

Ridges Basin Dam Gate Hydraulic Modification

Performance Work Statement (PWS)

1. INTRODUCTION & BACKGROUND

Ridges Basin Dam is an embankment dam that impounds Lake Nighthorse Reservoir, approximately 3.5 miles south of Durango, CO. The Dam has an outlet works system that includes a jet flow gate. The jet flow gate is operated by a hydraulic cylinder, associated hydraulic power unit, and 1.5-inch diameter hydraulic piping. To permit regular maintenance of the gate seal it is necessary to lift the gate's cylinder, bonnet, and leaf assembly approximately 12-inches without disconnecting the hydraulic piping system. To accomplish this, sections of hydraulic piping need to be replaced with flexible hydraulic hose.

Ridges Basin Dam is owned by the United States Bureau of Reclamation (Reclamation) and operated by the Animas La Plata Operation Maintenance and Replacement Association (Association).

2. OBJECTIVE

The objective of this PWS is to replace a portion of two existing hydraulic pipes with flexible hydraulic hose so that portions of a jet flow gate can be lifted 12 inches without disconnecting hydraulic system. The work also includes draining, refilling, fluid cleaning, and testing of the hydraulic system.

3. SCOPE & SERVICES TO BE PERFORMED

The scope of this effort includes all labor, materials, and equipment, mobilization and demobilization to be provided by the selected Contractor to replace portions of hydraulic piping with hydraulic hoses. The anticipated scope includes, at a minimum, the following. See the Requirements, Execution and Material Requirements Sections for additional information.

- a) Isolate the hydraulic power unit and hydraulic cylinder from the piping.
- b) Drain, contain, and dispose of existing hydraulic fluid from the hydraulic piping.
- c) Cut and remove portions of two hydraulic pipes. The hydraulic pipes are 1.5-inch diameter Schedule 80 steel pipes.
- d) Weld adapter fittings (four) to hydraulic piping to adapt to hose end fittings.
- e) Install two 1.5-inch inner diameter (-24) hydraulic hoses. The length and layout of the hoses shall be designed to permit the gate bonnet and cylinder to be lifted 12 inches. Demonstrate the hose installation will allow 12 inches of movement.
- f) Install supports for the hydraulic piping at both ends of the hydraulic hoses
- g) Refill the hydraulic system with new ISO VG-46 biodegradable hydraulic fluid that has been cleaned by filtering.
- h) Circulate and filter hydraulic fluid through the effected hydraulic piping, new hoses and fittings to clean them. (Excluding the isolated hydraulic power unit and hydraulic cylinder.)
- i) Test the hydraulic hoses and fittings.
- j) Make repairs if needed
- k) Coat the steel piping.
- l) Provide one extra assembled hose with the appropriate fittings and length.

4. REQUIREMENTS

- a) On-site work will begin within sixty calendar days of the date of contract award and be completed within fourteen calendar days of beginning. Post award site visits by the Contractor to gather data

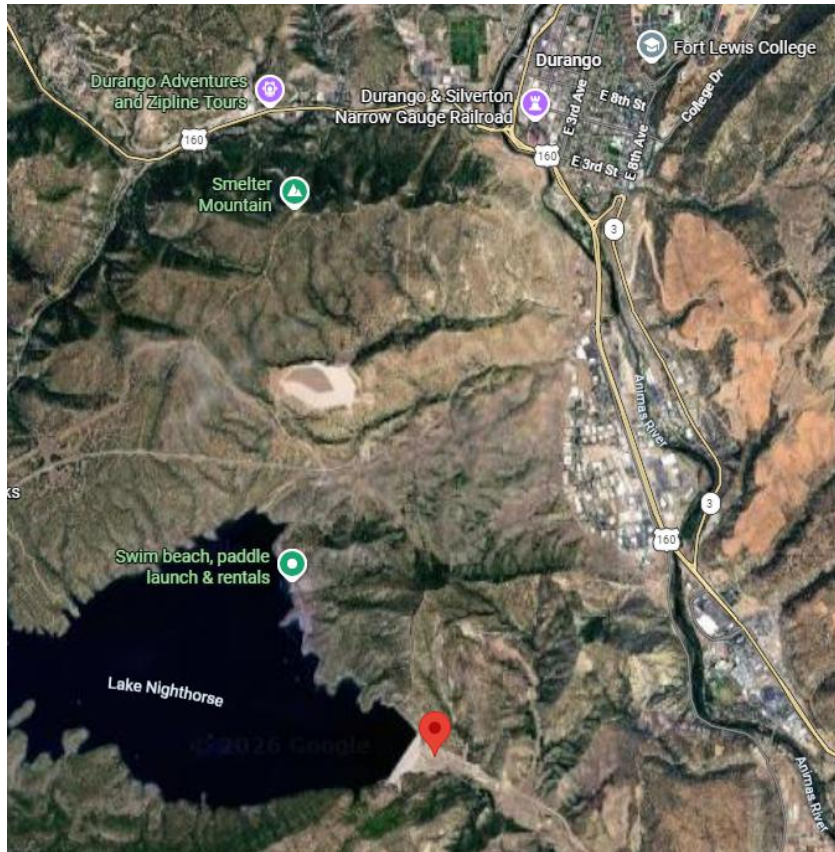
and information is not considered on-site work. The Contractor will provide Reclamation notice 10 calendar days prior to beginning on-site work.

- b) All components will have a rated operating pressure of at least 3,000 pounds per square inch. All required materials, fittings and associated connectors will be supplied by the Contractor. See Section 6, Material Requirements, for more information.
- c) The length and layout of the new hydraulic hoses will be designed so that the jet flow gate bonnet and cylinder can be lifted 12 inches without:
 - a. the need to disconnect any portion of the hydraulic system;
 - b. kinking, twisting, or tensioning of the hydraulic hoses;
 - c. causing bends in the hoses that are less than the manufacturer's listed minimum bend radius;
 - d. imposing stress on the hoses and fittings that are beyond the manufacturer's allowable limits.
- d) Provide hose supports at the lower and upper ends of the hydraulic hoses to prevent the hydraulic piping from bearing the weight of the hoses. Coordinate with Reclamation and the Association on the possibility of reusing existing supports and proposed support designs.
- e) Refer to Section 13. FIGURES for photographs of the gate, hydraulic system, hydraulic piping, and suggested hose connection and support areas.
- f) Component sizing and type will be confirmed by the Contractor following review of the site conditions and project needs with Reclamation and Association staff prior to preparing submittals. Submittals will be required for approval by Reclamation for all system components listed in Section 3 and shall include, at a minimum, the Manufacturers' names and product designations and specified product standards. A site visit for potential bidders will be offered, see Section 5, Supporting Information.
- g) Removal and disposal of the portions of the existing hydraulic piping and drained hydraulic fluid will be the responsibility of the Contractor.
- h) The hydraulic system and new hydraulic fluid will be cleaned by the Contractor once the hose installation work is completed. See Section 7, Work Execution for more information.
- i) The hose installation movement will be tested to ensure that the upper ends of the hoses can be raised 12 inches after connection and still meet all the requirements. The Contractor will demonstrate to Reclamation that the upper ends of the hoses can be raised vertically 12 inches above the horizontal plane of their final upper connection point. Contractor is responsible for making repairs or modifications to ensure the hose installation meets the requirements. See Section 7, Work Execution for more information.
- j) The hose installation will be tested by pressurizing the system and operating the outlet works gate through three full cycles. The hose installation is required to have no leaks during the test and within 120 minutes after completion of the test. The Contractor is responsible for making repairs or modifications to ensure a safe, leak free installation. See Section 7, Work Execution for more information.

- k) Once all testing is complete and air bleeding of the hydraulic system is complete the Contractor will be responsible for refilling the hydraulic system reservoir with new cleaned hydraulic fluid. See Section 7, Work Execution for more information.
- l) The Contractor will be responsible for coating any new steel piping and fittings and any areas where the existing steel piping coating is damaged. See Section 7, Work Execution for more information.
- m) Provide one spare completely assembled hydraulic hose that meets the requirements of this PWS. The spare hose will be suitable to serve as a direct replacement for either of the two installed hoses.
- n) All work performed for this project shall be done in accordance with applicable federal, state, and local safety codes. The Contractor shall furnish a Safety Plan to Reclamation within 30 calendar days of the contract award and prior to beginning on site activities. The Contractor shall furnish the Safety Plan to employees that will be on site prior to beginning on site work. The Safety Plan, at a minimum, shall include requirements for use of personal protective equipment and a summary of safety and emergency procedures to be used in the event of an injury or other emergency. A good source of reference is Reclamation's Safety and Health Standards.

5. SUPPORTING INFORMATION

- a) Period of Performance: Ninety calendars from date of award.
- b) Place of Performance: Work will occur at the Ridges Basin Dam outlet works gate house on the east side of Lake Nighthorse. Approximately 3.5 miles south of Durango, CO. Mapping address of 2571 Wheeler Rd., Durango, CO 81303



Location of Ridges Basin Dam Outlet Works Gate House

- c) Operating Hours: The operating hours available for Contractor staff to be on site are Monday through Friday, 7:30am to 4:00pm. The facility is locked and gated daily. Access to the work site will require coordination with Reclamation and Association personnel.
- d) Contractor Use Area: A portion of the parking area within the fenced gate house perimeter and nearby storage area outside of the fenced perimeter may be utilized by the Contractor for mobilization, demobilization, storage of materials and equipment, and performing work. The portions and locations used shall be coordinated with Reclamation and Association staff prior to beginning work. Contractor use of area shall not interfere with Reclamation and Association activities. The Contractor will assume full responsibility for protection and safekeeping of products stored on premises.
- e) Contractor staff will have access to an existing portable toilet (porta potty) located at the site. There are no other facilities at the site.
- f) A site visit will be scheduled for potential bidders. The timing and details of the site visit will be based on the solicitation timing. Nathan Nakamoto will be the contact for further site visit information (303-349-0591, nnakamoto@usbr.gov)

6. MATERIAL REQUIREMENTS

All materials will be new, previously unused. All pressurized system components will have a rated operating pressure of at least 3,000 pounds per square inch.

- a) Hydraulic Hose:
 - i. Size: 1.5-inch inner diameter or -24
 - ii. Suitable for hydraulic fluid

- b) Adapters and fittings:
 - i. Suitable for creating a leak free connection between the hydraulic piping and hoses.
 - ii. Rated operating pressure of 3,000 pounds per square inch
 - iii. Creates a connection between the hydraulic piping and hoses that can be disassembled (threaded, flanged, etc.) for future hose removal without proprietary tools or destructive means.
- c) Coating:
 - i. Rust Bullet DuraGrade urethane rust prevention coating or approved equivalent
 - ii. Color: Black
- d) Hydraulic Fluid:
 - i. Hydro-Safe ISO VG-46 Premium Biodegradable Hydraulic Fluid or approved equivalent

7. WORK EXECUTION

- a) Operations of the hydraulic system and outlet work gates will be performed by Association staff in coordination with Reclamation. The Contractor will work with the Association and Reclamation to coordinate operations.
- b) The contractor will be responsible for removal and disposal of all existing components and hydraulic fluid. It is estimated that the portion of hydraulic piping that needs to be drained has a volume of approximately ten gallons.
- c) Do not use or install bends in hoses less than the manufacturer's listed minimum bend radius.
- d) Prior to final connection the hose installation movement will be tested to ensure that the upper ends of the hoses can be raised 12 inches. After the lower hose connections and any supports are connected, the hose is cut to final length, and the upper connection fittings are prepared, the Contractor will demonstrate to Reclamation that the upper ends of the hoses can be raised vertically 12 inches above the horizontal plane of their final upper connection point. The Contractor is responsible for making repairs or modifications to ensure the hose installation meets the requirements.
- e) Two quick-connect fittings are located on each line for filling and cleaning the hydraulic lines.
- f) Clean the new fluid by filtering it with a 4-micron or less element filter prior to reconnecting the isolated piping and hoses with the hydraulic power unit and cylinder.
- g) Clean the isolated piping and hoses by circulating hydraulic fluid through them that is being continuously filtered with a 4-micron or less element filter. Circulate the hydraulic fluid in each pipe through the filter for at least three full piping volume exchanges.
- h) Bleed air from the effected hydraulic lines.
- i) Following installation completion, cleaning and bleeding, the system shall be tested for leaks. The test will comprise operating the outlet works gate through three full cycles. The installation is required to have zero leaks during, and within 120 minutes after completion, of the test. Any repairs or modifications to the new components will be the Contractor's responsibility and at the Contractor's cost. A new system test will be conducted after any repairs or modifications.
- j) Prior to beginning work the Contractor will be responsible for providing a temporary mark on the hydraulic reservoir to show the existing fluid level in the gate closed position. Once the hydraulic system passes testing the Contractor will be responsible for refilling the reservoir with the specified fluid, cleaned through a 4-micron or less element, back to the marked level.
- k) Once the system passes testing, site cleanup to restore the work and staging areas to original or better condition will be the responsibility of the Contractor.
- l) The Contractor will be responsible for coating repair of areas where existing coatings were damaged from the work and coating application to new steel products.
- m) All welding of hydraulic system piping will be done in accordance with ASME B31.1.

8. PERFORMANCE REQUIREMENTS & QUALITY

The Contractor's performance will be reviewed by Reclamation staff using the attached Quality Assurance Surveillance Plan.

Standards for and surveillance methods of the Contractor's performance in the Quality Assurance Surveillance Plan are also shown in the table below:

Item No.	Description	Timeframe	Performance Indicator	Acceptable Quality Levels (AQL)	Surveillance Method
1	Provide Submittals: Provide COR with submittals required by the Performance Work Statement	Within 15 calendar days of contract award	Specifications Submitted	Cut sheet and/or shop drawing Submittals must provide enough detail for COR to determine if specifications are being met.	Document when performance exceeds the standard. If performance is below standard for a given period, require contractor to re-perform service at no additional cost to the government.
2	Notification and Work Hours: Contractor must work specified hours and follow notification requirements.	Extent of contract	Communication with Reclamation & Association	Visitor logs and work reports	Same as above
3	Complete Installations: The contractor will install and test all required system components.	Within 14 calendar days of beginning on-site work	Requirements and timeframe achieved	System tests completed and passed per PWS	Same as above
4	Use of Facility: Contractor must return the facility, including staging areas and government furnished equipment, to its original or better condition	Extent of contract	Facility walkthrough with Reclamation & Association prior to leaving site	Facility left in its original or better condition	Same as above
5	Development of Safety Plan: The Safety Plan, at a minimum, will include requirements for use of protective clothing such as protective eye wear and footwear, gloves, etc. as well as a summary of safety and emergency procedures to be used in the event of an injury	Prior to site work	Report submitted	The Safety Plan, at a minimum, will include requirements per the PWS	Same as above

9. DOCUMENTATION

The Contractor will be required to provide design documentation that demonstrates that the criteria in the PWS have been met. Written plans and specifications, including cut sheets, sketches, job sheets, and drawings, shall meet standard criteria and comply with applicable laws and regulations.

Item No.	Description	Content	Format	Medium	Delivery
1	Manufacturer's Product Data for Material Components	PWS Section 3, 4, 6	PDF	Electronic report	Delivered to COR at least one week before ordering
2	Safety Plan	PWS Section 4	PDF or Microsoft Word	Electronic report	1 copy delivered to COR prior to construction start, within 14 days of contract award.

10. GOVERNMENT FURNISHED MATERIALS

An existing hydraulic fluid filter cart is available to use at the Contractor's option. The Contractor will be responsible for providing the filters, components, and fittings necessary for the cart to perform the work. The Contractor will be responsible for returning the cart in its original or better condition.

11. REGULATIONS & POLICIES

Reclamation policies and procedures recognize that protecting the environment, ensuring safety, conducting proper maintenance, and efficient operations are all compatible goals. Such policies and procedures ensure that Reclamation facilities are operated and maintained in the best interest of the public.

The Contractor must comply with all applicable Federal, state and local laws. Reclamation staff will make site visits to review the progress made in the completion of Tasks and provide instructions/comments on an as-needed basis and will review the safety practices of the Contractor.

12. PROJECT CONTACTS

- a) Reclamation
 - a. Contracting Officer (CO): Tyler Spencer, Telephone: 801-524-3653, Email: tyler_spencer@ios.doi.gov
 - b. Contracting Officer's Representative (COR): Nathan Nakamoto, Telephone: 970-385-6516, Email: nnakamoto@usbr.gov
 - c. Technical Representative: Nathan Nakamoto, Telephone: 970-385-6516, Email: nnakamoto@usbr.gov
- b) Association
 - a. Facility Supervisor: Kevin Neil, Telephone: 970-749-1676, Email: kneil@alpproject.org

13. FIGURES



Figure 1. Outlet works jet flow gate and hydraulic piping.

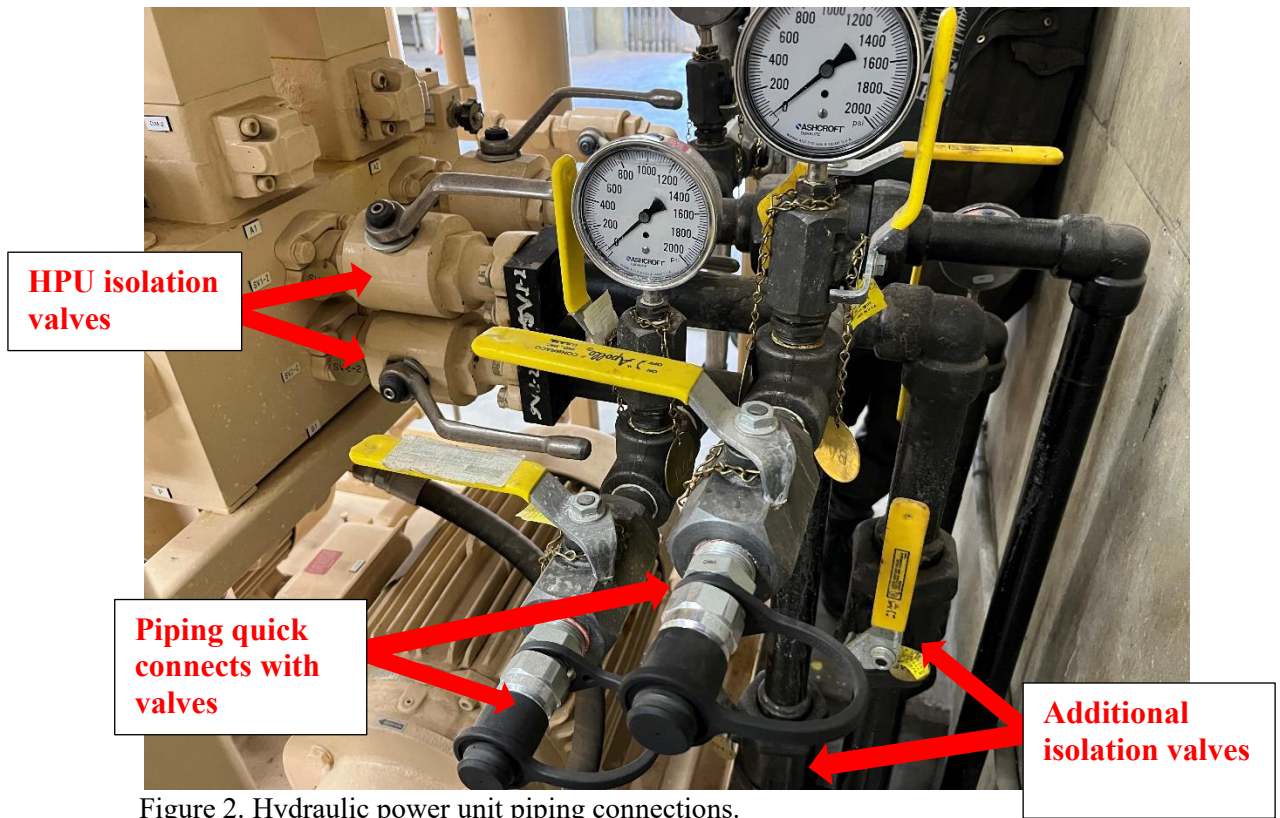


Figure 2. Hydraulic power unit piping connections.

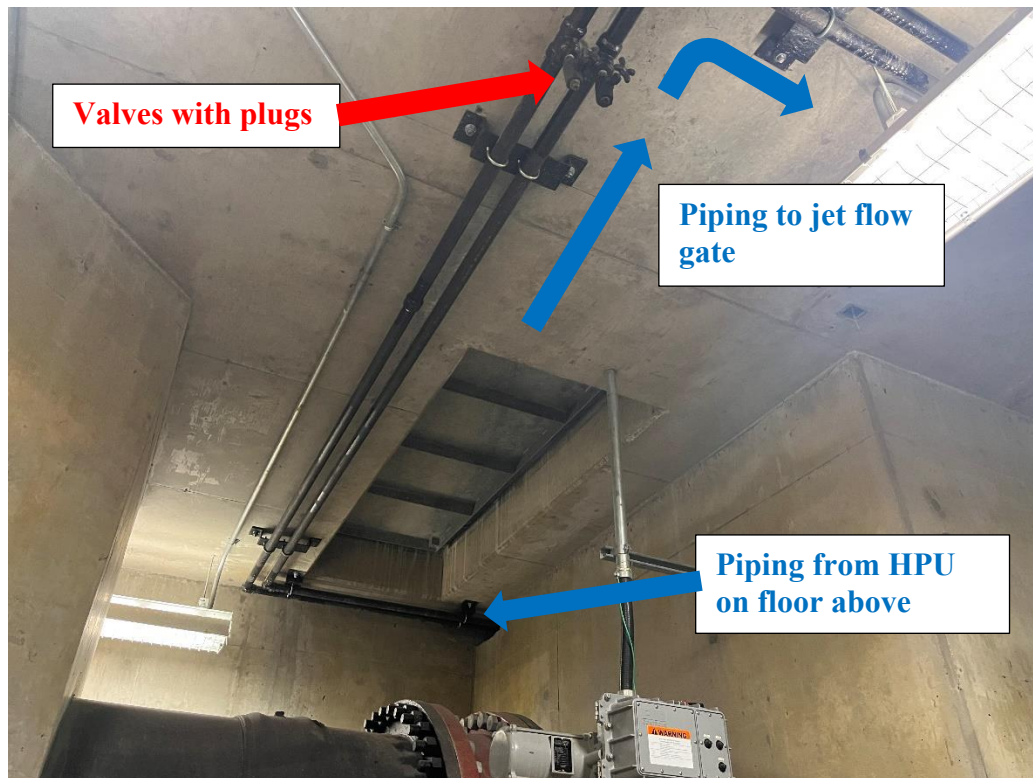


Figure 3. Hydraulic piping hanging on ceiling of lower floor.

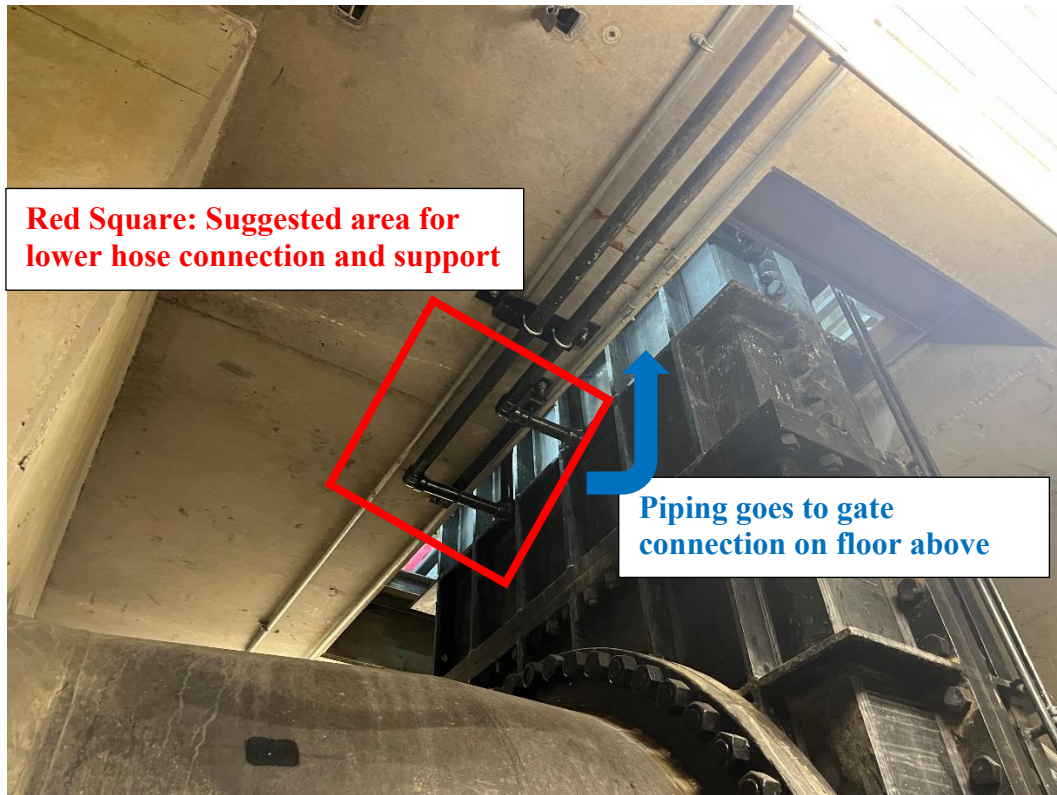


Figure 4. Hydraulic piping continued.

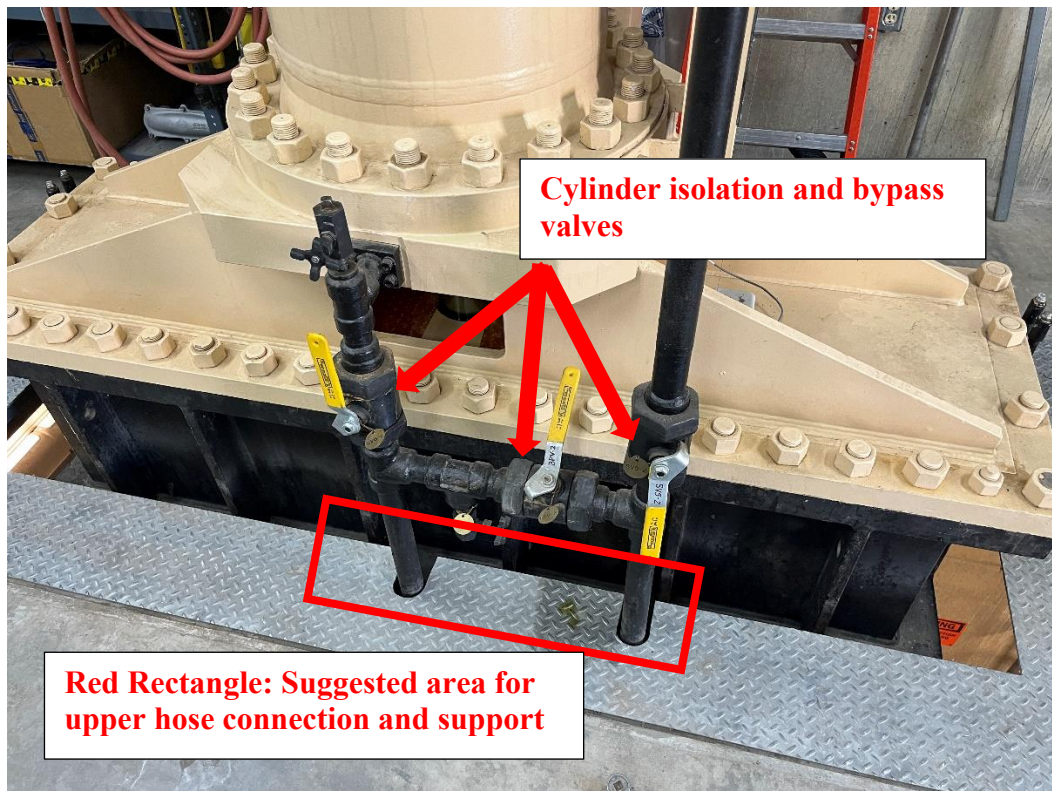


Figure 5. Hydraulic piping connection to jet flow gate.



Figure 6. Existing Hydraulic Fluid Filter Cart