UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT

MARCOTT COULEE PIPELINE CONTRACT 2026

PETROLEUM CO, MONTANA
LEWISTOWN FIELD OFFICE

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SPECIFICATIONS
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PART 1. GENERAL

SECTION 1.01 SUMMARY:

A. Description of Work: Furnishing labor, equipment, supplies, and materials, except for specified Government-furnished property, to complete the stock water delivery system described in these drawings, and specifications.

This will include trenching HDPE pipe of the required specifications to a bury depth of 6 feet below the surface of the ground. The installation of all pipe, curb stops, air relief valve assemblies, water troughs, remote tap assemblies and watering assemblies, shown on the drawing set is also required.

B. Location: Work under this Contract is located in Northern Fergus County, Montana. The work locations are shown on the drawings.

C. Work Data Sheet: Designates the type and quantity of work required at the project location.

SECTION 1.02 REFERENCES:

A. Referenced Specifications/Standards with Abbreviations and/or Acronyms: Wherever the following acronyms are used in these specifications or on the drawings, they are to be construed the same as the respective expressions represented. Copies of the referenced specifications/standards referred to herein may be procured by the Contractor, from the following:

1. AASHTO American Association of State Highway and Transportation Officials
   444 N. Capitol Street, N.W., Suite 225
   Washington, DC 20001
2. ACI American Concrete Institute
   P.O. Box 19150, Redford Station
   Detroit, MI 48219
3. API American Petroleum Institute
   1220 L Street, N.W.
   Washington, DC 20005

4. AWS American Welding Society, Inc.
P.O. Box 351040
Miami. FL 33135

5. AWPA American Wood Preservers' Association
P.O. Box 849
Stevensville, MD 21666

6. AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

7. ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

8. NSF National Sanitation Foundation
P.O. Box 1468
Ann Arbor, MI 48106

9. OSHA Occupational Safety and Health Administration
200 Constitution Avenue
N.W., Washington, DC 20210
Sec. 02300.0.1.F

SECTION 1.03 DEFINITIONS:

A. Approvals: Approval of the submittals is an indication that the Contractor's submittals have been reviewed and that there are no objections, except as noted. Approval of deviations shall apply only to those deviations or omissions from the requirements of the drawings and specifications brought to the government's attention in writing. After approval of an item, the Contractor may submit a substitute for approval when the approved item cannot be purchased or delivered in time to avoid delay in completion of the project.

SECTION 1.04 SUBMITTALS:

A. Scope: Submittals include Contractor's Work Schedule, well logs, well record, manufacturers literature, and well testing data.

B. Requirements: Refer to specifications for submittals required. Allow at least 5 working days for review. Submittals shall be delivered to the government at the prework conference.

C. Identification of Submittals: Completely identify each submittal by showing at least the following information:

1) Name and address of submitter, plus name and telephone number of the individual to contact for further information.

2) Name of project as it appears in these specifications.

3) Contract number, drawing number, and specification section number to which the submittal applies.

4) Whether this is an original submittal, or resubmittal.

5) Each item shall clearly note the manufacturer's name and address, trade name, product, lot, style, color, catalog designation or model number, and locations of use.

SECTION 1.05 CERTIFICATES OF CONFORMANCE:

A. Requirements: The government may permit use, prior to sampling and testing, of materials when accompanied by Certificates of Conformance. Materials used on the basis of a Certificate of Conformance may be sampled and tested. Installation of materials on the basis of Certificates of Conformance shall not relieve the Contractor of responsibility for incorporating materials which conform to the requirements of the drawings and specifications. Material not conforming to those requirements will be subject to rejection, whether in place or not.

B. Format: The form of the Certificate of Conformance provided by the supplier shall be as follows:

1) The certificate shall state that the named product conforms to the Contract requirements.

2) The certificate shall either be accompanied with a certified copy of the test results or certify that such test results are on file with the manufacturer and will be furnished to the government upon request.

3) The certificate shall provide the name and address of the manufacturer, the testing agency and the date of tests.

4) The certificate shall set forth the means of identification, which will permit field determination of the product delivered as being the product covered by the certification.

SECTION 1.06 QUALITY ASSURANCE:

A. Codes and Standards: The work shall comply with codes and

standards applicable to each type of work and as listed in the individual sections of these specifications. This Contract incorporates materials, applications, and tests by reference, with the same force and effect as when they were given in full text.

B. Conflict: Where a conflict occurs between reference documents and project specifications, the project specifications shall govern.

SECTION 1.07 DELIVERY, STORAGE, AND HANDLING:

A. Delivery: The Contractor shall protect products, incorporated into the work, from damage while in transit to the site. Products must be delivered in original unopened containers with manufacturer's name and brand designation and contents legibly indicated. The containers shall bear the referenced specification number, type and class as applicable.

B. Storage: The Contractor shall provide temporary storage facilities for products complying with manufacturer's recommendations which will protect them from damage until installation on the project and final acceptance. The storage area shall permit access for inspection and handling.

C. Handling: The Contractor shall load and unload products in such a manner that protects them from damage until installation on the project.

SECTION 1.08 PROJECT/SITE CONDITIONS:

A. Access to the Work:

1) Access to the Work: Access to the work shall be provided by and at the Contractor's expense. Building or blading of access roads across land under the jurisdiction of the Bureau of Land Management will not be permitted without prior written approval from the government. Public or private access roads, and any off-road travel areas, damaged by the Contractor's travel or operations, shall be restored, by the Contractor at the Contractor's expense, to the same condition that they were in at the commencement of work.

2) Utilities: Before starting construction, the Contractor shall be responsible for determining the location and extent of all utilities, both above and below ground. The Contractor shall be responsible for protecting utilities during construction. If any utilities are damaged by the Contractor's operations,

the Contractor shall notify the utility owner immediately and the Contractor shall be responsible for the cost of the repairs to the utility. Call before you Dig # is 1-800-454-5555.

B. Environmental Considerations:

1) Permitted Work Period: Work on this project can only occur between July 15th and November 30th during any calendar year to accommodate wildlife concerns in the vicinity.

2) Operations of the Contractor (including storage of materials, project office, camping area, and equipment parking) upon Government premises shall be confined to areas approved by the government. The surrounding landscape shall not be disturbed. In the event that it is disturbed, the Contractor shall restore that area at the Contractor's expense. Government premises adjacent to the construction site will be made available for use by the Contractor without cost whenever such use will not interfere with other Government activities.

3) No waste products from office trailers, travel trailers, vehicles, or equipment (such as fuel, oil, grease, sanitary waste, or antifreeze) shall be drained, spilled on the ground, or disposed of other that through legal ways. All waste products shall be captured by the Contractor and disposed of properly, and legally offsite. If a waste product is accidentally spilled on the ground, the Contractor shall excavate areas that have been saturated or contaminated to a depth 24" beyond contaminated material. The excavation shall be backfilled with approved material. The Contractor shall haul the contaminated material to an approved disposal site at the Contractor's expense.

4) The contractor shall coordinate with Fergus County the road crossing of the pipeline. At no time shall the road not have at least 1 lane of traffic available to the public. The contractor is responsible for providing all the construction signage, and construction barriers necessary and required by code to provide a safe working environments for all employees and the public in the county right of way.

SECTION 1.09 SEQUENCING AND SCHEDULING:

A. Work Schedule: The schedule shall be submitted at the

pre-work conference. When requested, the Contractor shall submit an updated schedule within 3 calendar days.

PART 2. PRODUCTS

(There are no applicable requirements.)

PART 3. EXECUTION

SECTION 3.01 PROJECT MEETINGS:

A. Pre-Work Conference:

1) Notification: A pre-work conference will be held prior to the start of work. The Contractor will be notified in advance of meeting time, date and place. The purpose will be to review required work, project drawings and specifications, construction schedules, payroll and payments, and administrative provisions of the Contract.

2) Attendance: The Contractor, subcontractors and the persons responsible for coordination of the work shall be present at the meeting.

3) Presentation: The Contractor shall be prepared to summarize and explain procedures planned for the project and present the submittals requested in the specifications.

B. Progress Meetings:

1) Location: Meetings shall be held at the project site, or as determined by the Government.

2) Notification: Meetings may be called by either the Government or the Contractor. Request shall state who should attend.

C. Final Inspection:

1) Location: Meeting shall be held at the project site, or as determined by the government.

2) Notification: The Contractor shall notify the government in writing at least 3 working days before the completion date so the Government can schedule final inspection.

3) Attendance: The Contractor shall require the superintendent to be present during this inspection.

SECTION 3.02 WORK LAYOUT:

A. Requirements: The Government will set construction stakes to give the Contractor measurements, lines and grades necessary for the work executed under the Contract. Baseline monuments or benchmarks disturbed or removed during construction shall be reset by the Contractor at the Contractor's expense.

PART 4. PART 4: MEASUREMENT AND PAYMENT

SECTION 4.01 METHOD OF MEASUREMENT:

A. Units: The work described in this section will not be measured for payment.

SECTION 4.02 BASIS OF PAYMENT:

A. Payment: No direct payment for the work described under this section will be made. The Contractor shall include consideration for this item in the bid price for other items of the Contract.

END OF SECTION

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SECTION 01505

MOBILIZATION

PART 1: GENERAL

1.1 SUMMARY

A. Section Includes: Preparatory work and operations, including those necessary to the movement of personnel, equipment, supplies and incidentals to the project site; and for other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site.

PART 2: PRODUCTS

A. Section Includes: The cost of all bonding required by the contract documents. Bid, Payment, and performance bonds.

PART 3: EXECUTION

(There are no applicable requirements.)

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT:

A. Units: Progress payments will be made as follows:

1. When 5% of the original Contract amount is earned from other bid items, 50% of the amount bid for mobilization or 5% of the original Contract amount, whichever is lesser, will be paid.

2. When 10% of the original Contract amount is earned from other bid items, 100% of the amount bid for mobilization or 10% of the original Contract amount, whichever is lesser, will be paid.

3. Upon completion of work for the project, payment of the amount bid for mobilization in excess of 10% of the original Contract amount, will be paid.

4. The total sum of all payments shall not exceed the original Contract amount bid for mobilization, regardless of the fact that the Contractor may have shut down the work on the project or moved equipment away from the project and then back again.

4.02 BASIS OF PAYMENT:

C. Payment: No direct payment for moves between project sites will be made. The Contractor shall include consideration for moves between project sites in the bid price for other items of the Contract. Prices and payment will be full compensation for the work described in this section. Bond certifications and invoices will be required for the government to make payment for those items. Unbalanced mobilization pay item will be returned to the contractor for revision. Payment will be made under:

Pay Item		Pay Unit
01505(01)	Mobilization.	Lump Sum

END OF SECTION

SECTION 02229

TRENCHING, BACKFILLING AND COMPACTING

PART 1. GENERAL

SECTION 1.01 SUMMARY:

A. Section Includes: Trenching, backfilling and compacting for the installation of water lines.

SECTION 1.02 DEFINITIONS:

A. Unclassified Excavation: Unclassified excavation shall consist of the material excavated and its placement regardless of its nature.

SECTION 1.03 QUALITY ASSURANCE:

A. Failure Criteria: Not limited to the following:

1) Settlement of backfill below natural ground surface.

2) Bury depth less than minimum.

3) Compaction (where required) shall not be less than minimum.

SECTION 1.04 1.04 PROJECT/SITE CONDITIONS:

A. Environmental Conditions: Hand rake as necessary to remove excess material in areas inaccessible to construction equipment. Grade to produce a well-drained surface. Excess material from the trench excavation shall be placed over the backfill in an inverted 'U' shape.

PART 2. PRODUCTS

SECTION 2.01 MATERIALS:

A. General: Material excavated shall be unclassified. Backfill material shall be approved before use. Material from excavations shall be used, unless it contains ice or frozen earth, debris, earth with high moisture content, or other materials found objectionable by the CO, or is specified in other sections to be replaced. Organic materials removed in clearing and grubbing shall not be used for backfill.

B. Backfill: Shall conform to the general requirements for soil materials above and shall not contain rock larger than 3 inches in diameter.

C. Bedding: Shall be materials from the excavation that passes a 1/2-inch sieve.

D. Topsoil: Topsoil material shall be considered to be material which will sustain plant growth and includes sod, roots and other vegetative matter which can be uniformly spread.

PART 3. EXECUTION

SECTION 3.01 PREPARATION

A. Clearing and Grubbing: The pipeline alignment shall be mowed to remove all sagebrush and vegetation higher than 3” before trenching begins. This shall extend no less than 10’ either side of the excavation and no more than 12’ either side of the trench.

B. Utilities: Before starting excavation, establish the location and extent of overhead and underground utilities in the work area “CALL BEFORE YOU DIG!”. Protect active utility services uncovered by excavation. Damage to any utilities shall be repaired or replaced at the Contractor's expense. Repairing damaged utilities shall be started immediately unless otherwise authorized by the Contracting Officer

SECTION 3.02 INSTALLATION:

A. Unclassified Trench Excavation: Excavated trenches shall be a minimum of 6 inches in width, and a maximum of 24 inches in width unless written authorization from the Government is obtained. The minimum bury depth above the pipe shall be 6 feet or as specified in or near certain assemblies.

1) Water and Caving Soils: Water and caving soils may exist along the pipeline alignment. Any open trench left without pipe installed overnight or at periods of a break in operations that slough shall be corrected at the contractor’s expense. Trenching and pipe installation operations may be required to take place simultaneously.

B. Pipeline Bedding: The pipe shall be bedded in the bedding zone with approved bedding material specified herein (Part 2, section 2.01). The bedding zone is shown on the drawing titled - Typical Trench Detail. If rock is encountered at the bottom of the trench, 2 inches of bedding material shall be placed under the pipe. The minimum bury depth shall not change.

C. Pipeline Trench Backfill: The backfill zone is shown on the Typical Trench Details. Prior to testing, the pipe may be center loaded with a maximum of 12 inches of approved material. Two feet of pipe at the joints and connections shall be left uncovered. After testing and approval, the trench backfilling shall be completed. Excess backfill material from trench excavation shall be placed over the trench in an inverted "U" shape.

D. BLM Road Crossing

1) Roadway excavation shall be a minimum of 36” wide and 72” deep.

2) The embankment materials shall be brought to within 2% of optimum moisture for compaction before being placed in the excavation.

3) Embankment (backfill) shall be placed in loose layers not to exceed 8” in depth.

4) Each layer of embankment shall be compacted to attain a minimum compaction of 95% density utilizing the AASHTO T-99 METHODS A OR B.

5) The embankment shall be brought up to the elevation of the adjoining road in a uniform manner following the embankment and compaction specifications noted above.

SECTION 3.03 FIELD QUALITY CONTROL:

A. Testing of Pipelines: Shall be done according to Section titled - Water Systems.

PART 4. MEASUREMENT AND PAYMENT

SECTION 4.01 METHOD OF MEASUREMENT:

A. Units: The trenching - as described in this section - will be measured and paid for by the linear foot as measured along the ground surface over the completed water conveying pipeline.

SECTION 4.02 BASIS OF PAYMENT:

A. Payment: Prices and payment will be full compensation for the work described in this section. Payment will be made under:

Pay Item	Pay Unit
02229(2) Trenching 6’ DEPTH, Backfilling and Compacting	Linear Foot
02229(5) Trenching to daylight, backfilling and compacting	Linear Foot

END OF SECTION

SECTION 02260

EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes temporary excavation support and protection systems.

1.2 PERFORMANCE REQUIREMENTS

A. Furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads.

1. Pre-Manufactured units shall have the certification that they were designed for and are approved for use under the conditions found at the project site.

1.3 SUBMITTALS

A. Certification of capacity of pre-manufactured units.

1.4 QUALITY ASSURANCE

A. Pre-installation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.

C. Certified Steel Trench Shoring may be substituted at the Contracting Officers approval. Submittals of the proposed units shall be provided to the Contracting Officer for their approval.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Certified Steel Trench Shoring shall be used in strict conformance with all manufactures specifications.

3.2 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

PART 4 - MEASUREMENT and PAYMENT

4.1 4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION 02260

SECTION 02260

EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes temporary excavation support and protection systems.

1.2 PERFORMANCE REQUIREMENTS

A. Furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads.

1. Pre-Manufactured units shall have the certification that they were designed for and are approved for use under the conditions found at the project site.

1.3 SUBMITTALS

A. Certification of capacity of pre-manufactured units.

1.4 QUALITY ASSURANCE

A. Pre-installation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.

C. Certified Steel Trench Shoring may be substituted at the Contracting Officers approval. Submittals of the proposed units shall be provided to the Contracting Officer for their approval.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Certified Steel Trench Shoring shall be used in strict conformance with all manufactures specifications.

3.2 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

PART 4 - MEASUREMENT and PAYMENT

4.1 4.1 METHOD OF MEASUREMENT

A. Units: The work described in this section will not be measured for payment.

4.2 4.2 BASIS OF PAYMENT

A. Payment: No direct payment for the work described under this section will be made. Consideration for this item shall be included in the bid price for other items of the Contract.

END OF SECTION 02260

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. General excavation and embankment refer to any work that is completed that requires an excavator or backhoe to move earthen materials to complete construction. This would include and not be limited to pads for stock tanks, open trenches where laborers need to enter to fuse pipe and similar activities.

B. Unauthorized excavation consists of excavation beyond indicated lines and dimensions without direction by Government. This activity will not be paid for by the government.

C. Do not interrupt existing utilities serving facilities occupied by Owner or others unless permitted in writing by the government and then only after arranging to provide temporary utility services according to requirements indicated. Call before digging 1-800-424-5555.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.

B. Unsatisfactory Soil: ASTM D 2487 Soil Classification Groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.

C. Backfill and Fill: Satisfactory soil materials.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Protect subgrades and foundation soils from softening and damage by water, freezing temperatures, or frost.

B. Explosives: Do not use explosives.

C. Excavate to subgrade elevations regardless of character of materials and obstructions encountered.

D. Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by the government. It may be to the advantage of the government to relocate excavated area to address rock.

E. Excavate for structures. Trim subgrades to required lines and grades. Over excavation and required embankment will not be paid for by the government.

F. Utility Trenches: Excavate trenches to indicated slopes, lines, depths, and invert elevations. Maintain 12 inches of working clearance on each side of pipe, curb stop, or conduit. Note all excavations that will be occupied shall be done in accordance with OSHA standards.

G. Place backfill and fill in layers not more than 8 inches in loose depth at optimum moisture content. Compact each layer under structures, building slabs, pavements, and walkways to **95** percent of maximum dry unit weight according to ASTM D 698.

H. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

PART 4: MEASUREMENT AND PAYMENT

METHOD OF MEASUREMENT:

Units: The excavation and embankment will be measured and paid for by the cubic yards of material. Trenching and Backfilling of the common pipeline will be paid for under trench and Backfill 6’ depth or Trench to daylight and backfill sections.

BASIS OF PAYMENT:

Payment: Prices and payment listed below will be full compensation for the work described in this section. Payment will be made under:

Pay Item	Pay Unit
02300(01) General Excavation and Backfill	YD^3

END OF SECTION

END OF SECTION 02300

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SECTION 02665

WATER SYSTEMS

PART 1. PART 1: GENERAL

SECTION 1.01. SUMMARY:

A. Section Includes: Furnishing and installing this water system in accordance with these specifications, using assemblies as shown on the drawings and specified herein.

SECTION 1.02. REFERENCE:

A. American Society for Testing and Materials:

1. ASTM D3350 Standard specification that covers the identification of polyethylene plastic pipe and fittings materials. It provides guidelines for testing primary properties such as density, index, flexural modulus, and tensile strength
2. ASTM D1238-10 Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
3. ASTM F714 Standard specification for polyethylene (PE) plastic pipe based on outside diameter. It covers PE pipes with various dimension ratios (DR) and pressure ratings (PR). The standard defines three standard outside diameter sizing systems: DIPS, IPS, and Metric.
4. ASTM D2837-22 Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
5. ASTM F1473-24a Standard Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins
6. ASTM D1238-10 Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
7. ASTM D1505-18 Standard Test Method for Density of Plastics by the Density-Gradient Technique
8. ASTM D638-22 Standard Test Method for Tensile Properties of Plastics
9. ASTM A53/A53M-99b Specification for Pipe, Steel, Black and Hot-Dipped, Zinc- Coated, Welded and Seamless
10. ASTM A 53 REV A-89 Pipe, Steel, Black and Hot-Dipped Zinc-Coated Welded and Seamless
11. ASTM A865-97 Specification for Threaded Couplings, Steel, Black or Zinc- Coated (Galvanized) Welded or Seamless, for Use in Steel Pipe Joints.

B. National Sanitation Foundation (NSF).

SECTION 1.03. SUBMITTALS:

A. General: Submittals shall be according to 01009 - General Information and Requirements, Section 1.05 certificates of conformance.

B. Manufacturer's Literature: Submit 1 copy of the manufacturer's descriptive data.

C. Certificates of Conformance: Submit one copy of written certification from the supplier of the Contractor-furnished materials to be used on this project to ensure that it conforms to the requirements of this specification section.

SECTION 1.04. QUALITY ASSURANCE:

A. Failure Criteria: Not limited to the following:

1) Evidence of leakage

2) Evidence of breakage of pipe

3) Malfunctioning valves

4) Blockage of piping

5) Contamination of water, rendering it not usable

6) Excessive Pressure drop

B. Labeling Requirements: High Density Polyethylene (HDPE) plastic pipe and fittings shall carry the National Sanitation Foundation (NSF) seal of approval for potable water pipe.

SECTION 1.05. DELIVERY, STORAGE, AND HANDLING:

A. Storage: Store materials and equipment according to the manufacturer's instructions. Store plastic piping under cover out of direct sunlight.

PART 2. PART 2: PRODUCTS

SECTION 2.01. CONTRACTOR-FURNISHED MATERIALS:

A. Pipe and Fittings: Pipe size, type and ratings shall be as shown on the drawings or as specified. Unless specified, fittings shall be the same size as the adjoining pipeline except where reducers are required to enter a valve body or reduce to another pipe size. Fitting pressure ratings shall be equal to or greater than the rating for the adjoining pipeline size rating for DR-11 HDPE pipe. Pipe and fittings shall be manufactured of material approved by NSF for potable water systems.

1) HDPE SDR 11, 2” Diameter, HDPE pressure pipe is manufactured with premium, highly engineered PE4710 resin that provides maximum performance benefits to service water needs. The PE4710 material conforms to ASTM D3350 with the cell classification of 445574C/E and is listed with the Plastic Pipe Institute’s (PPI) TR4. It is formulated with carbon black and/or ultraviolet stabilizer for maximum protection against UV rays for added assurance.

2) Contractors shall use heat fused butt welded joints. Contractor must provide submittals to substantiate performance for approval. This will require that the manufacture provides a certification of compliance with respect to all physical properties of the HDPE pipe.

3) The contractor shall submit manufacturers certifications and specifications detailing that the proposed product will perform with adequate reliability.

4) The contractor shall be responsible for adapting the HDPE pipe to all required metal pipe, valves, and devices. This must also be submitted on.

5) All HDPE joints must be heat fused; internal sleeves and mechanically fastened joints will be unacceptable.

6) All transition fittings shall be HDPE to stainless steel thread.

7) Brass nipples: Conform to ANSI B 16.15-85 CAST BRONZE THREADED FITTINGS. They shall also comply with Fed. Spec. WW-U-516B and WW-P-460 D.

B. Float Valve: 1″Ø Roberts BOB Float Valve, model R810-1v (or equal) vented to eliminate siphoning, 121 GPM flow at 65 psi, designed to be unaffected by freezing with ABS plastic and stainless-steel internal parts.

C. Curb Stop w/ drain Valves:

1. Curb Stop w/ drain Valves at watering assemblies: Mueller H-10287 or equal with these features: 1″ Ø O-ring type valve, 1/4 turn check, 175 psi working pressure, Minneapolis top threads. The body, tee-head and stem shall be made of brass or bronze. A drain port is required.

2. Curb Stop Valve W/Drain at Remote Tap: Mueller H-10288 or equal with these features: 2″ Ø O-ring type valve, I.P. threaded inlet and outlet, 1/4 turn check, 175 psi working pressure, Minneapolis top threads. The body, tee-head and stem shall be made of brass or bronze. A drain port is required. Contactor shall terminate the pipe with a 2″ Θ elbow and nipple.

D. Curb Stop w/out drain Valves:

3. Curb Stop w/ drain Valves at watering assemblies: Mueller H-10287 or equal with these features: 2″ Ø O-ring type valve, 1/4 turn check, 175 psi working pressure, Minneapolis top threads. The body, tee-head and stem shall be made of brass or bronze. A drain port is NOT required.

E. Curb Box: Ford EM-2-6557 and EM-2-6556 or equal, with these features: telescoping type, cast iron and steel construction, brass pentagon head plug, Minneapolis pattern base, 66-inch minimum length stationary shut-off rod, asphalt base coating. The curb box shall be compatible with curb stop valves described herein. The curb box shall extend 2 inches above ground surface when attached to valve buried at pipe depth shown on Work Data Sheet.

F. Curb Box Key: Shall have a minimum length of 24 inches. Tee handle type, for removing the pentagon plug and operating stationary shut-off-rod. Compatible with curb boxes described herein. Furnish the number of keys listed on the Work Data Sheet

G. Air Relief Valves: Bermad Model No. 2"; DN50 threaded or equal with these features: automatic continuous air bleed and vacuum relief type, 1.5 to 174 psi working pressure range, minimum vent discharge rate of 25 ncfm at 50 psi.

H. Sump Gravel: Gravel shall be 1/2 inch to 3/4 inch and shall be washed free of all fines under 1/2 inch in size.

I. Polyethylene Sheeting: 6 mil minimum thickness.

J. Flow Restrictors: Dole or equal with these features: Shall be of non-corrosive material. The restrictors shall have a 1”Ø inlet and outlet with three gallon per minute flow as shown on the drawings.

K. Metal Strapping and Nails: 1" x 12-gauge galvanized steel strapping and 16d galvanized nails.

L. Wood Marker Posts: Posts shall be 42" long, straight, single stem and sound. Treatment shall be in accordance with Spec. 02802 - Water Troughs section 2.02, Wood Treatment Practices.

M. The contractor is responsible for providing and installing (provide labor) **ALL** miscellaneous fittings and supplies not explicitly noted in specifications or drawings in order for the system to function properly.

PART 3. EXECUTION

SECTION 3.01. PREPARATION:

A. Clearing and Grubbing: Shall be according to Spec. 02229 - Trenching, Backfilling, and Compacting Part 3, Execution.

B. Excavation and Backfill: Shall be according to Spec. 02229 - Trenching, Backfilling and Compacting, Section 3.01, Preparation.

SECTION 3.02. INSTALLATION:

A. General: HDPE pipe shall be installed according to ASTM D 2774. Interior of the pipe shall be kept clean. The pipe JOINTS shall not be covered until the pressure tests have been approved with the exception of the existing road crossings, which shall be backfilled immediately.

B. HDPE pipe joints and fittings: HDPE joints and fittings shall be assembled in accordance with MANUFACTURES AND ASTM STANDARDS. The OPEN ends of the pipe shall be covered during the progress of the work to keep the interior of the pipe clean.

C. Thread Compound: Thread Compound used shall be suitable for potable water systems.

D. Bedding: Shall be according to Spec. 02229 - Trenching, Backfilling and Compacting.

E. Assemblies: Refer to the drawings for locations of all assemblies. All pipe and fittings in assemblies shall be the same size as the adjoining pipeline except where otherwise specified or where reducers are needed to enter a valve body.

1) Curb Stop Valve Assembly: Install curb stop valve, curb box, stationary rod, HDPE transition, reducers, if required, and a 6 inch by minimum 3-1/2-foot-long treated wood post set in the ground approximately 24 inches. Set the post 24 inches upstream of the valve.

2) Curb Stop Valve w/Drain Assembly: Install curb stop valve w/drain, a one cubic foot gravel sump with 6 mil polyethylene covering, curb box, stationary rod, HDPE transition and reducer if required. Install a 6 inch Ø by minimum 3-1/2-foot-long treated wood post set in the ground approximately 24 inches. Set the post 24 inches upstream of the valve.

3) Remote Tap Assembly: Remote tap assembly shall consist of a 2"Ø curb stop and waste w/ associated curb box, extension rod, drainage gravel, 5 ml plastic cover, misc. fittings, pipe, and wood mounting post and exclosure as shown on drawings.

4) Air Relief Valve Assembly: Install air relief valve, HDPE tee (the same size as the adjoining pipeline), 1 cu. ft. of washed gravel as per curb stop and drain specification, 6 mil polyethylene cover to place over the gravel, reducer, HDPE transition, 8 inch Ø schedule 40 PVC riser 6 ft. long, 8 inch Ø schedule 40 PVC slip cap and a 6 inch diameter by minimum 3-1/2 foot long treated wood post. Drill six 1/4-inch diameter holes in the 8 inch Ø PVC riser, spaced evenly around the circumference of the pipe. The wood post shall be set in the ground 24 inches deep, 24 inches upstream of the valve.

5) Watering Assembly: Install 20 feet of 1 inch Ø DR11 HDPE pipe and galvanized pipe and ball valve as shown on the drawing Pipeline Details. Install a 6 inch Ø by 7-foot-long treated wood post to be used as one post in the Water Trough Assembly. 1"Ø curb stop and waste at the beginning of the 20' section of 1"Ø HDPE pipe. The wood post shall be set 24 inches deep and backfill around the post shall be firmly tamped. Install two 1" Ø inch threaded elbows, two 1" Ø inch by 6-inch threaded nipples, one Float Valve Assembly and one flow restrictor. The 1 inch Ø DR11 HDPE pipe shall be secured to the wood post with two 1-inch metal galvanized straps completely encircling the post and HDPE pipe.

6) Water Trough Assembly: Install as shown on the drawings and described in the specifications.

SECTION 3.03. FIELD QUALITY CONTROL:

A. General: It is the Contractor's responsibility to perform all required tests. The Contractor shall supply and temporarily install a gauge on each portion of pipeline being pressure tested, to monitor any pressure drop during the test. The four-hour pressure tests, previous to backfill, shall be performed immediately when a segment as detailed by the contractor's work schedule, is completed and flushed. The flow tests shall be done before backfilling.

B. Pre-Test Inspection: Test equipment and the pipeline shall be examined before pressure is applied to ensure that connections are tight, necessary restraints are in-place and secure, and components that are required be isolated or disconnected are isolated or disconnected. All low pressure filling lines and other items not subject to the test pressure shall be disconnected or isolated.

C. Hydrostatic testing: The preferred testing medium is clean water. The test section shall be completely filled with the test medium, taking care to bleed off any trapped air. Venting at high points may be required to purge air pockets while the test section is filling. Venting may be provided by using equipment vents. Re-tighten any loosened flanges before applying test pressure.

D. Non-monitored Make-Up Water Test: The test procedure consists of initial expansion, and test phases. For the initial expansion phase, make-up water is added as required to maintain the test pressure for four (4) hours. For the test phase, the test pressure is reduced by 10 psi. If the pressure remains steady (within 5% of the target value) for an hour, no leakage is indicated. The above testing procedures were taken from the Plastic Pipe Institute Engineering Handbook, Inspections, Tests and Safety Concerns.

Nominal Pipe Size in inches	U.S. Gallons/100 ft of Pipe		
	1-Hour	2- Hour	3- Hour
2	0.07	0.11	0.19
3	0.10	0.15	0.25

E. Test Duration: For any test pressure from 1.0 to 1.5 times the system design pressure, the total test time including initial pressurization, initial expansion, and time at test pressure, must not exceed eight (8) hours. If the pressure test is not completed due to leakage, equipment failure, etc., the test section shall be depressurized and allowed to "relax" for at least eight (8) hours before bringing the test section up to test pressure again.

F. Pressure Testing Precautions: The piping section under test and any closures in the test section shall be restrained or otherwise restricted against sudden uncontrolled movement in the event of rupture. Expansion joints and expansion compensators shall be temporarily restrained, isolated or removed during the pressure test. Testing may be conducted on the system, or in sections. The limiting test section size is determined by test equipment capability. If the pressurizing equipment is too small, it may not be possible to complete the test within allowable testing time limits. If so, higher capacity test equipment, or a smaller test section may be necessary. If possible, test medium and test section temperatures should be less than 100oF (38oC). At temperatures above 100oF (38oC), reduced test pressure is required. Before applying test pressure, time may be required for the test medium and the test section to equalize temperature. Contact the pipe manufacturer for technical assistance with elevated temperature pressure testing.

G. Test Pressure: The working pressure for this system is 50 psi at the well. Valves or other devices may limit test pressure, or lower pressure rated components. Such components may not be able to withstand the required test pressure, and shall be either removed from, or isolated from the section being tested to avoid possible damage to, or failure of these devices. Isolated equipment shall be vented. Ȋor continuous pressure systems where test pressure limiting components or devices have been isolated, or removed, or are not present in the test section, the maximum allowable test pressure is 1.5 times the system design pressure at the lowest elevation in the section under test. Ȉf the test pressure limiting device or component cannot be removed or isolated, then the limiting section or system test pressure is the maximum allowable test pressure for that device or component. Ȋor non-pressure, low pressure, or gravity flow systems, consult the piping manufacturer for the maximum allowable test pressure.

H. Flow Tests: The flow tests shall be completed at locations shown on the Work Data Sheet after completion of the four-hour pressure test and before backfill. The Contractor shall install necessary equipment to determine the flow rate and document the time, location, test method, flow rate, name of testing personnel. The documentation shall be provided to the CO. After approval the Contractor may backfill the tested section of pipeline.

I. Final Test: A final test shall be conducted on the total system after completion of backfilling. The pressure shall be maintained for a period of 24 hours; then the system inspected for failure criteria. All deficiencies evident shall be corrected and the test repeated until approved.

PART 4. PART 4: MEASUREMENT AND PAYMENT

SECTION 4.01. METHOD OF MEASUREMENT:

A. Units: The HDPE pipe will be measured and paid for by the number of lineal feet of pipeline measured along the centerline at the ground surface. Measurement for 2"Ø curb stop valve assembly, air relief valve assembly, watering assembly including a 1"Ø curb stop w/ drain, and 2"Ø remote tap with wood guard assembly shall be by the number of each assembly completed in place, as detailed on the respective drawings and as specified. Pipe within assemblies, gravel, and all components and fittings listed as part of the assemblies or shown on the assembly drawings are considered part of the assemblies and will not be paid for separately. There is no separate payment for testing, the Contractor shall include consideration for this item under the other bid items. Trenching, backfilling and compacting including, between water conveying parts of an assembly, will be measured for payment under Section titled - Trenching, Backfilling and Compacting.

SECTION 4.02. BASIS OF PAYMENT:

A. Payment: Prices and payment listed below will be full compensation for the work described in this section. Payment will be made under:

Pay Item		Pay Unit
02665(20.1)	DR11 HDPE pipe, 2"Ø.	Linear Foot
02665(20.2)	DR11 HDPE pipe, 2"Ø. Stock Tank Drain Line	Linear Foot
02665(72.1)	2"Ø Curb Stop Valve Assembly	Each
02665(74)	Air Relief Valve Assembly	Each
02665(90)	Watering Assembly.	Each
02665(92)	Remote tap w/ Wood Guard	Each

END OF SECTION

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PART 1: GENERAL

1.01 WORK INCLUDED:

A. Description: Furnishing and installing water trough assemblies in accordance with these specifications and to the sizes, types and dimensions as shown on the drawings.

1.02 REFERENCES:

A. American Wood Preservers Association.

AWPA C 1-92	All Timber Products - Preservative Treatment by Pressure Processes
AWPA C 5-92	Posts, Pressure Treatment
AWPA C 2-92	Lumber, Timbers, Bridge Ties and Mine Ties, Pressure Treatment
AWPA P 5-92	Waterborne Preservatives
AWPA M 4-91	Care of Pressure Treated Wood Products

1.03 SUBMITTALS:

A. Certification: The Contractor shall furnish written certification from the treating plant stating that chemicals and methods used, for wood preservation and net amount of preservative retrained are in conformance with applicable standards. Furnish written certification from the manufacturer that the Contractor-furnished fence posts and sawn members conform to the requirements of this section. Submittals shall be according to section titled - General Information and Requirements.

PART 2: PRODUCTS

2.01 CONTRACTOR-FURNISHED MATERIALS:

A. Stock water trough: Tank shall be Montana Fiberglass model Z-2000 or equal.

Equal shall have these salient features:

1. Constructed of fiberglass reinforced plastic; consisting of approximately 35% glass, 65% resin, and a minimum of 3/16" in thickness.

2. Resin shall be orthopthalic polyester with an ultimate tensile strength of 13,000 psi minimum, an ultimate flexural strength of 20,000 psi minimum, a compressive strength of 24,000 psi minimum and a minimum Barcol hardness of 30.

3. Equal shall have a non-skid bottom interior surface which is sanded and slip resistant. Interior surface shall be gel-coated, orthopthalic, with a minimum Barcol hardness of 30. Thickness of gel-coat shall range between 12-15 mil.

4. Equal shall have walls and floor which are seamless, ribbed and reinforced for additional strength.

5. Color of equal shall be tan.

6. Equal shall be constructed with a threaded 3/4" drain hole with threaded plug to fit.

7. The tank shall be constructed with tapered sides from top to bottom to reduce ice damage and facilitate storage and handling. The lip shall be rolled or flat. If rolled, it shall be 3/8" minimum thickness and if flat, it shall be 1/2" minimum thickness. The bottom shall be flat so the trough may set on a flat level surface and shall have bird ramps molded into the structure. One acceptable supplier is Montana Fiberglass, Lewistown, Montana

B. Gravel: Pit Run 3/4" to 1-1/2" gravel.

C. Wood: All wood members shall be of the lengths and sizes as shown on the drawings.

1. Sawed members: The sawed members shall have minimum nominal dimensions as shown on the drawings.

2. Treating: All wood products shall be full length treated unless listed as untreated on the schedule.

D. Connectors: All bolts, lag screws, rods and other connectors shall be galvanized.

E. See sheet 14 for Cattle Guard and Panel Materials.

F. The contractor is responsible for providing and installing (provide labor) ALL miscellaneous fittings, fasteners, and supplies not explicitly noted in specifications or drawings in order for the system to function properly.

2.02 WOOD TREATMENT PRACTICES:

A. General: The following treatments shall be used. Minimum net retention and penetrations shall be according to AWPA C 5 for posts and AWPA C 2 for lumber. Treatment method shall be according to AWPA C 1, except as noted. When a treated member must be bored or cut during construction, thoroughly swab untreated surfaces with copper naphthenate or an approved preservative according to AWPA M 4.

B. Chromated Copper Arsenate (CCA): Waterborne preservative according to Type A, B, or C in AWPA P 5.

PART 3: EXECUTION

3.01 PREPARATION:

A. Clearing and Grubbing: An area approximately 50’X 27’ shall be cleared of all brush and large rock. The tank and appurtenance at each water facility shall then be installed as shown on the drawings.

B. Excavation and Backfill: Shall be performed in accordance with section

titled - Trenching, Backfilling and Compacting.

3.02 INSTALLATION:

A. General: Special care shall be taken to place the tank gravel on a firm base. The installed stock tank shall be level to a tolerance of ±.10'. Excavation for each plank and post footing shall be made individually, disturbing the least area possible. The backfill around the footings (and in the event of over-excavation for the supports) shall be compacted at optimum moisture by means of hand or mechanical tampers to the density of the surrounding undisturbed soil. The water trough shall be placed at the watering assembly as shown on the drawings.

1. Water trough assembly shall be installed as shown on the drawing Titled (Typical Tank Installation)

C. Wood Members: When boring or cutting is required at the construction site, the exposed untreated surface of the member shall be thoroughly swabbed with an approved preservative. All the braces shall be securely bolted.

D. Gravel: Place the gravel to depth of 8” or to match wooden gravel guards under tanks.

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT:

A. Units: The water trough assemblies will be measured and paid for per unit for each water trough assembly, including all appurtenances, acceptably installed in accordance with the drawings and specifications.

4.02 BASIS OF PAYMENT:

A. Payment: Prices and payment will be full compensation for the work described in this section. Payment will be made under:

Pay Item	Pay Unit
02802(2) Water Trough Assembly w/Guard Panels	Each

END OF SECTION

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Marcott Coulee Pipeline

WORK DATA SHEET

Mobilization	1	Each
Excavation and Embankment	250	yd^3
Water Trough w/ guard panels Assembly	8	Each
Watering Assembly w/ 1”Ø curb stop and waste	8	Each
Trenching and backfilling & compacting 6’ to daylight	1200	lin. Ft.
2”Ø DR11 HDPE Pipe (tank drain)	1200	Lin. Ft.
Trenching, Backfilling, & Compacting 6’ Bury Depth	53233	Lin. Ft.
2”Ø DR11 HDPE Pipe	53233	Lin. Ft.
2”Ø Curb Stop Valve Assembly	6	Each
Air Relief Valve Assembly	20	Each
Remote Tap w/ Wood Guard	2	Each
Depth of pipe below existing grade	6’	ft
Number of curb stop keys to be supplied	6	Each

Flow and pressure tests: Tests shall be performed at the extreme end of each individual reach of pipe. A bucket w/ stopwatch will be acceptable for performing the flow test.

WORK DATA SHEET

Marcott Coulee Pipeline