lines and levels of the required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling and disposing of rejected Products.

END SECTION

SECTION 01029

UTILITIES WITHIN WORK AREAS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Utilities within work areas.

B. Contractor's responsibilities.

1.2 UTILITIES WITHIN WORK AREAS

A. The contractor shall be responsible for determining the location of any utilities in the project area.
B. The contractor shall be responsible for working safely around any utilities that are located within the project area.

1.3 CONTRACTOR RESPONSIBILITIES

A. Notification: The Contractor shall contact, in writing, all public and private utility companies that may have utilities that may be encountered during excavation. The notification shall include the following information:

1. The nature of the work the Contractor will be performing.

2. The time, date, and location the Contractor will be performing work that may conflict with the utility.

3. The nature of work the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.

4. Requests for field location and identification of utilities.

B. Overhead Utilities: The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities such as power lines, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination.
B. Alteration project procedures.
C. Preconstruction conference.

1.2 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.

C. After Owner occupancy of site, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

D. Contractor will coordinate all work activities with the Montana Department of Fish, Wildlife and Parks Engineer Kevin McDonnell.

1.3 PRECONSTRUCTION CONFERENCE

A. Engineer will schedule a conference after Notice of Award is issued.

B. Attendance Required: Engineer, Contractor and the Regional Fish, Wildlife and Parks representative when possible.

C. Agenda:
1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, Schedule of Values, and progress schedule.
5. Designation of personnel representing the parties in Contract, and the Engineer.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
7. Scheduling.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.
B. Construction progress schedules.
C. Proposed products list.
D. Product data.
E. Samples.
F. Manufacturers' instructions.
G. Manufacturers' certificates.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal to Project Manager no less than 15 days before product installation.
B. Apply Contractor's stamp, signature or initial certifying that review and verification of Products submitted, is in accordance with the requirements of the Work and Contract Documents.
C. Schedule submittals to expedite the Project.

D. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

E. Revise and resubmit submittals as required, identify all changes made since previous submittal.

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule within 15 days after date established in Notice to Proceed for Project Manager's review.

1.3 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, submit complete list of major products/aggregates proposed for use, with name of manufacturer/supplier, trade name, and model number of each product.

B. 15 days prior to installation of surfacing aggregate materials, submit aggregate laboratory test analysis for the aggregate along with the name of the supplier.

C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, in quantities specified for Product Data.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.6 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Engineer for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.8 MATERIAL SUBMITALS

A. Submit testing information, manufacturers product information or certificates for the following: gravel products, barrier posts, HDPE culverts.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality assurance and control of installation.

B. References

C. Inspection and testing laboratory services.

1.2 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 REFERENCES

A. Conform to reference standard by date of issue current on January 1, 2005.

B. Should specified reference standards conflict with Contract Documents, or Regulations request clarification for Architect/Engineer before proceeding.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 INSPECTION AND TESTING LABORATORY SERVICES

A. Contractor will appoint, employ, and pay for services of an independent firm to perform inspection and testing.

B. The independent firm will perform inspections, tests, and other services specified in individual specification sections and as required by the Architect/Engineer.

C. Reports will be submitted by the independent firm to the Architect/Engineer, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

D. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for retesting will be charged to the Contractor.

E. The Contractor shall deliver to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.

F. The Contractor shall cooperate with laboratory personnel, and provide access to the work.

G. The Contractor shall provide incidental labor tools and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.

H. The Contractor shall notify Architect/Engineer and laboratory 48 hours prior to expected time for operations requiring inspection and testing services.

I. The Contractor may arrange with laboratory and pay for additional samples and tests desired by Contractor beyond specified requirements.

OWNER

A. Engineer will perform periodic field inspections to determine testing is required.

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

A Selection and payment.

B Contractor submittals.

C Laboratory responsibilities.

D Laboratory reports.

E Limits on testing laboratory authority.

E Contractor responsibilities.

F Schedule of inspections and tests.

1.2. REFERENCES

A. ANSI/ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.3 SELECTION AND PAYMENT

A. Contractor shall employ the services of an independent testing laboratory to perform specified inspection and testing. The testing agency will be approved by the FWP Engineer prior to testing.

B. Employment of testing laboratory shall in no way relive Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.4 QUALITY ASSURANCE

A. Comply with requirements of ANSI/ASTM E329 and ANSI/ASTM D3740.

B. Laboratory: Authorized to operate in state in which Project is located.

C. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.

D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.

1.5 CONTRACTOR SUBMITTALS

A. Prior to testing, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.

B. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards (NBS) during most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.6 LABORATORY RESPONSIBILITIES

A. Perform specified inspection, sampling, and testing of Products in accordance with specified standards.

B. Ascertain compliance of materials and mixes with requirements of Contract Documents.

C. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or Products.

1.7 LABORATORY REPORTS

A. After each inspection and test, promptly submit two copies of laboratory report to Architect/Engineer, and to Contractor.

B. Include:

1. Date issued,
2. Project title and number,
3. Name of inspector,
4. Date and time of sampling or inspection,
5. Identification of product and Specifications Section,
6. Location in the Project,
7. Type of inspection or test,
8. Date of test,
9. Results of tests,
10. Conformance with Contract Documents.

C. Provide interpretation of test results to Engineer.

1.8 LIMITS ON TESTING LABORATORY AUTHORITY

A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

B. Laboratory may not approve or accept any portion of the Work.

C. Laboratory may not assume any duties of Contractor.

D. Laboratory has no authority to stop the Work.

1.9 CONTRACTOR RESPONSIBILITIES

A. Contract with an appropriate testing agency and make arrangements with the testing agency to perform the tests required in the contract documents.

END OF SECTION

SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Weed Control.

B. Water Control.

C. Dust Control.

D. Erosion and Sediment Control

E. Pollution Control

F. Traffic Control

1.2 RELATED SECTIONS

A. Section 01010 - Summary of Work

B. Section 01039 - Coordination and Meetings

1.3 WEED CONTROL

A. Seed and reclaim disturbed areas as soon as possible.

B. Thoroughly clean equipment before bringing on site and notify Engineer for inspection.

1.4 WATER CONTROL

A. Grade site to drain away from natural water bodies. Maintain excavations free of water.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.5 DUST CONTROL

A. Contractor shall grade and compact materials as soon as possible after being placed.

1.6 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.7 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.8 TRAFFIC CONTROL

A. Provide all temporary signing, personnel and traffic control devises as required by federal, state and local regulations.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART I GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Transportation and handling.

C. Storage and protection.

D. Substitutions.

1.2 PRODUCTS

A. Products: Means new material, components, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

1.3 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

D. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

E. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

1.5 SUBSTITUTIONS

A. Engineer will consider requests for Substitutions only within 15 days after date established in Notice to Proceed.

B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that the Contractor:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the Substitution as for the specified product.

3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension which may subsequently become apparent.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.

3. The Engineer will notify Contractor, in writing, of decision to accept or reject request.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Project record documents.

1.2 CLOSEOUT PROCEDURES

A. Notify the Engineer within 5 days of Work completion that Work is complete in accordance with Contract Documents and ready for Project Manager's final inspection.

B. Provide submittals to Engineer that are required by governing or other authorities or Owner.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. Include Certificate of Substantial Completion, Affidavit on Behalf of the Contractor, Consent of Surety Company to Final Payment and As-built drawings and specifications.

D. Owner will occupy all portions of the site.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean equipment and fixtures to a sanitary condition.

C. Clean site, rake clean landscaped areas, leave all disturbed areas relatively smooth with no wheel tracks, ridges or ruts.

1.4 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the Work:

1. Contract Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other Modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates utilized.

3. Changes made by Addenda and Modifications.

E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Field changes of dimension and detail.

3. Details not on original Contract drawings.

4. Product substitutions or alternates utilized.

5. Changes made by Addenda and Modifications.

F. Submit documents to Engineer with claim for final Application for Payment.

1.5 WARRANTIES

A. All work shall be warranted free from defect for a period of one year from final inspection date.

END OF SECTION

SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Remove surface debris.

B. Clear only areas designated for construction of plant life and grass.

C. Tree and shrub removal.

D Topsoil excavation.

E. Measurement and Payment

1.2 REGULATORY REQUIREMENTS

A. Conform to State and County codes for disposal of debris and burning debris on site.

B. Coordinate clearing Work with utility companies.

PART II EXECUTION

1.1 PROTECTION

A. Locate, identify, and protect utilities that remain, from damage.

B. Protect trees, plant growth, and features designated to remain, as final landscaping.

1.2 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove root system of woody plants to a depth of 24 inches below finished grade.

C. Clear undergrowth and deadwood, without disturbing subsoil.

1.3 REMOVAL

A. Remove extra top soil, rock, and extracted plant life to designated area.

B. Dispose of any additional material according to local regulations.

1.4 TOPSOIL EXCAVATION

A. Excavate and stockpile topsoil from all areas that are to receive fill or further excavation.

B. Stockpile location to be approved by Engineer.

1.5 MEASUREMENT AND PAYMENT

A. The work described in Section 02110 will be incidental to the Excavation. See Item #2 on the Bid Proposal Form and Section 01010 Summary of Work

END OF SECTION

SECTION 02207

AGGREGATE MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. References

B. Submittals

C. Aggregate materials and engineering fabric

D. Source quality control

E. Stockpiling

F. Stockpile clean up

1.2 RELATED SECTIONS

A. Section 02211 - Rough Grading.

B. Section 02231 - Aggregate Courses.

1.3 REFERENCES

A. AASHTO - M147 - Materials for Aggregate and Soil-Aggregate.

B. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

C. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.

D. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

E. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

A. Submit laboratory test results for each type of aggregate material 15 days prior to installation, for Project Manager approval.

1. Each aggregate material used as a base or surfacing material shall have as a

minimum the following laboratory tests completed:

I. Sieve Analysis
II. Proctor
III. Atterberg Limit Test (crushed top surfacing only)

B. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the work. Change of source requires retesting at the Contractor's expense.

C. Change of source requires Engineer's approval.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIALS AND ENGINEERING FABRIC

A. Pit run base course, 3" (-) free of shale, clay, friable material and debris; graded in accordance with AASHTO T-11 and T-27, within the following limits:

TABLE OF GRADUATIONS
Percentage of Weights Passing Square Mesh Sieves

	Grade 1
3 Inch Sieve	100%
No. 4 Sieve	25-60%
No. 200 Sieve	2-10%

1. Material shall be evenly graded.
2. 5% oversized material is permitted.

B. Crushed Top Surfacing; free of silt, lumps of clay, loam, friable or soluble materials, and organic matter; graded in accordance with ANSI/ASTM C136; within the following limits:

TABLE OF GRADUATIONS
Percentage by Weights Passing Square Mesh Sieves

Passing	% Passing
1”	100 %
3/4”	
1/2”	
3/8”	
#4	40% - 70%
#10	25% - 55%
#16	
#30	
#50	
#100	
#200	5% - 12%

The aggregate for all grades, including added binder or filler, shall meet the following supplemental requirements.

(1) Dust Ration. The portion passing the No. 200 Sieve shall not be greater than 2/3 of the portion passing the No. 40 Sieve.

(2) The liquid limit for that portion of the fine aggregate passing a No. 40 Sieve shall not exceed 25 and the plasticity index (PI) shall be less than six, as determined by AASHTO T-89 and T-90.

(3) No intermediate sizes for cover aggregate, or for other purposes, shall be removed from the material in the course of production unless authorized in writing by the Architect/Engineer.

(4) The material shall meet all the requirements of this section when it arrives on the project site. Windrow mixing of different materials to obtain the specified material will not be allowed. If bentonite is to be added, it shall be done in a method approved by the Engineer.

(5) At least 50% by weight of the aggregate retained on the No. 4 sieve must have at least one mechanically fractured face.

2.2 SOURCE QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01019.

B. Tests and analysis of aggregate material will be performed in accordance with AASHTO T-11 and T-27 and as specified in this Section.

C. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations approved by Engineer.

B. Separate differing materials with dividers or stockpile apart to prevent mixing.

C. Stockpile in sufficient quantities to meet project schedule and requirements.

D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean, neat condition reseed as necessary. Grade site surface to prevent freestanding surface water.

END OF SECTION

SECTION 02211

ROUGH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDE

A. Removal of topsoil and subsoil.
B. Excavating, grading, filling and rough contouring the site for parking area and boat ramp construction.
C. Measurement and Payment

1.2 RELATED SECTIONS

A. Section 01410 - Testing Laboratory Services: Testing fill compaction.
B. Section 02110 - Site Clearing
C. Section 02207 - Aggregate Materials.

1.3 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils using a 10-lb (4.54 kg) Rammer and an 18-in. (457 mm) Drop.

B. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

PART 2 EXECUTION

2.1 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Notify utility companies to locate buried utilities.

D. Locate, identify, and protect utilities that remain from damage.

2.2 TOPSOIL AND SUBSOIL EXCAVATION

A. Excavate topsoil and subsoil from marked areas.

B. Stockpile topsoil in area approved by Engineer.

C. Topsoil will be blended into landscape and seeded, or used for reclamation on site. See Section 02936

2.3 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Place fill materials on continuous layers and compact. See Section 02231

C. Maintain optimum moisture content of fill materials to attain required compaction density.

D. Make grade changes gradual. Blend slope into level areas.

2.4 FIELD QUALITY CONTROL

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

B. Compaction testing will be performed in accordance with ASTM D2922. <u>If determined necessary by the FWP Engineer.</u>

C. Placement of base aggregate and subsequent road surfacing shall not commence until Engineer has been notified and has had 48 hours to inspect rough grading.

2.4 MEASUREMENT AND PAYMENT

A. The Rough Grading described in Section 02211 shall be included under Excavation Bid Item #2 on the Bid Form.

END OF SECTION

SECTION 02231

AGGREGATE COURSES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aggregate courses.

1.2 RELATED SECTIONS

A. Section 01025 - Measurement and Payment: Requirements applicable to lump sum.

1.3 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils using a 10lb (4.54 kg) Rammer and an 18 in. (457mm) Drop.

B. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

C. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 PRODUCTS

2.1 SURFACING MATERIALS

A. 1 inch minus Crushed Top Surfacing (CTS): As specified in Section 02207.
B. 3 inch minus crushed base course: As specified in Section 02207.

PART 3 EXECUTION

3.1 AGGREGATE PLACEMENT

A. Spread material over prepared substrate to a total compacted thickness indicated for each material. A vibratory roller is suggested for compaction.

B. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

C. Use mechanical tamping equipment in areas inaccessible to compaction equipment. Compact both to minimum 90 percent of maximum density.

Compaction Testing	Location	Frequency
Base Course	Access Road (centerline)	1 per 50 lineal feet*
Crushed Top Surfacing	Access Roads	1*
Crushed Top Surfacing	Parking Areas	1*

*Location determined by FWP Engineer

3.2 TOLERANCES

A. Flatness: Maximum variation of 1/10 foot in 10 feet measured along existing slope.

B. Scheduled Compacted Thickness: Within 1/4 inch of designated thickness.

C. If tests indicate Work does not meet specified requirements, Project Manager may at his discretion direct the Contractor to rework the material and retest or remove work, replace and retest.

3.3 FIELD QUALITY CONTROL

A. Contractor will be responsible for field quality control.

B. Compaction testing will be performed in accordance with ASTM D2922.

C. If tests indicate Work does not meet specified requirements, recompact and retest or at Engineer's discretion, remove Work, replace and retest.

3.4 MEASUREMENT AND PAYMENT

A. All material and labor described in this section shall be bid and compensated under the associated material as listed on the bid form, or under the Compaction Testing Allowance Bid Item #12.

END OF SECTION

SECTION 02240

ROCK BAR REMOVAL

PART 1 GENERAL

1.1 DESCRIPTION

A. Flows from the Dam Outlet have deposited material from the Outlet Stilling Basin in a bar across the Outlet Stilling Basin outflow channel. This has caused the water level in the Outlet Stilling Basin to be higher than desirable.

This work will require removal and disposal of the rock bar. Vegetation will be stripped and removed from the site. The remaining material will be sorted with larger rock being used as riprap on the east side of the Outlet Stilling Basin. The remaining finer grained materials are to be wasted on the existing riprapped areas along the stilling basin and outflow channel.

In addition, to optimize the lowering of the water surface elevation in the Outlet Stilling Basin it may be necessary to move some of the loose rock in the outlet of the Spillway Stilling Basin from the outflow channel to the side of the channel to prevent back up the Spillway Stilling Basin into the Outlet Stilling Basin

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 GENERAL

A. The Contractor may access the work site on the existing access trail on the west side of the Dam, crossing Beaver Creek downstream of the Spillway Stilling Basin. Fence taken down to gain access or perform the work shall be restored to its original condition upon completion of the work. Damage to the soil and vegetation caused by the Contractor's actions shall be repaired.

B. The depth to bed rock under the rock bar is unknown. The design elevation for the streambed where the bar is located is 3547.3', the elevation of the invert of the Outlet Conduit. It is anticipated that this will require the removal of approximately 3.5' of material at the highest point of the bar. The existing plunge pool between the concrete structure and the rock bar is to remain undisturbed if possible. This work is to remove loose rock and sediment from the rock bar to bedrock or the design elevation for the streambed as listed above, whichever is higher.

C. The Contractor shall use Best Management Procedures (BMPs) to minimize the possibility of fine materials entering State Waters, contamination of the job site with petroleum products, the spread of noxious weeds and other environmental issues.

3.2 EXCAVATION

A. Remove and dispose of existing vegetation from the Rock Bar across the outflow of the Outlet Stilling Basin. Remove, salvage, sort and reinstall loose rock from the Rock Bar. Remove loose rock and sediment from the Rock Bar to the desired outlet floor elevation of 3547.3' or until bedrock is encountered. Maintain the design channel prism with channel wall slopes of 2:1. See sketch.
Salvaged material shall be reinstalled as riprap along the banks of the Outlet Stilling Basin, the Outlet Stilling Basin outflow channel and the Spillway Stilling Basin. As much as is practical, the salvaged material shall be sorted by size with the larger materials being used in the Outlet Stilling Basin where the velocities are the highest. Smaller materials to be used as in fill for the existing riprap and in areas of lower velocity. See sketch for further direction on rock placement.

B. Loose rock shall be removed from the east side of the Rock Bar across Beaver Creek at the outlet of the Spillway Stilling Basin as necessary to prevent water from the Spillway Stilling basin backing up into the Outlet Stilling basin at low flows. Rock removed from the bar across the creek is to be salvaged and set on the downstream eastern bank of Beaver Creek to serve as bank protection. See sketch.

C. It is estimated a total of 100 cu. yds. of rock will need to be removed and salvaged from the two locations.

3.3 CONSTRUCTION

A. Flow from the Outlet may be shut down for up to 72 hours to perform the work. The Contractor may pump out the Outlet Stilling Basin to aid in the rock removal, placing the salvaged rock and minimize the BMPs necessary to prevent the spread of waterborne fines. Flows will be maintained in the Spillway Stilling Basin. Contact the Project Manager two weeks prior to the anticipated shutdown time to allow time for graduated flow adjustments. Contact the Project Manager at least 72-hours prior to the desired shutdown time to schedule gate closure.
NOTE: Dam safety and stream flow issues take precedence over the rock removal. The Contractor shall maintain good communications with the Project Manager in reference to the proposed work schedule to ensure the best possible scheduling. Be aware that severe weather events may require postponement of the work.
The Contractor is encouraged to coordinate this work with the Construction of the Crib Steps to minimize the time the Outlet Gate is closed.

B. The Contractor shall use BMPs to minimize the spread of waterborne fines from the excavation area. The Contractor shall provide the Project Manger a written BMP plan for review at least 10 days prior to the start of work.

C. Equipment shall not leak fluids and shall be pressure washed free of dirt and vegetation to prevent the spread of weeds before coming on site.

D. Contractor shall repair/replace any fencing taken down to gain access to or to perform the work. The final condition of the repaired or replaced fence shall be at least as good as the original fence.

E. Care shall be taken to minimize damage to the vegetation. Vegetated areas disturbed by the Contractor's operations shall be fertilized, seeded with an approved grass seed mixture and raked smooth as per Section 02936 of these Specifications.

PART 4 MEASUREMENT AND PAYMENT

4.1 Measurement

A. Rock Bar Removal is a Lump sum bid item. No measurement of quantities shall be made.

4.2 Payment

A. Rock Bar Removal is a lump sum bid item. Payment shall include all labor, material equipment and incidental costs for the rock removal, environmental controls, site restoration and other costs associated with the work.

END OF SECTION

SECTION 02250

CRIB ACCESS STEPS

PART 1 GENERAL

1.1 DESCRIPTION

A. FWP/DNRC personnel must regularly access the Right Abutment Drain of Bearpaw Dam. The drain is located several feet to right of the Dam Outlet structure. This project is to construct crib type steps from the flat foot trail area above the outlet down to a point adjacent to the drain.

This work will require fitting the structure to the existing ground conditions. The slope of the steps must generally match the existing ground (estimated to vary from 1.5:1 to 2:1). Tread and rise shall be uniform over the crib step structure. Note that subsurface conditions are unknown and may require Project Manager approved deviations from the drawing to fit the existing conditions.

PART 2 PRODUCTS

2.1 TIMBERS

A. Timbers for the crib steps shall be commercially treated fir or larch. Treatment to meet AWPA UC4A standards or higher for timbers in contact with the ground/and or fresh water. Timbers shall be sound and shall not have structural flaws such as decay, twisting, bowing, splits and checks. Cosmetic flaws shall not be excessive and must not affect the final use. For example bark pockets would be acceptable provided they were not extensive and not in areas expected to experience wear.

Moisture content shall be 20% or less.

Note: With the Project Manger's approval alternative sizes of treated timbers maybe used to construct the crib steps. Construction shall be similar to the construction shown in the drawings. The minimum actual dimension of timbers used in step construction shall be 3.5" (standard width S4S 4x_ lumber) with the exception that backer boards may have a minimum dimension of 1.5" (Standard width 2x_ lumber). Other requirements to remain the same. Minimum tread depth shall be 10 ". Rise shall be between 7" and 11". Submit shop drawings including material specifications, fastening and installation details with sufficient detail to show the proposed alternative construction shall be the equivalent of the specified work in all respects.

2.2 FILL MATERIAL

A. Finish surface fill material shall be free draining, uniformly graded crushed aggregate with enough fines to ensure good compaction. Acceptable gradations shall be between ¼" (-) and 1" (-). Shale, scoria, volcanic tuff or other materials subject to degradation from weathering shall not be used.

B. Sub-surface fill material shall be select material salvaged from the excavation. Select material shall be granular, free draining with gradation appropriate to provide a well compacted base.

C. If additional material is needed it may be salvaged from the Rock Bar Removal portion of the Project or an on site borrow area approved by the Project Manager.

2.3 FASTENERS

A. Timbers shall be pinned together and anchored at joints with #6 rebar.

B. Standard log screws or lag bolts and washers shall be used to fasten timbers together at butt joints as shown on the drawings. A minimum 2 screws or bolts per joint. Screw or bolt fasteners shall be sized to penetrate the second member a minimum of 2/3 the width of the first member or 3.5" whichever is greater. Bolts and screws shall have a corrosion resistant coating.

PART 3 EXECUTION

3.1 GENERAL

D. The crib steps are to be located between the Outlet Structure and the cement pipe outlet right of the Abutment Drain. At the outlet of the drain the distance to the corner of the Outlet Structure is only 2.5'. The Contractor shall take care not to damage either of the structures.

E. Sub-surface conditions are unknown. The Contractor shall excavate existing materials to the design elevations over the entire work before starting construction of the crib steps. The Contractor shall note unyielding rock, unsuitable materials, flowing water or other issues in conflict with the plans and bring them to the Project Manager for direction.

F. The Contractor may access the work site on foot, with small rubber tired equipment such as ATVs or small "Bobcat" sized rubber tracked loader/excavators by existing trails down the right abutment or the face of the dam. Heavier equipment such as full sized End Loaders and Steel Tracked Equipment shall use the existing access trail on the west side of the Dam, crossing Beaver Creek downstream of the Spillway Stilling Basin.
Fence taken down to gain access shall be restored to its original condition upon completion of the work. Damage to the soil and vegetation caused by the Contractor's actions shall be repaired.

G. The Contractor shall use Best Management Practices (BMPs) to minimize the possibility of fine materials entering State Waters, contamination of the job site with petroleum products, the spread of noxious weeds and other environmental issues.

3.2 EXCAVATION

D. Carefully remove existing material to the minimum depth necessary to perform the work. Salvage topsoil and store separately. Brush and other woody vegetation removed for the excavation shall be disposed of offsite.
If rock is exposed that is in conflict with the plans and is either too large to be removed or located so as to make removal difficult without damaging the existing adjacent structures contact the Project Manager for direction.

E. Stock pile excavated material so as to prevent potential contamination of State Waters. Stockpile site to be approved by Project Manager. Material not reused in the work shall be removed and disposed of offsite.

3.3 CONSTRUCTION

F. Flow from the Outlet may be shut down for up to 72 hours to perform the work. The Contractor may pump out the Outlet Stilling Basin to aid in installation of the crib steps, and minimize the BMPs necessary to prevent the spread of waterborne fines. Flows will be maintained in the Spillway Stilling Basin.
Contact the Project Manager two weeks prior to the anticipated shutdown time to allow time for graduated flow adjustments. Contact the Project Manager at least 72-hours prior to the desired shutdown time to schedule gate closure.
The Contractor is encouraged to coordinate this work with the work in "Section 02240, ROCK BAR REMOVAL", to minimize the time the gate is closed.
The Contractor shall maintain good communications with the Project Manager in reference to the proposed work schedule to ensure the best possible scheduling.

NOTE: Dam safety and stream flow issues take precedence over the crib step installation. Be aware that severe weather events may require postponement of the work.

G. Backfill as necessary with suitable salvaged material. Adjust moisture and using hand operated compaction equipment compact to provide a firm base for the crib step components.

H. Joints shall be pinned together with #6 Rebar. Rebar shall extend 2' below the joints noted in the drawings or until refusal to provide anchors for the structure.

I. Holes for Rebar pin joints shall be drilled slightly smaller than the rebar diameter for a tight fit. The top of the rebar shall be driven 1/4" below the surface of the

timber. If rebar is driven to refusal at less than 2' below the joint the rebar may be cut flush with the top of the timber.

J. Heads of lag bolts or timber screws shall be counter sunk where exposed to traffic.

K. Timbers shall be installed truly level, vertical and square as per the design.

L. Cuts and bore holes made to the timbers shall be swabbed or soaked per the manufacturer's directions with a commercially available 2% Copper Naphthenate wood preservative designed for treating cuts in treated wood. The treatment shall meet AWPA UC4A standards or higher for timbers in contact with the ground/and or fresh water.

M. Spaces between the timbers may be backfilled and compacted to within 6" of the surface with suitable salvaged native materials. The remainder to be completely filled with the specified aggregate material. Do not leave empty pockets beneath or around the timbers. Add water if necessary for good compaction and compact with hand operated vibratory compaction equipment.

N. Backfill and compact disturbed areas adjacent to installed crib steps with select salvaged material to the approximate original elevations. The top 2"+ shall be salvaged topsoil, lightly compacted. Fertilize, seed and rake smooth as per Section 02936 Of these Specifications. Protect steep slopes on either side of crib steps with Project Manager approved biodegradable erosion control treatments such as North American Green SC150BN or 6" of straw mulch with a burlap/jute cover fabric. Install per manufacture's instructions if a manufactured product. Provide proposed materials and installation methods to the Project Manager for approval for non-manufactured erosion control.

Note: If the finish surface of the steps is significantly above the level of the original surfaces place fill and topsoil on adjacent disturbed areas with a maximum slope of 2:1 to the original surface level.

O. Remove all left over materials, clean worksite of debris.

P. Contractor shall repair/replace fencing taken down to gain access to the work site. The final condition of the repaired or replaced fence shall be at least as good as the original fence.

Q. Care shall be taken to minimize damage to the vegetation. Vegetated areas disturbed by the Contractor's operations, including accessing the work site, shall be fertilized, seeded with an approved grass seed mixture and raked smooth as per Section 02936 of these Specifications.

PART 4 MEASUREMENT AND PAYMENT

4.1 Measurement

A. Crib Steps will be bid and compensated for on a Lump Sum basis.

4.2 Payment

A. Payment shall be made at the Lump Sum price, see Bid Item #8 on the Bid Proposal Form. Payment shall include all equipment, labor and materials to provide a complete set of crib steps per the specs and drawings including environmental controls, rehabilitation of damages to the existing ground and damages to existing facilities caused by the Contractors operations.

END OF SECTION

SECTION 02251

PIEZOMETER REPAIR ASSISTANCE

PART 1 GENERAL

1.1 DESCRIPTION

A. Slope movement has damaged a piezometer (monitoring well) approximately 4' below the existing ground surface.

As part of the Slump Area Repair coordinate with the FWP and DNRC and supply excavation, backfill and compaction services to support repair of the existing piezometer. (See "Rock Bar Removal" drawing)

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 GENERAL

H. Repairs to the Piezometer shall be done by DNRC personnel. The Contractor shall communicate and coordinate with the Project Manger to insure efficient scheduling of the work. The Project Manager shall be notified a minimum of 3 weekdays prior to the Contactor's desire to start work requiring the DNRC's attendance. DNRC personnel will not be available from noon on Fridays to noon on Mondays.
At the Project Manager's discretion the Contractor may coordinate directly with DNRC staff.

3.3 EXCAVATION & BACKFILL

F. Remove and salvage the existing metal casing and cap. Carefully excavate around the existing PVC monitoring well to the elevation of the break. Care shall be taken not to allow the surrounding material to fall into the well. Hand work may be required. If the break is greater than 5' below the existing ground surface contact FWP and/or DNRC for direction. Slope the excavation walls as necessary to allow safe access to the trench. DNRC Staff shall be present for excavation.

G. After the break is exposed DNRC personnel will make repairs to the PVC well extending the repaired well to at least 0.5' above the projected ground surface.

H. The Contractor shall backfill the excavation in 0.5' lifts. Compaction of each lift will be provided by a vibratory rammer or similar hand operated compactor. Moisture shall be added or removed from the backfill as necessary to provide good compaction. Care shall be taken during backfilling and compaction to maintain a straight and vertical alignment of the repaired PVC well. The salvaged metal casing and cap will

be reinstalled by DNRC personnel with the top of the cap approximately 0.5’ above the final surface of the repaired slump area. DNRC personnel shall present for backfilling operations.

I. Care shall be taken during the subsequent repair of the slump area not to damage the repaired piezometer and to maintain its straight and vertical alignment.

J. Assist DNRC with the abandonment of the well if it is not repairable. Assistance would typically include aid in getting owner supplied materials such as pelletized bentonite and tools in and out of the excavation. After abandonment work is complete the excavation shall be backfilled and compacted to the density of the surrounding soil in conjunction with the repair of the slump area.

PART 4 MEASUREMENT AND PAYMENT

4.1 Measurement

B. Piezometer Repair Assistance is a Lump sum bid item. No measurement of quantities shall be made.

4.2 Payment

5 Piezometer Repair Assistance is a lump sum bid item. Payment shall include all labor, material equipment and incidental costs for providing assistance in the repair or abandonment of the Piezometer. Included is any extra time to repair the slump area due to the extra care taken to protect the repaired piezometer.

END OF SECTION

SECTION 02936

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Measurement and Payment

B. Quality assurance

C. Delivery storage and handling of seed and fertilizer

D. Seed mixture

E. Soil materials

F. Fertilizer

G. Examination of soil base

H. Substrate preparation

I. Placing topsoil

J. Fertilizing

K. Seeding

L. Maintenance

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Grassed Areas:
   1. Basis of Measurement: Not measured. Lump Sum. See Bid Item #7 on the Bid Form.
   2. Basis of Payment: Lump Sum. Includes preparation of topsoil and seeding.
   3. Seed and Fertilize those areas disturbed by construction and areas of existing roads and parking that are outside of the new roads and parking areas..

1.3 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.4 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Knapweed, Horsetail, Morning Glory, Rush Grass, Mustard, Leafy Spurge, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic,

Perennial Sorrel and Brome Grass.

1.5 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of pure live seed, seed mix, year of production, net weight, date of packaging, and location of packaging.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products such that they are stored in a weatherproof, dry, rodent free location in such a manner that it will not be damaged or its usefulness impaired.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.7 SEED MIXTURE (By Weight)

A. Native Grass Seed Shall Be: % By Weight

Western Wheatgrass	40%
Slender Wheatgrass	25%
Canadian Bluegrass	25%
Hard Fescue	10%

B. All seed shall comply with and be labeled in accordance with the Montana Seed Law. Seed shall have been grown in the North American Continent, in an area having climatic conditions and elevation similar to area of use. All seed should be of standard grade. The seed may be rejected by the Project Manager if the point of origin and production is not suitable.

1.8 SOIL MATERIALS

A. Topsoil: Excavated from site and free of excess vegetation.

1.9 FERTILIZER

A. Fertilizer: Recommended for native grass in proportions to meet requirements for actual nitrogen and phosphate as outlined in Section 2.4.A.

B. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify substrate base has been contoured and compacted.

B. If there is not enough topsoil for total area, the Engineer shall prioritize areas of topsoil.

2.2 SUBSTRATE PREPARATION

A. Eliminate uneven areas and low spots.

B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove subsoil contaminated with petroleum products.

C. Scarify subgrade to depth of 3 inches where topsoil is to be placed. Scarify in areas where equipment is used for hauling and spreading topsoil and has compacted subsoil.

2.3 PLACING TOPSOIL

A. Place topsoil in disturbed areas to a nominal compacted depth of 2 inches. Place topsoil during dry weather.

B. Fine grade topsoil eliminating rough or low areas. Maintain profiles and contour of subgrade.

C. Remove roots, weeds, rocks and foreign material while spreading.

D. Manually spread topsoil close to trees and plants to prevent damage.

E. Lightly compact placed topsoil.

F. Place excess topsoil on obliterated roadways.

G. Leave stockpile area and site clean and raked, ready to receive landscaping.

H. All topsoiled areas shall be “garden raked” after seeding to remove the debris and wheel tracks. The final surface shall be smooth.

2.4 FERTILIZING

A. Furnish fertilizer at the rate of 30 pounds actual nitrogen and phosphate per acre. Fertilizer shall be evenly applied to native grass areas which are to receive seed at the rate of 30 pounds of actual nitrogen and phosphate per acre and worked lightly into the top one inch of soil in such a way as to make a finely pulverized seedbed approximately 48 hours prior to seeding. This operation may be accomplished by broadcast and hand raking or drilling with a fertilizer drill.

B. Apply after smooth raking of topsoil.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Lightly water to aid the dissipation of fertilizer.

2.5 SEEDING

A. Grass seed shall be sown at the rate of 25 pounds pure live seed per acre on native grass areas using broadcast methods.

B. Planting Season: Fall, after August 15th or spring prior to May 1.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods. Wind speed should not exceed 5 mph.

D. All disturbed areas shall be fertilized and seeded unless otherwise directed.

2.6 MAINTENANCE

A. Immediately reseed areas which show bare spots.

B. Protect seeded areas from traffic or pedestrian use with warning barricades or other Engineer approved methods.

END OF SECTION

SECTION 02950

STRAW WATTLE

PART 1 GENERAL

1.1. DESCRIPTION

A. The Work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for installation of Straw Wattle at designated areas adjacent to the road improvement project.

PART 2 MATERIALS

A. PREAPPROVED PRODUCTS

1. The following products have been pre-approved. Do not order, deliver, or install other products without the written approval of the Engineer.

2. The straw wattle material shall be completely biodegradable 9” diameter North American Green WS925 or approved equal.

C. SUBMITTALS

1. Name, address, and phone number of supplier(s) of all coir fabrics used on the project.
2. Technical Specification straw wattle with associated testing.
3. Dimensional sizes of delivered products.
4. Manufacturer’s shipping, storing, and placement recommendations.

D. MATERIALS HANDLING AND STORAGE

1. Store all straw wattle elevated off the ground and insure that it is adequately covered to protect the material from damage. Protect fabric from sharp objects that may damage the material. Materials damaged during transport, storage or placement shall be replaced at the Contractor’s expense.

2.2. WOODEN STAKES

A. Straw wattle stakes shall be wooden stakes 12 inches long and 1 inch by 0.75 inches in diameter, or other dimensions as approved by the Engineer. Straw wattle stakes shall not be treated with preservative. Other types of stakes shall be subject to the approval of the Engineer.

PART 3 EXECUTION

A. This section describes the placement of straw wattle on surfaces designated on the Plan Sheets and by the FWP Engineer.

B. Install Straw wattle as described in this section.

C. Before placing Straw wattle, the topsoil surface on which it is to be placed shall be prepared by removal of all sharp objects. All holes and large ruts shall be filled with material.

D. The Contractor shall handle the Straw wattle in a manner that does not damage the Straw wattle.

3.2. ENGINEER INSPECTION AND APPROVAL

A. Engineer shall approve the floodplain surface prior to the placement of the Straw wattle.

PART 4 MEASUREMENT AND PAYMENT

4.1. MEASURE

A. The quantity of Straw wattle shall be the actual length of the product installed rounded to up to nearest 25’ increment.

4.2. PAYMENT

A. Payment for Straw wattle placed over reclaimed surfaces shall be made by unit cost basis. The unit cost per each lineal foot Straw wattle shall constitute full compensation for all materials, staking, labor, equipment, and incidentals necessary to furnish materials and for installation as specified in the specifications and on the Plan Sheets. Refer to Bid Item #11 on the bid form.

END OF SECTION