Action Requested/Required:

- [x] Vote/Action Requested
- [ ] Discussion or Presentation Only
- [ ] Public Hearing

Report Date: _____
Hearing Date: _____
Voting Date: _____

Department: City Management **Presenter(s) & Title:** Nathan Ingram, Assistant City Manager

Agenda Item Title:

Discussion and Possible Approval for the City to Apply to the Hazard Mitigation Grant Program (HMGP).

Summary:

Each year the Etowah River floods its banks. When it does, these floods deposit tons of sediment on top of and inside the Hickory Log Creek Reservoir intake vault. This inundation of silt creates a situation that makes the intake virtually unusable and requires costly, dangerous and time-consuming dredging to remove.
Cobb County-Marietta Water Authority and the City have budgeted a capital project to raise the vault's height to two feet above the 100-year floodplain, thus reducing the chances for this sedimentation. The expected cost of this project is $2M (City responsible for 25% of this). The City has allocated funds for this project within its FY '26 Budget.
In correspondence with GEMA, we believe that this project would be eligible for funding through the HMGP. We are requesting that Council approve staff, in partnership with CCMWA, to apply for this grant that could offset up to 75% of the overall project cost.

Budget Implications:

Budgeted? ☐ Yes ☐ No ☑ **N/A**

Total Cost of Project: _____ Check if Estimated ☐
Fund Source: General Fund ☐ Water & Sewer ☐ Sales Tax ☐ Other: _____

Staff Recommendations:

Staff Recommends: Motion to approve staff, in partnership with Cobb County-Marietta Water Authority, to apply for project grant funds to the Hazard Mitigation Grant Program (HMGP).

Reviews:

Has this been reviewed by Management and Legal Counsel, if required? ☑ Yes ☐ No

Attachments:

Technical Memorandum from R2T for the Design of the HLC Intake Gate Vault Improvements

Technical Memorandum

To: Cobb County-Marietta Water Authority

From: R2T, Inc.

Date: September 9, 2024

Re: Conceptual Design – Hickory Log Creek Intake Gate Vault Improvements

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1. Introduction

This Memorandum outlines the design criteria and summarizes the basis for detailed design development associated with modifications and improvements to City of Canton and Cobb County Marietta Water Authority's (CCMWA) Intake Gate Vault structure at the Hickory Log Creek Intake and Pumping Station located along the Etowah River.

1.1 Background and Objectives

In partnership with the City of Canton, CCMWA maintains and operates the Hickory Log Creek (HLC) Intake and Pumping Station that supplies water to the HLC reservoir from the Etowah River. The Intake and Pumping Station was built in 2008-2009 and includes an intake gate vault/chamber with four slide gates located immediately adjacent to the Etowah River in the designated floodway. The site is located in the City of Canton within Cherokee County. The property is owned by the City of Canton (PIN# 14-0228-0030).

CCMWA currently experiences operation and maintenance issues associated with flood events and deposited sediment within the intake vault and raw water piping and pumping system. CCMWA desires to raise the vault to 2-feet above 100-year base flood elevation (BFE) to eliminate the potential from sediment and debris entering the system during flood events. As part of this project, CCMWA also desires to raise the gate stems and equip the 30-inch intake slide gates located at the vault with electric actuators with remote control.

Photo 1-1 Existing Intake Vault

1.2 Existing Conditions

Per the record drawings provided by CCMWA, the top of the intake vault is elevation 863.50. The vault is composed of cast in-place concrete with the size of approximately 8' wide x 18' long (interior dimension). The FEMA 100-year Base Flood Elevation (BFE) at the location of the site is at approximately elevation 878.00. Therefore, the goal is to raise the structure to an elevation of approximately elevation 880.00 (raise structure ~16.5-feet).

Four existing 30" pipes supply raw water into the intake chamber where raw water is gravity fed to the existing pump station through one 54" pipe. Flow into the intake chamber can be reduced or isolated by means of four existing slide gates at each of the four 30" supply pipes. Currently, these slide gates can only be closed by means of manual, portable actuators, which require personnel to access the operating level of the structure. Under current conditions, CCMWA must first clean off silt from any recent flood events to be able to access the recessed floor nuts before manually operating the slide gates.

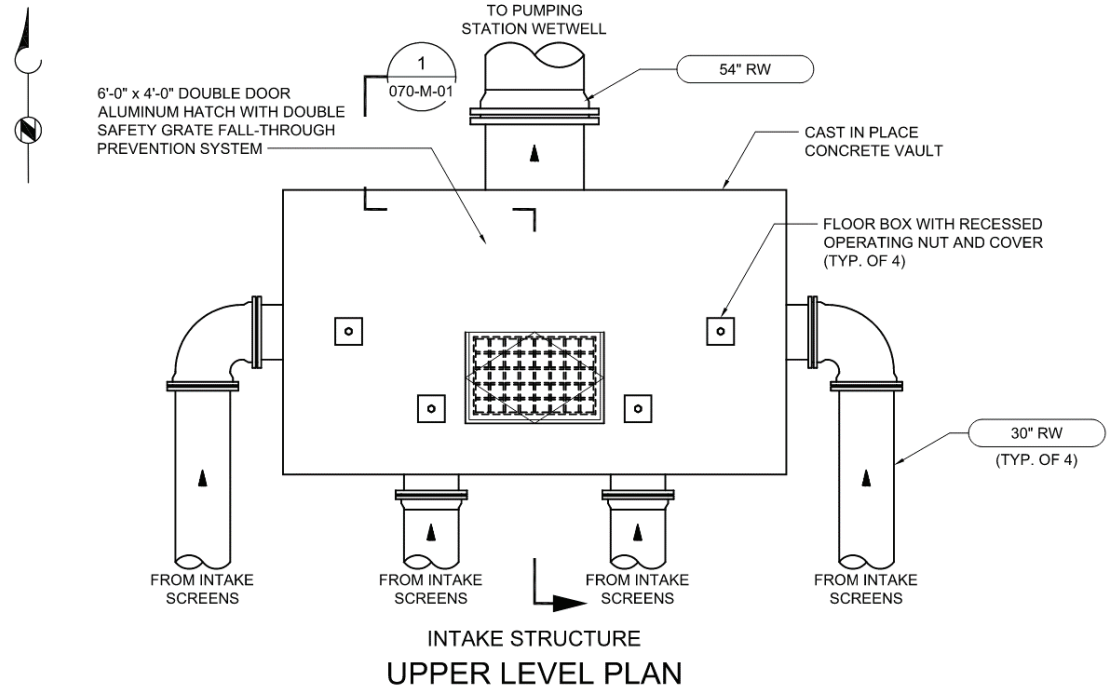


Figure 1-1 Existing Top Plan

2. Proposed Improvements

River to Tap, Inc. (R2T) has been tasked with evaluation and development of a detailed design package for the permitting and construction of the improvements at the HLC intake vault/chamber. The project is anticipated to be procured utilizing short form contract documents from CCMWA. Conceptual Drawings have been included in Appendix A detailing the proposed improvements. The following sections outline the proposed improvements by discipline:

2.1 Structural

The existing concrete intake vault structure will be retained with minimal modifications made to the existing structure and its components. The only modifications made to the existing structure will be to remove the existing hatch doors and core the top slab to allow new and longer stems to pass through to the new top slab and actuators above.

For the new structural additions to the vault, new reinforced concrete walls with brick veneer will be constructed directly overtop the existing walls below and a new reinforced concrete top slab will be poured at the top of the addition. These new concrete walls will be anchored to the

existing structure by doweling vertical bars into the walls below. A new retrofit PVC waterstop will be bolted to the top of the existing structure at the centerline of the new walls, creating a watertight joint to prevent water from entering the structure during flood events.

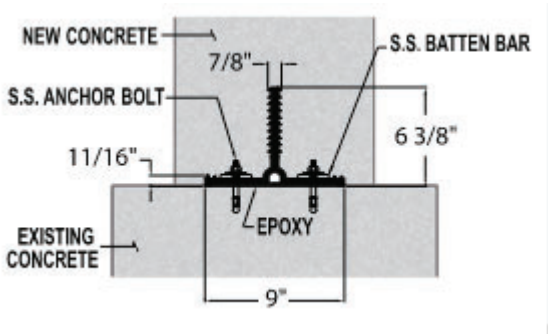


Figure 2-1 Proposed Retrofit PVC Waterstop Detail

At the new concrete top slab, the new actuators will be anchored to the top slab and aluminum railing with kickplate will be installed around the full perimeter of the top slab. Two new hatches will be cast into the top slab, one 4ft x 6ft hatch to allow removal and access to the slide gates and one 3ft x 3ft manway hatch with a ladder down into the new top chamber of the intake vault.

A new stairway will be installed to provide access to the new top slab. The stairs will be supported by cantilever and bracketed support framing anchored to the new concrete wall. This mounting technique is ideal for this structure to prevent flood events from heaving and settling of the foundation elements that would be isolated from the intake vault structure and cause potential damage to the stair framing over time.

Increased soil bearing pressures due to the self-weight of the new structural additions are not expected to exceed existing, allowable soil bearing capacities. New effects of wind loading, soil backfill pressures, and hydrostatic flood loading on the exposed addition as well as buoyancy effects will be verified but are not expected to adversely impact the load capacities of the existing structural elements.

2.2 Architectural

To provide an aesthetically pleasing appearance to the exposed intake vault addition, the entire perimeter of the above-grade walls will be clad in brick veneer. The brick veneer will be stacked predominantly in running bond with soldier coursing at the mid-height and top courses of the brick veneer. This pattern, along with the brick color, will match the brick veneer of the Pump Station as closely as possible.

In addition to the visual improvements to the new addition, multiple life safety improvements will be included as well. Access to the new top slab will be provided by means of a new aluminum staircase and platforms on the north side of the structure. The north side of the structure will not be visible from the pedestrian paths on the south side of the Etowah River and the structure itself will obstruct visibility of this new stair. The sizes of treads and landings will

adhere to the minimum requirements of The Occupational Safety and Health Administration (OSHA).

At the top of the new intake addition, aluminum railing with kickplates will be installed around the full perimeter of the top slab. The railing will be specified to be designed to resist a linear load of 50 pounds per linear foot and a concentrated load of 200 pounds. This railing will meet the minimum dimensional requirements of OSHA and will be fabricated and installed in an arrangement that will not impact the operation of the new actuators.

The new addition to the intake vault will inherently create a new chamber within the vault itself. The existing chamber of the vault will become the bottom chamber and the space above the existing slab will become the top chamber. This creation of a second chamber provides access for maintenance with the added benefit of having a working surface within the vault to maintain and service the gate stems without having to enter the water-filled, bottom chamber below.

Multiple new hatches and a single ladder access to the new top chamber will be provided as well. A new 4ft x 6ft aluminum hatch will be installed in the new top slab and located directly over the existing 4ft x 6 ft hatch in the existing top slab. This new service hatch will maintain a service access point to remove or replace the existing slide gates in the bottom chamber of the intake vault as needed. In addition to this service hatch, a new 3ft x 3ft manway hatch will be provided with ladder access down into the top chamber of the intake vault.

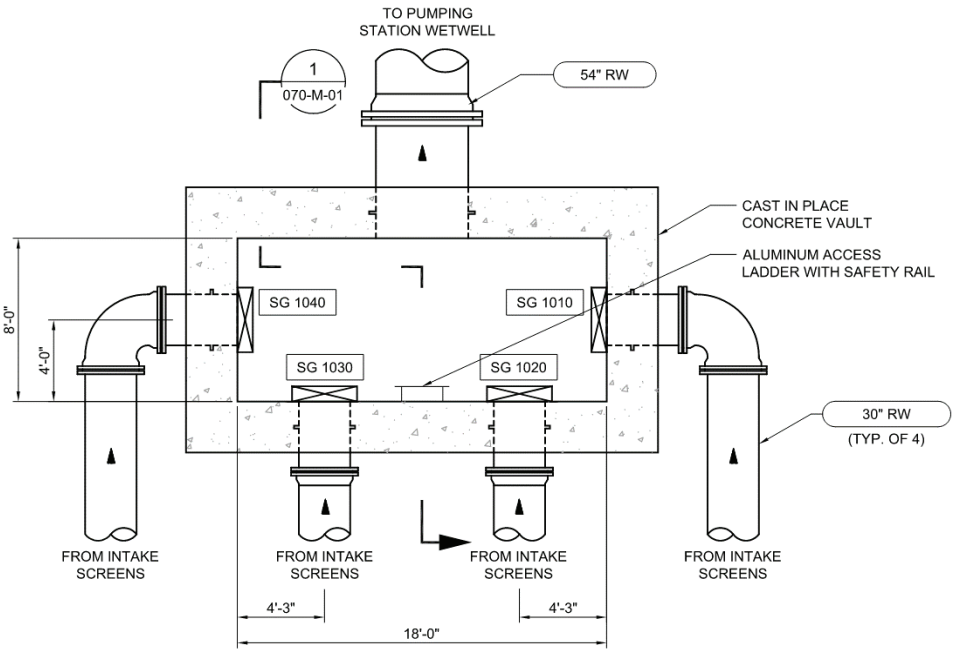
The existing 4ft x 6ft hatch will be modified by removing the hatch doors and installing removable grating and support framing to make access to the existing bottom chamber ladder safer for maintenance personnel. This grating will be removable in the event the full access opening is required to remove or replace the slide gates below.

2.3 Process

At this time, R2T has not been able to directly assess the condition of the 4 slide gates due to access constraints and the exact configuration of the installed gates. A review of the top of the structure and available record documents indicates the following:

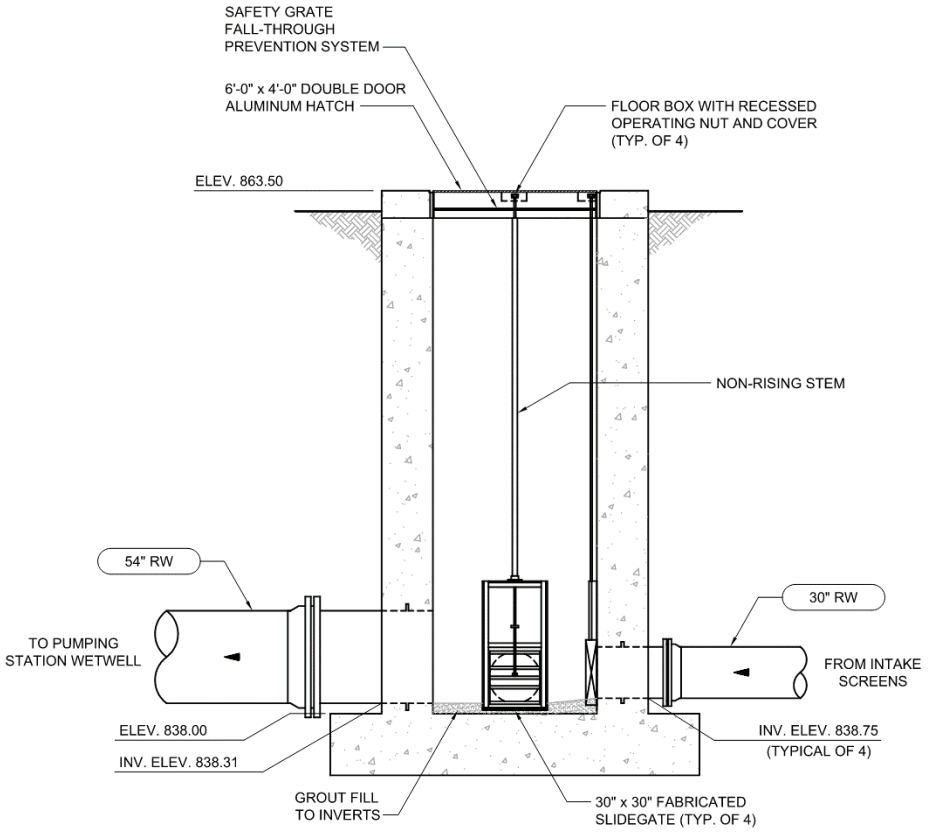
Table 2-1 Existing Slide Gate Schedule

Tag#	Size (LxW), in	Install type	Seating/unseating head, ft	Stem	Operation
SG 1010	30x30	Face mount	20	Non-rising	Portable EMO with stem caps
SG 1020	30x30	Face mount	20	Non-rising	Portable EMO with stem caps
SG 1030	30x30	Face mount	20	Non-rising	Portable EMO with stem caps
SG 1040	30x30	Face mount	20	Non-rising	Portable EMO with stem caps



INTAKE STRUCTURE
LOWER LEVEL PLAN

Figure 2-2 Existing Bottom Plan



INTAKE STRUCTURE

Figure 2-3 Existing Cross-Section

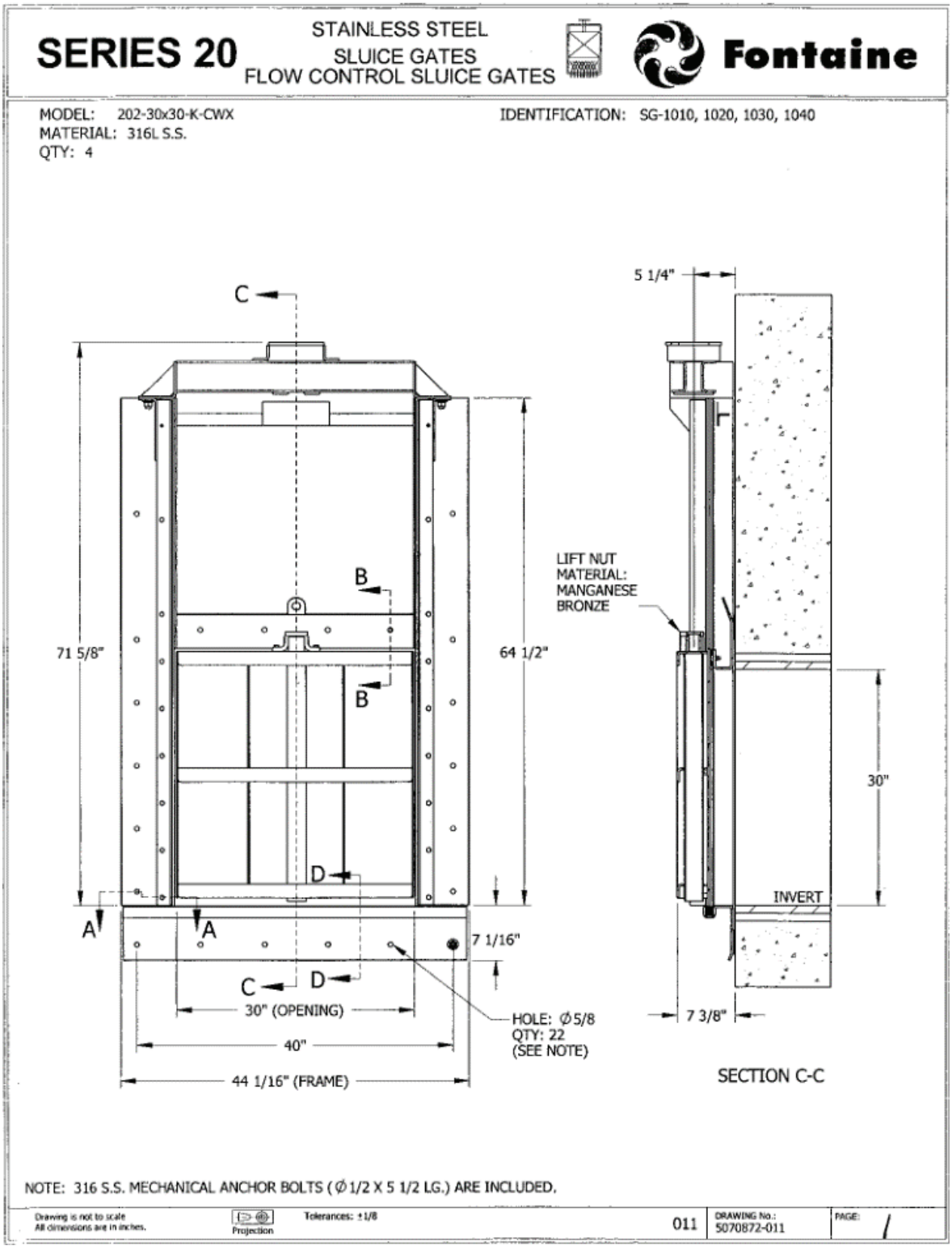


Figure 2-4: Submittal Drawing

According to submittal information, the gates were manufactured by Fontaine, model number 202-30x30-K-CWX.

The scope requires a design to elevate the operating level of this chamber above the flood elevations. This will require extending the stems by a minimum of 16.5 feet, or to approximately 880 feet.

The current installation is a non-rising stem configuration. This requires the operating nut to be close-coupled to the frame and leaf on the gate. Access to the operating nut is already limited and provided the requirement to raise the vault, it is recommended to retrofit the stems to a rising-stem type configuration as to improve maintenance, accessibility, and service life. Access to this location is limited, which will result in suboptimal maintenance. A rising-stem configuration will allow for remote observation of the open/close status of the gate and provides access for maintenance of the primary wear part of the equipment. This reconfiguration may require offsetting the operating point by 6" from the current layout, although this can only be verified by field inspection.

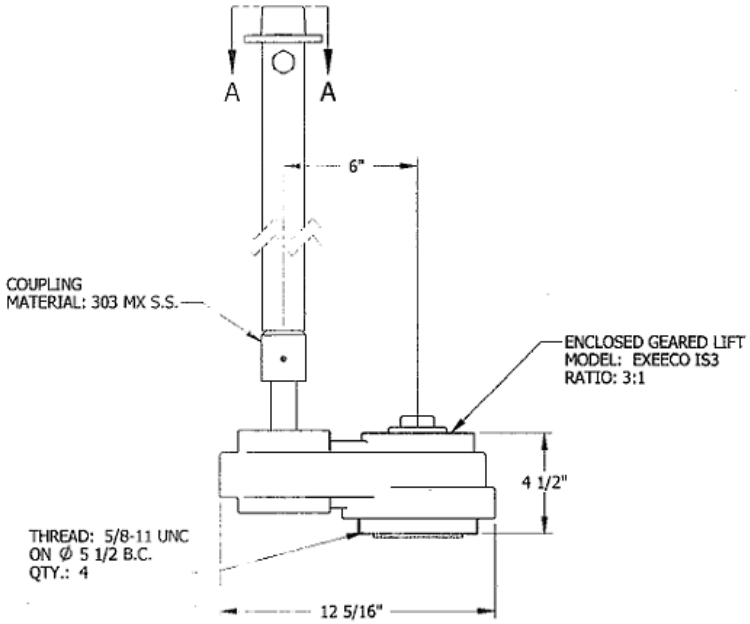


Figure 2-5: Non-Rising Stem Offset

The recommendation for process modifications are summarized below:

- Install new stems that reach the proper elevation, including pedestal height (approximately 20')
- Reconfigure the existing operating nut mechanism so that the gates become rising-stem type, with access atop the structure for routine maintenance. This may shift the location of the operator by 6" along the plane of the leaf.
- Install electric motor actuators with remote monitoring and controls and capability to open variable percentages.
- Include allowances for gate inspection. Confirm and evaluate existing conditions.

- A single-source vendor is advisable.
- Per Owner preference, new actuators to be by vendor Beck (see Appendix C for Beck Actuator Submittal). Note that for this service, the available actuators from this vendor are significantly oversized, and must have torque limits programmed to prevent faulty operation. A cut sheet of the proposed Beck model selected for this application is provided below.

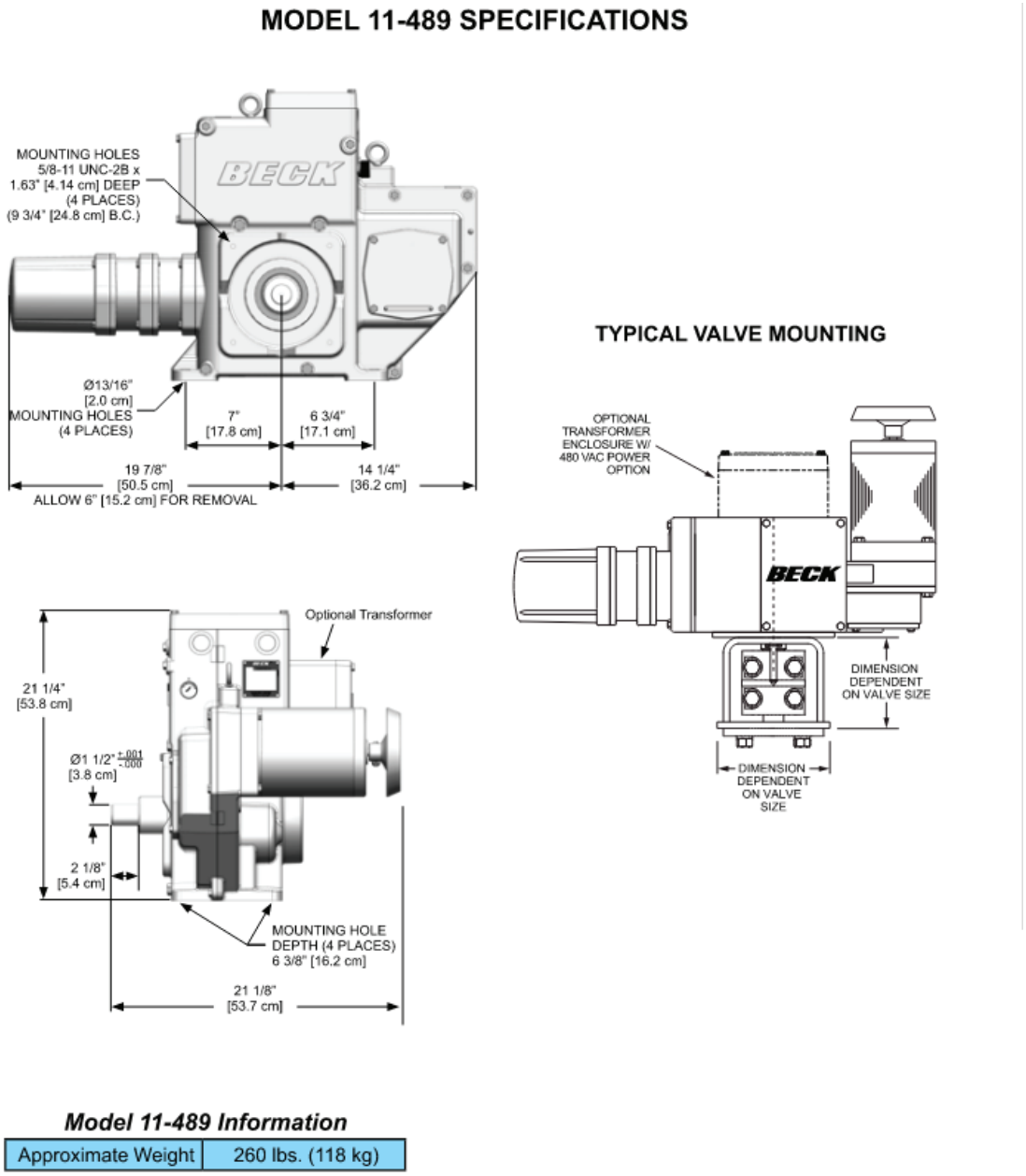


Figure 2-6: Actuator Cut Sheet

2.4 Electrical

Electrical modifications will be associated with the following the following scope items:

- Addition of four (4) new Electric actuators (modulating type) at the intake vault.
- Installation of four (4) new local disconnect switches for electric actuators.
- New Lighting fixtures addition at the intake structure.
- Convenience receptacle addition at the intake structure.
- Surveillance camera replacement at the existing lighting pole (at the influent structure) with be handled by the City's security systems contractor. As part of this project, Electrical contractor shall install 1" spare conduit (conduit size can be adjusted during the design based on security contractor's input) from the pole location back to the Electrical Room for camera cable installation by others.
- Existing Lighting pole power circuit repairs (to be determined upon CCMWA personnel evaluation of the existing circuit conditions).

New Electrical actuators will be 480V, 3Ph and will be powered from existing 480V, 3Ph Motor Control Center "MCC-1000" located in the existing Electrical Room. The existing MCC has available spare breakers (15A, 3P) which will be used to feed the new actuators. Local Disconnect switches (DS) will be installed for each electric actuator, the DS's will be 480V, 3P, 30A in NEMA 4X 304 SS enclosure.

Local lighting at the intake structure will be provided with stanchion mounted LED lighting fixtures pointed downward (qty to be determined based on photometrics calculations) and will be controlled from individual photocells.

All low voltage loads (lighting and convenience receptacle) will be fed from existing 208/120V, 3Ph panelboard "PP-1000" (located in the "MCC-1000").

A new underground ductbank will be added (along the route of the existing ductbank) to accommodate power and control cables for the new electrical devices as required. All new steel structures (handrails, ladders) will be grounded to the existing Ground grid.

Electrical Conduit runs shall be limited along the influent structure exterior walls, the conduits shall be installed inside the concrete wall or inside the structure.

2.5 Instrumentation and Controls (I&C)

I&C modifications will include programming and HMI graphics modifications to accommodate four (4) new electric actuators. The following I/O's are planned to be included for each actuator:

- Position Control 4-20mA
- Position Indication 4-20mA
- Auto Mode
- Fault

It will be determined upon further review of the existing Control Panel "CP-1000" wiring diagrams whether the existing spare I/O can be used to accommodate the actuators control wiring or if additional I/O's modules will be required to be added to the PLC rack.

All modifications to the existing SCADA control panel will be performed by MR Systems.

3. Regulatory & Permitting Requirements

The project includes redevelopment that will add less than 5,000 square feet of impervious cover, is not considered to be a hotspot land use as the project will not be changing the hydrological footprint of the site, and the development is not part of a larger common plan of development. Per the City of Canton Post-development Stormwater Management ordinance (Section 109.04.04), the project is exempt from the City's stormwater management requirements. Therefore, a stormwater management report / hydrology report will not be provided.

The vault is located within a FEMA designated Special Flood Hazard Area (SFHA), and specifically within the floodway, and therefore must adhere to the City of Canton Floodplain Management/Flood Damage Prevention ordinance (Ordinance). The Ordinance [Chapter 107.03.08(E)] states:

> "…Encroachments for bridges, culverts, roadways, and utilities within the regulatory floodway may be permitted provided it is demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the encroachment shall not result in any increase to the pre-project base flood elevations, floodway elevations, or floodway widths during the base flood discharge. A registered professional engineer must provide supporting technical data and certification thereof. If the applicant proposes to revise the floodway boundaries, no permit authorizing the encroachment into, or an alteration of the floodway shall be issued by the city until an affirmative CLOMR is issued by FEMA and no-rise certification is approved by the city.".

R2T has since confirmed with the City of Canton Engineering Department that this ordinance requirement is applicable to perform the proposed improvements to the vault, as desired by CCMWA. As such, Duplicate Effective, Existing Condition, and Proposed Condition hydraulic modeling of the Etowah River, within the project limits, will be performed to determine how the proposed vault improvements affect the floodplain and floodway. The goal of the hydraulic analysis will be to achieve a No-Rise Certification.

In addition to the proposed work to the vault structure, a new duct bank for power and control cables will be installed from the pump station to the vault. Due to the disturbance from constructing the proposed improvements, a Land Disturbance Permit (LDP) will be required from the City of Canton. A summary of the floodplain analysis will be included as part of the LDP submission.

A Nationwide Permit, issued by the USACE, and a Stream Buffer Variance, issued by the City of Canton, will not be required for this Project. The total land disturbance area for the project is anticipated to be less than (1) one acre. National Pollutant Discharge Elimination System (NPDES) Storm Water Discharges Associated with Construction Activity for Stand Alone Construction Projects permitting (Permit No. GAR100001) will not be required.

4. Sequencing Requirements

Construction of the intake vault improvements will present multiple sequencing challenges to the Contractor. As such, the construction schedule will have to be closely coordinated with CCMWA personnel to avoid adversely impacting normal operations.

The immediate issue that will be faced during construction will be drainage of the vault chamber. Once the slide gates are closed, water within the chamber, the 54" outlet pipe, and the wet well at the Pump Station itself will all be filled with standing water. CCMWA will be able to drain as much of the water from the wet well as possible, but the pumps will be unable to fully drain the entirety of the wet well volume. Because the wet well is gravity fed by the 54" pipe from the intake vault, some of the water within the intake vault may be drained as well. Construction efforts will require the Contractor to be responsible for the drainage of any remaining water within the intake vault during the entirety of construction activities. Also, in the event of flooding during construction, the contractor will also be fully responsible for any drainage and cleaning of the intake vault until construction of the new intake structure is completed. This unique condition for dewatering and site restoration after flood events and how it will impact the project duration will be thoroughly outlined in the Project Contract Documents.

While the new concrete walls and slab are being constructed, the existing slide gates will not be able to be operated due to formwork and concrete wall obstructions at grade level. Only once the concrete structure is fully constructed, and the new actuators are installed, can the gates be operated. CCMWA has confirmed that pumping operations may be temporarily suspended while the new structure is built. However, this period of downtime is anticipated to be limited to a maximum duration of 3 months at a time.

As previously mentioned, the risk of the jobsite flooding will be ever-present during construction. If flooding occurs during construction, the Contractor will be responsible for cleaning and removal of silt and debris left over from the flood event around the immediate area of the intake vault construction. CCMWA will only provide initial cleaning and removal of silt and debris to expose the top slab for initial construction activities. Detailed cleaning and surface preparations of the existing top slab surface will be the responsibility of the Contractor at all times throughout construction. To mitigate this issue, CCMWA will establish unique requirements during optimal seasonal period that present lower risks of flooding.

5. Construction Cost Opinion

A 30% Basis of Design level construction cost opinion summary for the improvements to the Hickory Log Creek Intake Gate Vault is presented in Appendix B. This estimate is classified as a Class IV estimate by AACE (Association for the Advancement of Cost Engineering) and indicates a level of accuracy of -30, +50% to be used for budgetary considerations at the conceptual design stage only. The estimated budget for this project ranges from $646,000 to $1,385,000 and the detailed breakdown of this estimate can be found in Appendix B. R2T will continue to develop and refine the estimate in conjunction with detailed design process while considering the Authority's budget requirements.