



Contract No. 20210214

### City of Springfield Contract Tracer

**INSTRUCTIONS:** Upon receipt, please initial and write in the date of receipt on this Tracer form. When your department has approved and signed the blanket contract, please initial and date in the forwarding section and deliver to the next department.

DEPARTMENT	DATE RECEIVED		DATE FORWARDED TO NEXT DEPT.	
	Initials	Date	Initials	Date
Office of Procurement			TGT	9/21/20
Capital Assets			PSB	9/24/20
City Comptroller	PSB	10-5-2020	PSB	10-5-2020
Law	PF	10/6	PF	10/6
Mayor	LCJ	10/9/20	LCJ	10/9/20
Office of Procurement	DM	10/9/20		

Vendor No.: 21090      Contract Number: 20210214      Contract Amt. \$577,810.00

Amend Date:              Contract Start Date: 9/9/20              Expiration Date: 9/9/21

Bid No.: 20-184

Requisition No.: 21004224    Acct No:

Vendor Name: STEEL FAB INC.

Contract Purpose: PURCHASE OF WATERSHOP'S DAM REPLACEMENT GATES

Requesting Dept.: DCAC

TYPE OF DOCUMENT (Please select at least one): MGL Ch. 30B §5

- New             
  Amendment             
  Extension             
  Renewal

**CONTRACT FOR THE FABRICATION, SUPPLY, AND DELIVERY OF  
WATERSHOPS POND DAM REPLACEMENT CREST GATE AND SLIDE GATES**

**WHEREAS**, this Contract is being entered into on by and between the CITY OF SPRINGFIELD, a municipal corporation within the County of Hampden, Commonwealth of Massachusetts, with its principal offices at 36 Court Street, Springfield, Massachusetts 01103, acting by and through its Director of Capital Asset Construction (hereinafter "DCAC"), with the approval of the Mayor (collectively referred to herein as the "City"), and **Steel-Fab. Inc.**, a Massachusetts Corporation with a business address of **430 Crawford Street, Fitchburg, MA 01420**, (hereinafter the "Vendor").

**WHEREAS**, The City is in need of a qualified Vendor to design, furnish, and deliver a new crest gate, two (2) new low-level slide gates, and a new hydraulic operating and control system for all three gates to be used in the rehabilitation of Watershop's Pond Dam; and

**WHEREAS**, The Vendor warrants it has the necessary resources, ability and supplies to design, furnish, supply, and deliver the items specified in the bid in order for the items to be installed and to operate for its intended programming and purpose, and is willing to provide the goods and services under the terms and conditions of this agreement; and

**WHEREAS**, the Vendor has provided the City with a satisfactory bid response, attached hereto as **Exhibit B and incorporated by reference**, in which the Vendor was found to be the lowest responsive and responsible bidder, in accordance with the City of Springfield Invitation for Bids (IFB) No. 20-184, a copy of which is attached hereto as **Exhibit A** and is incorporated herein by reference, and these services have been procured through the Competitive Bidding process prescribed by MGL Ch. 30B § 5;

**NOW THEREFORE**, the parties hereby mutually agree as follows:

**I. Vendor Contact Information**

- A. The Vendor's Name: **Steel-Fab Inc.**
- B. Contact Person: **Louis Bartolini, Vice President**
- C. Telephone: [REDACTED]
- D. Fax: [REDACTED]
- E. Email: [REDACTED]
- F. City Vendor No.: 21090

**II. SCOPE OF SERVICES**

- A. The Vendor will be responsible for providing all necessary labor, supervision, materials, equipment and supplies for the services specified in **Exhibit A**, which includes the full bid listing and other contract documents.

B. It is the intent of these contract documents to include all necessary labor, materials, equipment and services of every kind necessary to properly execute the work and to cover the terms and conditions of payment thereof. Please see **Exhibit A** for a full listing of equipment as well as other information covered by this Agreement.

C. All equipment and accessories shall be new, unused and of recent manufacture, unless otherwise noted.

D. Vendor shall obtain and pay for all necessary permits and all equipment, appliances and work shall conform to applicable safety and fire codes. All equipment specified herein, and furnished to this project shall be designed and manufactured to meet Occupational Safety and Health Administration standards.

E. The Vendor must assure prompt and satisfactory performance in the execution of the total conditions of this specification and in the production, furnishing and delivery of all equipment specified.

#### **F. Equipment Specifications**

#### **WATERSHOPS POND DAM, REPLACEMENT CREST GATE AND SLIDE GATES**

**\*\*PLEASE SEE EXHIBIT A TO THIS IFB FOR COMPLETE PROJECT MANUAL, INCLUDING PERFORMANCE AND SCHEDULE DETAILS\*\***

### **III. COMPENSATION**

A. The Vendor shall be paid the rates specified in its IFB Submission for City Bid No. 21-184, attached hereto as **Exhibit C** and incorporated herein by reference.

B. The total financial obligation of the City under this contract shall NOT exceed **Five Hundred Seventy Seven Thousand Eight Hundred Ten Dollars and 00/100 (\$577,810.00)**, unless otherwise amended. A complete listing and breakdown of the pricing for the goods and services under this Agreement is contained in **Exhibit C**, but can be summarized below:

1. Price for New 2'-6" Crest Gate: \$424,860.00
2. Price for Two (2) New 48" x 48" Slide Gates: \$58,650.00
3. Price for Electrical Controls and Hydraulic Operating System: \$94,300.00

**Grand Total: \$577,810.00**

C. The Vendor shall pay all royalties and license fees on products furnished. Vendor shall defend all suits and claims for infringement of any patent rights and shall indemnify and save the Owner from loss or inconvenience resulting there from.

D. Vendor is responsible for all storage costs and arrangements from time of contract award through completion of final Delivery.

E. The City will not reimburse Vendor for storage/warehouse costs due to changes in delivery dates, related with unexpected delays in the project.

F. No payment will be made until receipt of an itemized, detailed invoice signed by the Vendor who by signing affirms that the Vendor has delivered a conforming good in the appropriate manner to the designated delivery address as detailed in the invoice.

G. No additional or changes to the billing or payment will be acceptable. The Vendor shall conform to the documents. All obligations are subject to prior appropriation therefore.

#### **H. Payment Schedule**

Please see **Exhibit A** for complete Payment Schedule details.

#### **IV. DELIVERY SCHEDULE**

Changes to schedule must be approved in writing. Please see **Exhibit A** for complete schedule of services to be provided.

##### **A. Delivery will be made to:**

**Watershops Pond Dam  
1 Allen Street  
Springfield, MA 01108**

Or at a location to be specified within 1 mile of the above address. No additional charges for delivery, drayage, parcel post, packing, cartage, insurance, license fees, or for any other purpose will be paid by the DCAC other than those costs described in Section III(B) above.

##### **B. Damages for Delay**

(a) Due to scheduling constraints, the crest gate system shall be on site and ready for erection/installation in accordance with Paragraph 1-9 of **Exhibit A**. The City will incur substantial costs if the crest gate system meeting all requirements of the Contract documents is not delivered in accordance with Paragraph 1-9 of **Exhibit A**. If the Supplier fails to deliver the crest gate system within the time specified, the Supplier shall store and properly maintain the crest gate system at its facility at its own expense and shall pay the actual damages sustained by the City, including all costs associated with delaying crest gate system erection/installation. Damages may be retained from monies due under the Contract, and, if no money is due, damages shall be paid by the Supplier to the City.

C. All prices are to be FOB destination. The Vendor shall retain title to merchandise until accepted by DCAC at the place designated for delivery.

1. Vendor shall be responsible for filing all claims for damage or loss resulting from shipment and shall provide timely remedy to DCAC for any loss thereby incurred.

D. All items covered by this contract shall be subject to inspection and acceptance at destination. Any material found to be damaged, as well as broken seals or other tampering shall be removed and replaced by the Vendor at no cost to the DCAC.

1. All products delivered to the ordering departments will be new and in unopened cases or boxes

E. All products must be delivered and unloaded in-house or on-site to the location at the Vendors' risk with all charges for transportation and unloading prepaid by the Vendor. Product delivery is to be made via the Vendors' vehicles or common carrier.

#### **V. WARRANTY**

A. The Vendor shall act as the manufactures' agent for all warranty issues.

B. All products shall carry the manufactures warranty of merchantability and fitness for a particular purpose.

C. All items purchased shall carry a standard manufactures warranty.

D. The Vendor shall guarantee and warrant each product and shall replace, repair, or make good, without cost to the City, any defects or faults arising within One (1) year after date of acceptance of the product.

#### **VI. GENERAL**

A. The Vendor is an independent contractor and not an employee, agent, partner, joint venturer, or any entity for whose conduct the City is legally responsible.

B. The Vendor agrees to perform all services and provide all equipment in a professional, competent, proper, and safe manner and to comply with all applicable laws, rules, regulations, codes, ordinances, and all other authority applicable to the goods/services that are the subject of this contract.

C. The Vendor shall be fully liable for any damage to City property caused by the acts or omission of the Vendor or any employee or sub-contractor of the Vendor.

D. The Vendor warrants that the services provided hereunder will be performed in a professional and workmanlike manner and shall conform to the requirements more specifically set forth in this Agreement and in the City of Springfield IFB No. 19-057 specifications, attached hereto as **Exhibit A** and incorporated herein by reference.

E. The Vendor is responsible for ensuring that all services under this Agreement are performed to the City's satisfaction.

F. The City is not responsible for services, goods, materials, supplies, or expenses incurred during the course of performance of the services unless prior granted by written order or otherwise herein.

G. If any term or provision of this Agreement should be declared invalid by a court of competent jurisdiction, the remaining terms and provisions of this Agreement shall be unimpaired.

H. Any material changes to the terms of this Agreement, including the time for performance and/or fee for services must be reduced to writing and signed by all authorized representatives of the parties listed on the signature page of this Agreement.

I. Where no specific schedule for performance of the services is listed in the Agreement, the services will be scheduled by mutual agreement of the Vendor and City Department/Official.

J. The Parties agree that the City shall own all data, reports, blueprints, drawings, and other deliverables generated pursuant to this Agreement.

K. The City of Springfield reserves the right to add mutually agreed upon items/services at any time during the life of the contract. The City reserves the right to solicit other proposals for work that is not a part of this proposal.

## **VII. INSURANCE AND INDEMNITY**

A. The Vendor shall fully indemnify, defend, and hold harmless the City of Springfield, its officers, agents, and employees, from all claims and damages of any kind based on or arising out of, directly or indirectly, in whole or in part, the acts or omissions of the Vendor, its agents, servants, employees, sub-contractors, and anyone for whose conduct the Vendor is legally responsible, whether or not caused in part by any act or omission on the part of the City. This indemnity requirement shall survive the termination of this Contract.

B. The Vendor shall maintain the following insurance coverages:

1. For all persons working in Massachusetts, Worker's compensation and employer's liability insurance as required by the Commonwealth of Massachusetts, M.G.L. Ch. 152. This insurance shall also be required of all sub-contractors. (M.G.L. c. 149, § 34A)

2. Comprehensive automobile and vehicle liability insurance covering claims arising from use of motor vehicles, including onsite and offsite operations, and owned, non-owned, or hired vehicles, with not less than \$1,000,000 single limits and \$3,000,000.00 aggregate limits.

3. Commercial general liability insurance covering claims arising out of any covered act or omission of the Vendor or of any of its employees, agents, or subcontractors, with not less than \$1,000,000 single limits and \$3,000,000.00 aggregate limits.

C. The insurers will be authorized to do business in Massachusetts.

D. The Vendor shall require the same insurances from any of its sub-contractors.

E. No later than the date of execution of this Contract by the Vendor, certificates evidencing all above insurances shall be attached to this Contract as **Exhibit D**, and are incorporated by reference herein.

## **VIII. GOVERNING LAW**

A. This Agreement shall be governed by the law of the Commonwealth of Massachusetts without regard to conflicts of law provisions.

B. The Vendor and the City agree that any action, whether at law or equity, shall be brought only in the Superior Court of Hampden County (except claims by the City of a value less than \$25,000. which claims shall be brought in the Springfield District Court) or the United States District Court for the Western District of Massachusetts, all sitting at Springfield, Massachusetts.

## **IX. RECORDS**

A. Records. The records of the Vendor insofar as they relate to this Agreement shall be kept on a generally recognized accounting basis. The City or any of its duly authorized representatives or agents shall have immediate access to any books, documents, papers and records of the Vendor which are pertinent to this Agreement for the purposes of making audit, examination, excerpts, copies and transcriptions.

B. Audit. City Officials and/or their designated representatives shall have the right to audit, inspect, and review all books and records (in whatever form they may be kept, whether written, electronic or other) relating or pertaining to this Agreement (including any and all documents and other materials, in whatever form they may be kept, which support or underlie those books and records, kept by or under the control of the Vendor, including, but not limited to those kept by the Vendor, its employees, agents, assigns, successors and subcontractors.)

C. The Vendor shall maintain such books and records, together with such supporting or underlying documents and materials, for the duration of this contract or agreement and for at least seven (7) years following the completion of this Agreement, including any and all renewals thereof. The books and records, together with the supporting or underlying documents and materials shall be made available, upon request, to the City, through its employees, agents, representatives, contractors or other designees, during normal business hours at the Vendors Massachusetts office or place of business, at no cost to the City.

#### **X. PERFORMANCE, BREACH, TERMINATION**

A. The failure of the Vendor to provide the requested services and materials in a timely and satisfactory manner shall constitute a breach of this Agreement. For breach of this Agreement, the City reserves the right to terminate this agreement procure the services and materials from any source whatsoever and the Vendor agrees to pay the difference in the cost to the City of obtaining the substitute services.

B. The City reserves the right to immediately terminate this Agreement for cause being any failure of appropriation, or for any situation of an imminent threat to the public safety or health, all in the judgment of the Director of the DCAC, whose decision shall be final.

C. The City may terminate this Agreement for cause if the Vendor breaches any material obligation under this agreement by sending written notice to the Vendor, effective Ten (10) days after receipt unless the Vendor cures such breach within the 10 day period or, if such breach cannot be cured within 10 days, unless the Vendor commences to cure such breach within the 10 day period and diligently and continuously works to cure the breach thereafter.

D. The City reserves the right to terminate this Agreement for convenience upon thirty (30) days' notice to the Vendor.

E. Upon any termination, the City shall be obligated to pay only for services and materials satisfactorily provided up to the date of termination, less any damages or refunds owed to the City under this contract or the law. In no event shall the Vendor be entitled to recover lost profits, special, incidental, punitive, exemplary or consequential damages.

#### **XI. CONFLICT OF LAWS & NON DISCRIMINATION**

A. The Vendor shall not discriminate as to its employees or the performance of services on the basis of race, color, religion, gender, sexual orientation, disability, family status, national origin, or any unlawful discrimination.

B. The Vendor warrants that in the performance of this Agreement that Vendor does not have and is not aware of anyone who has any interest, direct or indirect, which will create or cause a conflict of interest in any manner or degree with the performance of the services hereunder, as set forth in chapter 268A of the General Laws.

## **XII. ENTIRE AGREEMENT**

This Agreement represents the entire and integrated Agreement between the City and the Vendor, and supersedes all prior negotiations, representations or agreements, either oral or written. The Parties acknowledge that they are entering into this agreement freely and voluntarily and are not relying on any terms, conditions or promises, which are not expressly set forth within the terms of this agreement. This Agreement may be amended only by written instrument signed by all of the parties listed on the signature page hereto. No assignment or transfer of the Vendor's interest in this Agreement or the proceeds of this Agreement are valid without the consent of the City.

**SIGNATURE PAGE TO FOLLOW**



Signed, under seal, by all parties on the dates indicated:

Steel-Fab Inc.:

BY: Spin Barolini  
TITLE Vice President  
Date signed: 9.9.20

FOR THE CITY OF SPRINGFIELD:

[Signature]  
Director of Capital Asset Construction  
Date signed: 9/24/20

Approved:

[Signature]  
Office of Procurement  
Date signed: 9/21/20

Approved as to Appropriation:

[Signature]  
City Comptroller  
Date signed: 10.5.20  
0(9)00 #  
26451811.530105.64516  
\$ 577,810.-

Approved as to Form:

[Signature]  
City Solicitor  
Date signed: 10/16

APPROVED:

[Signature]  
DOMENIC J. SARNO  
Date signed: 10/17/2021

# CORPORATE CERTIFICATE

\*THIS MUST BE THE NAME OF THE PERSON AUTHORIZED IN YOUR BY-LAWS TO SIGN CONTRACTS \*

\*\*SINCE AN OFFICER CANNOT CERTIFY TO HIMSELF, SOMEONE MUST SIGN THIS OTHER THAN THE PERSON SIGNING THE CONTRACT \*

I, \*\* Mark W. Freeman A Resident of Lunenburg in

The State of MA DO HEREBY CERTIFY: that I am  
the ~~Clerk~~ President

Secretary of Steel-Fab, Inc.

A Corporation duly Organized and existing under and by virtue of the laws of the

State of MA

And that I have custody of the records of such Corporation: and that as of the date herein below recited

\* Louie E. Bartolini Vice President  
(Officer, person who is signing the Contract) (Title)

Authorized to execute and deliver in the name and on behalf of the CORPORATION the following:

**STEEL-FAB INC.**

**CONTRACT NO. 20210214**

**FABRICATION, PURCHASE, AND DELIVERY OF REPLACEMENT  
WATERSHOP'S POND CREST AND SLIDE GATES**

WITNESS WHEREOF, I have hereunto set my hand and affixed the Corporate Seal

Of such corporation this 15<sup>th</sup> day of September 2020

(Affix)  
(Seal)  
(Here)

\*\* Mark W. Freeman

**EXHIBIT A**

**CITY IFB NO. 20-184, ADDENDUM NO. 1+2  
(See attached)**

---

**PROJECT MANUAL**  
**for the**  
**WATERSHOPS POND DAM**  
**REPLACEMENT CREST GATE AND SLIDE GATES**

Including the design, manufacture, and delivery of a new crest gate, two (2) new low-level slide gates, and a new hydraulic operating and control system for all three gates

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**CITY OF SPRINGFIELD, MASSACHUSETTS**

**Domenic J. Sarno, Mayor**

***Bid No. 20-184***



***Prepared for:***

**City of Springfield  
Department of Capital Asset Construction  
36 Court Street  
Room 312  
Springfield, MA 01103**

***Prepared by:***

**GZA GeoEnvironmental, Inc.**

***Project Funded in Part by the:***

***U.S. Department of Housing and Urban Development  
CDBG Disaster Recovery (CDBG-DR)  
B-13-DS-25-0002***

**June 8, 2020**

**IFB No. 20-184, Addendum No. 1**



**Addendum No. 1, IFB No. 20-184**

**PURCHASE AND DELIVERY OF WATERSHOPS POND DAM REPLACEMENT  
CREST GATE AND SLIDE GATES**

**Date of Addendum: June 12, 2020**

**REVISED OPENING DATE for Bids: July 14, 2020, 2:00 P.M. EST**

Ladies and Gentlemen:

This is an Addendum to the above bid. Special attention should be given to this addendum to preserve the validity of any proposal submitted in response to this request. Addenda must be acknowledged, either by signing and returning this form or via the corresponding IFB forms. Failure to acknowledge this addendum may result in rejection of bid. **Bid responses must acknowledge this and all addenda.** This Addendum consists of 2 pages.

**Addendum Item No. 1-01: REVISED Bid Opening Date**

Please note that the Bid Opening date has been **REVISED**. The **REVISED Bid Opening Date** is now **July 14, 2020, at 2:00 P.M. EST**

**Addendum Item No. 1-02: Bidder Questions regarding the IFB**

The deadline for Bidders to submit questions has been extended to no later than **June 30, 2020 at 4:30 P.M.**

**Addendum Item No. 1-03: Site Visit**

The optional Site Visit has been re-scheduled for **June 18, 2020 at 10:00 A.M. EST**, on-site at Watershops Pond Dam. Assemble at the south end of the steel bridge 300 feet upstream of the dam. Please contact Tom Jenkins [thomas.jenkins@gza.com](mailto:thomas.jenkins@gza.com) for directions/site visit details.

Sincerely,

Theo G. Theocles, Esq. Deputy Procurement Officer

**IFB No. 20-184, Addendum No. 1**

Please acknowledge receipt of this addendum by signing below and returning to this office via facsimile to (413) 787-6295.

Signed: \_\_\_\_\_

Company: \_\_\_\_\_

(please print)

**END OF ADDENDUM NO. 1**

**IFB No. 20-184, Addendum No. 2**



**Addendum No. 2, IFB No. 20-184**

**PURCHASE AND DELIVERY OF WATERSHOPS POND DAM REPLACEMENT  
CREST GATE AND SLIDE GATES**

**Date of Addendum: July 8, 2020**

**OPENING DATE for Bids: July 14, 2020, 2:00 P.M. EST (unchanged by this Addendum No. 2)**

Ladies and Gentlemen:

This is an Addendum to the above bid. Special attention should be given to this addendum to preserve the validity of any proposal submitted in response to this request. Addenda must be acknowledged, either by signing and returning this form or via the corresponding IFB forms. Failure to acknowledge this addendum may result in rejection of bid. **Bid responses must acknowledge this and all addenda.** This Addendum consists of 2 pages plus attachments as listed below.

**ATTACHMENTS DIRECTORY:**

1. PRE-BID SIGN IN SHEET, dated 06/18/2020;

**BIDDER QUESTIONS AND RESPONSES:**

**Question No. 1:** *Regarding Specification Section A, Subsection A-4 Supplier and Supplier's Qualifications, paragraph (e) (3): This paragraph requires the designer of both the crest gate and hydraulics supplier be performed by a licensed Professional Engineer who is a direct employee of the crest gate Supplier. Given the special nature of the crest gate hydraulic system, it would be more beneficial to have the hydraulics system manufacturer stamp the hydraulic system design. Will that be acceptable?*

**City's Response:** See Amendments to the Project Manual included with this Addendum No. 2.

**IFB No. 20-184, Addendum No. 2**

**AMENDMENTS TO THE PROJECT MANUAL:**

**Addendum Item No. 2-01:**

Specifications Section A, Sub-Section A-4, Paragraph (e), DELETE Sub-paragraph (3) and RE-PLACE WITH the following:

- (3) The design of the crest gate and hydraulics shall be performed by a licensed Professional Engineer who is a direct employee of the crest gate Supplier. In the event that the hydraulics system is designed by a separate manufacturer, the hydraulic system design shall be performed by a licensed Professional Engineer under the employ of the hydraulic system manufacturer.

**MISCELLANEOUS / TECHNICAL DATA:**

**Addendum Item No. 2-02:**

See attached PRE-BID SIGN IN SHEET (06/18/2020, one page)

Sincerely,

Theo G. Theocles, Esq. Deputy Procurement Officer

Please acknowledge receipt of this addendum by signing below and returning to this office via facsimile to (413) 787-6295.

Signed: \_\_\_\_\_

Company: \_\_\_\_\_

(please print)

**END OF ADDENDUM NO. 2**



City of Springfield - IFB No. 20-184  
PURCHASE AND DELIVERY OF WATERSHOPS POND DAM REPLACEMENT CREST GATE AND SLIDE GATES

Pre-Bid Conference at the Site (with annotations by GZA)  
June 18, 2020

JUNE 18, 2020  
WATERSHOPS POND  
GATE REPLACEMENT  
SITE VISIT - Pre Bid  
SIGN IN  
- JESSICA LUND - GZA  
JESSICA LUND - GZA  
- JOSH ANDERSON - QCIS  
JASON ZOGANDELICIS - QCIS  
- RICARDO RICCI - APT/STEF-FAB  
rick@attinc.com  
- T.M. FINE  
T.M. FINE  
- A.J. PALATINO - PARKS DEPT.  
A.J. PALATINO - Parks Dept.  
- TOMMY WATKINS - GZA

- Robert Kibler  
Rodney Hunt  
[REDACTED]



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### APPENDICES - TECHNICAL DATA AND INFORMATION

NOTE: The following Appendices are considered to be Technical Data that the City of Springfield believes to be reasonably accurate and representative with respect to conditions at or in the vicinity of the Water-shops Pond Dam at the times and dates noted; notwithstanding, such data and information are not

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(continued)

Contract Documents. Supplier may not rely upon or make any claim against the City of Springfield or GZA, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such Technical Data for Supplier's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Supplier, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such Technical Data; or
3. any Supplier interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

### APPENDIX 1.

June 1956 – January 1958: Record Drawings, Contract No. DA-19-016-ENG-4654; by the U.S. Army Corps of Engineers.

Dwg 17-13-01	Site Plan & Index
Dwg 17-13-02	Plan Elevation & Details
Dwg 17-13-03	Sections
Dwg 17-13-04	Control House Plans and Details

### APPENDIX 2.

1956 "Corps-Approved" Shop Drawings by S. Morgan Smith Co.

Dwg 5281-HP-1	2'-6" x 105'-2-3/8" Bascule Gate
Dwg 5281-HV-1	Sill Beam & Seal
Dwg 5281-IA-1	Drive End Gate Section
Dwg 5281-IB-1	Intermediate and Non-Drive End Gate Section
Dwg 5281-IC-1	Armature Plate Drive End
Dwg 5281-ID-1	Armature Plate Non-Drive End
Dwg 4840-FB-1	Bascule Gate Piping Arrangement

### APPENDIX 3.

Photographs and Miscellaneous Information.

Photographs from the January 27, 2016, Phase I Dam Safety Inspection; GZA

Photograph Location Plan

Photos 1 – 24 (12 pages)

Miscellaneous Information

"Resiliency Improvements at Watershops Pond Dam," GZA

Project Location Plan

Aerial Photograph, November 2017

Miscellaneous Photos (8 pages)

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*(continued)*

**APPENDIX 4.**

ELEVATIONS AT WATERSHOPS POND DAM \*\*. GZA, June 4, 2020, Pages 1 -3 of 3.

**APPENDIX 5.**

"Topographic Plan for GZA GeoEnvironmental, Inc. of Watershops Pond Dam"  
Doucet Survey, Inc., Sheets 1 -3 of 3, January 5, 2018.

## SECTION A: SPECIFIC CONDITIONS

### A-1. The Requirement.

- (a) The City of Springfield (the City) is rehabilitating its Watershops Pond Dam. The project site is located off Allen Street and Hickory Street, within the industrial complex known as "The Watershops," which originally was a part of the U.S. War Department's Springfield Armory. The rehabilitation of the dam will provide several improvements to increase dam safety and resilience and improve operational control options to manage Watershops Pond during flood events and non-flood conditions. These specifications pertain to the purchase of a new crest gate, two (2) new low-level slide gates, a new operating system to control all three new gates, and associated appurtenances and accessories. This Contract will design, furnish, and deliver the new equipment to the dam site, for installation by the City's general contractor for the dam rehabilitation work.
- (b) The existing bascule-type crest gate was manufactured by S. Morgan Smith Co., ca. 1957. The gate consists of a steel torsion tube extending the full length of the spillway with steel ribs attached at intervals supporting the plate steel skin on the upstream side. The torsion tube extends through a drive end armature plate at the left end of the gate and a non-drive end armature plate at the right end of the gate. Seals are provided at the ends and bottom of the gate so that water tightness is obtained in all crest gate positions. Electric heaters prevent freezing of the seals. The gate is hydraulically operated by a single double-acting hydraulic cylinder, at the left end of the gate. Normally, the reservoir water pressure provides the forces to open (lower) the gate; however, the cylinder is double-acting so that the gate can be operated when the pond is below the level of the gate. The existing oil pressure pumping system consists of motor-driven oil pump complete with pressure switches and accumulator. The existing hydraulic control system was designed to automatically operate, controlled by a float monitoring the pond level. There is also an override at the control panel for manual operation. The automatic system is not in use, and the hydraulic system pressure is not maintained at all times.
- (c) The existing two (2) 48" x 48" cast iron slide gates are located near the midpoint of the dam and are of unknown origin. The gates are operated independent of one another. A gate operator's platform is accessed from the dam's right abutment. From the platform, the gates are controlled by handwheel operators with rising stems. Neither gate is believed to have been operated within the last 20 years, and both stems show extensive corrosion and loss of section at the normal waterline.
- (d) The Watershops Pond Dam was heavily damaged in the August 1955 hurricane. Subsequently, the U.S. Army Corps of Engineers conducted a dam repair program, at which time the fixed crest of the spillway was lowered and the crest gate was installed. It is believed that the two slide gates were not replaced at that time.

#### A-1.1 The Work.

- (a) The Work is for designing, furnishing, and early-delivery of a new crest gate, two (2) new

low-level slide gates, and a new hydraulic operating and control system for all three gates. The crest gate system shall include all structures, mechanisms, controls, and other features necessary for safe and dependable four-season operation of the gates with leakage maintained year-round at or below specified limits. The crest gate shall include a hydraulic actuator power system which shall provide for power open and close operations, automatically controlled with manual override. The hydraulic power system shall also be used to operate the slide gates and shall provide for power open and close operations, manually controlled.

- (b)** The scope of the Work includes providing to the City all specified design information (stamped by professional engineers of the appropriate discipline), operations and maintenance training and documentation, and warranty.
- (c)** The specifications direct attention to certain required features of the crest gate and slide gates system but do not purport to cover all details entering into its design and construction. Nevertheless, the Supplier shall furnish the equipment complete in all details and ready for installation by the City's general contractor.
- (d)** The new crest gate shall be a bascule-type hinged crest gate with a width of approximately 105 feet and effective height of 2.5 feet from the fixed crest to the top with the leaf in the fully raised position. The top edge of the gate shall be fitted with nappe breakers to eliminate flow induced vibrations. When in fully raised position, the gate leaf shall be lean slightly downstream from the vertical. It is anticipated that when fully raised the gate shall lean approximately 20 degrees downstream from vertical. The gate shall rotate from the fully raised to fully lowered position as shown on the 1958 record drawings and the 1956 shop drawings. The gate shall be capable of extended use in any position without vibration caused by flow. The crest gate shall be a single source design.
- (e)** The new crest gate shall be operated by one (1) hydraulic cylinder located at the left end of the gate inside the existing gate control house.
- (f)** The two (2) new low-level slide gates shall be manufactured as detailed herein and shall be supplied tested as per requirements. To the maximum extent possible, the gate assembly comprising of frame, guides and slide shall be supplied as a factory assembled unit and shipped to site ready to install on the dam.
  - (1)** The slide gates shall be self-contained with submerged hydraulic cylinder operation.
  - (2)** The design shall be of a bottom pick arrangement with the cylinder rod attached near the bottom of the slide, in order to minimize the overall height of the slide gate. In no case shall the overall height of the slide gate assembly exceed a dimension of 13 feet 0 inches, including frame, frame extensions, yoke, and cylinder.
  - (3)** The slide gates shall be manufactured from cast iron and shall be flat or flange back type suitable for wall mounting and manufactured in accordance with AWWA C-560.
  - (4)** The slide gates shall be designed for water tightness for both seating and un-



seating differential head per the actual site requirement as detailed in the Cast Iron Slide Gate Table.

- (5) The slide gates shall have a seating and un-seating leakage rate of 1/2 the leakage rate allowed by AWWA-C560.
- (g) The hydraulic power system shall be nominal 2,000 psi self-contained, pressurized hydraulic fluid system capable of operating the crest gate and the two slide gates at the loads specified. The crest gate shall be operated by one (1) new double-acting hydraulic cylinder, located at the left end of the gate inside the existing control house. Normally, the reservoir water pressure shall provide the forces to open (lower) the gate; however, the cylinder shall enable the gate to be lowered hydraulically when the reservoir is below the level of the gate. The oil pressure pumping system shall consist of alternating, duplicate motor-driven oil pumps complete with pressure switches and accumulator sized to operate the crest gate though 1.5 cycles after the loss of electric power supply. Documentation shall be provided that demonstrates that the accumulator can operate the crest gate through 1.5 cycles without any power. The operating system shall be operational with an ambient temperature from 10 degrees Fahrenheit to 100 degrees Fahrenheit. The gates shall be designed to transmit all necessary loads in order to allow this type of operation.
- (h) Delivery of the crest gate, the slide gates, and the control system items/components will be required to allow for the orderly and timely erection/installation of the slide gates, the crest gate, and the hydraulic power system upon its delivery. The Work also includes the following:
  - (1) Furnishing bolts with washers and nuts for the structural field connection between the crest gate leafs.
  - (2) Furnishing brackets, anchors, anchor bolts, nuts, washers, anchor plates and embedded plates for securing/fastening items/components to the spillway structure and related structures.
  - (3) Furnishing stainless steel adaptor plates for both of the two (2) replacement slide gates, drilled for mounting to the existing masonry and drilled and tapped for mounting the slide gate frames to the adaptor plates, and including gasket between the gate frame and the adaptor plates.
  - (4) All necessary anchor bolts with washers and nuts for mounting the adaptor plates to existing masonry, and all necessary bolts with washers and nuts for mounting the gate frames to the adaptor plates.
  - (5) Preparing and submitting, and printing, binding, and delivering an erection/installation procedures manual.
  - (6) Obtaining all road permits and related permits/authorization from authorities having jurisdiction for the shipping of the gates and operating and control system including shipping of all items and components.

- (7) Furnishing on-site services of a field service engineer(s).
- (8) Attendance at a pre-erection/installation meeting.
- (9) Preparing and submitting, and printing, binding and delivering a start-up, field testing, and inspection and report program.
- (10) Furnishing and submitting operations and maintenance manuals.
- (11) Furnishing instructions, materials and training for City personnel. Audio/video taping of the instruction and training period.

**A-1.2 Work not included.**

(a) The following work will be performed by others:

- (1) Receiving and unloading gate systems items/components at the location specified.
- (2) Field installation of gate systems items/components.
- (3) Receiving and unloading gate systems and all related equipment, appurtenances and accessories at the location specified.
- (4) Field erection/installation of gate systems and all related equipment, appurtenances and accessories.
- (5) Field welding at the line of connection of the crest gate leafs for leak elimination purposes.
- (6) Furnishing and installing basic electrical material including electrical conduit and wiring for extending power from the electrical panel to the gate system components.
- (7) Furnishing and installing hydraulic tubing, and related couplings and accessories, and installation of the system-compatible hydraulic fluid furnished and delivered by the gate Supplier for the hydraulic control system.

**A-2. Definitions.**

The following terms are defined:

Crest Gate System: An integrated and operable system comprised of a crest gate and control system including hydraulic system, and all related equipment, appurtenances and accessories necessary for complete assembly, erection/installation, and operation.

Slide Gate System: An integrated and operable system comprised of two (2) independent slide gates and their control system including hydraulic system, and all related equipment, appurtenances and accessories necessary for complete assembly, erection/installation, and operation.

**A-3. Drawings.**

The following Drawings are included for reference purposes only:

June 1956 – January 1958: Record Drawings, Contract No. DA-19-016-ENG-4654; by the U.S. Army Corps of Engineers. (refer to Appendix 1.)

Dwg 17-13-01	Site Plan & Index
Dwg 17-13-02	Plan Elevation & Details
Dwg 17-13-03	Sections
Dwg 17-13-04	Control House Plans and Details

1956 “Corps-Approved” Shop Drawings by S. Morgan Smith Co. (refer to Appendix 2.)

Dwg 5281-HP-1	2'-6" x 105'-2-3/8" Bascule Gate
Dwg 5281-HV-1	Sill Beam & Seal
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Dwg 5281-IB-1	Intermediate and Non-Drive End Gate Section
Dwg 5281-IC-1	Armature Plate Drive End
Dwg 5281-ID-1	Armature Plate Non-Drive End
Dwg 4840-FB-1	Bascule Gate Piping Arrangement

#### **A-4. Supplier and Supplier’s Qualifications.**

- (a)** A Supplier, in order to qualify, shall be a company that regularly and routinely is engaged in the design and manufacture of crest gate systems for a minimum of ten (10) years within North America.
- (b)** A Supplier, in order to qualify, shall have supplied a minimum of five (5) hinged crest gates installed within North America within the last ten (10) years.
- (c)** A Supplier, in order to qualify, shall be a company that regularly and routinely is engaged in the design and manufacture of slide gate systems or, alternatively, shall furnish slide gates of a company that regularly and routinely is engaged in the design and manufacture of slide gate systems.
- (d)** A Supplier, in order to qualify, shall be capable of designing and assembling a comprehensive electrical controls and hydraulic power system that integrates the operation of the new crest gate and new slide gates.
- (e)** The Supplier shall also fulfill the following criteria:
  - (1)** Be the sole source for the crest gate system.
  - (2)** Crest Gate Experience:
    - a. A minimum of 10 years experience in the design and manufacture of crest gate systems within North America.

- (3) The design of the crest gate and hydraulics shall be performed by a licensed Professional Engineer who is a direct employee of the crest gate Supplier.
- (4) Designed and manufactured at least five (5) crest gate systems within the last 15 years with a minimum crest gate length of 50 feet.
  - a. A crest gate system project listed by the Supplier under this qualification requirement may also be used in fulfilling the qualification requirement of Paragraph A-4(e)(5) if it meets or exceeds the specified requirement of Paragraph A-4(e)(5).
- (5) Designed and manufactured at least five (5) crest gate systems within the last 15 years with a minimum effective height of the leaf in the up position of 4 feet.
  - a. A crest gate system project listed by the Supplier under this qualification requirement may also be used in fulfilling the qualification requirement of Paragraph A-4(e)(4) if it meets or exceeds the specified requirement of Paragraph A-4(e)(4).
- (6) Supplier's prior experience in providing replacement crest gate systems for bascule-type crest gates originally manufactured by the S. Morgan Smith Co. will be required.
- (7) Slide Gate Experience:
  - a. The Supplier or, alternatively, the company furnishing the Supplier's slide gates shall have a minimum of 15 years experience in the design and manufacture of cast iron slide gates.
  - b. Designed and manufactured at least 30 cast iron slide gate installations with a minimum gate disc size of four square feet.
  - c. Each slide gate installation shall have been in satisfactory usage for over 5 years and shall have been designed and manufactured within the past 20 years.
  - d. Gate frames and slides shall be cast in a foundry under the direct supervision of slide gate company's personnel to ensure a high-quality casting. If using a third-party foundry, submit foundry pre-qualifications and references for evaluation and approval.

**A-5. Proposal Requirements Regarding Supplier's Qualifications**

- (a) Supplier proposal shall provide complete and detailed information that describes the Supplier's qualifications and that clearly demonstrates that the Supplier meets the minimum qualifications of these specifications.
  - (1) The Supplier's qualifications statement shall be accompanied by complete general arrangement and installation drawings of previous crest gates; a complete list of crest gates supplied with photos of each site; and associated contact names and

phone numbers.

- (2) The Supplier's qualifications documentation shall clearly indicate Supplier's prior experience in providing replacement crest gate systems for bascule-type crest gates originally manufactured by the S. Morgan Smith Co.
- (b) Supplier's proposal shall include a letter on Supplier's letterhead from an officer of the company certifying that the company meets the minimum qualifications of these specifications.

**A-6. References.**

(a) The publications listed below form a part of these specifications to the extent referenced. The publications are referred to in the text by basic designation only.

- (1) American Institute of Steel Construction, (AISC), Steel Construction Manual, current Edition
- (2) AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- (3) American Society for Testing and Materials (ASTM)
  - a. ASTM A36 - Carbon Structural Steel
  - b. ASTM A572 Grade 50 Steel
  - c. ASTM A106 GRADE C
  - d. ASTM A126 Gray Iron Castings for Valves, Flanges and Pipe Fittings
  - e. ASTM A276 - Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes
  - f. ASTM A436 Austenitic Gray Iron Castings (NiResist)
  - g. ASTM A536 Ductile Iron Castings
  - h. ASTM A240 Stainless and Heat Resisting Plate
  - i. ASTM A276 Stainless and Heat Resisting Steel Bars and Shapes.
  - j. ASTM F593 Stainless Steel Bolts, Hex Cap Screws and Studs
  - k. ASTM F594 Stainless Steel Nuts
  - l. ASTM B21 Naval Brass Rod, Bar and Shapes
  - m. ASTM B98 Copper-Silicon Alloy Rod, Bar and Shapes
  - n. ASTM B139 Phosphor Bronze Rod, Bar and Shapes
  - o. ASTM B187 Copper, General Purpose Rod, Bar, and Shapes
  - p. ASTM D2000 Rubber Products in Automotive Applications
  - q. ASTM A 312, Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes

- r. ASTM A 370 - Standard Test Methods and Definitions for Mechanical Testing of Steel Products
  - s. ASTM A 564 - Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes
  - t. ASTM A 941 - Terminology Relating to Steel, Stainless Steel, Related Alloys and Ferroalloys
  - u. ASTM E 94 - Standard Guide for Radiographic Examination
  - v. ASTM E 165 - Standard Test Method for Liquid Penetrant Examination
  - w. ASTM E 186 - Standard Reference Radiographs for Heavy-Walled (2 to 4 ½-in. {51 to 114 mm}) Steel Castings
  - x. ASTM E 446 - Standard Reference Radiographs for Steel Castings Up to 2 in. (51 mm) in Thickness
- (4)** American Society of Mechanical Engineers (ASME)
- a. Boiler and Pressure Vessel Code
    - 1. Section V Nondestructive Examination
    - 2. Section VIII Rules for Construction of Pressure Vessels Division 1
    - 3. Section IX Welding and Brazing Qualifications
  - b. Y32.10 Graphic Symbols for Fluid Power Diagrams
- (5)** American Welding Society (AWS)
- a. D1.1 Structural Welding Code –Steel
  - b. D1.6 Structural Welding Code –Stainless Steel
- (6)** American Water Works Association (AWWA)
- a. AWWA C560 Cast Iron Slide Gates
- (7)** The Society for Protective Coatings/National Association of Corrosion Engineers, (SSPC/NACE).
- (8)** National Fluid Power Association, (NFPA)
- (9)** Society of Automotive Engineers, (SAE).
- (10)** American National Standards Institute, (ANSI)

**A-7. Drawings and Data Required.**

- (a)** By the date shown in the Schedule (see Section A-21) submit for review and approval a detailed schedule for the timely and orderly completion of the Work activities including design, submittal of drawings, submittal of manuals, submittal of programs, submittal of design calculations, procurement of materials, fabrication, assembly, inspection by the

City, tests and delivery of crest gate and slide gates system items/components. Submit an updated schedule each month indicating progress to date and promptly advise the City of any occurrence requiring substantial revision of the schedule and furnish a revised schedule within 7 calendar days of such occurrence. The schedule shall be of the bar chart, critical path method (CPM) type.

**(1)** Include a list of crest gate and slide gates system items/components.

**(b)** By the dates shown in the Schedule (see Section A-21) start and end the submittal process for the review of submittals that are required for the design and manufacturing of the crest gate and slide gates system. Do not commence fabrication/manufacture until the submittals have been reviewed and approved by the City. All written information on the design calculations, drawings and other submittals shall be in the English language and in English units. Materials for all parts shall be completely identified with the corresponding codes or serial numbers referring to the standards of ASTM or other standards recognized in the United States of America. The design calculations and drawings shall be prepared, stamped and signed by a professional engineer registered in the Commonwealth of Massachusetts.

**(1)** See Paragraphs 1-4(c) to 1-4(l) and Paragraph 1-4(u) for submittals that are required to be submitted and approved for the design and manufacturing of the crest gate and slide gates system.

**(2)** See Paragraphs 1-4(m) to 1-4(t) for submittals that pertain to items including shop testing, shop reports, shop inspections, operations and maintenance manuals, start-up, field testing and inspection reports, field service engineer's(s') reports and daily logs(s), instructional materials and teaching outlines for the training period, and audio/video tape of the training period and instructional materials and teaching outlines.

**(3)** The required design calculations, drawings and other required information/data shall be submitted in complete sets so that sufficient information will be available for checking.

**(4)** Submittals made without complete information will be returned "Not Approved."

**(c)** Submit list of sources as required by Section A-10.

**(d)** Submit the following drawings and data. Each numbered item shall be furnished as a complete submittal package.

**(1)** General: Complete data including all loads imposed on the spillway structure, detailed drawings of all equipment including the crest gate, hydraulic cylinders, seals, hinges, anchorage, bolting, hydraulic power unit and controls, PLC, PLC cabinet, instrumentation, and layout of all hydraulic piping, electrical systems, conduit, and wiring.

**(2)** Crest gate drawings showing overall dimensions.

**(3)** The following data is required, as a minimum, on the crest gate:

- a. Crest gate assembly drawings.
  - b. Overall length of the crest gate.
  - c. Working length of the crest gate.
  - d. Height of the crest gate
  - e. Weight of the crest gate.
  - f. Weight of individual components of the crest gate.
  - g. Anchorage and bolting drawings.
- (4)** The following data is required, as a minimum, on all hydraulic operated actuators/pistons/cylinders:
- a. Hydraulic operated actuator/piston assembly drawings.
  - b. Power, seal heating, and control wiring diagrams.
  - c. Programmable Logic Controller (PLC)
  - d. PLC cabinet manufacturer, type and size with length, width and height dimensions and weight.
  - e. Pump manufacturer.
  - f. Pump type and catalog number.
  - g. Pump operating characteristics.
  - h. Cylinder seat details.
  - i. Hydraulic layout and hydraulic tubing layout drawing. Include design data and specifications for the hydraulic tubing, related couplings and accessories, and specifications for the hydraulic fluid. Include statement indicating approximate quantity of hydraulic fluid required to flush and fill the hydraulic system during start-up.
  - j. Hydraulic schematic(s) in accordance with ASME Y32.10 showing all hydraulic components with setpoint and size parameters indicated for each component. Hydraulic schematic drawing(s) shall include bill of material listing original manufacturer and original manufacturer's complete part number for each component of the hydraulic system.
  - k. Anchorage and bolting drawings.

Note: Concrete anchorage "blocks" and other concrete "works" will be by others.

- (5)** The following data is required, as a minimum, for the control system:
- a. Process and instrumentation diagrams in The Instrumentation, Systems, and Automation Society (ISA) format identifying field equipment, local I/O, local controls, remote monitor outputs, and programmable logic controller (PLC).



- b. Basic PLC cabinet layout drawings that provide a basic layout of the inside of the cabinet, the front face of the cabinet.
  - c. Plan drawings locating the PLC cabinet and all other equipment to be installed in the gate control house.
  - d. A system diagram identifying the local display and control system, and communications link for remote monitoring.
  - e. Panel outline drawings with dimensions.
  - f. Elementary diagrams.
  - g. Physical wiring diagrams with cross reference to terminal blocks of equipment furnished.
  - h. Specifications for electrical/electronic components furnished including complete bill of material listing component manufacturer and component manufacturer's complete part number.
- (e)** Design calculations shall include the following:
- (1)** Loads imposed on the spillway structure.
  - (2)** Cylinder support loads.
  - (3)** Reactions for anchors, bolts, hinges, and hydraulic cylinders.
  - (4)** Structural integrity of the crest gate.
  - (5)** Metal reinforcement connections.
  - (6)** Welds.
  - (7)** Finite element analysis showing the crest gate design meets operational and structural requirements of the specifications and appropriate crest gate stiffness.
    - a. Crest gate at elevation 155.2 feet (up position) and water level elevation at 164.7 feet (maximum flood level) without deformation.
    - b. Crest gate at elevation 155.2 (up position) and water level with ice at 155.2 with deformation.
    - c. Crest gate rising from elevation 152.7 feet to elevation 155.2 feet with the water elevation at 155.2 without deformation.
    - d. Crest gate rising from elevation 152.7 feet to elevation 155.2 feet with the water elevation at 164.7 with deformation.
- (f)** The drawings shall include details of assembled equipment that may be necessary for detailing installation drawings.
- (g)** All assembly drawings shall accurately show in detail the assembly of all parts and shall indicate each component of the equipment by part number. The assembly drawings shall reference all individual component detail drawings required for maintenance and

troubleshooting. The assembly drawings shall show the weight of each major component, the total weight of the assembly, and the location of its center of gravity. Parts or material lists shall fully describe each component.

- (h)** The wiring diagrams shall be drawn with all devices indicated in their relative physical location and shall represent the equipment and terminals arranged as they would appear to a person wiring the equipment.
- (i)** Fabrication drawings and data shall include:

  - (1)** Welding Procedure Specifications (WPS), supporting Procedure Qualification Records (PQR), weld repair procedures, and post weld heat treating procedures. Included shall be welding repair procedures for casting defects.
  - (2)** Nondestructive Examination (NDE) procedure specifications including acceptance criteria.
  - (3)** Submit with fabrication drawings.
- (j)** Submit the lifting drawings for review and approval within 7 calendar days after approval of the design calculations, drawings, catalog cuts and manufacturer's literature.
- (k)** Submit the erection/installation procedures manual for review and approval within 7 calendar days after approval of the design calculations, drawings, catalog cuts and manufacturer's literature.

  - (1)** Print, bind and deliver the reviewed and approved erection/installation procedures manual by the date shown in the Schedule. (See Section A-21.)
  - (2)** See Section A-8 for the number of copies to be printed and bound, and for delivery information.
- (l)** Submit the start-up, field testing, and inspection and report program for review and approval within 7 calendar days after approval of the design calculations, drawings, catalog cuts and manufacturer's literature.

  - (1)** Print, bind and deliver the reviewed and approved start-up, field testing, and inspection and report program by the date shown in the Schedule. (See Section A-21.)
  - (2)** See Section A-8 for the number of copies to be printed and bound, and for delivery information.
- (m)** Submit detailed procedures for shop tests a minimum of 6 weeks prior to scheduling shop tests. Shop test reports shall be prepared and submitted within 7 calendar days of the completion of the testing.

  - (1)** Include information on the Supplier's cleaning methods and finishing procedures with the procedures for shop tests.
- (n)** Submit evidence of final shop inspection and acceptance of all items/components including approved waivers and deviations from the Contract documents in accordance with

the Supplier's QA/QC program within 7 calendar days of the completion of final shop inspections.

- (o) Submit operations and maintenance manuals a minimum of 4 weeks prior to scheduled field testing.
- (p) Submit field service engineer's(s') reports within 7 calendar days of the completion of the assignment.
- (q) Submit field service engineer's(s') start-up, field testing and inspection reports within 7 calendar days of the completion of the field testing and inspection.
- (r) Submit field service engineer's(s') daily log(s) within 7 calendar days of the completion of the assignment.
- (s) Submit instructional materials and teaching outlines for the training period a minimum of 8 weeks prior to the scheduled training period.
- (t) Submit the audio/video tape(s) of the training period and 5 copies of the reviewed and approved instructional materials and teaching outline to the City within 7 calendar days after the end of the training period.
- (u) See other Sections for additional submittals.

**A-8. Submittals.**

- (a) Make submittals to the City promptly in accordance with approved schedule and in such sequence as to cause no delay in work. Allow ten (10) working days following receipt of submittal or resubmittal for review.
- (b) At a minimum, submittals shall be provided electronically to the City and (in duplicate) to the City's Engineer. Additional requirements for the number of hard copies (if any) of each submittal are contained in the specific Specification sections and paragraphs. Drawings shall be full size. The City's project name and Contract document number, and the Supplier's contract number, revision number, sheet number, and total number of sheets shall appear on each submittal. Allow space on submittals for review stamps.
- (c) For submittals requiring hard copies, each submittal shall be sent to:  
  
City of Springfield  
Department of Capital Asset Construction  
Attention: Peter J. Garvey, Director  
36 Court Street – Room 312  
Springfield, MA 01103  
  
Two hard copies of such submittals shall be sent to:  
GZA GeoEnvironmental, Inc.  
Attention: Tom Jenkins, 1350 Main Street – Suite 1400; Springfield, MA 01103.
- (d) Shop Drawing and Sample Submittal Requirements:
  - (1) Before submitting a Shop Drawing or Sample, Supplier shall have:

- (2) Reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
- (3) determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- (4) determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- (5) determined and verified all information relative to Supplier's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- (6) Each submittal shall bear a stamp or specific written certification that Supplier has satisfied Supplier's obligations under the Contract Documents with respect to Supplier's review of that submittal, and that Supplier approves the submittal.
- (7) With each submittal, Supplier shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication Separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- (8) Supplier's Drawings
  - a. Shop drawings shall be presented in a clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable City to review information as required.
  - b. Sheet size: 8-1/2" x 11" or larger, as required. Typically, significant shop drawings shall be 24" x 36".

**(e) Engineer's Review:**

Engineer will provide timely review of Submittals, Shop Drawings, and Samples. Engineer will review submittals only for general conformance to design concept of project and compliance with information given in the Contract Documents.

- (1) Engineer's review will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incidental thereto.
- (2) Engineer's review of a separate item as such will not indicate approval of the assembly in which the item functions.
- (3) Engineer's review of a Shop Drawing or Sample shall not relieve Supplier from responsibility for any variation from the requirements of the Contract Documents unless Engineer has given written approval of each such variation by specific

written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents.

- (4) Engineer's review of a Shop Drawing or Sample shall not relieve Supplier from responsibility for complying with the requirements of these specifications.
  - (5) Engineer's review of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Time or Contract Price, unless such changes are included in a Change Order.
  - (6) Neither Engineer's receipt, review, acceptance or return of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document. Submittals will be reviewed only as to arrangement and conformance to this Specification. Review shall not be construed to relieve or mitigate the Supplier's responsibility for accuracy, adequacy, or suitability of materials or equipment represented.
- (f) City's Review;
- (1) The City will receive comments from the Engineer.
  - (2) The City will have the final authority to judge the adequacy of the Supplier's submittal and shall have final authority for approval or rejection by the Engineer.
- (g) Supplier shall revise and resubmit for approval within 7 calendar days each submittal marked "Approved Except as Noted" or "Not Approved."
- (h) The criteria for acceptance of drawings and documents shall be as follows:
- (1) IMAGE: Lines and/or lettering shall be uniform in sharpness and density.
  - (2) LETTERING: Lettering shall be dense with uniform characters that are open, well-rounded, and uncrowded.
  - (3) BACKGROUND DENSITIES: Background densities shall be uniform across the entire document with good line-to-background contrast. If the original drawing was created with paste-up or image transfer material that negates producing a good transmitted light reproduction, it shall be photographed with reflected light and the final drawing created from the resulting negative after retouching.

**A-9. Correspondence.**

- (a) Correspondence shall include the City's Contract document number, specification number, and the name "Watershops Pond Dam Replacement Crest Gate and Slide Gates".

**A-10. Inspection.**

- (a) Submit a list of sources of materials and equipment to permit planning by the City for inspection of materials and equipment to be furnished from such listed sources in

advance of their use. All orders for materials and equipment shall carry a notation to the effect that the materials and equipment are subject to inspection and acceptance by the City. Said inspection will be conducted at the City's option both during fabrication/manufacture and after delivery at destination. Provide 2 weeks notice for inspection prior to fabricating articles.

**A-11. Delivery of Items/Components.**

- (a) Allow for the delivery of crest gate and slide gates system items/components in the fabrication/manufacturing and shop testing schedule to permit the orderly and timely installation/erection of the crest gate and slide gates system upon its delivery.
  - (1) Submit a list of crest gate and slide gates system items/components with the schedules submitted under these specifications, and a revised/final list with the erection/installation procedures manual.

**A-12. Delivery.**

- (a) Delivery of the crest gate system items/components shall be completed at the delivery location on or before the date specified in the Schedule (refer to Section A-11).
- (b) Delivery of the crest gate system shall be completed at the delivery location on or before the date specified in the Schedule (refer to Section A-11).
- (c) Do not deliver crest gate and slide gates system items/components prior to the specified dates unless approved in writing by the City. The Supplier shall allow for a storage period at their facility or at a Supplier provided site of the completed crest gate and slide gates system if the City will not approve delivery prior to the specified dates.
- (d) Delivery shall be at the following location:
  - Watershops Pond Dam
  - 1 Allen Street
  - Springfield, MA 01108
  - Or at a location to be specified within 1 mile of the above address.

**A-13. Damages for Delay.**

- (a) Due to scheduling constraints, the crest gate system shall be on site and ready for erection/installation in accordance with Section A-21. The City will incur substantial costs if the crest gate system meeting all requirements of the Contract documents is not delivered in accordance with Section A-21. Supplier agrees to pay as liquidated damages the sum of Five Hundred Dollars (\$500.00) per calendar day, starting with the first consecutive calendar day after the date specified in Section A-21 for "Delivery of crest gate and slide gates system," up to and including the date of actual Delivery. Damages may be retained from monies due under the Contract, and, if no money is due, damages shall be paid by the Supplier to the City.

- (b) If the Supplier fails to deliver the crest gate and slide gates system within the time specified, the Supplier shall store and properly maintain and protect the individual system components at its facility at its own expense until the entire system is delivered. The City may accept individual components of the incomplete system if, in the City's sole opinion, it is in their best interests to do so, and Supplier shall make such deliveries at no additional cost to the City.

**A-14. Partial Payments.**

- (a) In order to receive partial payments during the progress of the Work, the Supplier may invoice in accordance with the following schedule:
  - (1) Completion of the submittal review and approval process: 30% of the Contract price.
  - (2) Completion of shop tests and submittal, review and approval of shop test reports: 30% of the Contract price.
  - (3) Delivery on site: 20% of the Contract price.
  - (4) When the crest gate system has been erected/installed, operated, tested, and accepted by the City: 18% of the Contract price.
  - (5) After completion of the instruction and training period: 2% of the Contract price.
- (b) No partial payment will be made for the early delivery of any crest gate and slide gates system items/components and the services of the field service engineer(s).
- (c) Payments of invoices submitted by the Supplier will be made as defined in the Contract Terms and Conditions.

**A-15. Guarantee.**

- (a) The Supplier guarantees the material and workmanship used in the manufacture of the crest gate system furnished and services provided under the Contract documents to be as specified and agreed upon, free from defects, and in all respects satisfactory for the service required. At the earliest practicable date after erection/installation of the crest gate system by others in accordance with the erection/installation procedures manual under the oversight supervision of the field service engineer(s), others will test said equipment under the oversight supervision of the field service engineer(s) in accordance with the start-up, field testing, and inspection and report program. The Supplier further guarantees the satisfactory performance of the equipment under normal operating conditions, for a period of 2 years after the City's acceptance of the last field acceptance test. The Supplier shall make or have made at the his expense, repairs, adjustments, replacements, assembly, disassembly, or other corrective work necessary to restore or bring into full compliance with the requirements of the specifications any part of the work, materials, or equipment which, during the guarantee period, is found to be deficient with respect to any provisions of the specifications.

- (b) If defects to the crest gate system arise during erection/installation and testing or during the guarantee period due to failure by the field service engineer(s) to exercise reasonable care and skill in the performance of their services, the Supplier shall repair and perform all corrective works as specified in Paragraph A-15(a) above, without cost to the City.

**A-16. Shipping.**

- (a) The Supplier shall obtain all road permits and related permits/authorization from authorities having jurisdiction for the shipping of the crest gate system including shipping of crest gate system items/components.
  - (1) The Supplier shall determine load weight limits and dimensional limits based upon road permits and related permits/authorization from authorities having jurisdiction.
- (b) Ten calendar days prior to a shipment, notify the City of shipment by certified mail with return receipt and by e-mail, giving the routing, the number of the bill of landing, the freight bill number, the name of the carrier or shipping agency, the number of the car or trailer, a list of material shipped, the total weight of the shipment, the weight of the heaviest item/component and the dimensions of the largest item/component.
- (c) All equipment shall be securely packaged and prepared for long-term outdoor storage. All flanged joints and inspection covers shall be watertight.
- (d) All moving parts shall be lubricated before shipment.
- (e) When it is necessary to disassemble components for shipping, all uncoated machined surfaces exposed by such disassembly shall be coated with a suitable, easily removable, rust-preventive compound before shipping.
- (f) All components which may be subject to damage from vibration or jarring during shipment shall be securely blocked or otherwise supported in a manner which will prevent damage. Ground shipment shall be made in trucks or "shock control" type railway cars.
- (g) Attach one packaging list to each pallet or container.
- (h) Notify the following individual at the City as specified.

City of Springfield  
Department of Capital Asset Construction  
Attention: Peter J. Garvey, Director  
36 Court Street – Room 312  
Springfield, MA 01103  
Telephone: 413-787-6445  
e-mail address: pgarvey@springfieldcityhall.com

with copy to:

GZA GeoEnvironmental, Inc.  
Attention: Tom Jenkins



Telephone: 413-563-7986  
Email address: thomas.jenkins@gza.com

**A-17. Lifting Drawings.**

- (a) Prepare and submit for review and approval project specific lifting drawings which provide weights and lifting points for items/components of the crest gate system.
  - (1) Include dimensions and gross weight of each package item/component,
  - (2) Include details for support of components during on-site storage to avoid distortion and other damage.
  - (3) Load weight limits and dimensional limits for shipping shall be shown.
- (b) The lifting drawings shall include requirements for the handling/erecting/installing of items/components including the following:
  - (1) Handle at the project site during unloading, storage, and erection/installation to minimize damage to the surfaces.
  - (2) Ship on wood dunnage and protected from chain contact and damage during shipping.
  - (3) Store on-site on wood dunnage separating steel to steel contact and to keep off the ground.
  - (4) Handle/erect items/components with rubber coated chains with uncontaminated stainless steel or non-ferrous hooks. Use of beam clamps will not be permitted.
  - (5) Handle/install items/components with rubber coated chains with uncontaminated stainless steel or non-ferrous hooks, or slings made of synthetic material. Use of beam clamps will not be permitted.
  - (6) If winter conditions exist, all items/components shall be protected by tarps or other coverings.
  - (7) Items/components shall be covered or removed from areas that are at a high risk for re-contamination and relocated to a secure location.
- (c) The lifting drawings shall include identification for components of the crest gate system. Match-markings used for identification shall be the same as used on the erection/installation drawings.

**A-18. Field Service Engineer(s).**

- (a) Provide the services of a field service engineer(s), fluent in English, for the following:
  - (1) Attendance at the pre-erection/installation meeting.
  - (2) Oversight supervision for the following:
  - (3) Unloading at the site of the crest gate system.

- (4) Erection/installation of the crest gate system, including crest gate system items/components, in accordance with the erection/installation procedures manual.
  - (5) The field service engineer(s) shall prepare and submit reports.
  - (6) Start-up, field testing, and inspection and report program.
  - (7) The field service engineer(s) shall prepare and submit reports.
- (b) The field service engineer(s) shall keep a daily log. The daily log shall include information on activities, directions provided, equipment and manpower on site, problems encountered and how resolved, and other items pertinent to the work.
- (1) Submit the daily log(s).
- (c) The field service engineer(s) shall be considered an employee(s) of the Supplier. The Supplier shall hold the City harmless from any liability arising out of the employment of said employee(s).
- (d) The field service engineer(s) shall report directly to the City's authorized field representative.
- (e) Include in the Contract price the cost of the services of a field service engineer(s) based on the following schedule. Expenses including meals, lodging and round trip transportation to the project site will be considered incidental and will not be reimbursed, but shall be included in the Contract price.

Schedule for On-Site Services of the Field Service Engineer(s).

Work Item	Duration
<u>Crest Gate:</u>	
Attendance at pre-erection/installation meeting	8 hours *
On site for delivery of items/components	8 hours
On site during installation of delivery items/components	16 hours
On site for delivery of crest gate system	8 hours *
On site during erection/installation and testing of crest gate system:	
Crest Gate and Hydraulic Control Unit:	
Assembly of the gate leafs	16 hours
Erection of the leaf sections	16 hours
Installation and start-up of the hydraulic operating system	16 hours
Installation and start-up of the control system	16 hours
Trial "dry" operation of the assembled crest gate system	8 hours*
Final operational "wet" testing of the crest gate system	8 hours

Slide Gates:

Operational "wet" testing of the slide gates and slide gate interface with the hydraulic operating system 8 hours

\* For each manufacturer's field service engineer on site and performing specified services.

**A-19. Electric Power Available at the Site.**

480 volt and 120/208 volt, 3-phase, 60 hertz power will be furnished and installed by others.

**A-20. Quality Assurance/Control Program.**

(a) The Supplier shall have in effect a quality assurance/control program (QA/QC program) which establishes quality standards, and the authority and responsibility of those administering it for the Supplier's overall operation and the work as related to these Contract documents. Persons performing quality assurance functions shall have responsibility and authority to enforce quality requirements, to identify, initiate, recommend, provide solutions to quality problems and to verify the effectiveness of the solutions.

(1) Submit evidence of final inspection and acceptance of all items/components including approved waivers and deviations from the Contract documents in accordance with the Supplier's QA/QC program.

**A-21. Schedule.**

(a) Work activities listed in the following table shall be completed by the dates indicated. The following schedule assumes a Notice to Proceed (NTP) for the crest gate system is issued no later than August 24, 2020. All dates listed below will be adjusted based on the actual date of the issued Notice to Proceed. Bidders shall hold their proposed price and schedule for 90 days following the date of the bid opening.

<b>Work Activities:</b>	<b>Date:</b>
Schedule submitted	September 7, 2020
Start submittal process for the review and approval of submittals that are required for the design and manufacturing of the crest gate system. (See Section A-6)	September 21, 2020
End submittal process for the review and approval of submittals that are required for the design and manufacturing of the crest gate system.	November 2, 2020
Print, bind and deliver copies of reviewed and approved start-up, field testing, and inspection and report program with "fly" sheet. (See Section E-5)	November 16, 2020

Print, bind and deliver copies of reviewed and approved erection/installation procedures manual with "fly" sheet. (See Section F-3)	March 26, 2021
Delivery of crest gate and slide gates system.	May 12, 2021
Crest gate system installation/erection and testing completed and accepted by the City. Including "dry" and "wet" operation of the crest gate system.	November 26, 2021

**(b)** See Section A-6 for the schedule requirements of other submittals.

**A-22. Photographs.**

Refer to Appendix 3. for related photographs. The photographs are provided for reference purposes only.

**END OF SECTION A**

## SECTION B: DESIGN, MATERIALS, AND WORKMANSHIP

### B-1. Design and Fabrication

#### B-1.1 *General.*

The Supplier shall assume full responsibility for the design, fabrication, manufacturing, inspection, shop testing, and furnishing of the crest gate and slide gates system in accordance with the specifications, and the Supplier's quality assurance/control program. The design stresses and factors of safety used throughout the design shall be proven in practice and the design stresses shall be lower than specified, especially the design of all parts to be subjected to intermittent or alternating stresses, or to shock.

#### B-1.2 *Other Design Considerations.*

Parts subject to periodic replacement shall be readily accessible with minimum dismantling of the equipment involved. The parts shall be designed to prevent detrimental vibration or distortion during operation under the adverse conditions specified. Mechanisms shall be of suitable design and of sufficient strength to function smoothly and efficiently under the adverse conditions and to otherwise satisfy the requirements of these specifications. Water passages shall be shaped to produce good hydraulic efficiency and provide smooth flow of water.

### B-2. Trade Names and Alternatives.

(a) For convenience in designation in the specifications or on the Drawings, certain articles, or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and his catalog information. The use of alternative articles or materials which are of equal quality and with the required characteristics for the purpose intended will be permitted, subject to the following requirements: the burden of proof as to the comparative quality and suitability of alternative articles or materials shall be upon the Supplier and he shall submit at his own expense, copies of complete description, information, and performance data showing the equality of the articles or materials offered to those specified and such other necessary or related information as may be required by the City. The City will be the sole judge as to the comparative quality and suitability of alternative articles or materials, and the City's decision shall be final.

(1) A request for alternative products or materials constitutes a representation that the Supplier:

- a. Has investigated the proposed products or materials and determined that it meets the quality level of the specified products or materials.
- b. Will provide the same warranty for the provided products or materials as for the specified products or materials.
- c. Will coordinate installation and make changes to other work which may be required for the Work to be complete, at no additional cost to the City.

- d. Waives claims for additional costs or time extension which may subsequently become apparent.
- e. Will reimburse the City for review and redesign services associated with review and re-approval by agencies and other parties having responsibility.

**B-3. Materials**

- (a) Materials to be used in the fabrication/manufacture of the equipment shall conform to these specifications and shall be new, undamaged and suitable for the application. In the event the Supplier desires to use materials not conforming to or not covered by these specifications, but of equal or higher quality for the purpose, the Supplier shall submit for review and approval complete specifications for the materials he proposes to use and a statement of the parts to be fabricated/manufactured from said materials.
- (b) Materials not included under these specifications shall be high grade materials best suited to the purpose for which they are used, and shall be subject to review and approval.
- (c) Castings shall be sound and free of shrink holes, blow holes, cracks, scale, blisters, and other similar injurious defects. Castings in pressure service shall not be repaired by peening, plugging, burning in, or impregnating. The wall thickness and other dimensions of the castings shall not be less than those called for on the design drawings by an amount sufficient, in the opinion of the City, to reduce the strength of castings by more than 10 percent or to permit the stresses allowed under the specifications to be exceeded. Castings shall not be warped or distorted, nor shall their dimensions be oversized to such an extent as to interfere with proper fit with other parts of the apparatus.
- (d) Laminations or other defects in the plate shall be cause for rejection wherever, in the opinion of the City, such laminations or defects will impair the quality of the metalwork.
- (e) Ready finished shafting shall be turned, ground, and polished.

**B-4. Fabrication and Welding.**

- (a) Fabrication, inspection and welding of all crest gate system components shall conform to the following requirements and AWS D1.1 / D1.6.
- (b) All weldments shall receive the specified heat treatment prior to machining.

**B-4.1 *Welding Qualifications.***

- (a) Qualification of welding procedures, welders, and welding operators shall conform to the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.
- (b) Welding procedure specifications (WPS), supporting procedure qualification records (PQR), weld repair procedures, and post weld heat treating procedures shall be submitted for review and approval.
- (c) Welder qualification records and records demonstrating continued use of each qualified welding process at least once every 6 months shall be on file at the Supplier's shop/office,

and are subject to review and approval by a City's authorized inspector, at the option of the City, prior to commencement of welding operations.

#### **B-4.2 Welding.**

(a) General. – Welds shall conform to the following requirements:

- (1) Rejectable indications shall be excavated by thermal or mechanical means to remove the indication. The cavity as prepared for repair welding shall be examined as to suitability before proceeding with the repair welding.
- (2) Completed weld repairs shall be examined by the nondestructive examination (NDE) method which originally detected the rejectable indication and visual examination.
- (3) Visual inspection acceptance criteria:
  - a. Welds shall have
  - b. no cracks
  - c. no lack of fusion
  - d. no overlap
  - e. Weld surfaces shall be free from slag and excessively coarse ripples, abrupt ridges, or valleys and spatter.
- (4) Filler metal used shall produce a weld deposit with the same chemistry and mechanical properties as the base material being welded.

#### **B-5. Heat Treatment of Metals.**

- (a) Terms relating to heat treatment of metals shall be in accordance with ASTM A 941.
- (b) Submit for review and approval all heat treatment procedures prior to any heat treatment.
- (c) Notify the City 2 weeks prior to heat treatment to allow the presence of a City authorized representative. Whenever the Supplier works or arranges to work at any time other than his regularly scheduled hours, or when he arranges to vary his daily scheduled hours, he shall give the City advance notice.
  - (1) Presence of a City authorized representative will be at the option of the City.

#### **B-6. Material Testing.**

##### **B-6.1 Mill Test Report.**

- (a) Submit copies of the certified mill test reports of the chemical analysis, tensile and impact and bend test results for the materials described in these specifications. The mill test reports shall identify the components for which the material will be used and information

necessary to verify compliance with the specifications. For standard stock parts, this submittal shall be one of the following:

- (1) Certified mill test reports;
  - (2) Written certification of the material to be used by the Supplier; or
  - (3) Copy of the Supplier's catalog material list with written certification that the materials identified will be used in the manufacture.
- (b) The data shall be in such form as to afford means of determining compliance with the applicable specifications for the materials. The cost of supplying all the above required data shall be borne by the Supplier.

#### **B-6.2 Tensile Test.**

- (a) Submit copies of the tensile test results performed on coupons from the components listed in Section B-3.
- (b) A minimum of 3 tensile test coupons shall be prepared for each component in accordance with ASTM A 370. The test coupons shall be of the same heat as the component and shall receive identical heat treatment as the component.

#### **B-6.3 Impact and Bend Tests.**

- (a) Submit copies of the impact and bend test results from the materials for the structural fabrication as listed in Section B-3, with the exception of the seals. Materials shall be tested for impact resistance using the charpy "V"-notch specimen and shall have an impact strength of not less than 20 ft-lb at 0 degrees F. Testing shall conform to the requirements of ASTM A 370. Both longitudinal and transverse impact test shall be performed for each heat on plate steel. Bend tests shall be performed on specimens of all major steel castings and forgings in accordance with the applicable ASTM standard methods.

#### **B-6.4 Radiograph Testing.**

- (a) Radiograph testing procedures shall comply with ASTM E 94 and ASTM E 142, with acceptance criteria of ASTM E 446, or ASTM E 186, Class 3.

#### **B-6.5 Ultrasonic Testing.**

- (a) Ultrasonic testing procedures shall comply with Section V, Article 5, of the ASME Boiler and Pressure Vessel Code with acceptance criteria in accordance with Section VIII, Division 1, Appendix 12 of that Code.

#### **B-6.6 Liquid Penetrant Testing.**

- (a) Liquid penetrant testing shall comply with ASTM E 165, procedure A-1 or B-2, with acceptance criteria in accordance of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, Appendix 8.

### **B-7. Workmanship**



- (a) Quality. All work shall be done and completed in a thorough, workmanlike manner and shall follow the best modern manufacturing practices, notwithstanding any omission from these specifications. All work shall be performed by mechanics skilled in their trades, and wherever possible, all parts shall be made accurately to standard gage to facilitate replacement and repair. Machine work shall in all cases be of high-grade workmanship and finish. Bolt holes on surfaces not otherwise machined shall be spot-faced and all exposed surfaces shall be neat in appearance. All sharp edges, burrs, and unnecessary projections shall be removed. Surfaces requiring painting shall be smoothed and ground. Components which are to be permanently adjacent in contact, or fixed together, and which are not required to move with respect to each other, shall be joined with a continuous weld sealing all edges, corners, gaps, or crevices between them. Adequate clearance shall be provided around and above bolt heads and nuts for application of box and socket wrenches.
- (b) Patterns. Care shall be taken when making patterns to avoid sharp corners or abrupt changes in cross sections, and ample fillets shall be used. All dimensions shown on the design drawings shall be met, and the required draft and allowance for shrinkage and machining shall be added.
- (c) Tolerances. Tolerances shall be shown on the design drawings. Due consideration shall be given to the special nature or function of the parts and to the corresponding accuracy required to secure proper operation of the equipment and interchangeability of spare parts.

**END OF SECTION B**

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## SECTION C: GENERAL INFORMATION AND DESIGN REQUIREMENTS

### C-1. General Information.

- (a) The replacement crest gate, slide gates, and control system shall be furnished based on the Supplier's design and as specified.
- (1) The crest gate and slide gates shall be furnished complete with erection and maintenance supports, hinges, side and bottom seals, hydraulic cylinders, seal heaters, air vents, piping, water level and gate position sensors, transmitter and indicators, wired PLC and instrumentation and PLC cabinet, hydraulic power unit and hydraulic accumulator(s) for gate position maintenance and all appurtenances necessary to provide a complete integrated and operating system.
- (b) Provide a coordinated and complete design fulfilling the requirements and intent of these specifications and conforming to the best engineering practice. Any item or device not specifically called for in these specifications but which is necessary to provide a complete, working unit, device or system, shall be included.
- (c) The crest gate cylinder shall be capable of holding the crest gate in position during normal operation so that water and vibration forces, and loss of hydraulic pressure will not be the cause for the crest gate cylinder to move from any set position and in the event of a catastrophic hydraulic failure.
- (1) To hold the crest gate in position, low leakage pilot operated check valves and an accumulator shall be provided at the hydraulic power unit.
- (2) A velocity fuse shall be provided at each cylinder to hydraulically lock the cylinder in position in the event of a catastrophic hydraulic failure.
- (d) All parts of the cylinders shall be readily accessible for inspection, adjustment, maintenance, repair, and replacement.
- (e) Bladder type accumulators, suitable for charging with nitrogen, shall be provided, for "cushioning" the pumps. As a minimum, the accumulators shall be sized for 10 percent of the rated pump flow, and to prevent gate creep should the power be off for a period of ½ hour. Accumulators shall be equipped with a safety device to release excessive pressure before the burst pressure is reached. The accumulators shall be designed and fabricated in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section VIII Division 1.
- (f) The upstream surface of the crest gate leaf shall be curved to match the existing gate. The shape of the gate shall prevent negative pressure on the gate surfaces for any head up to the specified design head.
- (g) The crest gate shall be designed to accommodate the existing recesses and platforms in the dam spillway, to receive the leaf in its down position.
- (h) All electrical components shall operate from available on-site power, which is 480 volt, 60 cycle, three phase power, and 240-volt or 120-volt, single-phase power.

**C-2. Crest Gate Design Requirements.**

**C-2.1 Crest Gate Design Factors**

(a) Crest Gate Table (all elevations are NAVD88 vertical datum):

Width of Gate:	Approximately 105' 2-3/8" based on Record Drawings. (Supplier shall verify all dimensions of spillway and dam crest.)
Top of Raised Gate:	El. 155.20
Normal Gate Position:	El. 154.7
Top of Base Slab:	El. 150.50±
Fixed Spillway Crest:	El. 152.70±
Nominal Gate Height:	2.5' above fixed crest

(b) Hydraulic Conditions: Reservoir

Normal Water Level:	El 154.9± (= Normal Gate Position + 0.2 ft.)
Spillway Design Flood: ("1/2 Probable Maximum Flood")	13,700 cubic feet per second (cfs)
Spillway Design Flood: ("1/2 Probable Maximum Flood")	El. 164.7 (Reservoir Elevation, crest gate <u>fully lowered</u> )
Spillway Design Flood: ("1/2 Probable Maximum Flood")	El. 164.7 (Reservoir Elevation, crest gate <u>fully raised</u> )

**C-2.2 Crest Gate Design Criteria**

- (a) The gate raising system shall have sufficient thrust capacity to raise the leaf from the fully lowered position to the fully raised position, when the upstream water level is at elevation 158.9, with no tailwater.
- (b) The gate shall be structurally designed to withstand the worst combination of all axial, bending, shear, torsion and thermal loads and shall be subject to fatigue loading from the worst loading condition caused by static and dynamic loadings in any position with the upstream water surface at any elevation between Elevation 152.7 and Elevation 164.7 and no tailwater.
- (c) The gate and anchors shall be designed to withstand the combined force of a normal water level with crest gate raised to maximum height and a horizontal ice load of 5,000 pounds per lineal foot of gate applied uniformly and horizontally along the width of the gate in the downstream direction at the top elevation of the crest gate at maximum height.

- (d) The gate and anchors shall be designed to withstand in an overloading condition including the combined forces of a normal water level and a seismic acceleration of 0.15g or greater as may be required by building code or dam standard with acceleration specific for the region. The gate manufacturer shall also detail, as needed, any special modifications to the concrete crest gate structure to assure the overall structural adequacy of the gate system.
- (e) The gate leaf shall be designed as an integral torsion member subjected to fatigue loading.
- (f) A factor of safety applied to the material yield strength of 2.5 for normal loading conditions and 2.0 for overloading conditions shall be applied when considering the elastic instability of the gate structure.
- (g) The gate leaf shall be continuously welded. The welds connecting the upstream and the downstream skin plates to each other and to the vertical ribs shall develop the full strength of the plates. The weld joint shall be designed to consider fatigue.
- (h) Welds shall be proportioned as to not exceed 80% of the allowable loading of AWS D1.1, Section 2.

### **C-2.3 Crest Gate Components**

#### **(a) Leaf**

- (1) The crest gate leaf shall be fabricated in approximately equal lengths no less than 17 feet per section and not exceeding 21 feet per section.
- (2) The gate leaf shall consist of curved upstream and downstream skin plates and flat vertical diaphragm plates arranged to form an integral torsion member that will avoid negative pressure zones. The gate leaf structure shall be ASTM A572 Grade 50 steel.
- (3) A curved steel surface shall be provided directly above the gate hinges to mate with the horizontal seal. The top edge of the upstream skin plate shall form a discharge lip of a design which when in combination with nappe breakers and air vent piping located downstream of the gate, will eliminate flow induced vibrations.
- (4) The space between the upstream and downstream skin plates shall be made airtight by welding hermetically and the welds checked for air tightness. The leaf side seals shall be mounted so as not to penetrate the gate leaf, thereby, eliminating any access ports in the downstream skin compartments that would compromise water tightness.
- (5) The gate leaf shall transmit the forces from the hydraulic cylinder to the skin plates and bearings and, in turn, to the embedded anchors through the bearings.
- (6) When it is necessary to manufacture and ship the gate leaf in multiple sections, the joint between the sections shall be bolted together using high strength A325 fasteners.

#### **(b) Hinges.**

- (1) The gate leaf shall rotate on pin-type hinges. The hinge pins shall be A564 Grade 17-4PH high strength stainless steel and fixed to the gate leaf. The pins shall rotate in permanently lubricated bronze bearings, which shall be retained in fabricated Type 304L stainless steel bearing brackets. The brackets shall be anchored to the concrete structure in a manner to allow adjustment in all three planes during erection of the leaf sections. The hinge bracket anchor bolts shall be Type 316 stainless steel and have a minimum diameter of 1 ½ inch.
- (c) Side Seals
- (1) Type 304 Stainless Steel side seal plates shall be furnished to cover the existing armature plates. Seals shall allow for sealing in all gate positions. Leaf side seals shall be fluorocarbon clad neoprene and attached to the sealing ends of each leaf with Type 304 Stainless Steel retainers and fasteners. The seal attachment shall allow for replacement of the seal without removal of the leaf. Side seal plates shall consist of the stainless steel seal plate surfaces with appropriate anchoring mechanism to affix to the existing armature plates and abutments. Type 304 Stainless Steel anchor bolts shall be provided to affix the side seal plates to the existing abutments. The sealing surface of the side seal plates shall have a surface finish smoother than 250 micro-inch RMS.
- (d) Erection and Maintenance Supports
- (1) Erection struts and associated brackets provided to support the leaf in the full up position with the operator detached from the leaf. Each strut and bracket shall be manufactured from A36 Steel and strong enough to support the leaf in the full up position with a normal water surface elevation to facilitate future maintenance work.
- (e) Leaf Stops
- (1) When the leaf is in the fully lowered position the weight of the leaf shall be supported by adjustable gate stops contacting pads on the downstream surface of the spillway channel. All components shall be designed and furnished by the gate supplier. The pads shall be manufactured from A36 steel and anchored in place using Type 316 Stainless Steel anchor bolts.
- (f) Aeration Piping
- (1) The gate manufacturer / supplier shall determine the necessity of aeration piping and size, location, and shape of the aeration piping system if needed. Aeration piping shall be sized to prevent excessive negative pressure under the gate with reasonable velocities in the aeration pipes. The aeration vent piping shall be galvanized steel and have protective screens on both the inlets and outlets. Aeration vent piping shall consider the existing aeration piping configurations and shall minimize retrofit efforts necessary for installation on the existing structure.
- (g) Heating

- (1) Electric resistance type heaters shall be provided in the seal support members. The heaters shall provide an output of 50 watts per running foot of seal. The heaters shall have stainless steel sheathing. Heater elements shall be accessible for replacement.
- (2) Resistance type heaters for the bottom seals and the side seals shall be provided. The heaters shall be housed in 1-1/4 inch diameter Type 316 stainless steel pipe. Heaters shall be thermostatically controlled.
- (3) An outdoor temperature sensing probe shall be provided for mounted at the gate control house. An "on-off" selector switch and a red "on" indicating light shall be located on the PLC cabinet in the gate control house. The heaters shall operate on 480 volt, 3-phase and be thermostatically controlled.

(h) Design and furnish all anchorage/bolting required. Templates shall be provided.

**C-3. Slide Gate Design Requirements**

**C-3.1 Slide Gate Design Factors**

(a) Cast Iron Slide Gate Table.

Qty. Req'd.	Size of Opening (in.; W x H)	Gate Type:	Seating Head (ft.)	Unseating Head (ft.)	Bottom Type	Operator	Remarks
2	48" x 48"	Self-contained	30	10	Conventional	Hydraulic	1. Including adapter frame / wall liner  2. In no case shall the overall height of the slide gate assembly exceed a dimension of 13 feet 0 inches, including frame, frame extensions, yoke, and cylinder  3. Furnish debris deflector at each gate.

**C-3.2 Slide Gate Design Criteria**

(a) General.

- (1) The slide gates including operating cylinders will be located below the normal water surface of Watershops Pond at the low-level outlets for the dam.
  - (2) Each slide gate shall be manufactured as detailed herein and shall be supplied tested as per requirements. To the maximum extent possible, the gate assembly comprising of frame, guides and slide shall be supplied as a factory-assembled unit and shipped to site ready to install on the wall.
  - (3) The slide gates shall be manufactured from cast iron and shall be flat or flange back type suitable for wall mounting and manufactured in accordance with AWWA C-560.
  - (4) The slide gates shall be designed for water tightness for both seating and un-seating differential head per the actual site requirement as detailed in the Cast Iron Slide Gate Table.
  - (5) The slide gates shall have a seating and un-seating leakage rate of 1/2 the leakage rate allowed by AWWA-C560.
  - (6) Operation shall be by means of a stainless steel hydraulic cylinder, per gate, as detailed in the Cast Iron Slide Gate Table.
  - (7) Each slide gate shall be equipped with a debris deflector to protect the hydraulic cylinder from large woody debris entrained within the flow.
  - (8) The slide gates shall be supplied complete with all accessories including: stainless steel wall adaptor frame / wall liner, frame extensions, yoke, gate assembly, gasket between wall frame and gate assembly, studs and nuts for mounting the frame to the headwall, studs and nuts for mounting on the frame, stainless steel hydraulic cylinder and mounting hardware, debris deflector and associated studs and nuts for mounting on the headwall, thrust nut, and cylinder rod couplings. The gates shall utilize adjustable wedges. All wedge attachments shall include a key and keyway or other positive means to prevent rotation.
  - (9) The slide gates shall be suitable for throttling flow and extended operation at any degree of full or partial openness
- (b) Frame and Guides.
- (1) The frame shall be cast iron, one-piece construction with rectangular opening. The gate frame shall be sufficiently rigid to withstand the designated water head. The frame shall be self-contained as identified in the Cast Iron Slide Gate Table.
  - (2) The back flange of the gate frame shall be precisely machined flat and drilled to engage with the stainless steel adapter frame / wall liner to be mounted to the wall. A resilient gasket or mastic shall be provided to seal between the flange of frame and the stainless steel adapter frame / wall liner.
  - (3) The gate frame shall be self-contained in accordance with the Cast Iron Slide Gate Table. Self-contained frames shall extend sufficiently to attach a yoke for mounting the operating mechanism at the appropriate height. All operating loads for



self-contained gates shall be reacted within the frame with no significant loads imposed on the civil works.

**(c)** Adapter Frame / Wall Liner.

- (1)** Final dimensions of the adapter frame / wall liner shall be in accordance with field measurements of the wall and waterway openings conducted by the gate supplier.
- (2)** The adapter frame / wall liner shall be constructed of stainless steel, with a width sufficient to extend a minimum of 4 inches in all directions beyond the limits of the cast iron frame.
- (3)** The depth of the wall liner flange shall be 6 inches.
- (4)** The adapter frame / wall liner shall be drilled and tapped for attaching the gate frame, and shall be drilled on the face and wall liner flange for mounting to the wall and waterway bottom, top, and sidewalls.

**(d)** Slide.

- (1)** The gate slide shall be cast iron and shall be ribbed to withstand the designated water head as defined in the Cast Iron Slide Gate Table.
- (2)** The gate slide shall be provided with an integral pocket for the thrust nut connecting the stem with the slide. The slide and thrust nut shall be designed to safely withstand the stem design load as defined by these specifications.

**(e)** Seating / Sealing Faces.

- (1)** Seating / sealing facing shall be bronze.
- (2)** Bronze facing shall be mechanically swaged into machined dovetailed grooves in the gate frame and slide. The contact pressure on bronze seat facings shall not exceed 900 psi under full operating head calculated based only the side seat facings.
- (3)** The sealing surfaces shall be machined to a 32 micro inch finish. The mating seating/sealing faces on the gate frame and slide shall be precisely finished for proper contact. The mating surfaces shall exclude a 0.004" feeler gauge at all points.

**(f)** Wedging Devices.

- (1)** The slide gates shall be provided with individually adjustable wedging devices to ensure proper contact of the frame and slide seat facings to achieve the required leakage performance.
- (2)** Slide gates shall have side and top wedging devices. The bottom shall have wedges or a flush bottom closing arrangement.
- (3)** The wedging system shall include wedge brackets on the frame. The wedge brackets shall remain in a fixed position and the mating wedge on the slide shall be adjustable or vice versa. A key and keyway arrangement shall be provided on the base of wedge brackets to prevent any tendency to shift. Provision shall be made

to secure the adjustable brackets firmly in adjusted position.

- (4) The adjustable wedges shall be constructed of solid cast bronze, machined on all contact surfaces. The fixed wedging surface shall be bronze faced.

**(g) Hydraulic Cylinders.**

- (1) Capable of continuous service in submerged conditions.
- (2) Casing: Type 316 stainless steel.
- (3) Piston rod: 17-4 PH chrome plated stainless steel.

**(h) Anchor Bolts.**

- (1) Anchor bolts, nuts and washers shall be provided by the gate manufacturer for mounting the gates and the appurtenances.
- (2) The quantity and location shall be determined by the gate manufacturer, subject to the Engineer's approval.
- (3) All anchors shall be epoxy type, with epoxy provided by the installing contractor.
- (4) Anchor bolts will have a minimum diameter of 1/2-inch.

**(i) Debris Deflectors.**

- (1) Each slide gate shall be furnished with a debris deflector designed to protect the hydraulic cylinder from large woody debris entrained within the flow.
- (2) The debris deflector shall be fabricated of Type 316 Stainless Steel and shall consist of a "V" shaped shield designed by the Supplier to protect all portions of the slide gate hydraulic cylinders and hydraulic lines and hoses that project above the gate frame including the frame extension and integral yoke.
- (3) Debris deflectors shall be designed to mount to the headwall using threaded studs and nuts and shall be removable for servicing or removal of the gate or cylinder.
- (4) Debris deflector shall be capable of withstanding a direct impact force of no less than 8,000 pounds and transmit said load to the headwall structure without damage to the deflector. Analysis and design of the debris deflector shall consider the following references:
  - a. Maximum Impact Force of Woody Debris on Floodplain Structures; US Army Corps of Engineers, ERDC/CRRE: TR-02-2; February 2002
  - b. Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures; FEMA P-259, January 2012.

**(j) Materials of Construction.**

Frame, Slide, Thimble	Cast Iron ASTM A126 Class B
Stem / Rod Coupling	Stainless Steel ASTM A 276 type 304/316

Frame Adapter / Wall Liner	Stainless Steel ASTM A 276 type 316
Debris Deflector	Stainless Steel ASTM A 276 type 316
Seating Faces, Wedge Lining	Bronze ASTM B21 / ASTM B139 / ASTM B98
Assembly Bolts, Nuts, and Fasteners	Stainless Steel ASTM A 276 type 304/316 Stainless Steel ASTM A 193 / 194 B8 / B8M
Yoke	Cast Iron ASTM A126 Class B Carbon Steel ASTM A36 Stainless Steel ASTM A 276 type 304/316
Wedges, Thrust Nut, and Lift Nut	Bronze ASTM B584 C865 / C873

**C-4. Cleaning and Painting.**

**C-4.1 Crest Gate**

- (a) After shop testing is completed and prior to the delivery of the crest gate system, the Supplier shall clean the crest gate system of oils, greases, forming compounds, lubricants, coolants, cutting fluids and other undesirable organic and metallic residue left behind because of handling, fabrication and the machining processes.
- (b) After cleaning is completed and prior to shipping the crest gate system, the Supplier shall apply shop coatings of all carbon-steel components in accordance with the following schedule:

<b>Crest Gate Ferrous Appurtenances</b>		
<b>Surface Preparation</b>	Prepare all steel designated for water immersion service in accordance with SSPC-SP10 / NACE 2, Near White Metal Blast cleaning. Refer to appropriate specification pages and SSPC / NACE preparation details for further guidelines.	
<b>Prime Coat</b>	Single-Component, Moisture-Curing Urethane Zinc Rich Primer	2.0 – 4.0 mils DFT
<b>Stripe Coat I</b>	Two-Component, High-Solids, Fast-Drying Polyamide Epoxy (brush application to all steel edges, fasteners, welds, and perforated areas of steel)	3.0 – 4.0 mils DFT
<b>Intermediate Coat I</b>	Two-Component, High-Solids, Fast-Drying Polyamide Epoxy	4.0 – 6.0 mils DFT
<b>Finish Coat to all Surfaces</b>	Two-Component, Fast-Drying, Polyester-Modified, Aliphatic, Acrylic Polyurethane – Gloss, Color by City from mfr range.	4.0 – 6.0 mils DFT
<b>All Coats</b>		14 mils DFT min.

(c) Submit information on the Supplier's cleaning methods for review and approval.

#### **C-4.2 Slide Gates**

- (a) Prior to the delivery of the slide gates, the Supplier shall clean the slide gates of oils, greases, forming compounds, lubricants, coolants, cutting fluids and other undesirable organic and metallic residue left behind because of handling, fabrication and the machining processes.
- (b) The slide gates shall be factory painted as follows:
- (1) Gates, Frames, and other Submerged Cast Iron components shall be factory painted.
  - (2) Surface Preparation - Blast clean to near white metal finish.
  - (3) Priming - 1 coat of a high solids, low VOC, two component, high build, surface tolerant epoxy coating, minimum DFT 4 mils before shop testing.
  - (4) Touch up primer is required after shop testing.
  - (5) Finish Painting – 2 coats of a high solids, low VOC, two component, high build, surface tolerant epoxy coating, semi-gloss. Minimum DFT 4 mils/coat. Minimum TDFT 12 mils.

#### **C-5. Location and Environment**

- (a) The crest gate will be located outdoors.
- (b) The slide gates including operating cylinders will be located below the normal water surface of Watershops Pond at the low-level outlets for the dam.
- (c) The crest gate operating cylinder, electrical controls and hydraulic operating system for the crest gate and both slide gates, and PLC cabinet for the control system will be located in the existing gate control house at the left abutment.
- (1) The gate control house will be heated and ventilated (by others). The gate control house will not be cooled.
- (d) Location and Site Information:
- (1) Site Location: Watershops Pond Dam; Springfield, Massachusetts.
  - (2) Proposed Gate Control House Air Temperatures: 40 degrees F to 115 degrees F.
  - (3) Outdoor ambient air temperature: minus 20 degrees F to 115 degrees F.
  - (4) Gate Control House service power to be provided by others: 480 volt and 120/208 volt, 3-phase, 60 hertz.

**END OF SECTION C**

## **SECTION D: ELECTRICAL CONTROLS AND HYDRAULIC OPERATING SYSTEM**

### **D-1. General**

- (a)** The Electrical Controls and Hydraulic Operating System shall be furnished based on the Supplier's design and as specified.
- (b)** One (1) hydraulic cylinder mounted within the gate control house shall control the position of the crest gate. The specifications illustrate a standard of performance and quality.
- (c)** Each slide gate shall be operated by one (1) hydraulic cylinder mounted in each self-contained slide gate. The specifications illustrate a standard of performance and quality.
- (d)** The control system shall be designed to operate, position, and hold the crest gate in operation. Crest gate cylinder shall be double acting and shall be capable of operating the crest gate when the water level is below the fixed crest of the dam.
- (e)** The control system shall be designed to operate, position, and hold each slide gate in operation, independently of the crest gate and of the other slide gate. Slide gate cylinders shall be double acting.

### **D-2. Operation**

- (a)** Normal Operation – The crest gate's control system shall be designed to allow the gate to be RAISED and LOWERED through the use of manual pushbuttons.
- (b)** Movement of the gate in the raise and the lower direction shall be performed via a hydraulic pump, while movement of the gate in the lower direction may also be performed by releasing pressure from the bottom of the hydraulic cylinder.
- (c)** Power Failure Operation – Under power failure conditions, the crest gate shall not move and shall remain in position. If it is desired to lower the gate, a manual needle valve, located on the hydraulic power unit (HPU), shall be provided in order to allow the gate to be lowered. If the gate is not lowered via the manual valve, the gate shall remain in position.
- (d)** Remote monitoring – In order to monitor the position of the gate, the following shall be provided within the control panel (all necessary field wiring and transmitting of signals shall be provided by others):
  - (1)** Crest Gate Position (4-20ma Analog Signal)
  - (2)** HPU General Alarm (Set of Dry Contacts)
- (e)** Remote Control – When the LOCAL-OFF-REMOTE-AUTO switch on the Main control panel is in the REMOTE position, the crest gate shall be able to be raised and lowered via a set of dry contacts from a remote location (supplied by others). All necessary field wiring and transmitting of signals shall be provided by others.
  - (1)** Gate LOWER (Set of Dry Contacts)

- (2) Gate RAISE (Set of Dry contacts)

### D-3. Controls

#### D-3.1 PLC Cabinet.

- (a) The PLC cabinet shall be internally heated and house the controls for the control system with the hydraulic power unit. The PLC cabinet shall be located in the gate control house. The PLC cabinet shall, as a minimum, have the controls and indicators specified.
- (b) The PLC cabinet shall be a NEMA Type 4X enclosure.
- (c) The PLC cabinet shall include pump motor starters, seal heater contactors, switches, and indicators.
- (d) The PLC cabinet shall include an isolated 4 to 20 mA analog signal outputs wired to terminals for remote crest gate elevation, water elevation, hydraulic pressure, run time monitoring and low oil pressure indication.
- (e) The MAIN control panel shall be provided with a MANUAL-OFF-AUTO-REMOTE key-operated switch. In the MANUAL mode, the crest gate and both slide gates shall be able to be operated via pushbuttons on the MAIN control panel. In the AUTO mode the crest gate elevation shall be automatically controlled by inputting a desired impoundment water surface elevation. In the REMOTE mode, the crest gate shall be able to be raised and lowered via a set of dry contact closures (supplied by others).
- (f) A programmable controller (PLC) shall be provided to allow operation of the crest gate and the associated HPU. Solenoid valves shall be controlled by Open or Close pushbuttons for each gate. Solenoids shall be de-energized when the corresponding gate reaches the fully open or fully closed position. It shall be possible to stop each gate at any intermediate position.
- (g) Each gate's position shall be displayed on the face of the MAIN control panel.
- (h) Continuous position indication of the crest gate using a gate-mounted angle transmitter manufactured by Rittmeyer, Model Rivert. The transmitter shall be used to indicate "end of travel". Due to proven reliability, no substitute position indicators will be accepted.
- (i) In the MANUAL mode it shall be possible to position the crest gate through the use of a RAISE-STOP-LOWER selector switch on the PLC cabinet door.
- (j) Provisions shall be made for the remote transmitting of the crest gate elevation, either from the leaf itself or from the cylinder. Crest gate elevation transmission shall be electric (4 to 20 mA) and indicate the actual elevation of the tip of the crest gate.
- (k) It shall be possible to lower the crest gate by manually opening by-pass needle valves at the hydraulic power unit.
- (l) Crest gate elevation in elevation footage (example: 155.50), water elevation, hydraulic pressure, run time monitoring and low hydraulic oil indication display shall be provided on the PLC cabinet in the gate control house .

- (m) The Supplier shall design and furnish the means to obtain the necessary data to be able to display the required information for crest gate elevation, water elevation, hydraulic pressure, run time monitoring and low hydraulic oil indication
- (n) The display shall be capable of showing values to 2 decimal places. Values shall be shown in Arabic numbers 1 inch high. Indicate in 1 inch high block letters what information is being displayed adjacent to the respective display line.

**D-4. Hydraulic Power Unit (HPU)**

- (a) One (1) hydraulic operating system shall be provided to operate the crest gate and the two (2) slide gates. The system shall be designed to operate smoothly and uniformly operate the gates and hold the gates in the desired position. The crest gate shall be operated manually via push buttons at the local control panel at the hydraulic power unit.
- (b) The hydraulic power unit shall be a nominal 2000 psi hydraulic fluid system of sufficient size and capacity to operate the crest gate.
- (c) The hydraulic operating system shall be sized to operate the crest gate through a full close (raise) stroke in 10 minutes or less.
- (d) The hydraulic operating system shall be sized to operate both slide gates at the same time through a full open (raise) stroke in 10 minutes or less.
- (e) The system shall include dual automatically alternating motor/pumps. Manually operated valves and interconnections between each gate's hydraulic hoses shall be provided to allow one (1) of the motor/pumps to operate gates sequentially in the event that the other motor/pump fails.
- (f) A hand pump shall be provided to allow manual operation of the gates in the event that there is no electric power. No downward movement of the crest gate shall occur in the event of a power outage, unless manually overridden through means of opening bypass valve(s).
- (g) The hydraulic power unit shall be designed to be placed in a non-heated, weather-tight area. A 500 watt thermostatically operated immersion heater shall be provided in the oil reservoir.
- (h) Trouble indicating lights and a single general alarm dry contact shall be provided to signal a power unit fault for at least the following: low oil level, low temperature, and motor/pump failure.
- (i) Simultaneous with the low oil level alarm, an automatic switch shall shut-off power to the pump and motor. Power shall continue to be supplied to other parts of the hydraulic power unit, such as the heaters.
- (j) The hydraulic power unit shall be designed and manufactured in compliance with good engineering practice and shall include all necessary pressure relief valves, control valves, switches, filters, accumulators, etc., to provide a complete operating system. Stainless steel ball valve shut-offs shall be provided on each hydraulic line where it leaves the

hydraulic power unit.

- (k) The hydraulic power unit shall be designed to operate using environmentally friendly biodegradable, non-toxic hydraulic fluid with performance characteristics comparable to premium mineral oil based fluids and compatible with seals suitable for use with mineral oil based fluids.
- (l) Field hydraulic lines shall be stainless steel, supplied and installed by the General Contractor. All field lines shall be properly supported, installed, flushed and pressure tested to 150% of the maximum system operating pressure prior to connection of the field piping to the hydraulic cylinders and power unit.

## D-5. Hydraulics

### D-5.1 Hydraulic Cylinders

#### (a) General

A set of two (2) stainless steel ball valves and two (2) flexible hoses shall be installed at all hydraulic cylinders to allow for removal of the cylinder without requiring the cylinder or the interconnecting hydraulic lines to be drained. Crest Gate Cylinder

#### (b) Crest Gate Cylinder

- (1) The crest gate cylinder shall be sized to provide 125 percent of the maximum thrust required to operate the crest gate's full travel under the most extreme operating conditions specified without requiring more than 2000 psi.
- (2) Cylinder and components shall be tested and undamaged by a 3000 psi internal pressure. The piston rod shall be chrome plated A564 Type 630 Condition H-1150 stainless steel. The cylinder shall be provided with a stop tube to minimize lateral thrust on the rod seal.
- (3) The cylinder design shall incorporate lifting lugs. Cylinder bore shall be honed to a 15 micro inch finish. The slenderness ratio of the piston rod shall not be greater than 200.
- (4) The crest gate hydraulic cylinder shall be provided with all necessary mounting brackets and anchor bolts for installation of the cylinders underneath each gate leaf on the dam crest. The support brackets shall be fabricated from A36 steel with A325 Galvanized Steel anchor bolts provided for mounting each cylinder.
- (5) The hydraulic cylinders shall be of the heavy-duty industrial type suitable for immersion service and designed in accordance with AWWA C501 Section 3.16. Seals and glands shall be compatible with the hydraulic fluid used.
- (6) Hydraulic Cylinders.
- (7) Cylinder rods shall be chrome plated A564 Type 630 Condition H-1150 stainless steel.



- (8) Cylinder head, cap, body and tie rods shall be steel. The piston shall be equipped with lip seals. The rod end of the cylinder shall have rod wipers and ice scrapers. The cylinder design shall incorporate lifting lugs.
- (9) A velocity fuse shall be provided on the lower cylinder port to prevent inadvertent gate lowering and loss of hydraulic fluid upon sudden breach of the interconnecting hydraulic lines.
- (10) The hydraulic cylinder shall be provided with all necessary mounting brackets and anchor bolts for installation. The support brackets shall be fabricated from A36 steel with A325 Galvanized Steel anchor bolts provided for mounting cylinder.

#### **D-5.2 Hydraulic tubing**

- (a) Hydraulic tubing from the hydraulic power unit to all cylinders shall be designed and sized by the Supplier. The design shall include the layout of the hydraulic tubing. To provide for the greatest degree of redundancy, separate lines shall be run from the hydraulic power unit to each cylinder so that exposed lines are independent for each cylinder. Flow to and from each cylinder shall not be co-mingled with flow to/from any other cylinder in any field run lines.
- (b) Stainless steel ball valves shall be provided on each hydraulic line where it leaves the hydraulic reservoir, at each cylinder and at any other point where ball valves are required.
- (c) The hydraulic tubing, and related couplings and accessories will be furnished and installed by others.
- (d) Submit specifications for hydraulic tubing, and related couplings and accessories with the design data.
- (e) Provisions shall be made for bleeding air from the system during hydraulic fluid loading and hydraulic fluid changes.

#### **D-5.3 Hydraulic fluid**

- (a) Hydraulic fluid shall be a biodegradable, non-toxic hydraulic fluid with performance characteristics comparable to premium mineral oil based fluids and compatible with seals suitable for use with mineral oil based fluids.
- (b) Submit specifications for the hydraulic fluid based upon characteristics of the system design and components' requirements.
- (c) Submit statement indicating approximate quantity of hydraulic fluid required to flush and fill the hydraulic system during start-up.
- (d) The Supplier shall provide detailed specifications for the required hydraulic fluid, which will be furnished and installed by the City's general contractor installing the gate.

#### **D-5.4 Hydraulic Power Unit.**

- (a) The hydraulic power unit shall be a self-contained, 2000 psi hydraulic system capable of

operating the crest gate and the slide gates under the specified conditions.

- (b) The hydraulic power unit will be located in the gate control house.
- (c) The system shall include a duplex pump system for lead-lag operation with a duplex pump motor arrangement that is capable of raising the crest gate against a 2000 psi cylinder load at the specified rate. without exceeding the rate of any component or operating in or above the service factor of the motors.
- (d) An automatic electric alternator circuit shall be provided to nominally equalize wear and usage of the pumps by alternating the operational sequence of pumps on successive starts, and disable the lead pump and start lag/stand by pump if lead pump has failed to start or is unable to handle the load. The two pumps will not run simultaneously. The following shall be provided in the PLC cabinet for each pump motor: a magnetic type circuit breaker, a magnetic motor starter with 3 coil overload protection and a manual reset button, a unit running light (green), a TEST-OFF-AUTO selector switch for manual or automatic mode control of pump motor operation. Motors shall be totally enclosed fan cooled (TEFC), 1800 rpm, foot mounted with C-face and have a minimum service factor of 1.15. Pumps shall be fixed displacement gear pumps mounted on C-faced adaptors to maintain alignment with the motors.
- (e) Flexible couplings shall be provided between pumps and motors. No downward movement of the crest gate shall occur in the event of power outage except by deliberate use of the manual lowering system which shall be manually implemented by using by-pass needle valves on the hydraulic power unit. The hydraulic power unit shall be designed to operate in a non-heated, weather-tight area. A 500 watt thermostatically controlled immersion heater shall be provided in the oil reservoir. Trouble indicating lights and a general alarm dry contact shall be provided to signal a low oil level, low fluid temperature and pump motor failure.
- (f) The hydraulic power unit shall include fluid reservoir, pressure relief valves, control valves, switches, suction strainers, pressure and return filters, and accumulator to provide a complete and serviceable system.
- (g) An accumulator(s) shall be provided to maintain all gate positions. It shall be sized for a 1-1/2 inch movement of the cylinder pistons. When the system pressure drops to 1500 psi, the pump motor shall start. The pump motor shall stop when the system pressure reaches 2200 psi. The accumulator shall be either bladder or piston type.
- (h) Provisions shall be made for the monitoring of the hydraulic pressure.

**D-6. Shop Assembly.**

- (a) The hydraulic power unit and each cylinder shall be completely shop assembled. All mating parts shall be trial fitted. During shop assembly, the cylinders shall be checked for dimensions, tolerances, accuracy of alignment and squareness, and operational capability in conjunction with the crest gate.
- (b) During assembly and manufacture the City shall be allowed to conduct site visits of the

manufacturing facility and to see the fabrication/manufacture of the control system.

- (c) Before disassembly, each part shall be match-marked and identified in accordance with the erection/installation drawings; such marking shall be done so as to not damage surfaces, and retain its legibility until field erection/installation is complete.
- (d) Make a record of the shop measurements of all critical dimensions which may affect the field erection and alignment, and the operation and maintenance of the crest gate system. This record shall be included as part of the erection/installation procedures manual, and the operations and maintenance manual.

**END OF SECTION D**

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## SECTION E: TESTING AND MISCELLANEOUS REQUIREMENTS

### E-1. Shop Assembly of Crest Gate.

- (a) The crest gate leaf shall be completely trial assembled in the shop. The gate pivot bores shall be sighted to assure correct alignment of the centers. Each hinge bracket shall be assembled to the crest gate leaf at its respective location and the bracket rotated through its full range of operating swing. All mating parts shall be trial fitted. During shop assembly, the crest gate shall be checked for dimensions, tolerances, accuracy of alignment and squareness, and operational capability.
- (b) During manufacture and trial assembly, the City shall be allowed to conduct site visits of the manufacturing facility and to observe the fabrication/manufacture of the crest gate.
- (c) Before disassembly, each part shall be match-marked and identified in accordance with the erection/installation drawings; such marking shall be done so as to not damage surfaces, and retain its legibility until field erection/installation is complete.
- (d) Make a record of the shop measurements of all critical dimensions which may affect the field erection and alignment, and the operation and maintenance of the crest gate system. This record shall be included as part of the erection/installation procedures manual, and the operations and maintenance manual.

### E-2. Shop Testing of Crest Gate.

- (a) Furnish all necessary labor, material, and equipment, including hydraulic oil, pumps, piping, calibrated test instruments to perform the shop testing on the crest gate system and submit reports as required.
- (b) An operational shop test of the crest gate system shall be made in accordance with the Supplier's standard procedures to demonstrate proper functioning of the crest gate system including the functioning and sequencing of all control and alarm devices.

### E-3. Shop Testing of Slide Gates.

The following tests shall be conducted for both slide gates at manufacturers' facility prior to shipment.

- (a) Shop Leakage Test
  - (1) A leakage test by applying unseating pressure shall be conducted at manufacturer's facility. Hydrostatic pressure equal to max seating/unseating application head shall be applied to the gate. A suitable, calibrated gauge shall be used to measure the pressure. The leakage measured shall not exceed 50% of the limit as stated in AWWA C-560.
- (b) Operating Load Test
  - (1) After the first leakage test, the gate shall be fully opened and closed to simulate

normal operation. The piston force required to unseat the gate shall be measured. The load must be no greater than 0.5 times the value used in sizing the hoisting equipment.

- (2) The leakage test shall then be repeated without adjusting wedges. In the interest of reliability, no alternate testing arrangement shall be permitted in place of above.

(c) Structural Integrity Test

- (1) After the leakage tests, a hydrostatic test shall be conducted at the manufacturer's facility. A pressure equal to 1.5 times maximum operating head shall be applied to the gate for 5 minutes. No permanent deformation or damage to the casting shall be observed.

(d) Seat Clearance Check

- (1) With the gate in a closed condition, a 0.004" thick feeler gauge shall not pass through between seat facings.

(e) Additional Shop Testing Requirements:

- (1) The hydraulic cylinders shall be hydrostatically tested in the cylinder manufacturer's shop at a pressure of 150 percent of the hydraulic power unit design pressure.
- (2) Submit shop testing procedures for review and approval.

**E-4. Shop Handling, Shop Storage, and Delivery/Transportation.**

- (a) The crest gate system shall be shipped in sections as shown on the lifting drawings. Items/components shall be handled at the shop during fabrication, during shop storage and during delivery/transportation in accordance with the Supplier's standard procedures and the following.

- (1) Handle to minimize damage to the surfaces.
- (2) Ship on wood dunnage and protected from chain contact and damage during shipping.
- (3) Store on-site on wood dunnage separating steel to steel contact and to keep off the ground.
- (4) Handle items/components with rubber coated chains with uncontaminated stainless steel or non-ferrous hooks, or slings made of synthetic material. Use of beam clamps will not be permitted.

- (b) If winter conditions exist, all items/components shall be protected by tarps or other coverings, to reduce ice build-up.

- (c) Each control system subassembly including, the actuators/pistons/cylinders, hydraulic piping system and control assemblies shall be shipped completely assembled, to the maximum extent practicable.

- (d) Items/components shall be restrained to prevent distortion and/or damage in transit. Protective pads, supports and blocking shall be provided.
- (e) A packing list, listing the contents of each container, shall be placed in a moisture proof envelop and securely fastened to the outside of each container.

**E-5. Start-Up, Field Testing, and Inspection and Report Program.**

- (a) Prepare and submit for review and approval a project specific start-up, field testing, and inspection and report program for the crest gate and slide gates system. The program shall include personnel, instrumentation required, data/readings to be taken, observations to be made, and scope of start-up, field testing, inspections and reports. A cover/title sheet and table of contents shall be provided. Pages shall be numbered. Drawings shall be included where necessary to provide information.
- (b) Field testing shall include "dry" and "wet" operation of the crest gate system.
- (c) The field service engineer(s) shall provide oversight supervision, and shall prepare and submit reports and a daily log(s). See Section A-17.
- (d) Personnel, equipment, materials and instrumentation will be provided by others.
- (e) Report requirements.
- (f) Prepare and complete test reports showing in detail the results of the field tests. The test reports shall include data of test and sign off requirements for each test activity.
- (g) The test reports shall include a detailed tabulation showing values of pressures, flow rates and all adjustments recorded during the final tests for the crest gate system.
- (h) During each test, the following data and observation shall be recorded as a minimum:
  - (1) Control operation.
  - (2) Voltages.
  - (3) Currents.
  - (4) Pressures.
  - (5) Speeds and times.
  - (6) Flow control valve settings.
  - (7) Alignment and operating clearances.
  - (8) Excessive vibration by component.
  - (9) Temperature of motors and hydraulic fluid.
- (i) Pertinent observations regarding such events as unusual sounds, malfunctions or difficulties encountered and adjustments made.
- (j) The reports shall include a signed statement by the field service engineer(s) and the erection/installation contractor's superintendent/foreman indicating that the start-up of the

crest gate system has been inspected, tested, witnessed and fully complies with the requirements.

- (k) Six copies of the reviewed and approved start-up, field testing, and inspection and report program with "fly" sheet shall be printed, bound and delivered.
- (l) The "fly" sheet shall be printed with the phrase APPENDIX B and be placed before the cover/title page of the start-up, field testing, and inspection and report program.
  - (1) Font: Times New Roman, bold and upper case
  - (2) Font Size: 20
  - (3) Locate in the center of the page, 2 inches below the top of the page.
- (m) Copies shall be printed single sided, 3-hole punched and bound by post and screw. Size 8-1/2 x 11 drawings shall be punched and inserted following related text. Size 11 x 17 drawings shall be punched, folded and inserted following related text. Drawings larger than 11 x 17 shall be folded and placed in a punched sleeve and the sleeve(s) inserted at the end of the start-up, field testing, and inspection and report program.

Copies shall be delivered to:

GZA GeoEnvironmental, Inc.  
Attention: Tom Jenkins  
1350 Main Street – Suite 1400  
Springfield, MA 01103

**END OF SECTION E**



## SECTION F: SYSTEM ENSEMBLE

### F-1. Shop Measurement Record.

Make a record of the shop measurements of all critical dimensions which may affect the field erection and alignment, and the operation and maintenance of the crest gate system. The shop measurement record shall be included in the erection/installation procedures manual, and the operations and maintenance manual.

### F-2. Pre-Erection/Installation Meeting.

- (a) The City will schedule and conduct a meeting at the project site to review the approved submittals, including the lifting drawings, erection/installation procedures manual, start-up, field testing, and inspection and report program, and other pertinent matters.
- (b) The Supplier's authorized representative and the field service engineer(s) shall be present at the pre-erection/installation meeting.
- (c) Other individuals will be present at the pre-erection/installation meeting including the erection/installation contractor's superintendent/foreman, and the City's authorized representatives.

### F-3. Erection/Installation Procedures Manual.

- (a) Prepare and submit for review and approval a project specific written, detailed erection/installation procedures manual for the erection/installation of the crest gate system. The erection/installation procedures manual shall include the following:
  - (1) A cover/title sheet and table of contents. Pages shall be numbered. Drawings shall be included where necessary to provide information, and as required by Section F-3.
  - (2) List of delivery crest gate system items/components.
  - (3) Erection/installation drawings showing the sequence of steps necessary for erection/installation including erection/installation of items requiring delivery, precautions to be taken, description of adjustments to be made and tolerances to be maintained.
  - (4) Match markings shall be shown on the erection/installation drawings.
  - (5) Size of power units, installation details, anchorage/bolting details, piping sizes, interconnecting wiring details, hydraulic interconnection diagram, hydraulic tubing layout from the gate control house to the hydraulic cylinders, cleaning, flushing and filling procedure for the hydraulic system and the approximate quantity of hydraulic fluid required to flush and fill the hydraulic system during start-up.
  - (6) An identification drawing(s) showing match-marked components of the crest gate system and their match-markings for identification purposes during

erection/installation. Match-marking used for identification shall be the same as used on the erection/installation drawings.

- (7) A record of shop measurements of critical dimensions which may affect the field erection/installation and alignment, and the operation and maintenance of the crest gate system.
- (8) Methods for maintaining components in correct alignment, detailed piping installation drawings and locations of pipe supports.
- (9) Installation requirements for all anchorage and bolting furnished.

**F-4. Lifting drawings.**

- (a) Instructions and a products/materials list for field cleaning, including removal of match-markings, and performing field passivation work on stainless steel. Include test procedures to be performed at the completion of the field cleaning and passivation work.
- (b) Field cleaning and field passivation work shall not require products/materials that are harmful to the environment and potable water supplies, and non-biodegradable. Application methods and cleaning methods shall not require special procedures including the building of containment enclosures.
- (c) Field service engineer(s) shall provide oversight supervision for the work required by the erection/installation procedures manual. The field service engineer(s) shall prepare and submit reports and a daily log(s). See Section A-17.
- (d) The reports shall include a signed statement by the field service engineer(s) and the erection/installation contractor's superintendent/foreman indicating that the erection/installation of the crest gate system has been inspected, and fully complies with the requirements.
- (e) Six copies of the reviewed and approved erection/installation procedures manual with "fly" sheet shall be printed, bound and delivered.
- (f) The "fly" sheet shall be printed with the phrase APPENDIX A and be placed before the cover/title page of the erection/installation procedures manual.
  - (1) Font: Times New Roman, bold and upper case
  - (2) Font Size: 20
  - (3) Locate in the center of the page, 2 inches below the top of the page.
- (g) Copies shall be printed single sided, 3-hole punched and bound by post and screw. Size 8-1/2 x 11 drawings shall be punched and inserted following related text. Size 11 x 17 drawings shall be punched, folded and inserted following related text. Drawings larger than 11 x 17 shall be folded and placed in a punched sleeve and the sleeve(s) inserted at the end of the erection/installation procedures manual.
- (h) Copies shall be delivered to:

GZA GeoEnvironmental, Inc.  
Attention: Tom Jenkins  
1350 Main Street – Suite 1400  
Springfield, MA 01103

**F-5. Operations and Maintenance Manual.**

- (a) Submit 10 operations and maintenance manuals for the crest gate system. Operations and maintenance manual shall include the following.
  - (1) Functional flow diagrams illustrating component connection with switches, relays, controls and cable designations referenced by number.
  - (2) Nominal control settings illustrated as pictorial representations of the equipment's/system's PLC cabinet.
  - (3) Fabrication details with switches, relays, controls and other devices referenced to the functional flow diagrams.
  - (4) Data describing equipment/system to include the following.
  - (5) Manufacturer's product data/catalog cuts.
  - (6) Manufacturer's operating and maintenance manuals.
  - (7) Manufacturer's servicing information including schematics and support parts list.
  - (8) Specifications for hydraulic tubing, and related couplings and accessories.
  - (9) Specifications for hydraulic fluid.
- (b) Detailed operating and maintenance instructions shall include reduced-size copies of applicable drawings, applicable parts lists, and catalogs covering all equipment furnished and which may be needed or useful in the operation, maintenance, repairs, dismantling or assembling, and for repair and identification of parts for ordering replacements.
- (c) The operating instructions shall include all required liquid levels, flows, and pressure settings and settings of all auxiliary protective devices.
- (d) All catalog pages shall be marked to show the model number selected for each item of equipment.
- (e) The salient features of the equipment supplied shall be clearly stated and the operation of the control system fully explained.
- (f) A troubleshooting chart, maintenance timetable, lubrication diagrams, lubrication list, and disassembly, reassembly and adjustment procedures shall also be provided.
- (g) A record of shop measurements of critical dimensions which may affect the field erection/installation and alignment, and the operation and maintenance of the crest gate system.
- (h) Lifting drawings.

- (i) Information on the control system.
- (j) Shop test reports, and field test reports.
- (k) Additional Operations and Maintenance Manual Requirements
  - (1) Bind operations and maintenance manuals in 3-ring loose leaf binders.
  - (2) Include a title sheet showing the City's name, project name, project address, City's Contract document number, and the Supplier's name, address, telephone number, contract number, and date.
  - (3) Include a table of contents, and labeled tabbed dividers separating each subject.

**F-6. Instructions, Materials and Training for City Personnel.**

- (a) Upon completion of the work and at a time designated by the City, furnish the services of competent instructor(s) for the crest gate system. As a minimum, the instructor(s) shall give full instructions to City personnel in the adjustment, operation, and maintenance, including pertinent safety requirements of the crest gate system.
- (b) Instructional materials including training materials and instruction books shall be provided for the crest gate system.
- (c) Teaching outlines based on the instructional materials shall be provided.
- (d) The location(s) and the room(s) for the instruction and training period will be provided by the City.
- (e) The City anticipates a maximum of 10 people attending the instruction and training period.
- (f) The instructor(s) shall be regularly employed or authorized by the Supplier.
- (g) The period of instruction and training shall be two 8-hour working days.
- (h) A portion of the instruction and training period shall be for hands-on experience by the City's personnel.
- (i) The entire instruction and training period, including the portion of the instruction and training period allowed for hands-on experience, shall be audio/video taped.
- (j) Submit the audio/video tape(s) of the instruction and training period, and copies of the reviewed and approved instructional materials and teaching outline to the City.
- (k) Include in the Contract price the cost of the services of the instructor(s) and the audio/video taping. Expenses including meals, lodging and round trip transportation to the training location(s) will be considered incidental and will not be reimbursed, but shall be included in the Contract price.

**F-7. Special Tools and Devices.**

- (a) Furnish to the City one (1) set of all non-standard mechanic special wrenches, tools,

fixtures, and handling devices for assembly and disassembly of the crest gate system. Wrenches shall be case-hardened steel forgings with bright finished heads.

- (b) All eyebolts, hooks, and rods necessary for handling equipment that are not permanently fastened to the items shall be furnished with each tool set.
- (c) Each set of tools, eyebolts, hooks, and rods shall be mounted in a metal tool box with a hinged cover.
- (d) The metal tool box cover shall be permanently labeled with the following in 3/4 inch high letters:

SPECIAL TOOLS AND DEVICES  
WATERSHOPS POND DAM CREST GATE SYSTEM  
PROPERTY OF CITY OF SPRINGFIELD

- (e) Additional Items.
  - (1) Furnish the following additional items.
  - (2) Lubricants as needed for the start-up and operation of the crest gate system.
  - (3) Spare Parts.
  - (4) Furnish the following spare parts to the City:
    - a. 10 fuses of each type.
    - b. 10 indicating lamps.
    - c. 1 control relay of each type.
    - d. 2 sets of filters of each type.
    - e. 1 pressure gage of each type.
    - f. 2 control valves with solenoids of each type.
    - g. 4 sets of hydraulic cylinder seals, wear rings, and scrapers

**END OF SECTION F**

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**APPENDIX 1.**

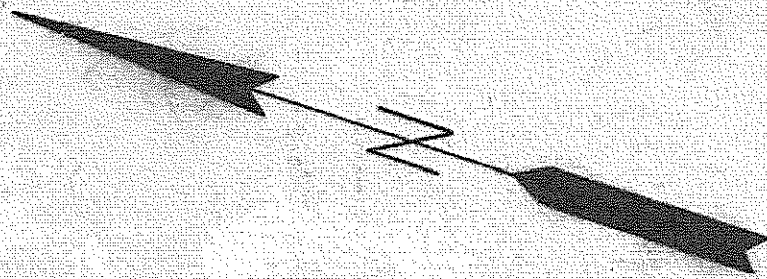
June 1956 – January 1958: Record Drawings, Contract No. DA-19-016-ENG-4654; by the U.S. Army Corps of Engineers.

Dwg 17-13-01	Site Plan & Index
Dwg 17-13-02	Plan Elevation & Details
Dwg 17-13-03	Sections
Dwg 17-13-04	Control House Plans and Details

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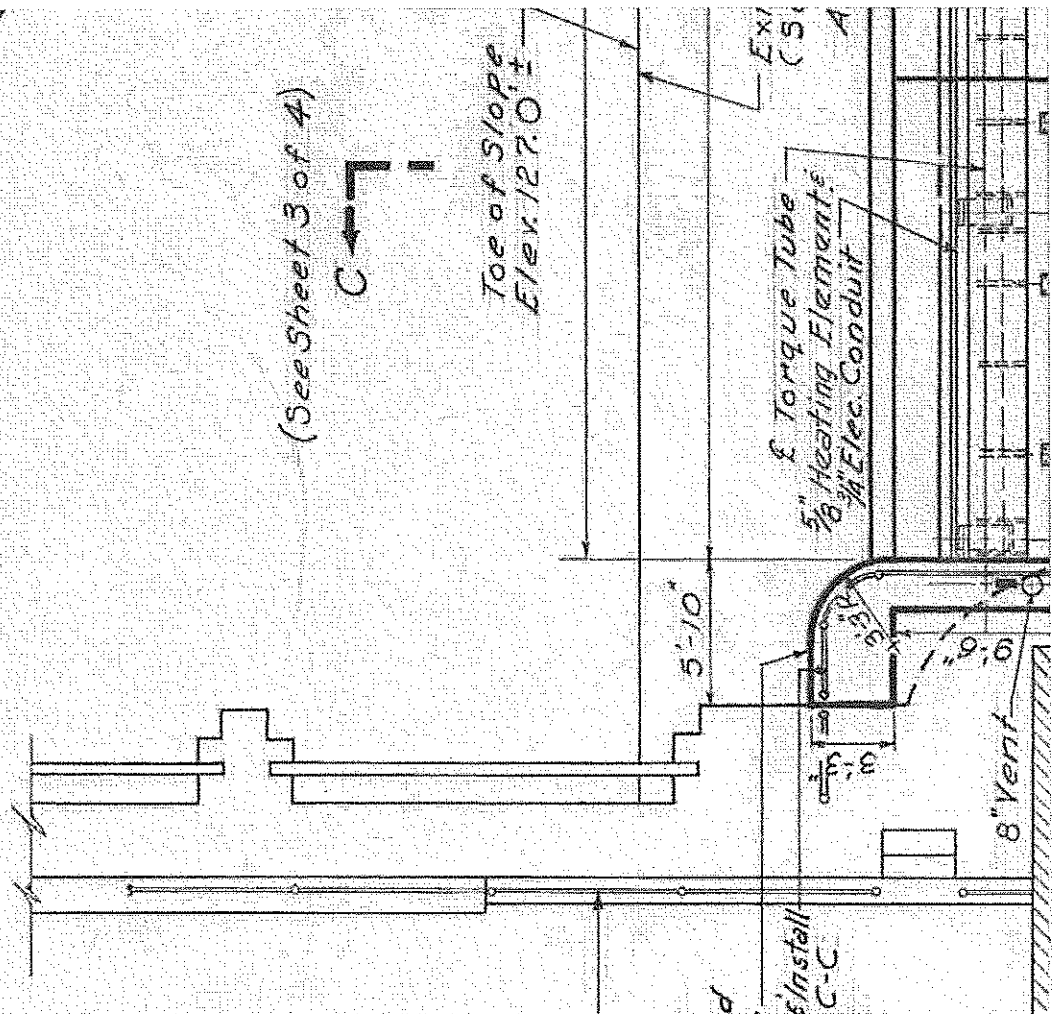
CORPS OF ENGINEERS



tail  
race

E

CORPS OF ENGINEERS



(See Sheet 3 of 4)

C ←

Toe of Slope  
Elev. 127.0 ±

Existing Pipe Rail

Concrete Support  
For Non-Driven End  
of Armature Plate  
Remove Exist. Rail & Install  
New Rail See Sect. C-C  
Sh. 3 of 4

5" Heating Element  
3/4" Elec. Conduit

8" Vent

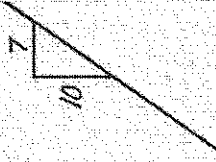
9'-6"

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(5)

A

CORPS OF ENGINEERS

P.T. 144.54'

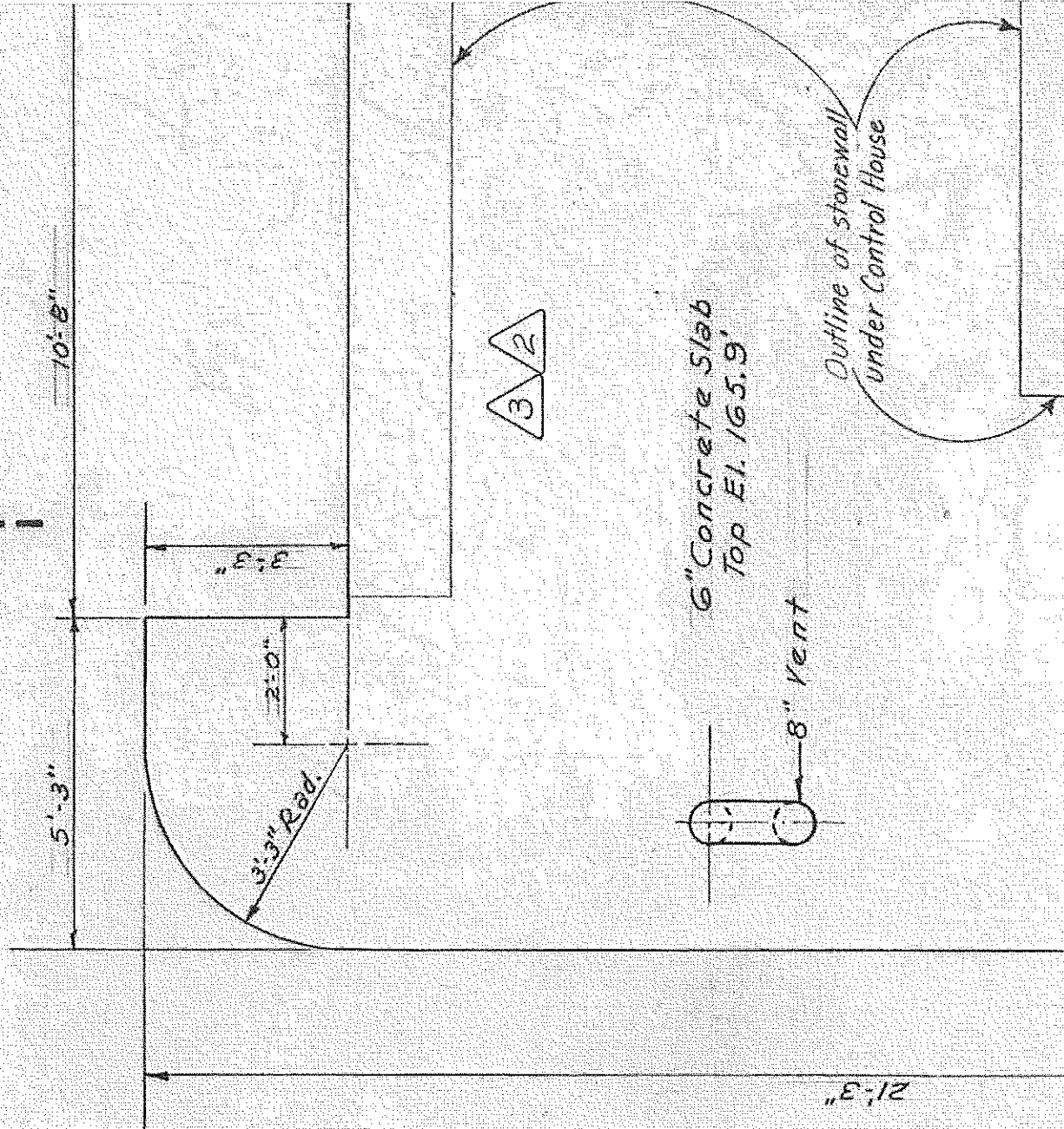


Former Cap and First  
Two Downstream  
Courses of Face Stone

Former Dam



CORPS OF ENGINEERS



## APPENDIX 2.

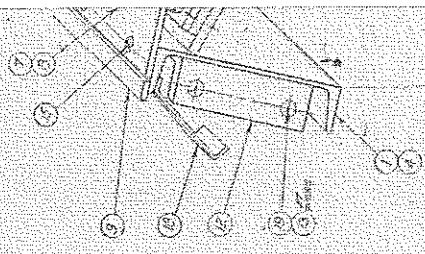
1956 "Corps-Approved" Shop Drawings by S. Morgan Smith Co.

Dwg 5281-HP-1	2'-6" x 105'-2-3/8" Bascule Gate
Dwg 5281-HV-1	Sill Beam & Seal
Dwg 5281-IA-1	Drive End Gate Section
Dwg 5281-IB-1	Intermediate and Non-Drive End Gate Section
Dwg 5281-IC-1	Armature Plate Drive End
Dwg 5281-ID-1	Armature Plate Non-Drive End
Dwg 4840-FB-1	Bascule Gate Piping Arrangement

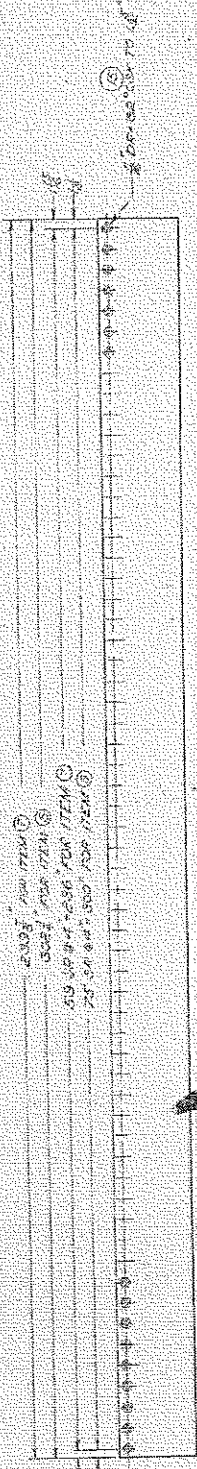
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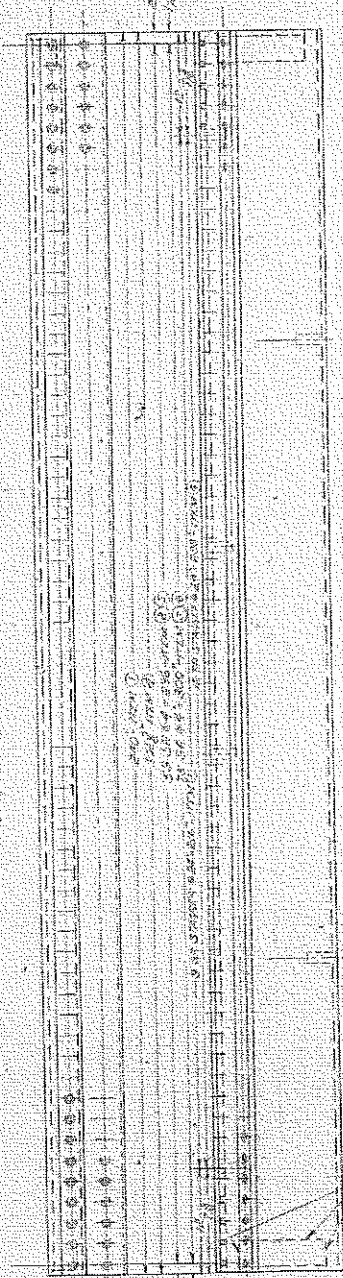
5284W-1



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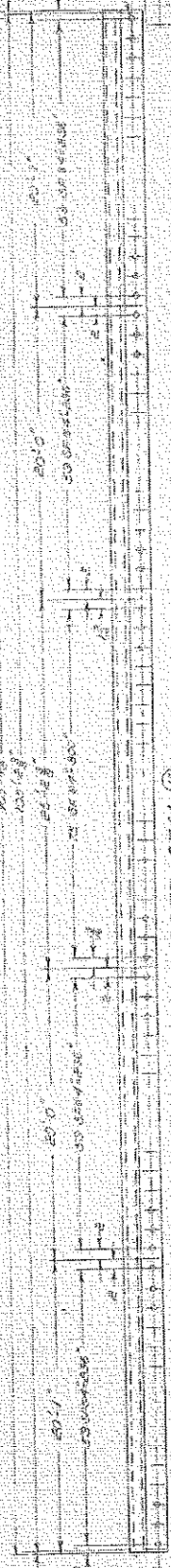
COVER PLATES (2)



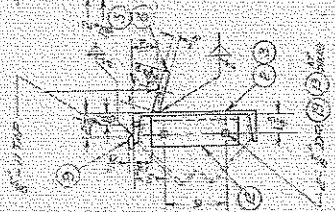
RILL EXAMS (7)



CLAMP BARS (17)



RUBBER SEAL (1)

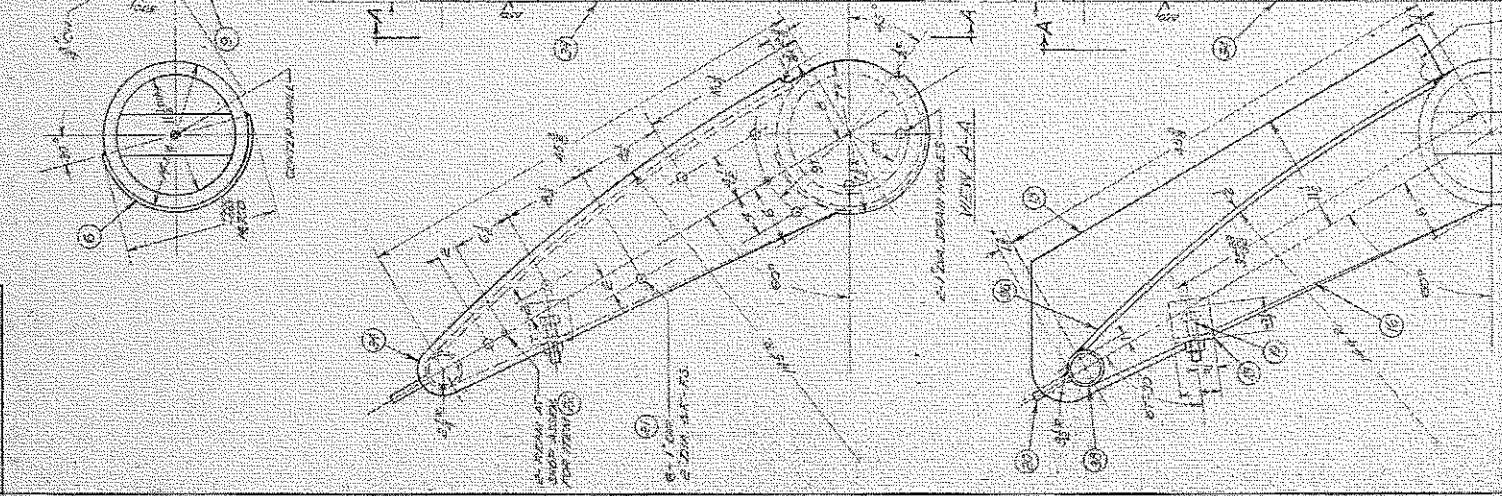
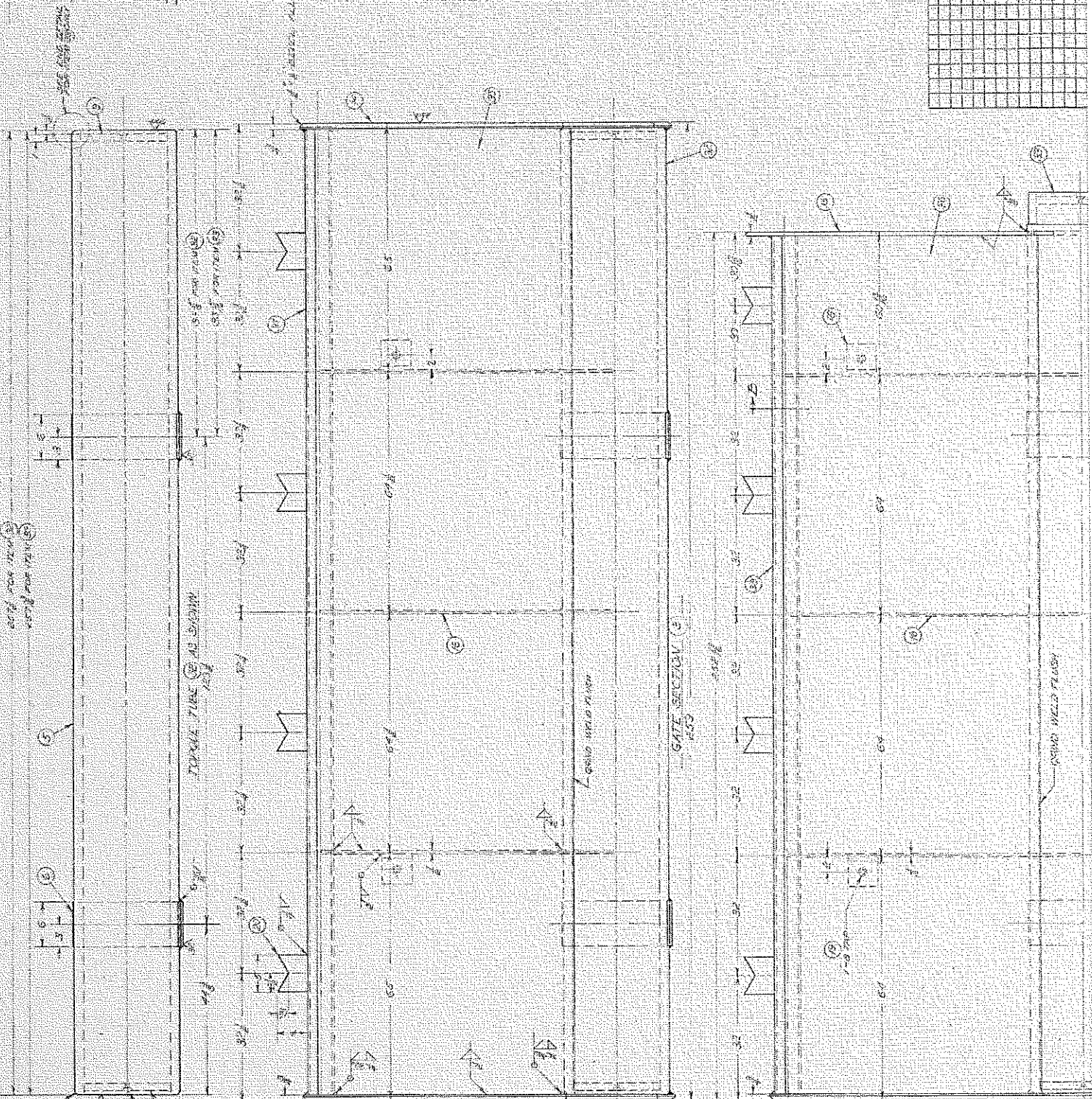
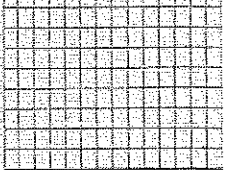


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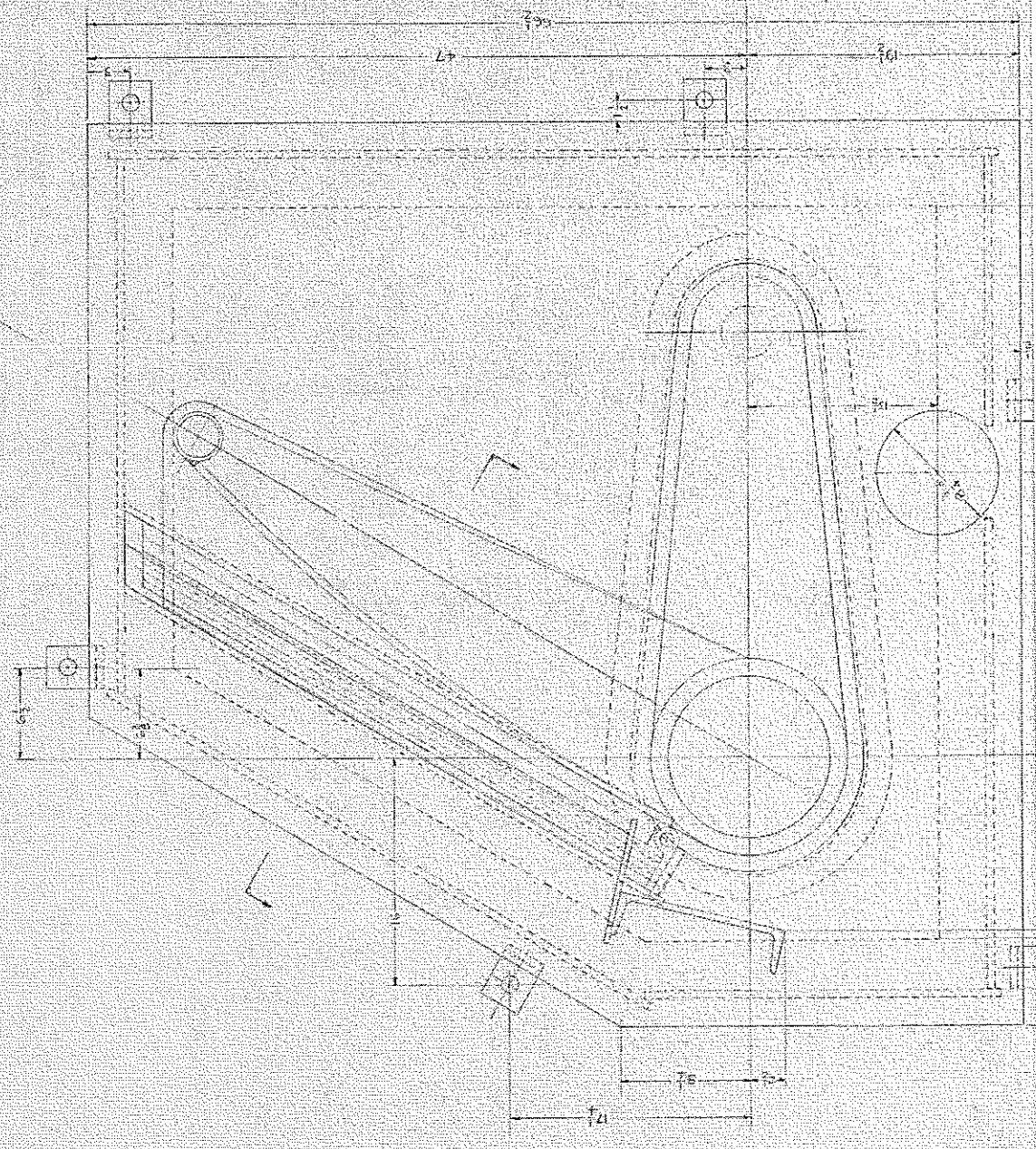
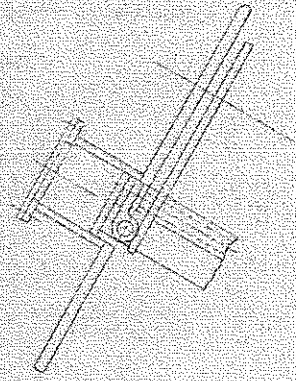
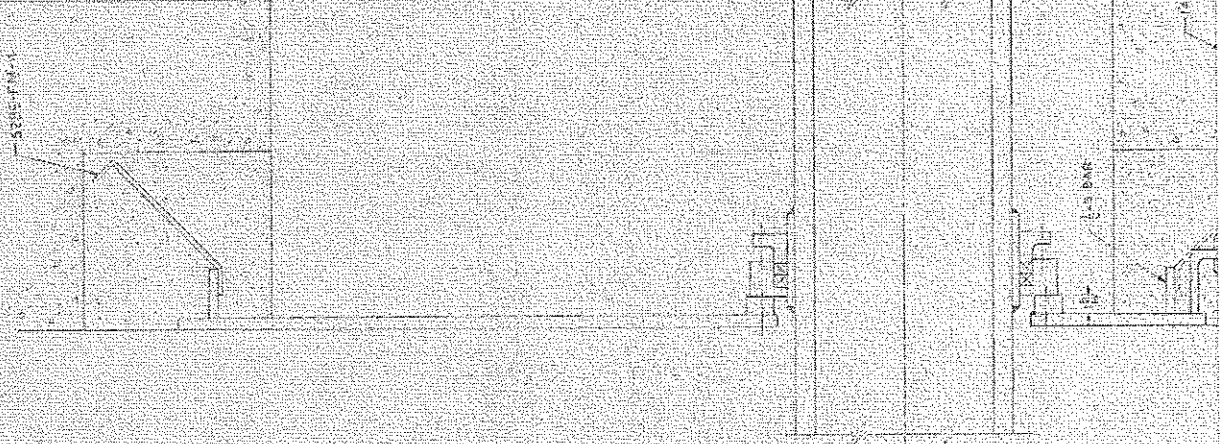
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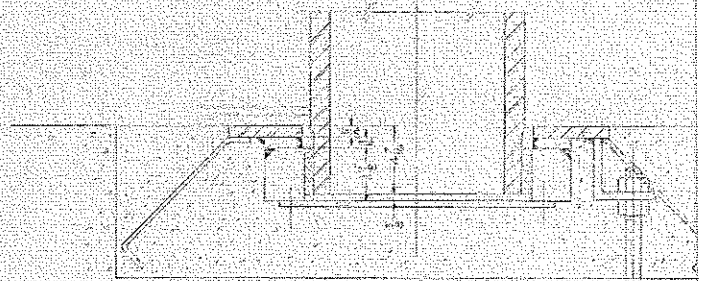
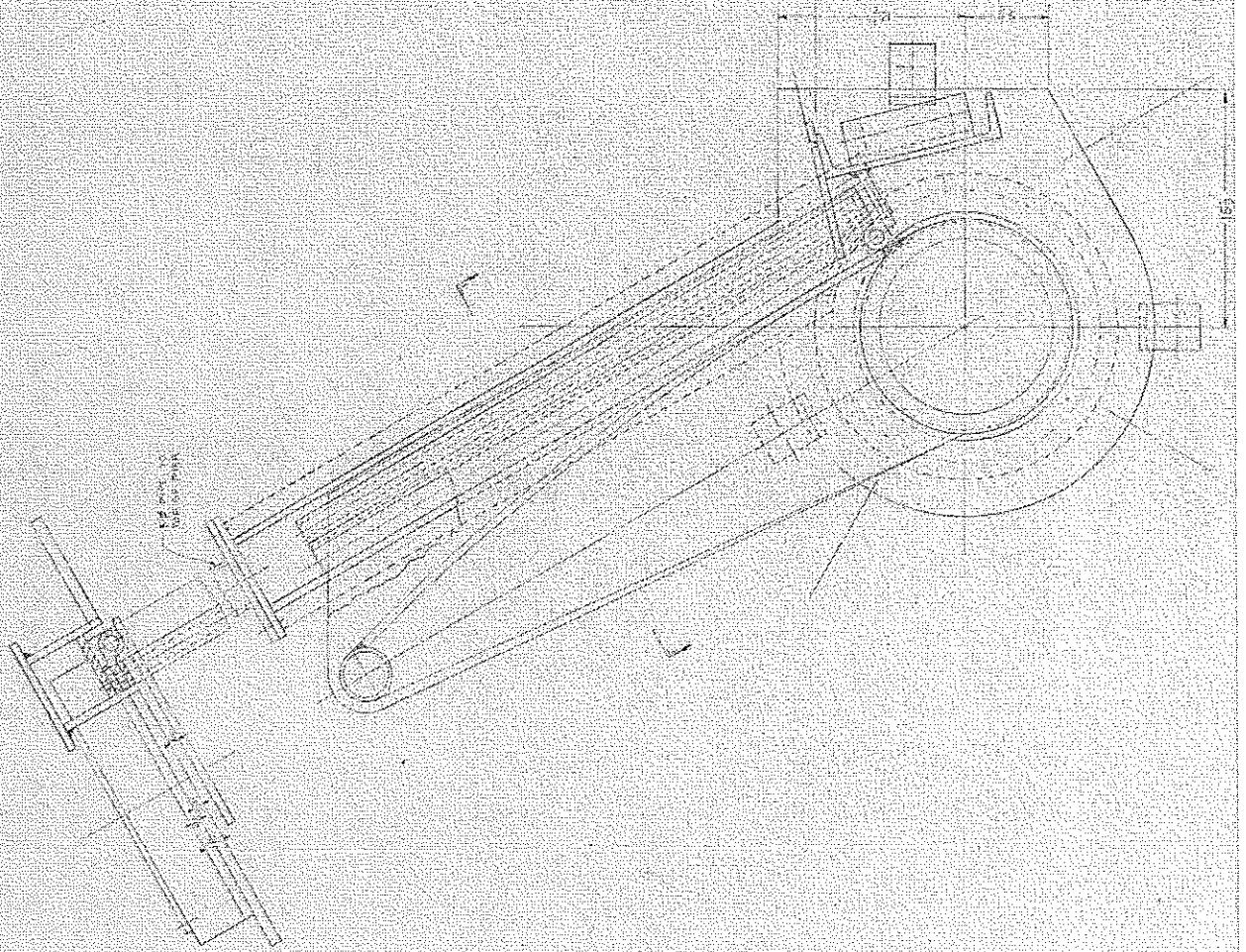




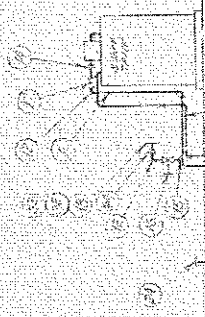
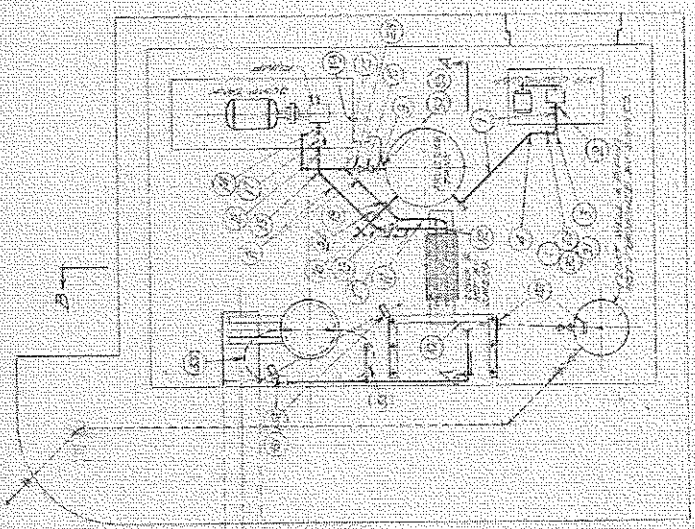
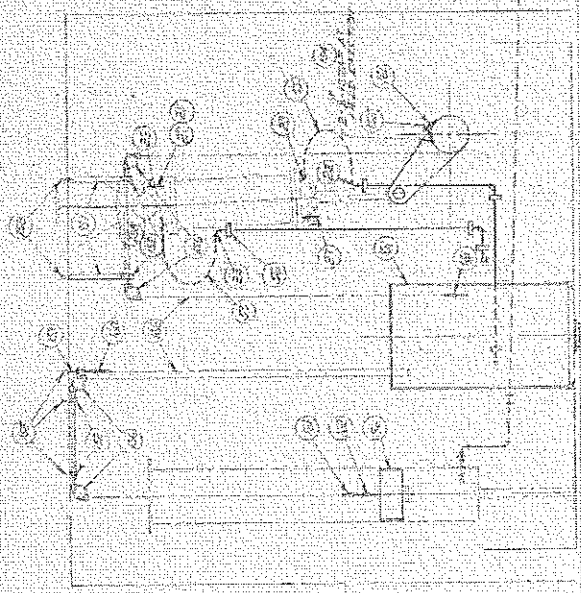
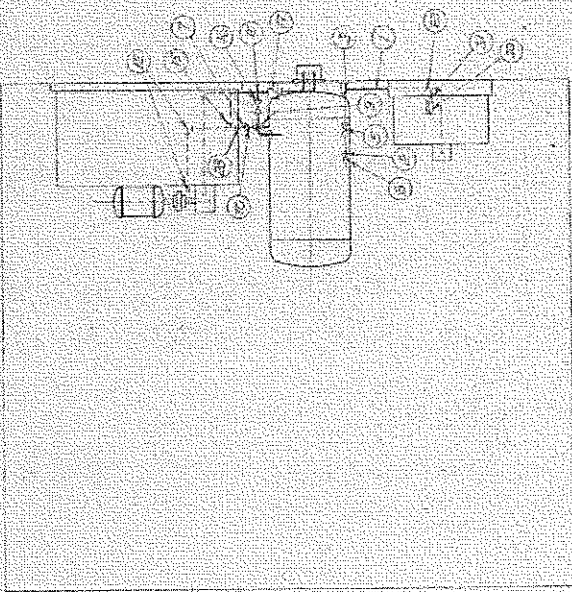
2489-1B-1



5281-IC-1



- (1) 1/2" DIA. STAINLESS STEEL
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- (4) 1/16" DIA. STAINLESS STEEL
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- (85) 1/16" DIA. STAINLESS STEEL
- (86) 1/4" DIA. STAINLESS STEEL
- (87) 1/8" DIA. STAINLESS STEEL
- (88) 1/16" DIA. STAINLESS STEEL
- (89) 1/4" DIA. STAINLESS STEEL
- (90) 1/8" DIA. STAINLESS STEEL
- (91) 1/16" DIA. STAINLESS STEEL
- (92) 1/4" DIA. STAINLESS STEEL
- (93) 1/8" DIA. STAINLESS STEEL
- (94) 1/16" DIA. STAINLESS STEEL
- (95) 1/4" DIA. STAINLESS STEEL
- (96) 1/8" DIA. STAINLESS STEEL
- (97) 1/16" DIA. STAINLESS STEEL
- (98) 1/4" DIA. STAINLESS STEEL
- (99) 1/8" DIA. STAINLESS STEEL
- (100) 1/16" DIA. STAINLESS STEEL



484017/1

### APPENDIX 3.

#### Photographs and Miscellaneous Information.

Photographs from the January 27, 2016, Phase I Dam Safety Inspection; GZA

Photograph Location Plan

Photos 1 – 24 (12 pages)

#### Miscellaneous Information

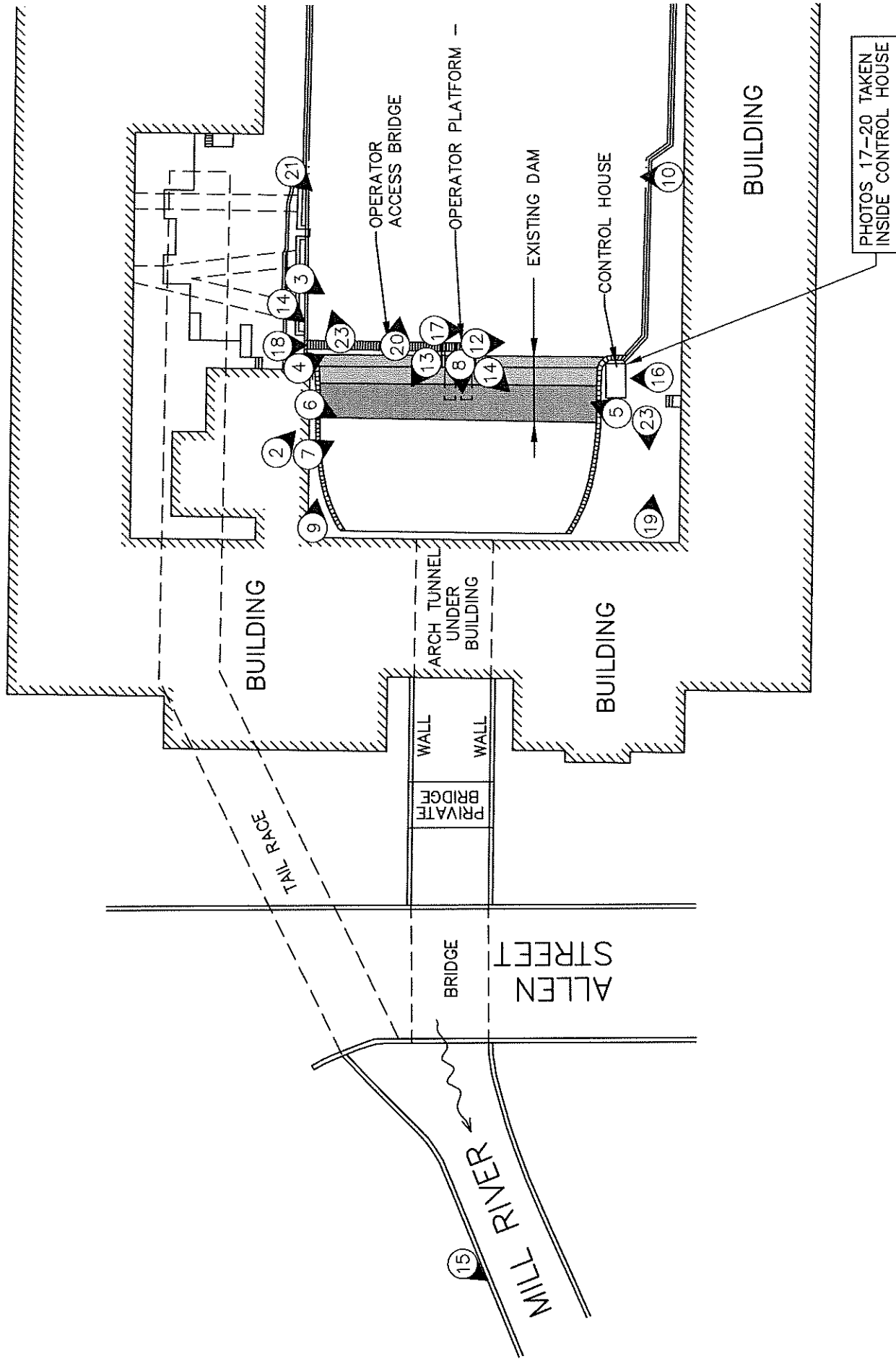
“Resiliency Improvements at Watershops Pond Dam,” GZA

Project Location Plan

Aerial Photograph, November 2017

Miscellaneous Photos (8 pages)

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PHOTOS 17-20 TAKEN INSIDE CONTROL HOUSE





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No. 1 Date: 01/27/2016

Direction Photo Taken:  
From private bridge upstream, looking downstream (west) across the approach channel.

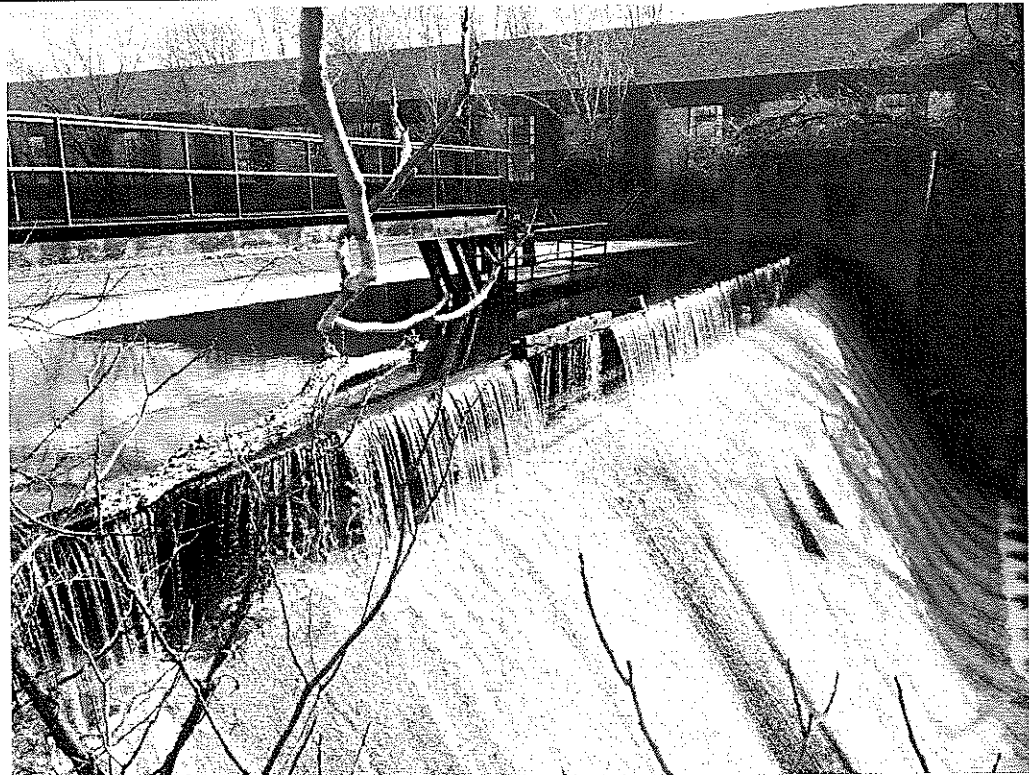
Description:  
Overview of dam from upstream.



Photo No. 2 Date: 01/27/2016

Direction Photo Taken:  
From downstream near right abutment, looking left (southeast).

Description:  
Overview of dam from right downstream training wall, showing downstream face and primary spillway with Bascule gate in normal, partially-raised position. Branches from vegetation at training wall are partially obscuring the view.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No. 3 Date: 01/27/2016

Direction Photo Taken:  
From upstream along right training wall at right abutment, looking left (southwest).

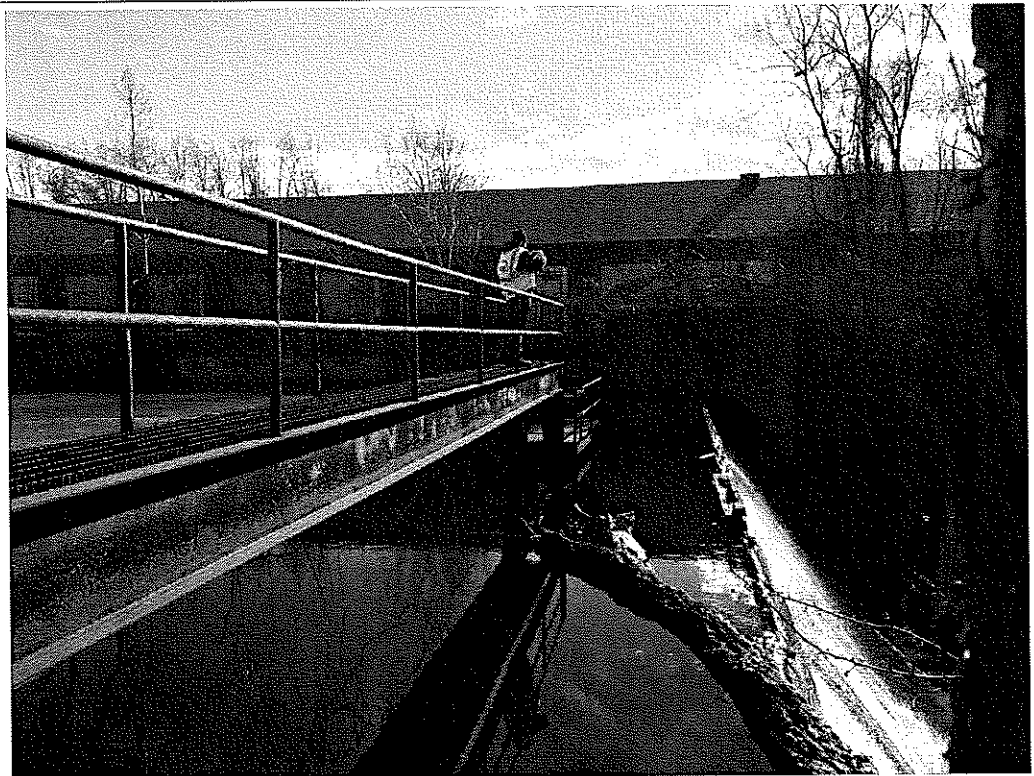
Description:  
Overview of upstream face of dam from near right abutment. Note approximately 1.5" depth of flow was passing over the spillway crest gate at the time of inspection.



Photo No. 4 Date: 01/27/2016

Direction Photo Taken:  
From right abutment at dam crest, looking left.

Description:  
Overview of dam crest and Bascule gate from right abutment.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No. 5 Date: 01/27/2016

Direction Photo Taken:  
From left abutment downstream of dam, looking right and upstream.

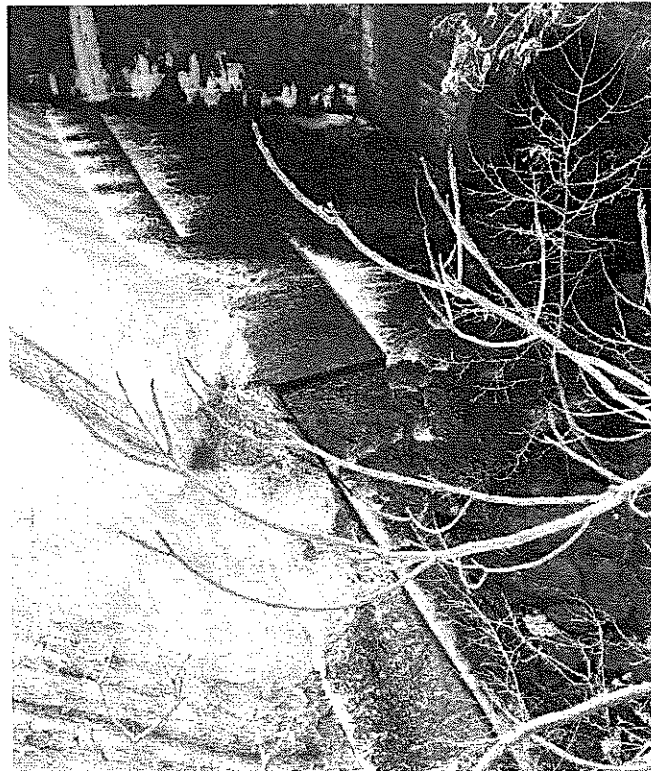
Description:  
Overview of dam crest, spillway, Bascule gate in normal, partially-raised position, and downstream face.



Photo No. 6 Date: 01/27/2016

Direction Photo Taken:  
From right abutment downstream of dam, looking right.

Description:  
Overview of Ogee spillway, concrete splashpad, and downstream area prior to culvert under industrial building. Note that the floor of this area is composed of bedrock (arkose sandstone).





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
7      Date:  
01/27/2016

**Direction Photo Taken:**  
From right abutment downstream of dam, looking upstream and left.

**Description:**  
Downstream face of dam below crest gate. The two 4-ft square sluiceways are slightly visible on the downstream face of the spillway. Note wooden debris on crest of spillway.

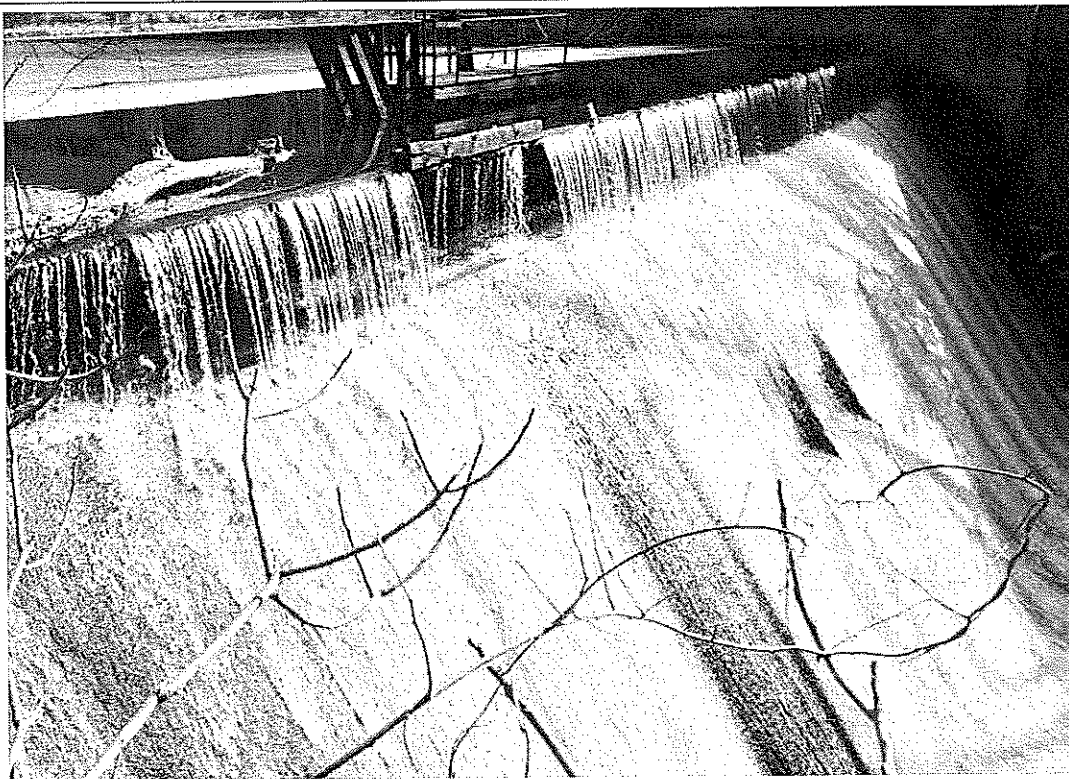
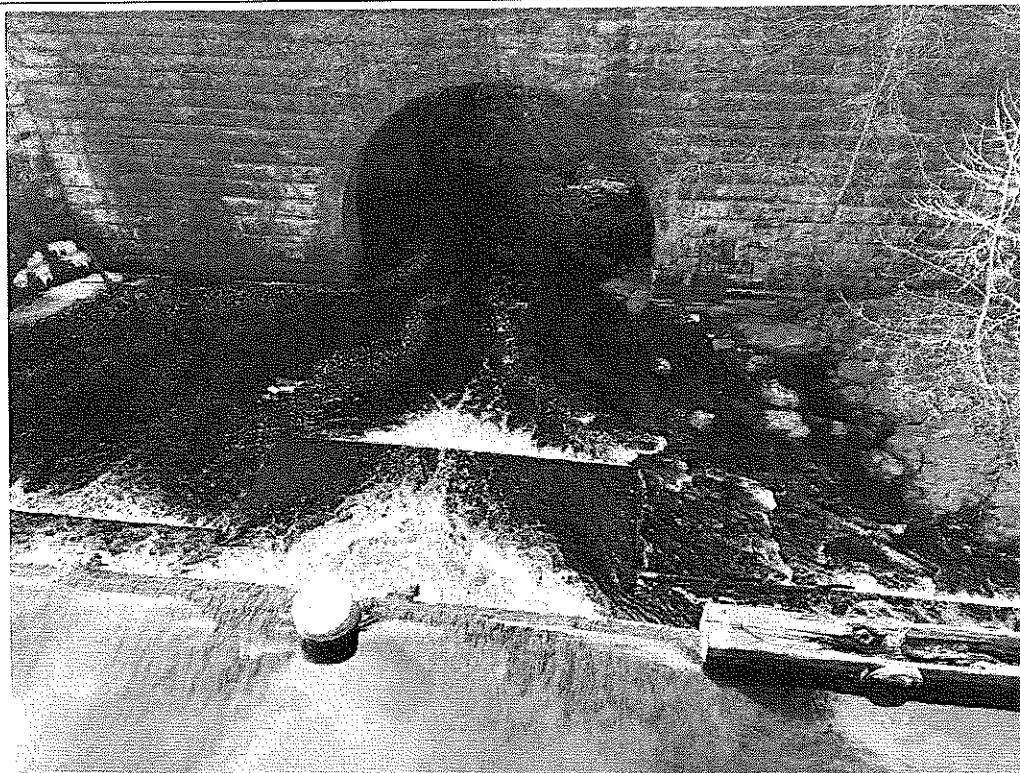


Photo No.  
8      Date:  
01/27/2016

**Direction Photo Taken:**  
From catwalk near center of spillway, looking downstream.

**Description:**  
View of culvert under industrial building downstream of spillway and the area of exposed bedrock immediately downstream of the dam.



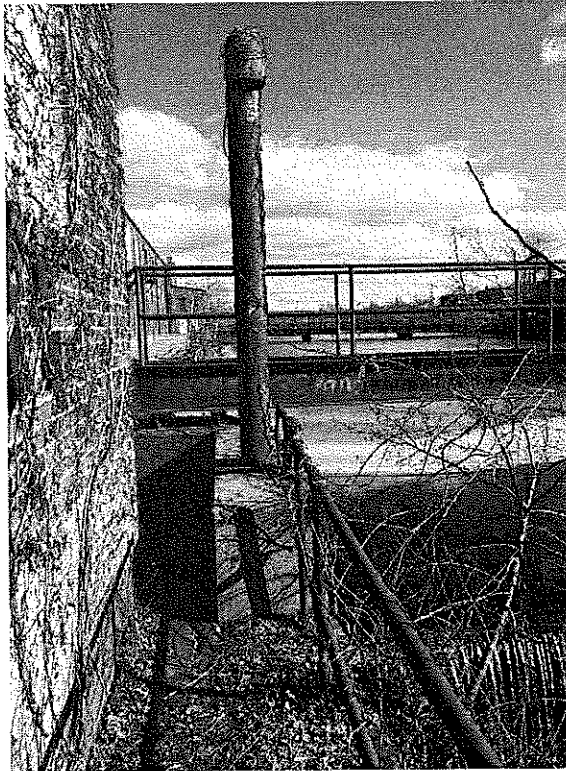


<b>Dam Owner:</b> CITY OF SPRINGFIELD	<b>Site Location:</b> WATERSHOPS POND DAM; SPRINGFIELD, MA NID# MA00569	<b>Project No.</b> 15.0166405.11
--	---	-------------------------------------

<b>Photo No.</b> 9	<b>Date:</b> 01/27/2016
-----------------------	----------------------------

**Direction Photo Taken:**  
From right abutment / downstream training wall, looking upstream.

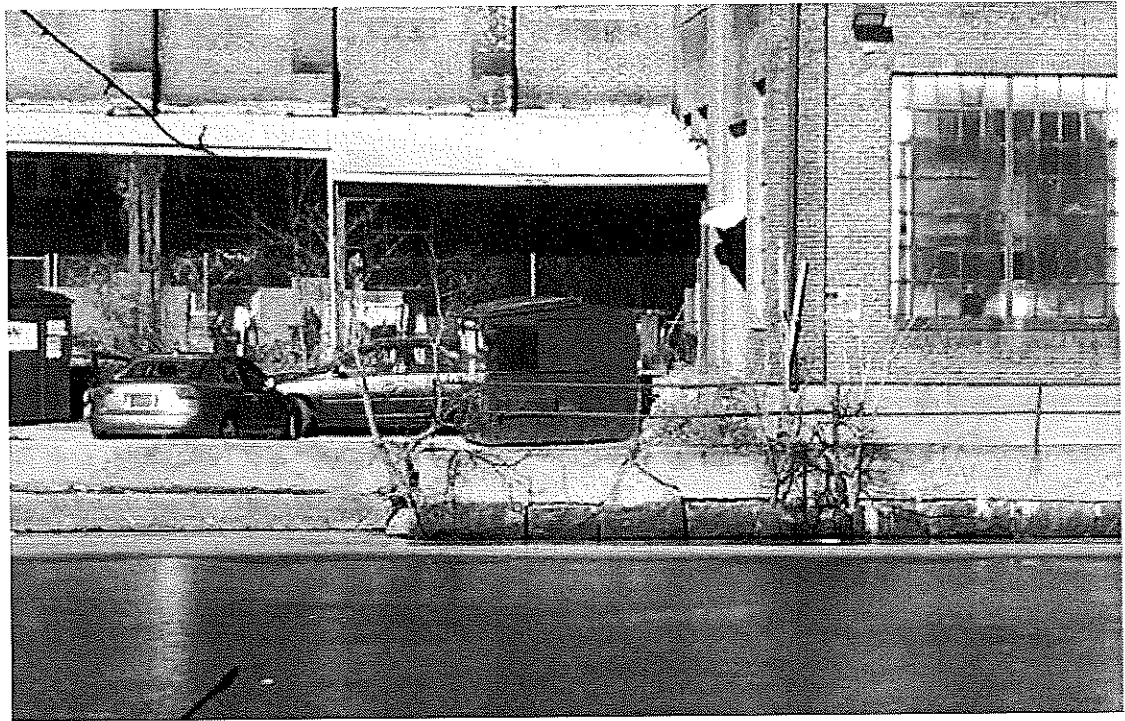
**Description:**  
View of right abutment, showing adjacent industrial building, nappe vent for crest gate, railings, catwalk to sluiceway operators, and undesirable vegetation. Private bridge can be seen in the background.



<b>Photo No.</b> 10	<b>Date:</b> 01/27/2016
------------------------	----------------------------

**Direction Photo Taken:**  
From left upstream training wall, looking right.

**Description:**  
Detail view of crack in concrete on right upstream masonry wall. Note vegetation growing along wall.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
11      Date:  
01/27/2016

**Direction Photo Taken:**  
From right upstream training wall, looking left and downstream.

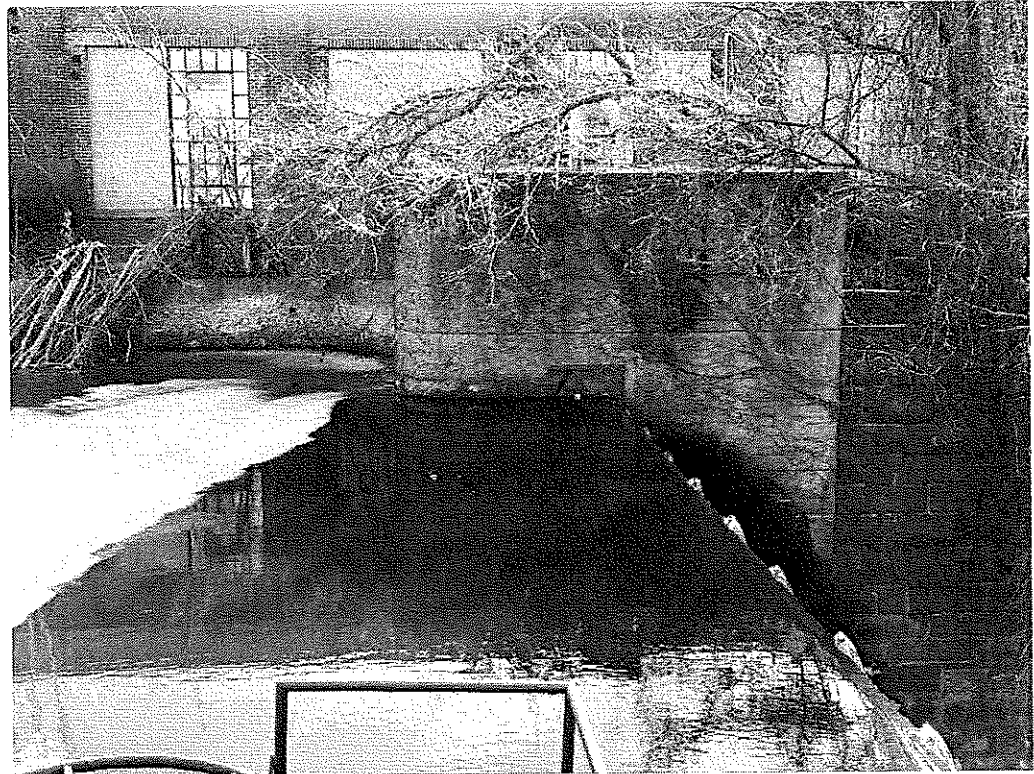
**Description:**  
View of left upstream training wall. Note spalling and deterioration of concrete on face of wall, undermining of walkway on top of wall, and growth of woody vegetation. Note downed vegetation on top of the gate control house at the left abutment.



Photo No.  
12      Date:  
01/27/2016

**Direction Photo Taken:**  
From catwalk near center of spillway, looking left.

**Description:**  
Detail of left abutment and left upstream training wall. Note spalling of concrete in training wall.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
13      Date:  
01/27/2016

**Direction Photo Taken:**  
From catwalk near center of spillway, looking downstream and right.

**Description:**  
View of right downstream stone masonry wall. Note growth of vegetation draping wall surface.

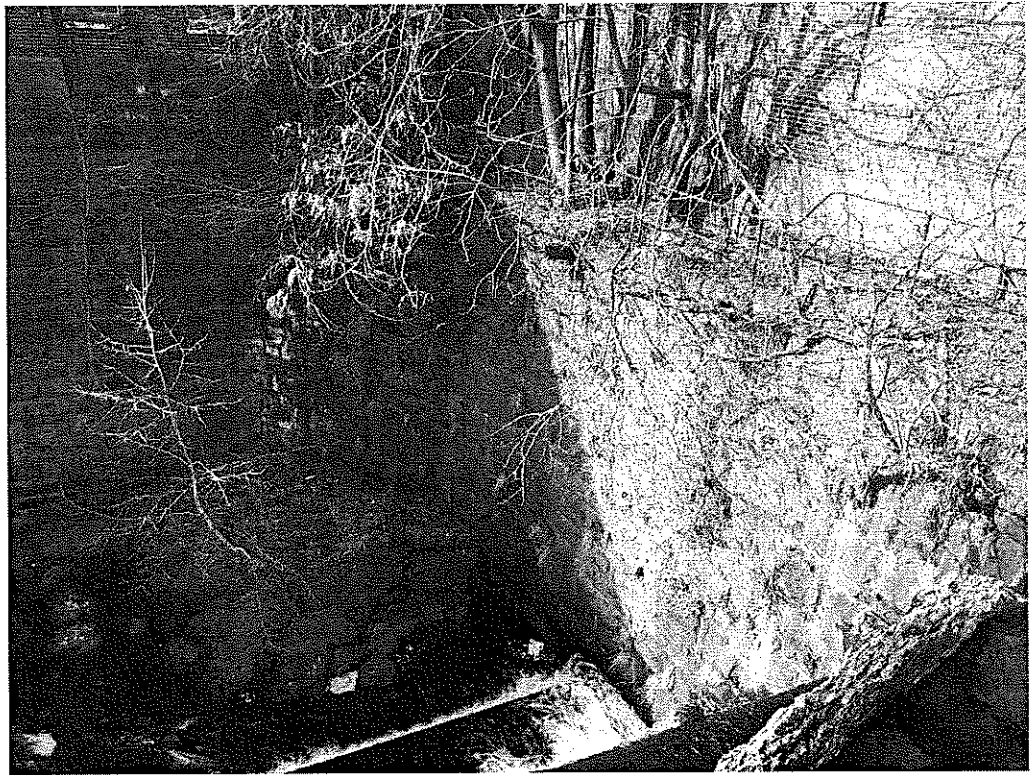
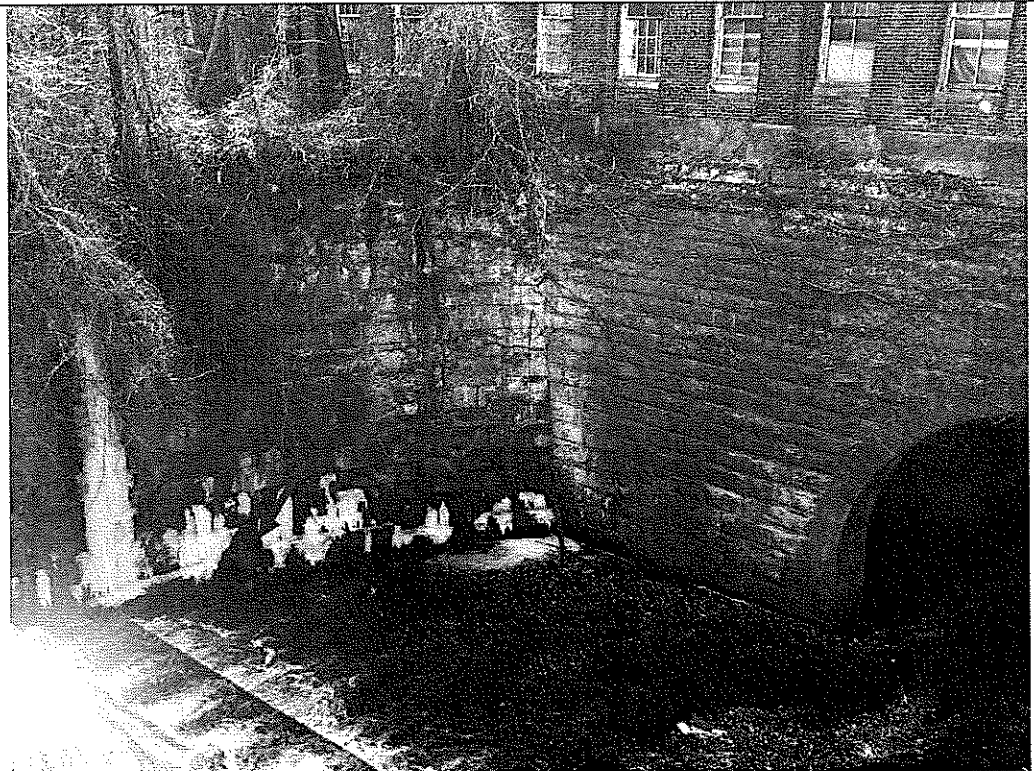


Photo No.  
14      Date:  
01/27/2016

**Direction Photo Taken:**  
From catwalk near center of spillway, looking downstream and left.

**Description:**  
View of left downstream stone masonry training wall. Note growth of vegetation and uneven stones with wetness / seepage at base of wall as evidenced by ice formation. Large ice is from a small drain pipe emanating from the wall about 2/3 up from the base. Note heavy vegetation behind and atop wall. Also note seepage near base of masonry and associated iron-oxide staining (indicated by red arrow).





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
15      Date:  
01/27/2016

**Direction Photo Taken:**  
From right bank of Mill River, downstream of Allen Street, looking downstream.

**Description:**  
View of the Mill River channel downstream of Allen Street.



Photo No.  
16      Date:  
01/27/2016

**Direction Photo Taken:**  
From near left abutment dam, looking right.

**Description:**  
Overview of gate control house exterior. Note that tree has fallen onto gate control house.







Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
17      Date:  
01/27/2016

Direction Photo Taken:  
From catwalk near center of spillway, looking left.

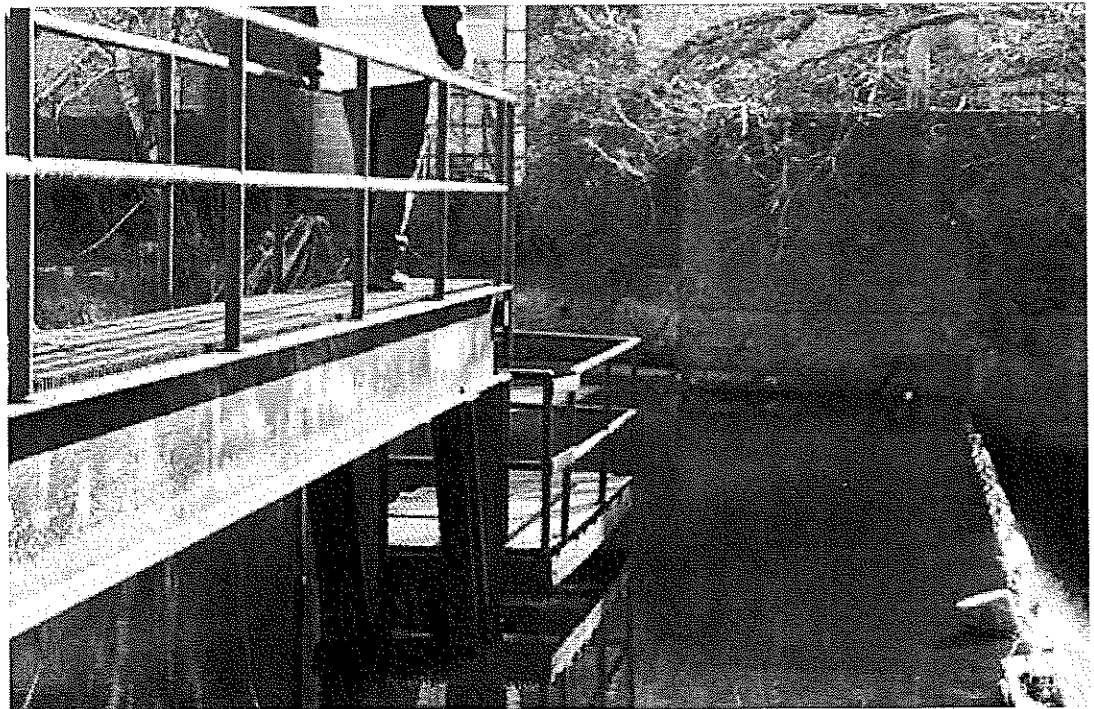
Description:  
View of sluice gate operators and operator platform with deterioration.



Photo No.  
18      Date:  
01/27/2016

Direction Photo Taken:  
From right abutment near dam crest, looking left.

Description:  
View of catwalk/platform. Note deterioration on metal supports and decking.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
19      Date:  
01/27/2016

**Direction Photo Taken:**  
From downstream terminus of left downstream training wall, looking upstream.

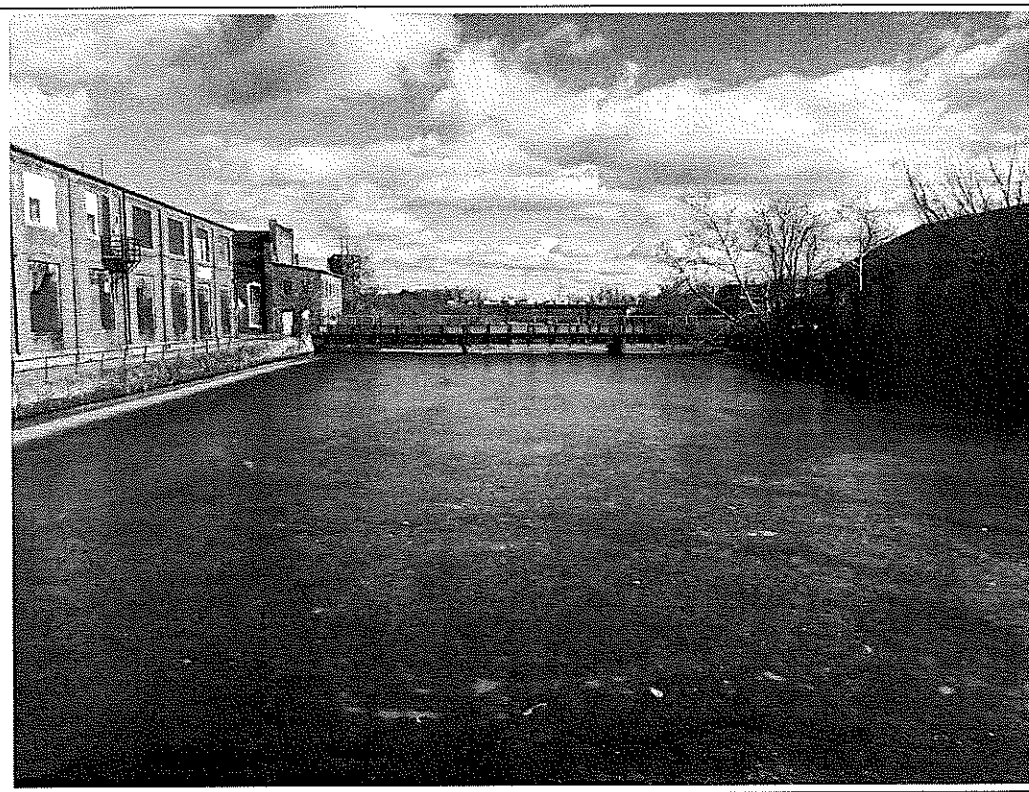
**Description:**  
Vegetation growth behind training wall and along left abutment.



Photo No.  
20      Date:  
01/27/2016

**Direction Photo Taken:**  
From catwalk near center of spillway, looking upstream.

**Description:**  
View of upstream reservoir, showing private vehicular bridge across the approach channel to the dam.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.  
21      Date:  
01/27/2016

**Direction Photo Taken:**  
Looking downstream, from left upstream training wall.

**Description:**  
View of left upstream training wall, showing typical deteriorated concrete cap atop the vertical wall, and undesirable vegetative growth between wall and water's edge. See also Photo 22.



Photo No.  
22      Date:  
01/27/2016

**Direction Photo Taken:**  
Looking downstream and slightly left.

**Description:**  
View of left upstream training wall, showing typical deterioration of concrete wall, concrete cap atop wall, and undesirable vegetative growth between wall and water's edge. Watershops Pond can be seen at the right edge of the photo.





Dam Owner:  
CITY OF SPRINGFIELD

Site Location:  
WATERSHOPS POND DAM; SPRINGFIELD, MA  
NID# MA00569

Project No.  
15.0166405.11

Photo No.      Date:  
23              01/27/2016

**Direction Photo Taken:**  
Facing upstream and to the right, from the catwalk off the right abutment.

**Description:**  
View of the three prior penstock openings on the right upstream training wall. The upstream-most opening was used for waterwheel power, and the two downstream openings (with gate hoisting mechanisms and remnants of screens) were used to power the hydroelectric turbine. All three openings are non-operational. Exact means of closing the openings off are unknown.

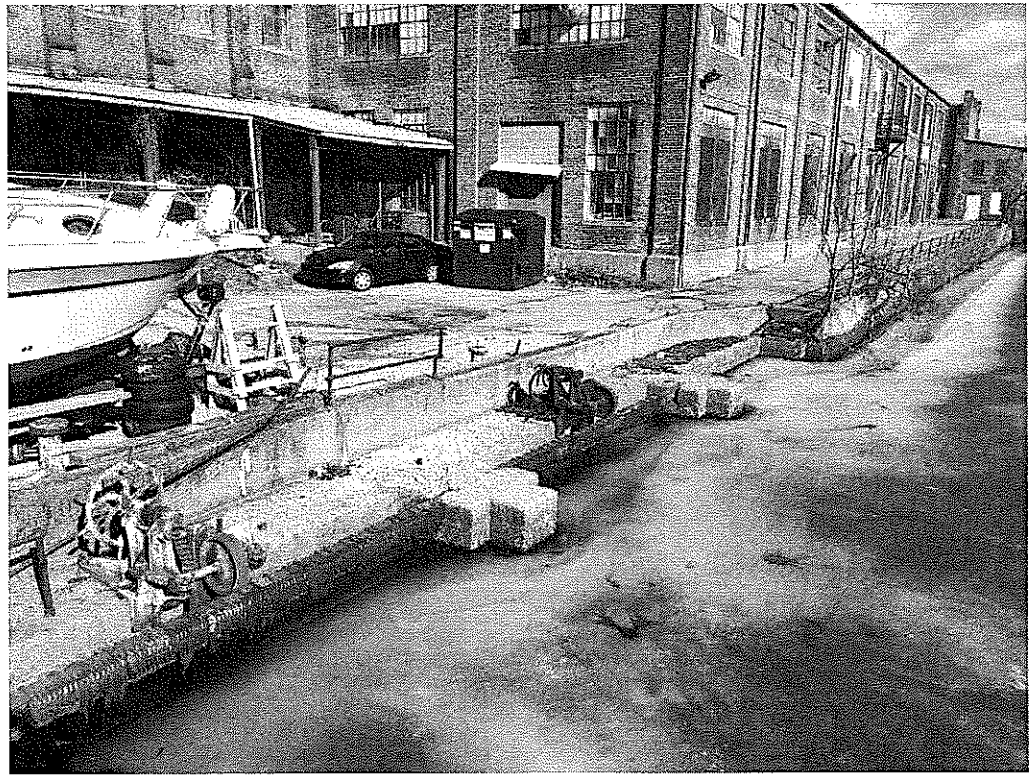


Photo No.      Date:  
24              01/27/2016

**Direction Photo Taken:**  
From private bridge at upstream end of approach channel, looking downstream and to the right.

**Description:**  
View of right upstream training wall, showing stone masonry lower portions, cement concrete upper portions with spalls and deterioration, railings, undesirable vegetation growth, and vehicular drive between wall and adjacent building.





Known for excellence. Built on trust.

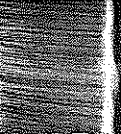
GEOTECHNICAL ENVIRONMENTAL



ECOLOGICAL



WATER



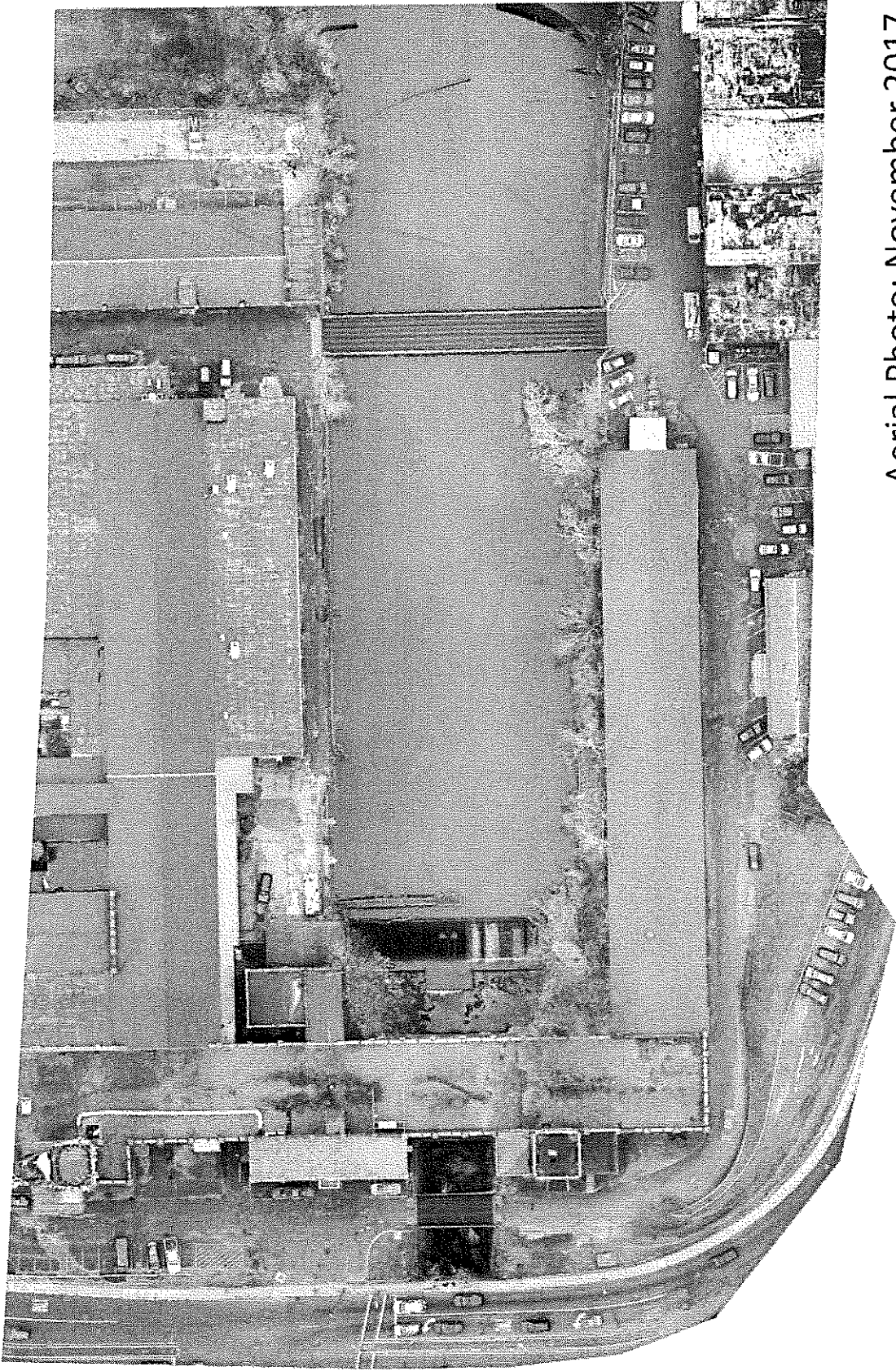
CONSTRUCTION MANAGEMENT



## RESILIENCY IMPROVEMENTS AT WATERSHOPS POND DAM





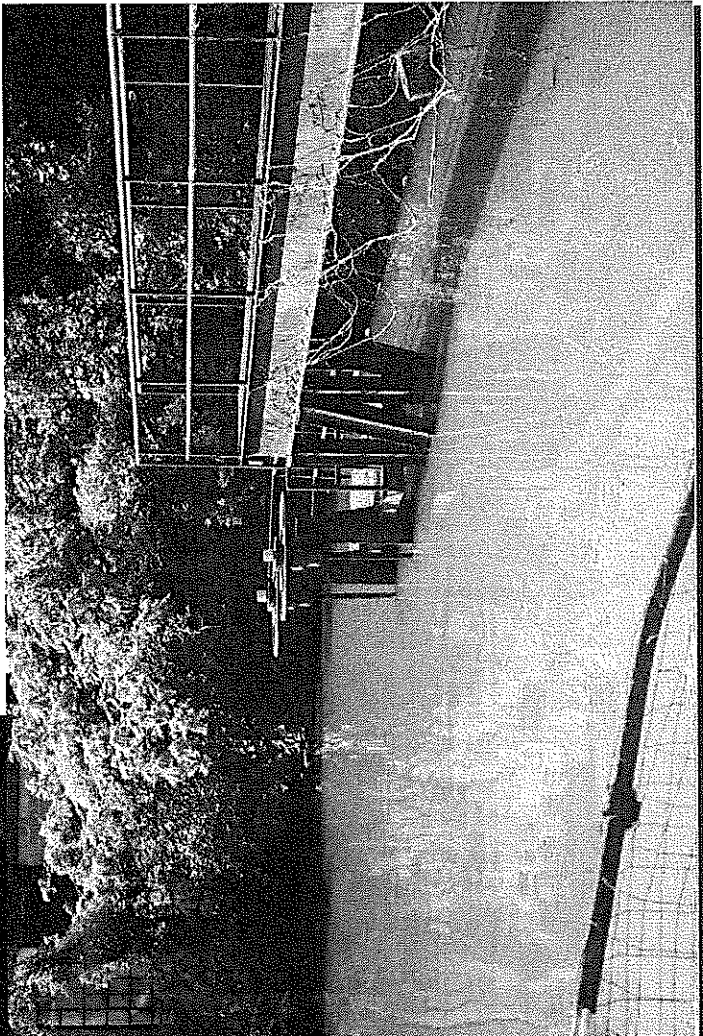


Aerial Photo; November 2017

Doucet Survey, Inc.

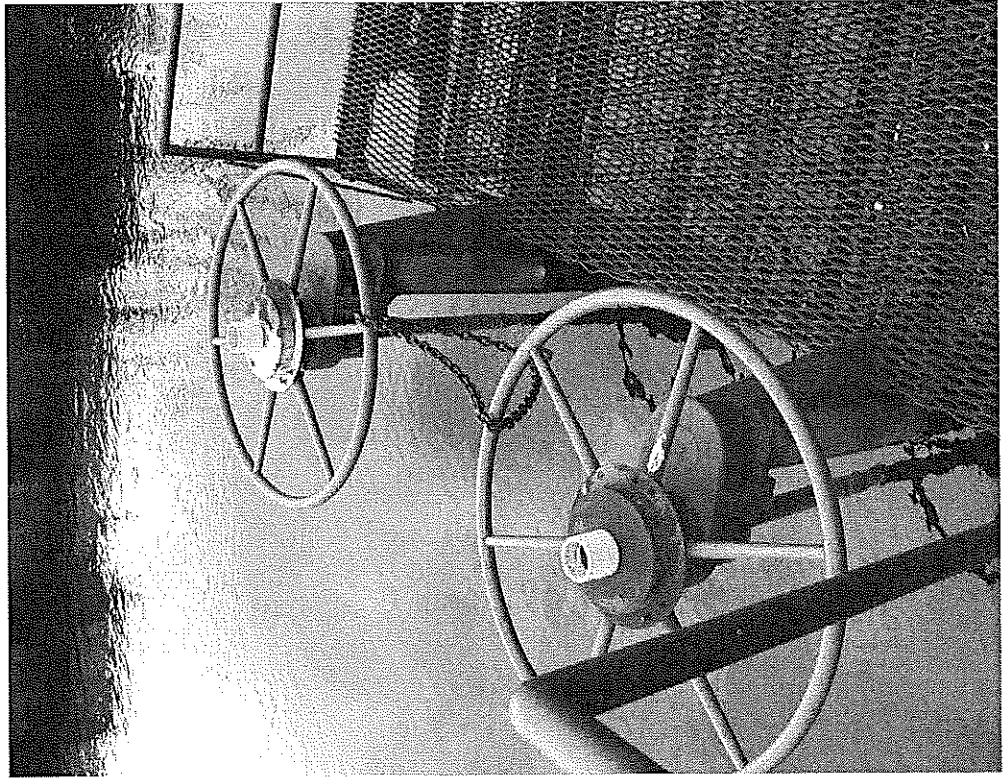
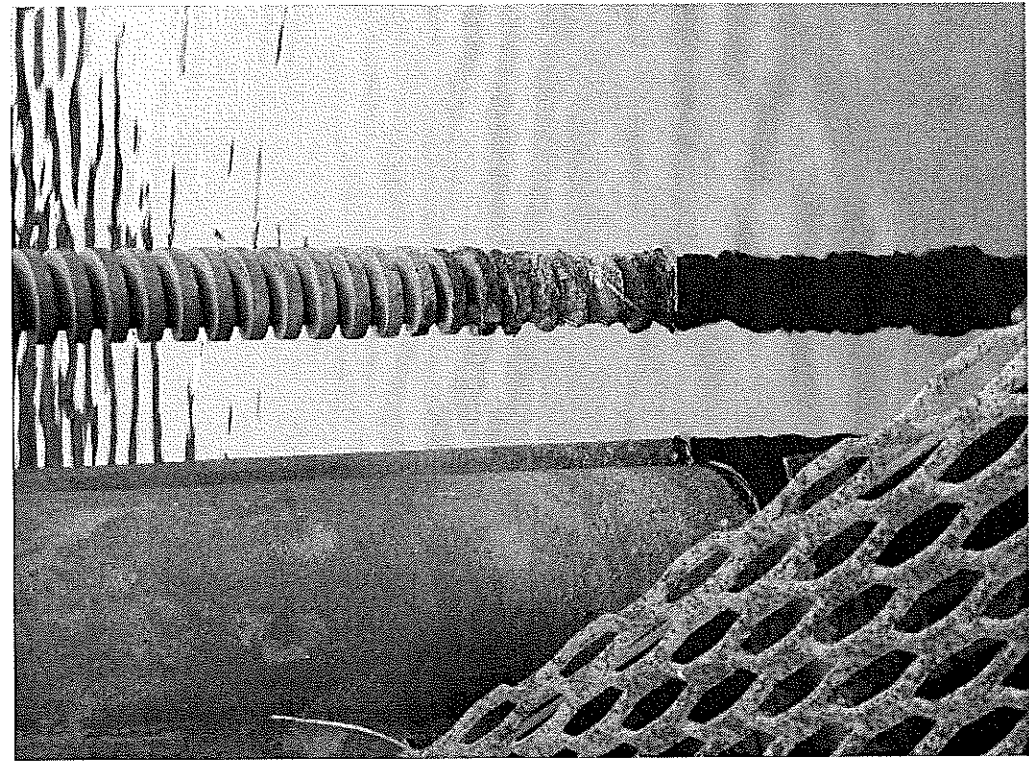
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# Watershops Pond Dam Existing Sluice Gate Operators GZA, August 2015



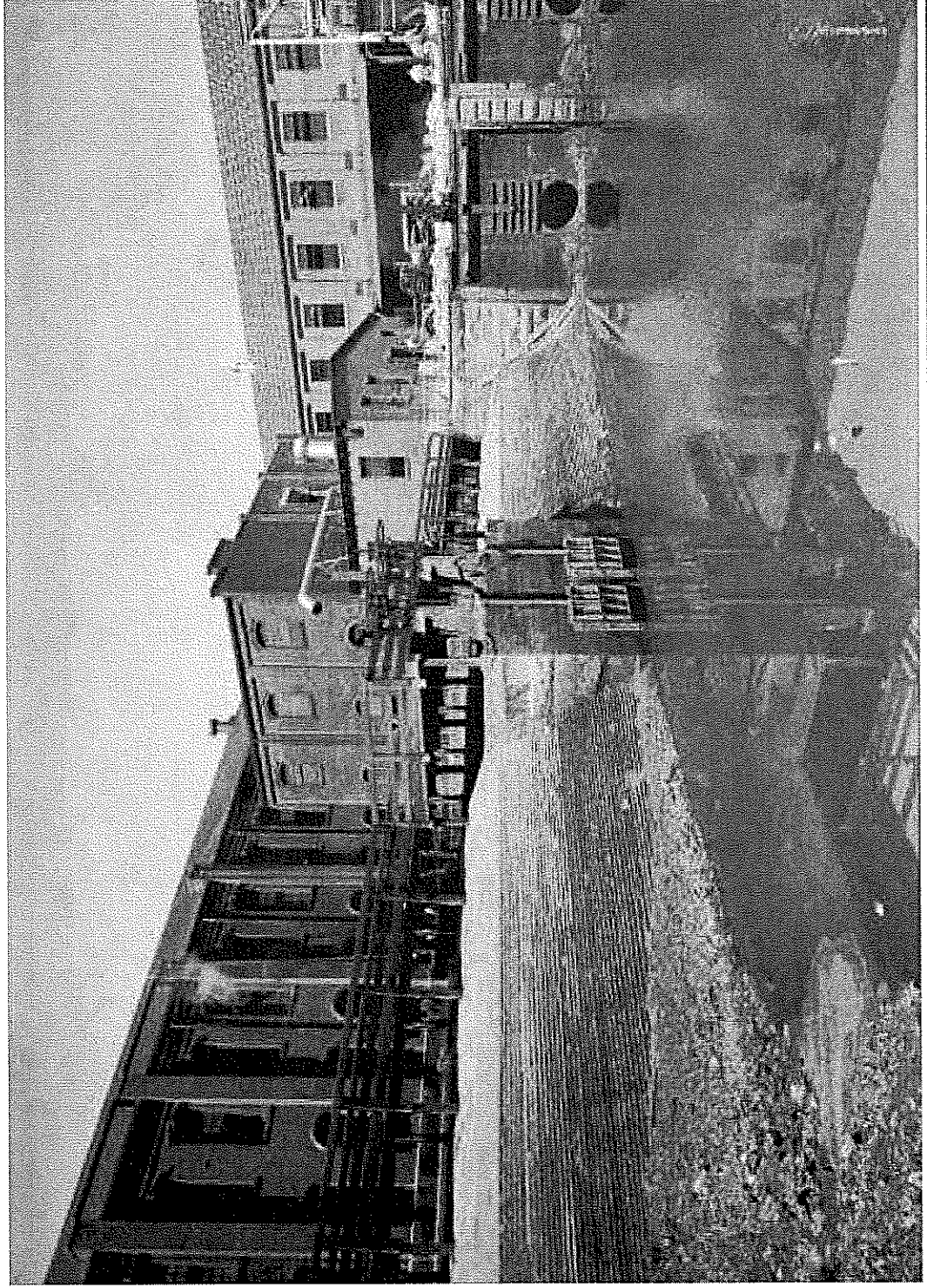


Watershops Pond Dam  
Existing Sluice Gate Operators  
GZA, August 2015

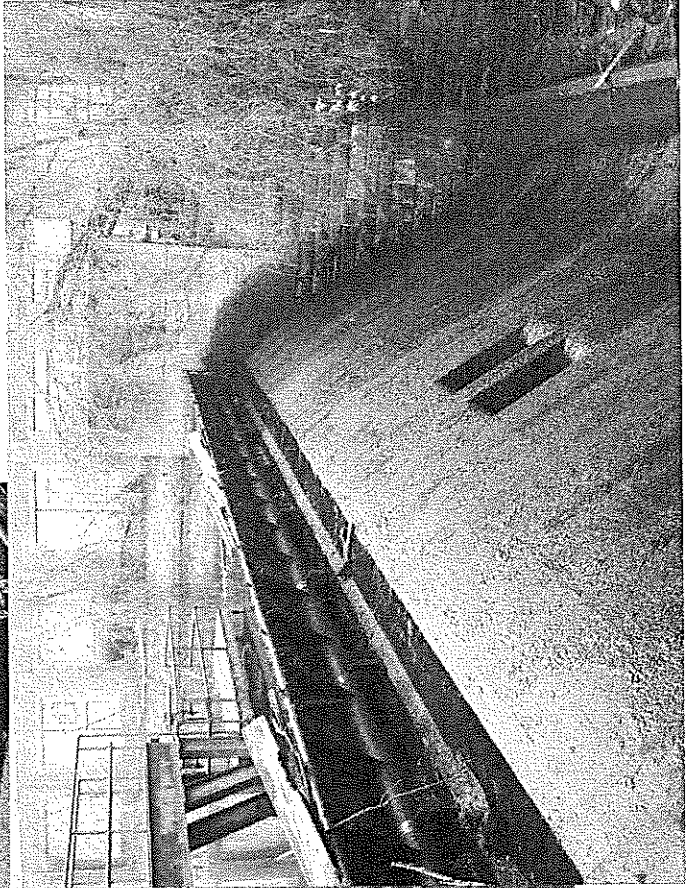
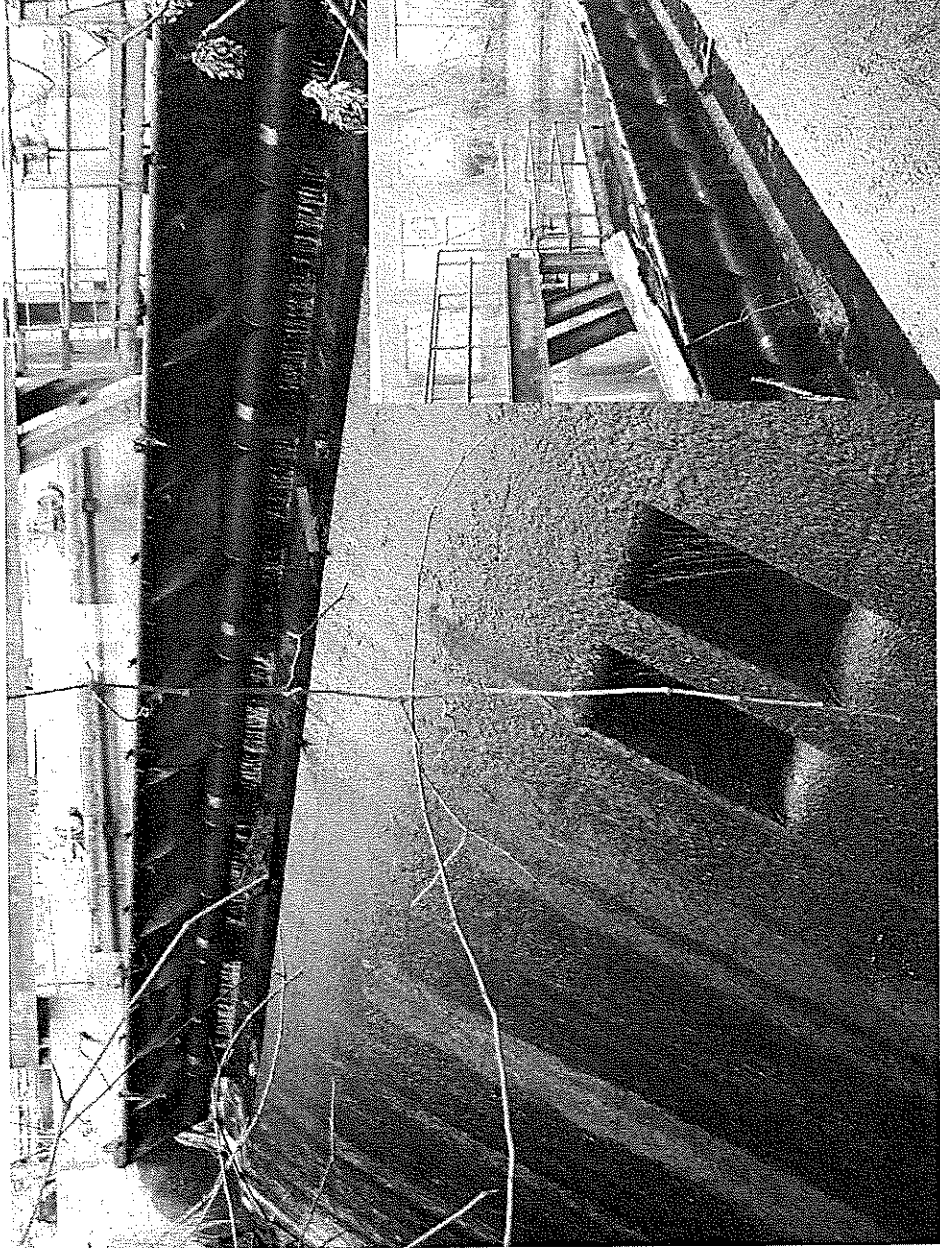


# Watershops Pond Dam Sluice Gates

Pre-1955 (Courtesy: National Park Service)



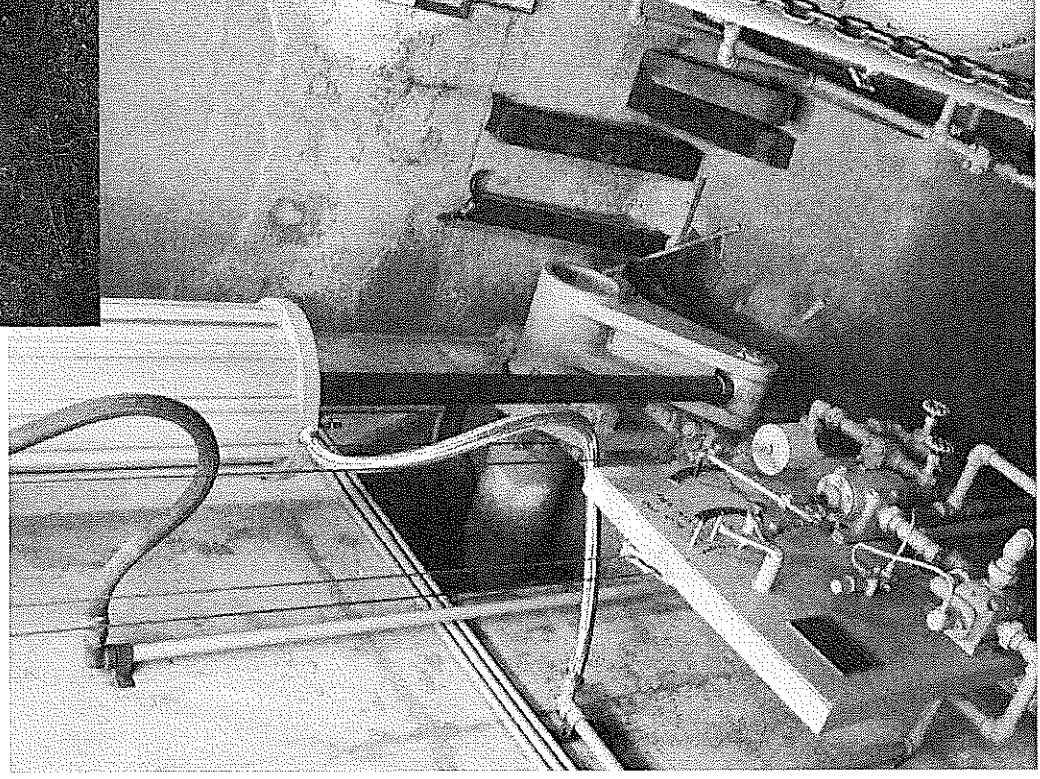
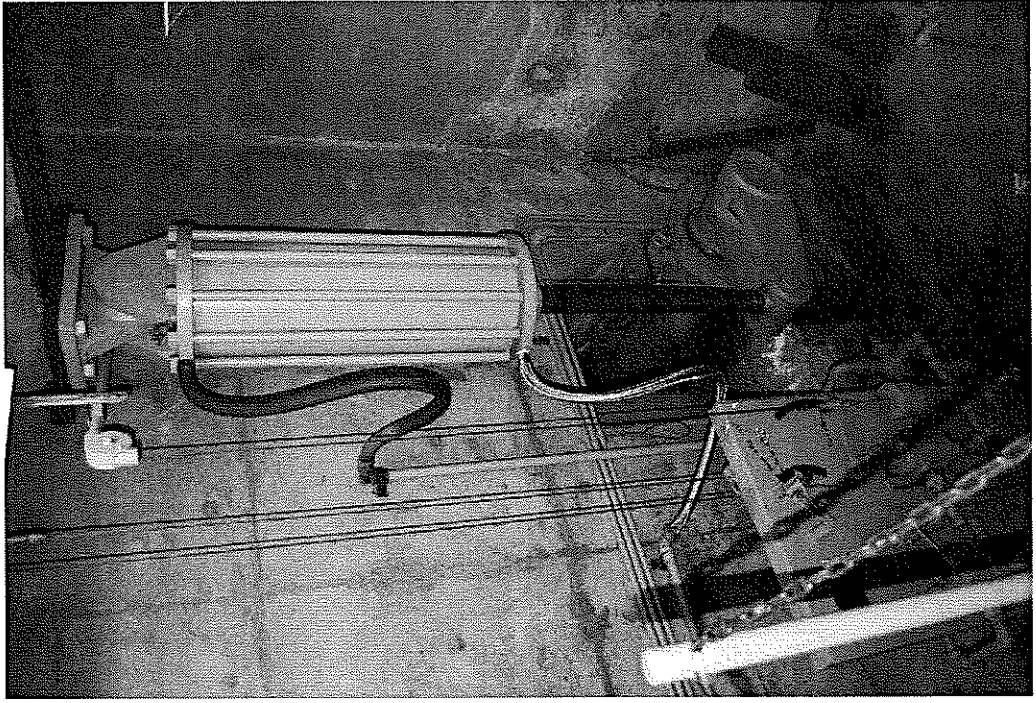
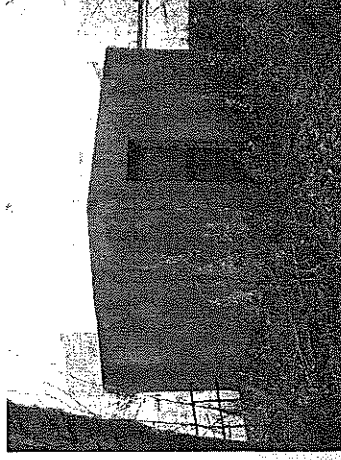
Watershops Pond Dam  
Existing Bascule-type S. Morgan Smith Co. Crest Gate  
GZA, 2012-2019



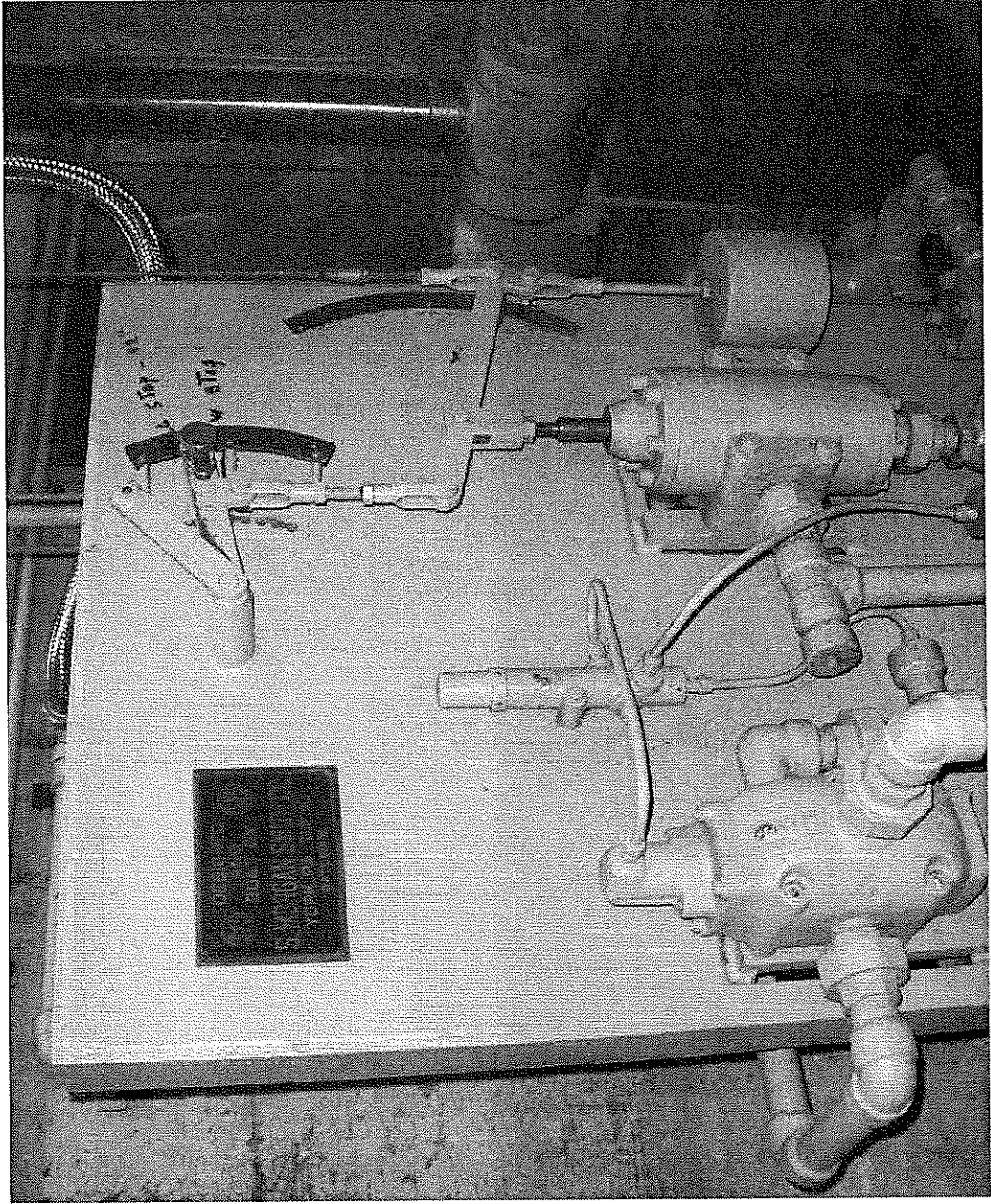
# Watershops Pond Dam

Existing Gate Control House – Interior, 1 of 4

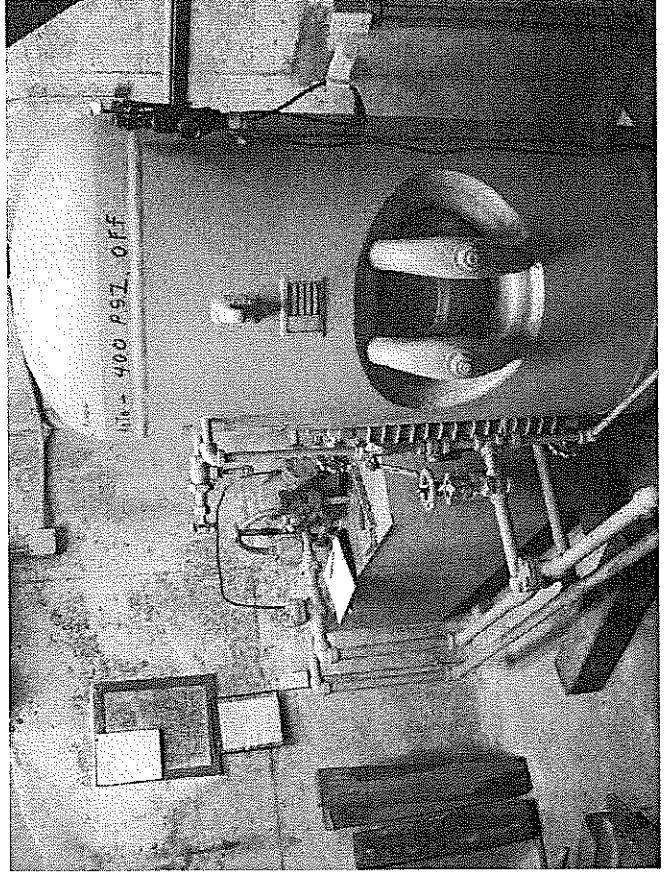
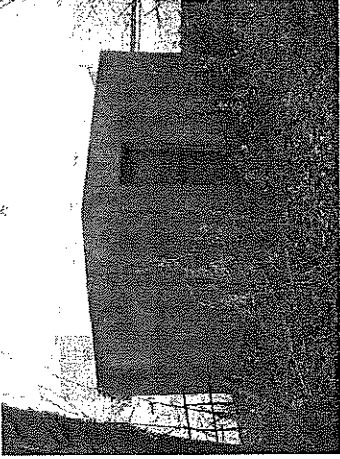
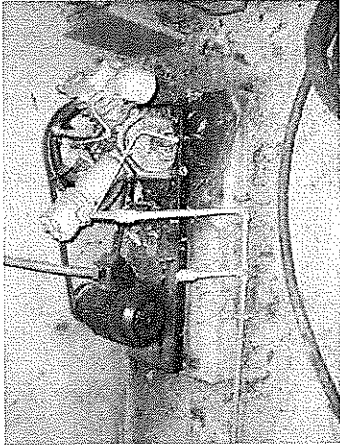
GZA, 2012-2019



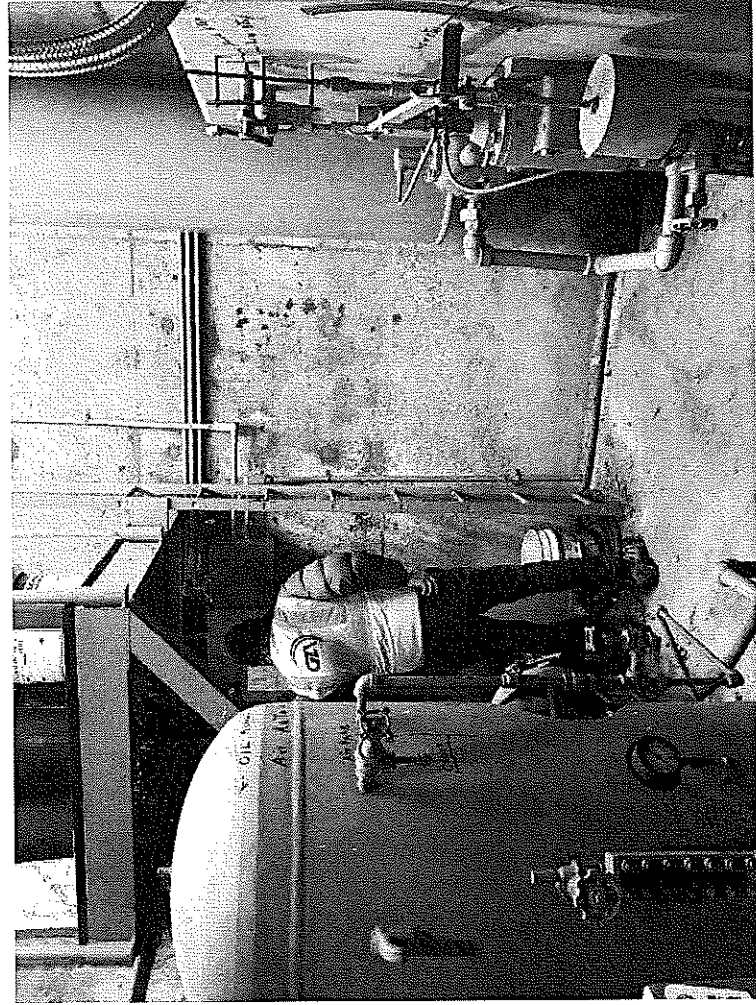
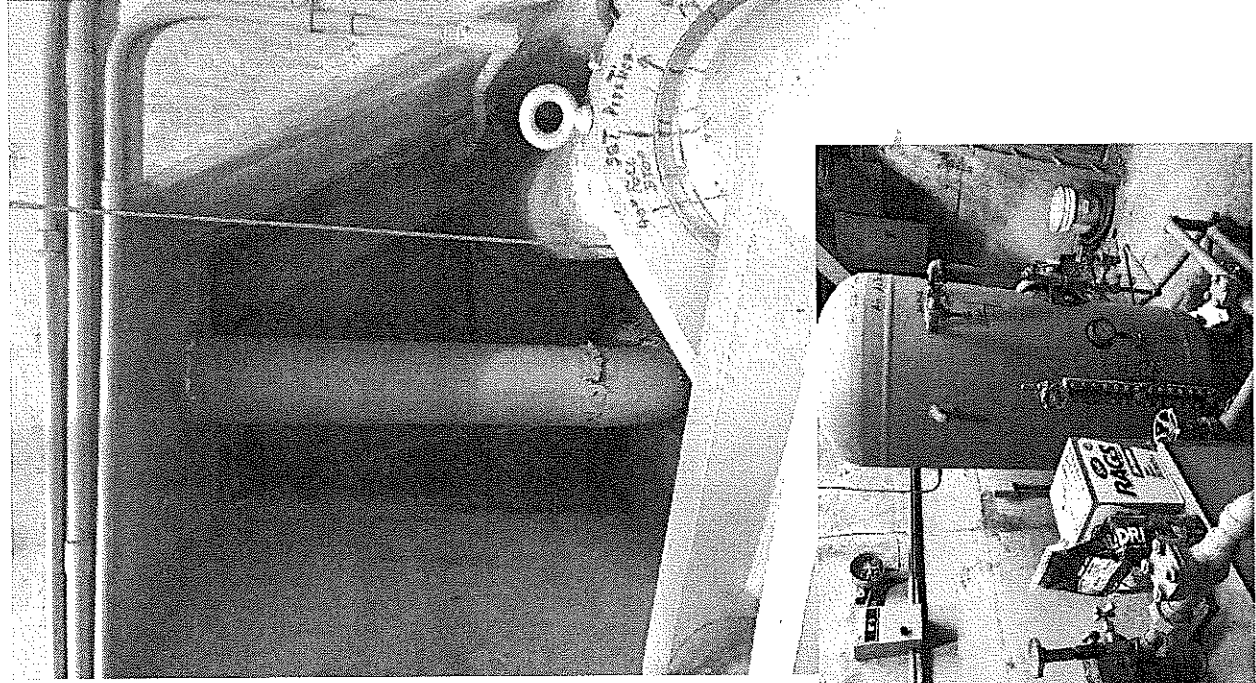
Watershops Pond Dam  
Existing Gate Control House – Interior, 2 of 4  
GZA, 2012-2019



Watershops Pond Dam  
Existing Gate Control House – Interior, 3 of 4  
GZA, 2012-2019



Watershops Pond Dam  
Existing Gate Control House – Interior, 4 of 4  
GZA, 2012-2019



**APPENDIX 4.**

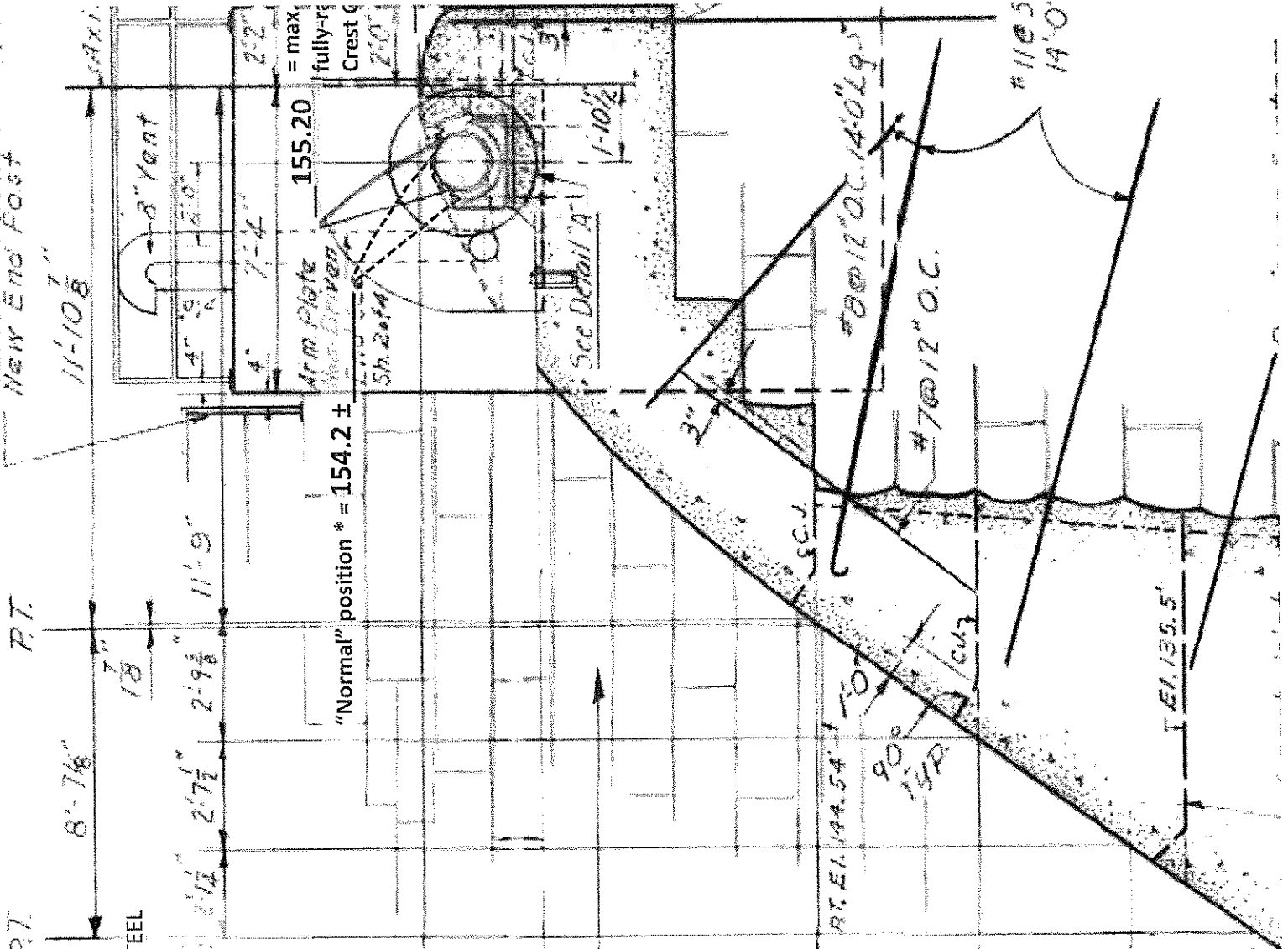
ELEVATIONS AT WATERSHOPS POND DAM \*\*. GZA, June 4, 2020, Pages 1 -3 of 3.

\*\* Supplier of Crest Gate and Slide Gates shall field verify all dimensions and elevations.



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Remove Exist. Fence. & N  
New End Post



**159.2±** DECK SURFACE OF STEEL  
BRIDGE 290'±  
UPSTREAM OF DAM  
(per Doucet survey)

BOTTOM CHORD OF  
STEEL BRIDGE  
UPSTREAM OF DAM

**156.56**

(per GZA measure, 2/25/20)

Crest E1.153.9'

E1.151.02

Exist. Brownstone  
Training Wall.

E1.144.75'

E1.140.75'

E1.137.0'

"Normal" position \* = 154.2 ±

155.20 = max  
fully-re  
Crest C  
2.0

Arm. Plate  
No. Drives  
Sh. 2 of 4

See Detail "A"

#8 @ 12" O.C. 14'-0" Lg.

#7 @ 12" O.C.

#11 @ 5  
14'-0"

R. E1.144.54

90°  
1/4"

E1.135.5'

10'-0" R.

DT E1.135.9'

# ELEVATIONS AT WATERSHOPS POND DAM \*\*

GZA/tej  
05/30/2020 r.6/4/20

Elevations shown in red are in feet and are referenced to the NAVD88 vertical datum.

Elevations shown in red (without a box) were estimated by GZA from GZA field measurements in Feb-May 2020 in conjunction with the Doucet Survey, Inc. field topographic survey.

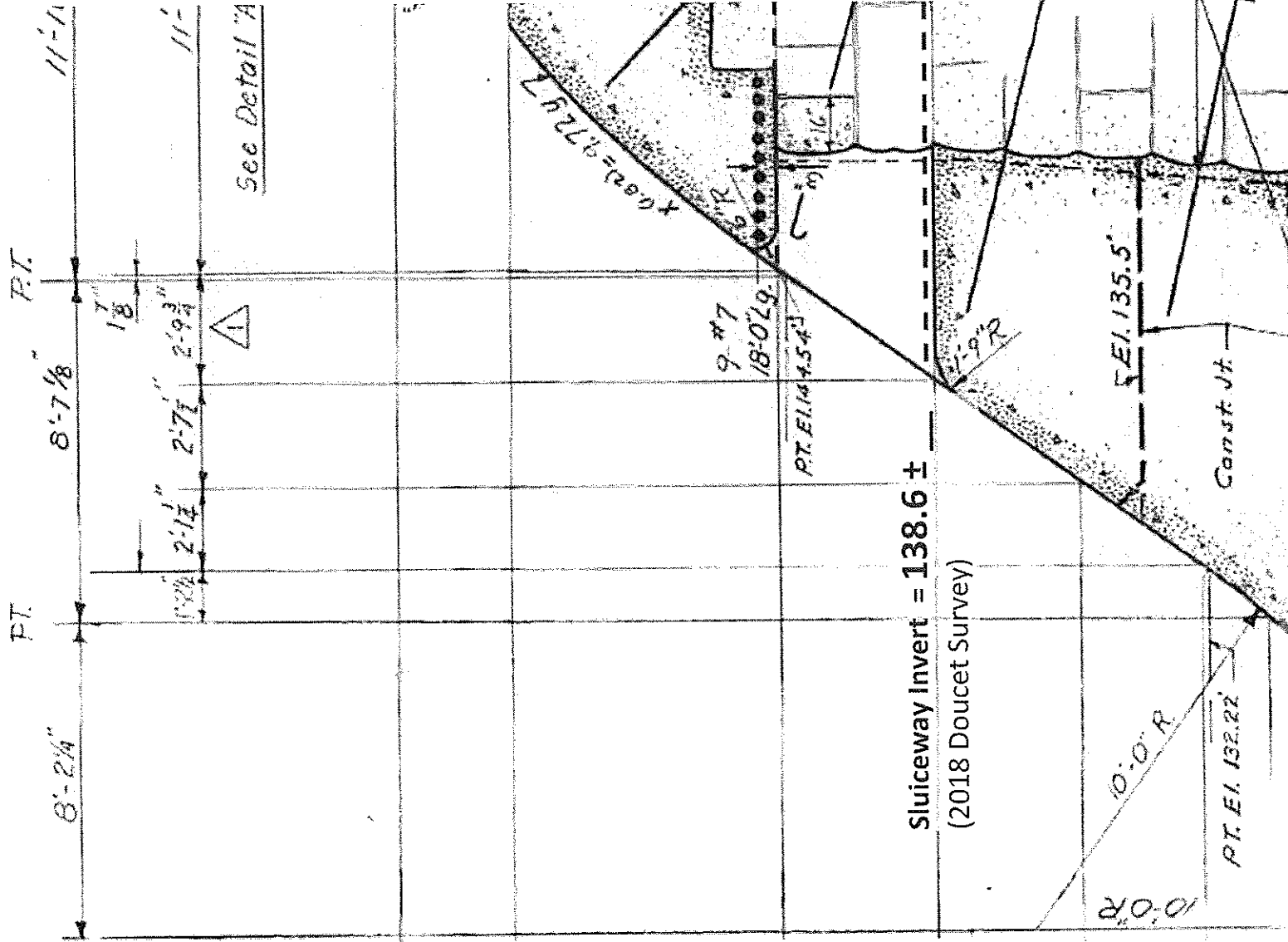
Elevations shown in red within a box were estimated by GZA by applying the vertical datum adjustment to information contained within the Corps of Engineers' Record Drawings, dated January 1958.

To convert elevations shown on the 1958 Record Drawings to NAVD88:

**Record Drawing elevations - 1.15' = NAVD88±**

\*\* Supplier of Crest Gate and Slide Gates shall field verify all dimensions and elevations.

Base graphics are "Section B-B" taken from Drawing 3 of 4 of the Corps of Engineers' Record Drawings, dated January 1958.



Crest El. 132.22

El. 134.75

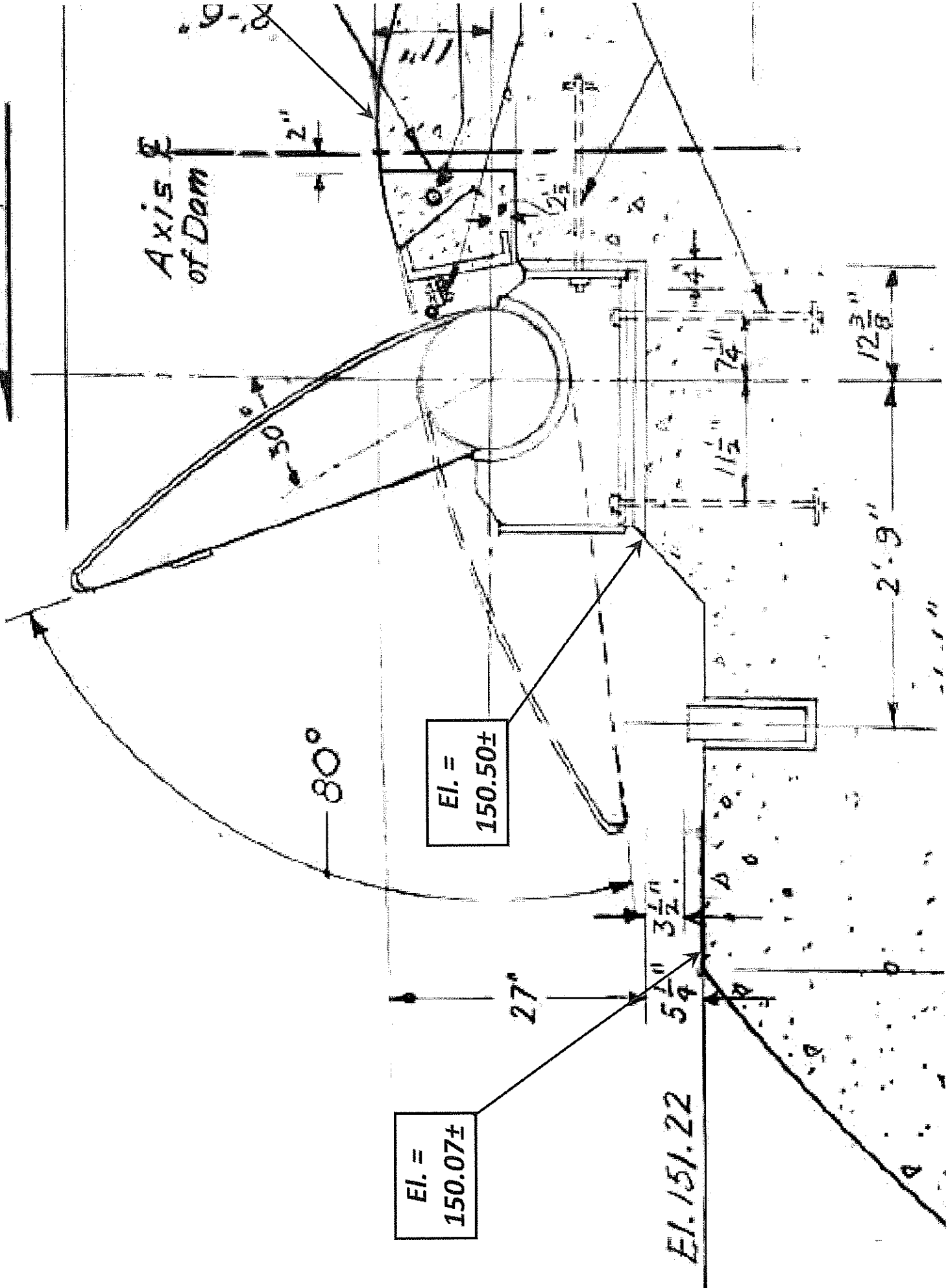
El. 140.75

El. 137.0

El. 134.0

FLOW

Axis of Dam



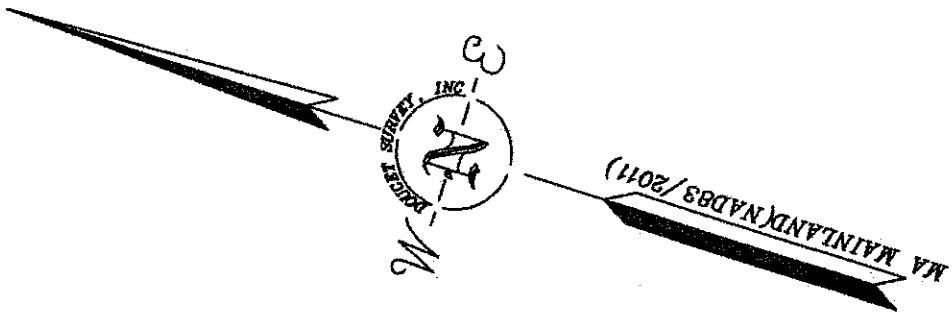
**APPENDIX 5.**

“Topographic Plan for GZA GeoEnvironmental, Inc. of Watershops Pond Dam”

Doucet Survey, Inc., Sheets 1 -3 of 3, January 5, 2018.

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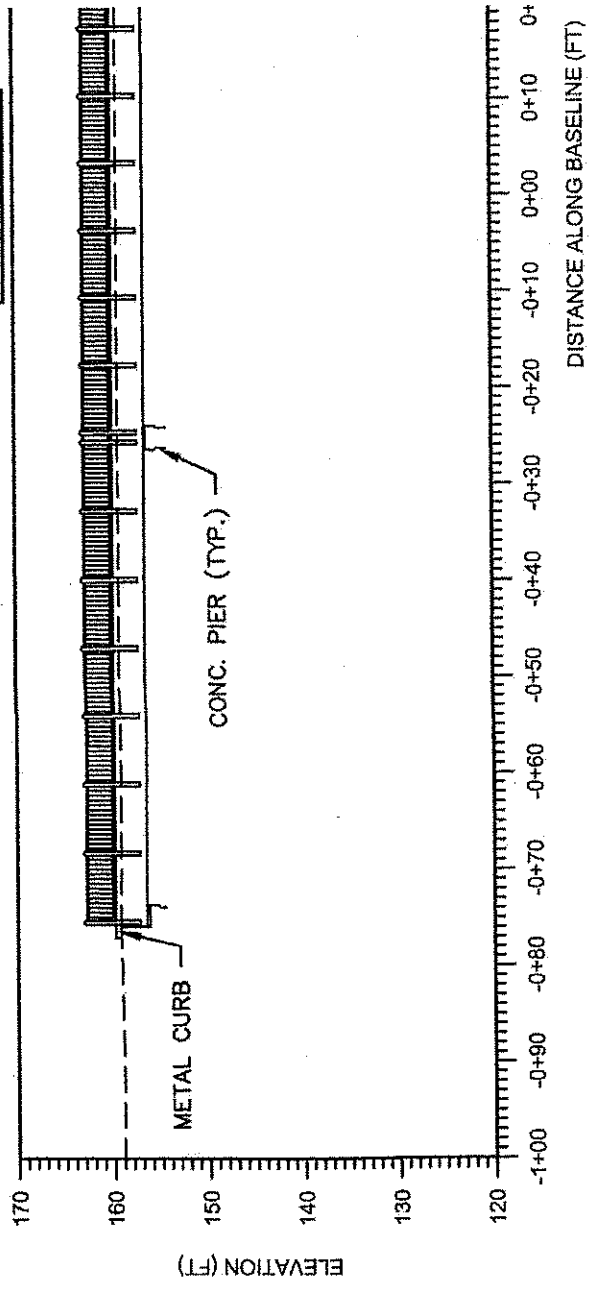
RIFLE







SECTION A-A'



**EXHIBIT B**

**VENDOR'S IFB SUBMISSION**  
**(See attached)**



**COLLUSION OR FRAUD STATEMENT**

THE UNDERSIGNED CERTIFIES UNDER PENALTIES OF PERJURY THAT THIS BID IS IN ALL RESPECTS BONA FIDE, FAIR AND MADE WITHOUT COLLUSION OR FRAUD WITH ANY OTHER PERSON. AS USED IN THIS SECTION THE WORD "PERSON" SHALL MEAN ANY NATURAL PERSON, JOINT VENTURE, PARTNERSHIP, CORPORATION OR OTHER BUSINESS OR LEGAL ENTITY.

Louis Bartolini

(NAME OF PERSON SIGNING BID)

*Louis Bartolini*

(SIGNATURE)

Steel-Fab, Inc.

(COMPANY)

THIS FORM MUST BE SIGNED & RETURNED WITH YOUR BID OFFER. FAILURE TO SUBMIT THIS FORM MAY BE CAUSE FOR IMMEDIATE REJECTION

Federal Identification Number: [Redacted] M.G.L. Identification Number: [Redacted]

Company: Steel Fab, Inc.

P.O. Box (if any): PO Box 2145 Street Address (only): 430 Crawford St.

City/State/Zip Code: Fitchburg, MA 01420 E-mail: [Redacted]

Telephone Number: 978-345-1112 Fax Number: [Redacted]

List address(es) of all other property owned by company in Springfield: N/A  
Please Identify if the bidder/proposer is a Corporation

Individual \_\_\_\_\_ Name of Individual: \_\_\_\_\_  
Partnership \_\_\_\_\_ Names of all Partners: \_\_\_\_\_  
Limited Liability Company \_\_\_\_\_ Names of all Managers: \_\_\_\_\_  
Limited Liability Partnership \_\_\_\_\_ Names of Partners: \_\_\_\_\_  
Limited Partnership \_\_\_\_\_ Names of all General Partners: \_\_\_\_\_

You must complete the following certifications and have the signature(s) notarized on the lines below. Any certification that does not apply to you, write N/A in the blanks provided.

**FEDERAL TAX CERTIFICATION**

I, Mark W. Freeman (authorized agent) certify under the pains and penalties of perjury that Steel Fab, Inc. (Bidder/Proposer) to my best knowledge and belief, has/have complied with all United States Federal taxes required by law.

Steel Fab, Inc. Bidder/Proposer/Contracting Entity  
[Signature] Authorized Person's Signature  
Date: 7/2/2020

**CITY OF SPRINGFIELD TAX CERTIFICATION**

I, Mark W. Freeman (authorized agent) certify under the pains and penalties of perjury that Steel Fab, Inc. (Bidder/Proposer) to my best knowledge and belief, has/have complied with all City of Springfield taxes required by law (has/have entered into a Payment Agreement with the City).

Steel Fab, Inc. Bidder/Proposer/Contracting Entity  
[Signature] Authorized Person's Signature  
Date: 7/2/2020

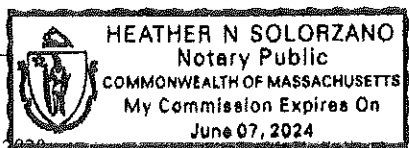
**COMMONWEALTH OF MASSACHUSETTS TAX CERTIFICATION**

Pursuant to M.G.L. c. 62C §49A, I, Mark W. Freeman (authorized agent) certify under the pains and penalties of perjury that Steel Fab, Inc. (Bidder/Proposer) to my best knowledge and belief, has/have complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

Steel Fab, Inc. Bidder/Proposer/Contracting Entity  
[Signature] Authorized Person's Signature  
Date: 7/2/2020

Notary Public

STATE OF Massachusetts  
County of Worcester, ss.



Then personally appeared before me [name] Mark W. Freeman [title] President of [company name] Steel Fab, Inc., being duly sworn, and made oath that he/she has read the foregoing document, and knows the contents thereof; and that the facts stated therein are true of his/her own knowledge, and stated the foregoing to be his/her free act and deed and the free act and deed of [company name] Steel Fab, Inc.

Heather N. Solorzano  
Notary Public  
My commission expires: 6/7/2024

**YOU MUST FILL THIS FORM OUT COMPLETELY AND, SIGNATURES MUST BE NOTARIZED ON THIS FORM AND YOU MUST FILE THIS FORM WITH YOUR BID/CONTRACT SUBMISSION.**

AFFIRMATIVE ACTION PLAN

NAME OF PROJECT Watershop's Pond Dam Replacement BID NO. 20-1884  
Crest Gate and Slide Gates

A.) Bidder shall include Company Policy Statement which sets forth the Chief Executive Officer's attitude on equal employment opportunity.

B.) Company's Officer Mark Freeman

NAME OF FIRM Steel-Fab, Inc.

NAME Mark Freeman

POSITION OR TITLE President

BUSINESS ADDRESS 430 Crawford Street Fitchburg MA 01420

CITY Fitchburg

TELEPHONE [REDACTED]

C.) What is the total number of employees that is currently employed by your company? 49

Please provide a profile of your workforce.

D.) What is your anticipated work force for this project/service? 17  
Number of Minorities 2 Number of Females 4

E.) Is your company a member of a union Yes  No  . If yes what union local number and location. Union # 02936 Auburn, MA

- F.) Describe company's advertising, recruiting efforts, and systematic contact with minority group organization, etc. and evidence that minority group members are being sought from all recruitment sources. We have extremely low turnover, however, we advertise on a diverse platform including Ziprecruiter, Craigslist, local unemployment office and regional Chamber of Commerce when we do hire new employees.
- G.) Is your company at least 51% owned and controlled by one of the following groups members? If yes, would you kindly circle the appropriate categories.

MALE--FEMALE: Black, Hispanic, Asian, American Indian,

Alaskan Native, Cape Verdean, Caucasian.

AUTHORIZED SIGNATURE



DATE 7/13/2020

FIRM Steel-Fab, Inc.

ADDRESS 430 Crawford Street Fitchburg, MA 01420

TELEPHONE NO. [REDACTED]

**THIS FORM TO BE SUBMITTED BY THE BIDDER WITH THE BID /PROPOSAL, AND SIGNED BY THE BIDDING COMPANY IF THE REQUIRED INFORMATION IS PROVIDED OR NOT.**



# STEEL-FAB, INC.

Water Control Gates • Gate Operating Systems • Steel Fabrications

Steel-Fab, Inc. provides equal employment opportunities to all employees and applicants for employment and prohibits discrimination and harassment of any type without regard to race, color, religion, age, sex, national origin, disability status, genetics, protected veteran status, sexual orientation, gender identity or expression, or any other characteristic protected by federal, state or local laws.

This policy applies to all terms and conditions of employment, including recruiting, hiring, placement, promotion, termination, layoff, recall, transfer, leaves of absence, compensation and training.



**BIDDERS REFERENCE FORM**

Please list at a minimum three (3) applicable references whom you have done volume business and service for in the past five (5) years.

**COMPANY:** Sundt-Davila J.V.

**Reference Name:** San Antonio River Authority River Walk

**Description:** Three (3) Crest Gates for San Pedro section

**Location:** San Antonio, TX

**Contract Amount:** \$ 400,000. **Completion Date:** Phase 1 April 2018

**Contact:** Ryan Silbernagel **Phone:** [REDACTED]

**Owner & Address:** San Antonio River Authority  
100 East Guenther Street  
San Antonio, TX 78204

**COMPANY:** Holyoke Gas & Electric

**Reference Name:** Hadley Falls Dam

**Description:** One (1) S Morgan Smith Bascule Gate Replacement

**Location:** Holyoke, MA

**Contract Amount:** \$ 450,000. **Completion Date:** December 2015

**Contact:** Paul Duchesney **Phone:** [REDACTED]

**Owner & Address:** Holyoke Gas & Electric  
99 Suffolk Street  
Holyoke, MA 01040

**COMPANY:** PCL Construction

**Reference Name:** Tempe Town Lake Dam

**Description:** Eight (8) 103' x 19'6" Crest Gates

**Location:** Tempe, AZ

**Contract Amount:** \$ 11M **Completion Date:** April 2016

**Contact:** Adam Gordon **Phone:** [REDACTED]

**Owner & Address:** City of Tempe  
Civil Infrastructure Division  
Tempe, AZ

**COMPANY:** Duke Energy

**Reference Name:** Cowan's Ford

**Description:** Floating Bulkhead

**Location:** Stanley, NC

**Contract Amount:** \$ 1.4M **Completion Date:** November 2019

**Contact:** Joe Arcella **Phone:** [REDACTED]

**Owner & Address:** Duke Energy  
460 South Tryon Street  
Charlotte, NC 28202

**COMPANY:** Brookfield Renewable Power

**Reference Name:** Hawk's Nest

**Description:** Floating Bulkhead

**Location:** Fayette County, WV

**Contract Amount:** \$ 1.3M **Completion Date:** August 2018

**Contact:** Justin Rider **Phone:** [REDACTED]

**Owner & Address:** Brookfield Renewable Power  
326 3rd Ave  
Montgomery, WV 25136



# Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

## Bid Bond

### CONTRACTOR:

(Name, legal status and address)

Steel-Fab, Inc.

430 Crawford Street  
Fitchburg, MA 01420

### OWNER:

(Name, legal status and address)

City of Springfield Dept. of Capital Asset  
Construction

36 Court Street, Room 312  
Springfield, MA 01103

### SURETY:

(Name, legal status and principal place of business)

Liberty Mutual Insurance Company  
175 Berkeley Street  
Boston, MA 02116

### Mailing Address for Notices

Liberty Mutual Surety Claims  
P.O. Box 34526  
Seattle, WA 98124

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

**BOND AMOUNT:** 5% of Bid Amount      Five Percent of Bid Amount

### PROJECT:

(Name, location or address, and Project number, if any)

Watershops Pond Dam Replacment Crest Gate and Slide Gates, manufacture and delivery of a new crest gate, two (2) new low-level slide gates, and a new hydraulic operating and control system

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 14th day of July, 2020.

Heather Solozano  
(Witness)

Steel-Fab, Inc.  
(Principal) [Signature] (Seal)  
(Title) President

[Signature]  
(Witness)

Liberty Mutual Insurance Company  
(Surety)  
[Signature]  
(Title) Kristin Caporale - Attorney in Fact





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
POWER OF ATTORNEY

Principal: Steel-Fab, Inc.
Agency Name: The Hilb Group of New England, LLC Bond Number:
Oblige: City of Springfield Dept. of Capital Asset Construction
Bid Bond Amount: (5% of Bid Amount) Five Percent of Bid Amount

KNOW ALL PERSONS BY THESE PRESENTS: that Liberty Mutual Insurance Company, a corporation duly organized under the laws of the State of New Hampshire (herein collectively called the "Company"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint Kristin Caporale in the city and state of Westborough, MA, each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Company in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Company and the corporate seal of the Company has been affixed thereto this 26th day of September, 2016.



Liberty Mutual Insurance Company

By: [Signature]

David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

STATE OF PENNSYLVANIA ss
COUNTY OF MONTGOMERY

On this 26th day of September, 2016, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: [Signature]

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-law and Authorizations of Liberty Mutual Insurance Company, which is now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature or electronic signatures of any assistant secretary of the Company or facsimile or mechanically reproduced or electronic seal of the Company, wherever appearing upon a certified copy of any power of attorney or bond issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of Liberty Mutual Insurance Company do hereby certify that this power of attorney executed by said Company is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Company this 14th day of July, 2020.



By: [Signature]

Renee C. Llewellyn, Assistant Secretary



Liberty Mutual Surety: Wausau  
2000 Westwood Drive  
Wausau, WI 54401  
(800) 826-1661 Fax: (866) 547-9183

## TRANSACTION REPORT

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<b>Transaction Date:</b> July 10, 2020		
<b>Preparer Name:</b> RENEE KOLPACKI		<b>Agency Name:</b> The Hilb Group of New England, LLC
<b>Preparer Email:</b> RENEE.KOLPACKI@LibertyMutual.com		<b>Agency Code:</b> [REDACTED]
<b>Principal:</b> Steel-Fab, Inc. 430 Crawford Street Fitchburg, MA 01420		<b>Obligee:</b> City of Springfield Dept. of Capital Asset Construction 36 Court Street, Room 312 Springfield, MA 01103
<b>Principal Account:</b> Steel-Fab, Inc.		
<b>Underwriting Information:</b> Issued with underwriter's approval		
<b>Bond Information:</b>		
<b>Reference Number:</b> BID-0004743		<b>Bid Date:</b> July 14, 2020
<b>Bond Request ID:</b>		<b>Estimated Completion Date:</b> November 26, 2021
<b>Bid Bond Amount:</b> 5% of Bid Amount		<b>Class Code:</b> [REDACTED]
<b>Estimated Contract Amount:</b> \$600,000.00		<b>Underwriting Paper:</b> Liberty Mutual Insurance Company
<b>Maintenance Period (Months):</b> 12		
<b>Project Location:</b> Springfield, MA		
<b>Description of Bond:</b> Watershops Pond Dam Replacment Crest Gate and Slide Gates, manufacture and delivery of a new crest gate, two (2) new low-level slide gates, and a new hydraulic operating and control system - Springfield, MA		
<b>Remarks:</b>		

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# STEEL-FAB, INC.



To all parties,

July 13, 2020

Please take this document as certification that Louis Bartolini, as Vice President of Steel-Fab, Inc., is fully authorized to act behalf of the Corporation in all matters, including but not limited to: Quotations, Contracts, Certifications, and other matters related to its regular course of business.

A handwritten signature in black ink, appearing to read 'Mark W. Freeman', is written over a horizontal line.

Mark W Freeman

President



# STEEL-FAB, INC.

Water Control Gates • Gate Operating Systems • Steel Fabrications

July 13, 2020

City of Springfield  
The Office of Procurement  
36 Court Street, Room 307  
Springfield, MA 01103

Attention: Theo Theocles  
Procurement Office

Reference: Supplier and Supplier Qualifications Section A Specific Conditions, Sub Section A-4

Dear Mr. Theocles,

In addition to the required Bid Forms, we are submitting the following information in response to the above referenced specification sections.

**Supplier and Supplier Qualifications Section A Specific Conditions, Sub Section A-4:**

Paragraph (a): Steel Fab has been designing and manufacturing crest gates continually since 1988.

Paragraph (b): We have attached drawings, pictures and contact information for five Steel Fab Crest Gate sites within the last ten years. (Ref: A-5).

Paragraph (c): We are supplying slide gates made by Hydro Gate Corporation, 12000 east 47<sup>th</sup> Ave. Suite 200, Denver, CO 80239. (They are represented locally by Atlantic Fluid Technology, West Boylston, MA).

Paragraph (d): We are using a separate supplier for the design and manufacture of the hydraulic operating system and controls under Steel Fab's direction and stamped by the system suppliers PE, (Ref Addendum No. 2).

Paragraph (e) 1: Steel Fab is the sole source for the crest gate system.

Paragraph (e) 2: Steel Fab has been designing and manufacturing crest gates since 1988.

Paragraph (e) 3: The design of the crest gates will be performed by a PE in our direct employ. The hydraulics will be designed by a PE in the direct employ of our hydraulic system manufacturer

Paragraph (e) 4 and 5: I have attached the drawings, photo and contact information of Steel Fab crest gate installations that meet the requirements of these paragraphs.

Paragraph (e) 6: One of the five reference installations included in the supporting documents required in A-5 is a replacement S Morgan Smith installation designed and manufactured by Steel Fab.

Paragraph (e) 7: Hydro Gate meets these requirements.

Yours truly,

A handwritten signature in cursive script that reads "Louis Bartolini".

Louis Bartolini  
Vice President  
Steel Fab, Inc.





# STEEL-FAB, INC.

Water Control Gates • Gate Operating Systems • Steel Fabrications

July 13, 2020

City of Springfield  
The Office of Procurement  
36 Court Street, Room 307  
Springfield, MA 01103

Attention: Theo Theocles  
Procurement Office

Ref: Proposal Requirements Regarding Supplier's Qualifications Section A Specific Conditions,  
Sub Section A-5

The following pages contain project information, pictures, and owner contacts for five Steel Fab projects that meet Section A-5 (a) (1) and the experience requirements defined in A-4. The corresponding general arrangement drawings for each project are attached.

Regarding Section A-5 (a) (2), one of the five projects we have listed on the following pages, Lake Deforest, was a S Morgan Smith Bascule Gate Replacement.

It also should be noted that we have two crest gate projects currently in house. Two 40' x 6' hydraulically operated crest gates for the Berry Bay Dam in Ossipee, NH and a 100' x 10' crest gate for the Upper Bee Branch Project in Dubuque, Iowa. The Berry Bay gates are near completion if the City would like to schedule a visit.

I have also included qualification statements from Steel Fab and Hydro Gate to satisfy A-5 (b)

Yours truly,

Louis Bartolini  
Vice President  
Steel Fab, Inc.

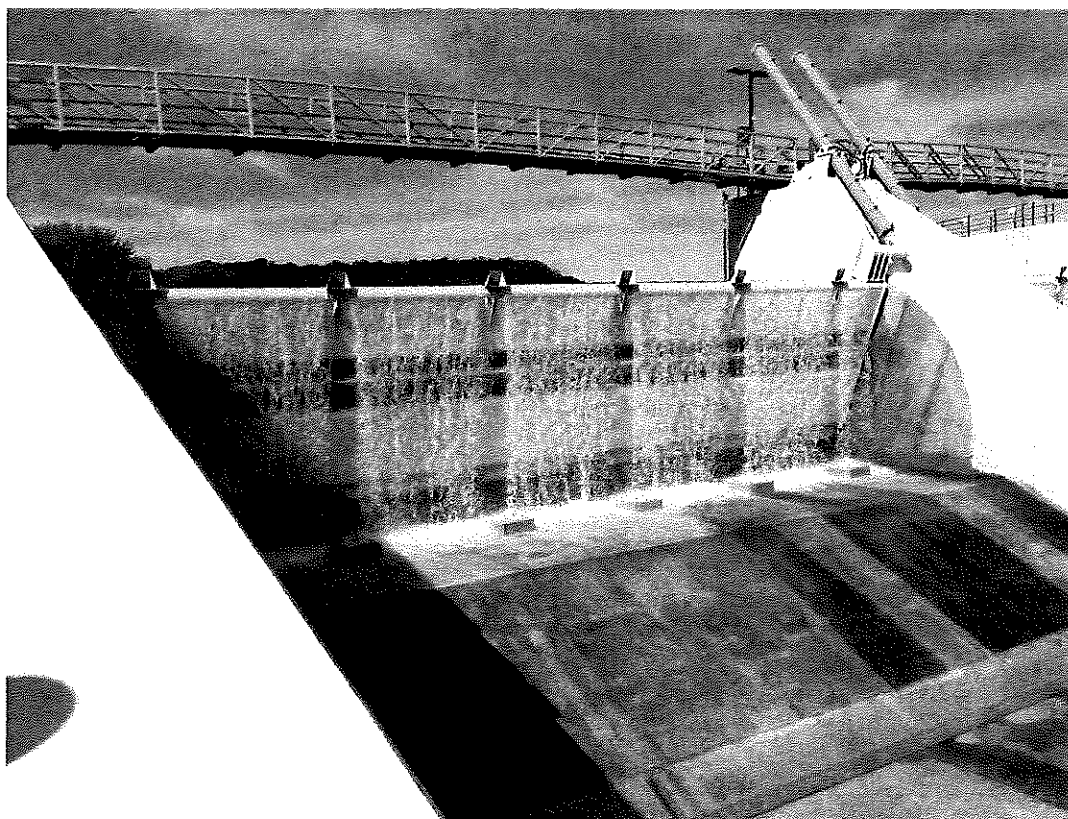
Name of Project: Wachusett Dam/Massachusetts Water Resources Authority  
Location: Clinton, MA  
Installed: : 2008  
Gate Dimensions: One (1) 100' x 5' Hydraulically Operated Crest Gate  
Contact: John Gregoire, 508-424-3608, [John.Gregoire@MWRA.com](mailto:John.Gregoire@MWRA.com)



Name of Project: Lincoln Street Dam, City of Wichita, KS  
Location: Wichita, KS  
Installed: 2012  
Gate Dimensions: Four (4) 56' x 10' Hydraulically Operated Crest Gates  
Contact: Steve Degenhardt, 316-268-4043, [SDegenhardt@wichita.gov](mailto:SDegenhardt@wichita.gov)



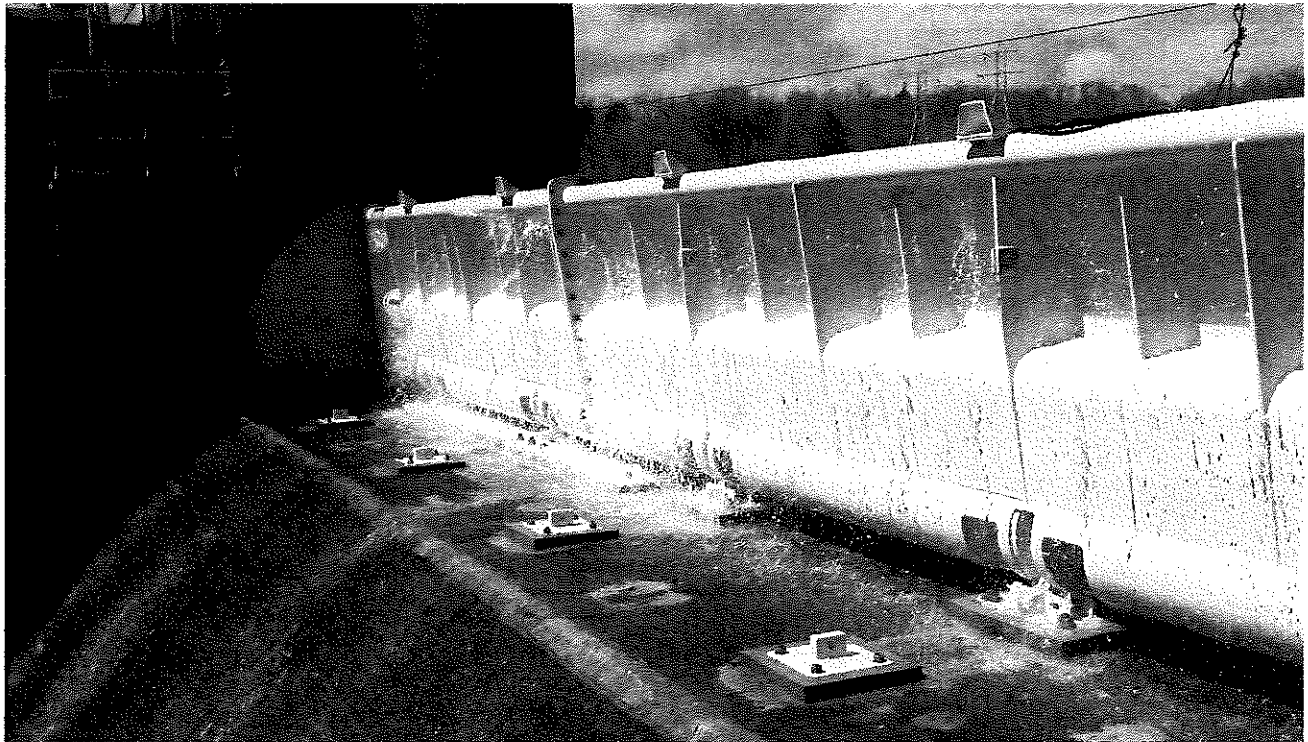
Name of Project: Byllesby Dam  
Location: Cannon Falls, MN  
Installed: 2014  
Gate Dimensions: Two (2) 65' x 12' 6" Hydraulically Operated Crest Gates  
Contact: Josh Petersen, 952-891-7140, [Joshua.Petersen@co.dakota.mn.us](mailto:Joshua.Petersen@co.dakota.mn.us)



Name of Project: Tempe Town Lake  
Location: Tempe, AZ  
Installed: 2016  
Gate Dimensions: Eight (8) 103' x 18' Hydraulically Operated Crest Gates  
Contact: Chris Kabala, 480-350-8585, [Chris.Kabala@tempe.gov](mailto:Chris.Kabala@tempe.gov)



Name of Project: Deforest Lake Dam  
Location: Nyack, NY  
Installed: 2013  
Gate Dimensions: Two (2) 50' x 4' Hydraulically Operated Replacement Bascule Gates  
Contact: Tara Buckley, 201-767-9300, [Tara.Buckley@Suez.com](mailto:Tara.Buckley@Suez.com)





**STEEL-FAB, INC.**

Water Control Gates • Gate Operating Systems • Steel Fabrications

July 13, 2020

City of Springfield  
The Office of Procurement  
36 Court Street, Room 307  
Springfield, MA 01103

Attention: Theo Theodis  
Procurement Office

Ref: Proposal Requirements Regarding Supplier's Qualifications Section A Specific Conditions,  
Sub Section A-5 Sub Paragraph (b), Steel Fab, Inc. Qualification Statement.

I certify that Steel Fab, Inc. meets the minimum qualifications of the specifications for the  
Watershops Dam Replacement Crest Gate and Slide Gates Project, City of Springfield,  
Massachusetts Bid No. 20-184.

Yours truly,

Louis Bartolini  
Vice President  
Steel Fab, Inc.

Hydro Gate Sales  
12000 E. 47th Ave.,  
Suite 200  
Denver, CO 80239  
phone: 303-288-7873  
fax: 303-287-8531  
hydrogate.com



Project Name: Watershops Pond Dam  
Project Location: Springfield, MA  
Hydro Gate Quotation: 2006081

To Whom It May Concern:

Hydro Gate certifies that cast iron sluice gates are in conformance with the experience requirements outlined in specification section A-4 (7) and A-5 (b). For any additional documentation, please contact Hydro Gate for assistance.

Thank You,

Gary Boehler  
Sales Director



12000 E. 47th Avenue - Suite 200 Denver, Colorado 80239  
office: 303.374.2175 | mobile: 303.916.0064 | muellerwp.com

MUELLER® | ECHOLOGICS® | HYDRO GATE® | HYDRO-GUARD® | JONES® | MILNET® | MILLIKEN® | PRATT® | SINGER® | U.S. PIPE VALVE AND HYDRANT



**EXHIBIT C**

**VENDOR'S COST SHEET**  
**(See attached)**

**IFB No. 20-184**  
**EXHIBIT A – Bid Pricing Form**

Inclusive of all costs, including design, fabrication, delivery, documentation, field engineer services during installation by others, manuals, training, warranty, and all other requirements of the specifications. Contract will be awarded to lowest TOTAL Price.

**A. Price for New 2'-6" Crest Gate:**

1. Figures: \$ 424,860.
2. Words: Four hundred twenty four thousand eight hundred sixty

**B. Price for Two (2) New 48" x 48" Slide Gates**

1. Figures: \$ 58,650.
2. Words: Fifty eight thousand six hundred fifty

**C. Price for Electrical Controls and Hydraulic Operating System**

1. Figures: \$ 94,300.
2. Words: Ninety four thousand three hundred

**D. Total Proposed Contract Price (ADD A+B+C)**

1. Figures: \$ 577,810.
2. Words: Five hundred seventy seven thousand eight hundred ten

**E. Bidder Information**

Submitted by: Louis Bartolini

Bidder Company name: Steel-Fab, Inc.

Address: 430 Crawford Street Fitchburg, MA 01420

Telephone number: O: 978-345-1112 C: 978-502-2002

Signature: *Louis Bartolini*

Date: 7/13/2020

**EXHIBIT D**

**VENDOR'S INSURANCE CERTIFICATES**  
**(See attached)**



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
09/17/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).


<b>PRODUCER</b> Mackintire Insurance Agency 11 West Main St  Westborough MA 01581		<b>CONTACT NAME:</b> Tracey Maffel <b>PHONE (A/C, No, Ext):</b> [REDACTED] <b>FAX (A/C, No):</b> [REDACTED] <b>E-MAIL ADDRESS:</b> [REDACTED]	
<b>INSURED</b> Steel-Fab Inc. 430 Crawford St PO Box 2145 Fitchburg MA 01420		<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A:</b> WR Berkley Corporate Group <b>INSURER B:</b> Maine Employers Mutual Insurance Group <b>INSURER C:</b> <b>INSURER D:</b> <b>INSURER E:</b> <b>INSURER F:</b>	

**COVERAGES**      **CERTIFICATE NUMBER:** [REDACTED]      **REVISION NUMBER:** [REDACTED]

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			CPA5316028	09/01/2020	09/01/2021	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 Employee Benefits \$ 1,000,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input checked="" type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			MAA5316029	09/01/2020	09/01/2021	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Uninsured motorist BI \$ 500,000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			CUA 5316030	09/01/2020	09/01/2021	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) if yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	6103800426	09/01/2020	09/01/2021	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.I. EACH ACCIDENT \$ 1,000,000 E.I. DISEASE - EA EMPLOYEE \$ 1,000,000 E.I. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
City of Springfield is included as additional insured with respect to general liability per written contract or agreement.

<b>CERTIFICATE HOLDER</b>  City of Springfield 36 Court Street Room 307 Springfield MA 01103	<b>CANCELLATION</b>  SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  <b>AUTHORIZED REPRESENTATIVE</b> 
---	---