Invitation for Bid (IFB)
Holyoke Dam Inflatable Crest Gate Replacement Project

Final: March 2025

Holyoke Gas & Electric
99 Suffolk Street
Holyoke, MA 01040
(413) 536-9300
www.hged.com

TABLE OF CONTENTS

SUMMARY

Project Introduction

Pursuant to MGL c.30 s.39M and under this Invitation for Bid (IFB), Holyoke Gas & Electric hereinafter referred to as "HG&E", "Owner", or "Department" is soliciting Fixed Lump Sum bids for the replacement of the Rubber Bladders for the Holyoke Dam. The facility is located at 25 Gatehouse Rd. Holyoke, MA 01040. Potential bidders are to provide all equipment, material, and any applicable Subcontractors to successfully fulfill all obligations as outlined in this specification.

Competitive Bidding

The bidding and contract award shall be in full compliance with Chapter 30 inclusive of the Massachusetts General Laws as amended. Bids from Bidders shall be for all the requirements designated in this Invitation for Bid, and the successful bidder, hereinafter referred to as "Contractor" shall be selected on the basis of such bid. Bidders are expected to read all sections of this Invitation for Bid (IFB) and review forms attached or otherwise transmitted with this package.

Mandatory Pre-Bid Meeting

A MANDATORY pre-bid meeting will be held at the project location, 25 Gatehouse Rd. Holyoke, MA on **April 3, 2025.** The meeting will convene promptly at **10:00 a.m. (EST).** All interested Bidders must attend in order for his/her bid to be considered valid. All attendees are requested to bring their own and proper PPE equipment, including but not limited to: hard hats, safety glasses, and steel-toed boots.

Notice of attendance shall be provided, a minimum of 24-hours in advance, via email to Richard Murray (rmurray@hged.com). Questions will not be recorded or answered during the pre-bid meeting, and if answered shall not be relied upon unless the questions are submitted in writing, as follows: Any questions must be submitted electronically in strict accordance with the "***Requests for Information***" Section below, following the pre-bid meeting and answers will be provided to all attendees at a later date via written addenda. No responses to questions shall be relied upon by bidders except for those responses contained in written addenda.

Requests for Information

If any respective Bidder is in doubt of the true meaning of any part of these specifications, plans, or proposed contract documents, he/she may submit a **written** request for an interpretation to:

Chi Wong
Purchasing Coordinator
Holyoke Gas & Electric
99 Suffolk Street, Holyoke, MA 01040
Tel 413.536.9308
Email cwong@hged.com

Failure to observe this rule may be grounds for *disqualification.*

Schedule

Contractor shall prepare and submit, with their bid, a schedule for the work specified herein for HG&E's review and approval,

Contract Milestones

- Mandatory Pre-Bid Meeting: April 3, 2025
- Bid due date May 2, 2025
- Notice to proceed May 30th, 2025
- Interim Milestone 01: Order inflatable crest gate replacement materials
- Interim Milestone 02: Deliver materials to the site no later than February 1, 2026
- Interim Milestone 03: Mobilize on site in June 2026 to begin work in the Summer of 2026
- Interim Milestone 04: Work on the replacement of the bladders will commence on July 1, 2026
- Interim Milestone 05: Demobilize from site for the season before high flows and ice sets in, Fall of 2026
- Interim Milestone 06: Mobilize on site in June to begin work in the Summer of 2027
- Interim Milestone 07: Work on the replacement of the bladders will commence on July 1, 2027
- Interim Milestone 08: Complete work and demobilize from site for the season before high flows and ice sets in Fall 2027

Work is expected to be completed over two years and will begin after the upstream fish passage season which typically ends on July 1.

Bid Validity

Submitted bids shall be valid for a time period of sixty (60) days after the bid due date or a longer time frame if mutually agreed upon by a Bidder and HG&E.

WORK PROTOCOL

Scope of Work

The current Bridgestone rubber bladder system was installed in 2001, just prior to the Department purchasing the Project. The Department is soliciting bids for the in-kind replacement of the five rubber bladder sections and clamping plates. At the time of installation, the Contractor will also perform tension tests on 212 of the embedded clamp plate anchors and concrete repairs on the existing crest on a time and material basis. No modifications to the electrical, controls, mechanical, or piping systems are anticipated at this time.

In order to perform all work, the Contractor will need to install cofferdams, including flashboards in the crest of the spillway (to be provided by the Contractor) and pins (provided by HG&E), and tailrace bulkheads at the toe of the spillway in the sections to be replaced at the time of replacement to allow all work to be completed in the dry. Currently, pin sockets in the crest exist from the previous installation which are believed to be suitable for re-use, but the Contractor will need to provide the safety equipment and transport system for erecting, sealing, and maintaining the flashboard system during construction. In the initial lump sum bid the Contractor shall include the price to replace the flashboards on Bay 3 or 4 two times due to damage from high water.

Owners Responsibilities

During the specified working hours below, the rubber bladders being replaced will be placed into a non-operational state in order to provide a safe work environment and suitable construction field conditions, considering the nature of the work. The Contractor shall be responsible and required to continuously coordinate with HG&E regarding planned construction operations by the Contractor and the operation of the available rubber bladders.

Bidders are hereby advised of the following work access restriction, herein referred to as the Annual Spring Fish Passage Season (ASFPS). The ASFPS occurs from April 1 through June 30 of any given year; HG&E under its current operational agreement must operate the existing fish lift facility to facilitate passage of fish species above the dam (upstream), as well as provide adequate downstream river flows to facilitate fish passage through the bascule gate and over the dam apron (downstream). During this period, the Contractor will be restricted from performing work.

Bidders are advised that from time to time throughout the course of any given year flows within the Connecticut River will increase to a degree where the Contractor will be required by HG&E to vacate the dam crest and apron work areas, until such time flows have subsided and no longer pose a threat to personnel, equipment, and materials. In an effort to mitigate the occurrence of Contractor work area demobilizations / evacuations, HG&E shall, to the extent practicable as determined by HG&E, allocate river flows in a preferential manner to maximize the ability of the Contractor to perform work on this contract. Excessive river flows will first be allocated into the First Level Canal, secondly through Hadley Station, finally through the remaining operational rubber bladders.

Drawings

The drawings listed below are provided as references for the project.

Northeast Generator Services Co. Drawings:

43733 – 40009 SH.1 Project Location Map and Drawing Index
43733 - 20001 Rubber Dam Compressor Building Mechanical Equipment and Piping Layout
43733 – 40009 SH. 2 Site Plan, Cross Section, and Details
43733 – 40009 SH. 3A Dam Concrete Plan, Elevation, And Notes
43733 – 40009 SH. 3B Concrete Sections and Details
43733 – 40009 SH. 4 Conduit Plan Sections and Details
43733 – 40009 SH. 5A Compressor Building Plan, Sections & Elevation
43733 – 40009 SH. 5B Compressor Building Plan, Sections & Elevation

Bridgestone Corporation Drawings:

RD-01G-001-3A-R2 Rubber Dam Anchoring Equipment
RD-01G-001-3B-R2 Rubber Dam Anchoring Equipment
RD-01G-001-3C-R1 Rubber Dam Anchoring Equipment
RD-01G-001-2A-R2 Rubber Dam Cross Section
RD-01G-001-2B-R2 Rubber Dam Cross Section
RD-01G-001-2C-R2 Rubber Dam Cross Section
RD-01G-001-1-R1 Rubber Dam Plan View & Front Elevation
RD-01G-001-4A-R2 Rubber Dam Rubber Body & Spacer Parts
RD-01G-001-4B-R2 Rubber Dam Rubber Body & Spacer Parts
RD-01G-001-4C-R1 Rubber Dam Rubber Body & Spacer Parts

Material Specifications

Materials are specified in the scope of work and attached drawings and specifications. Contractor shall follow manufacturer's recommendations for any material not specified.

Prosecution of Work

All work and procedures shall be in full accordance with this Project Manual, HG&E's Terms and Conditions and HG&E's Reimbursable Expenses Guidelines attached hereto and incorporated herein by reference. All work is to be performed in a workmanlike manner in accordance with standard utility practice and in conformance with all applicable rules, standards, and laws including Occupational Safety and Health Act (OSHA) regulations, the National Electric Safety Code (NESC), state and local regulations, and company safety practices and policies.

Protection of the job site, including protection of all labor and the public, is the responsibility of the Contractor. After any work is performed, the area is to be left clean, excess material removed, and any material replaced is to be of the same type as originally in place except as stated herein.

Hours of Work

Unless specifically authorized by HG&E, the work shall be limited to the hours from 7:00 am to 7:00 pm (Eastern Time) Monday through Friday, excluding HG&E Holiday observance periods. The following Holidays are observed:

- New Year's Day
- Martin Luther King, Jr. Day
- President's Day
- Patriots' Day
- Memorial Day
- Juneteenth Independence Day
- Independence Day
- Labor Day
- Columbus Day
- Veterans' Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Day

No work is to be done on Holidays, Saturdays, Sundays, or outside of the work hours described above, without prior written permission of HG&E. Should access to the site at other times be necessary, Contractor shall submit a request to HG&E for review/approval. Contractor shall ensure construction activities do not impact the activities or properties of HG&E and its Departments without prior coordination and consent of these entities.

Contractor's Personnel

Contractor shall supply all personnel required for the completion of the project within the times specified. Contractor shall supply an adequate number of properly trained and certified personnel to perform all of the work described in the Contract Documents.

All Contractor personnel performing work under the contract shall be equipped with the proper personal protective equipment. General supervision of the work shall be supplied by the Contractor as an overhead item included in the quoted bid. Contractor shall enforce safety procedures, strict discipline, and good order among persons performing the Work. If HG&E determines that a particular person does not follow safety procedures, or is unfit or unskilled for the assigned work, the Contractor shall immediately reassign the person on receipt of HG&E's written notice to do so.

HG&E reserves the right to exclude any personnel of the Contractor from work under this contract if, in the opinion of HG&E, they are not properly qualified, not fit to work, perform poorly, or reflect unfavorably on HG&E.

Contractor's Equipment

Contractor shall provide all equipment and personnel necessary to complete the work as outlined in this Project Manual and all attachments. Contractor shall provide all safety equipment required, including personal protection equipment, and shall be responsible for all health & safety on-site in full accordance with OSHA, federal, and State requirements; and safeguard of property. During times when field grounding is required, the Contractor is responsible for providing all equipment as well as installing and removing these grounds.

Equipment shall meet all safety standards and shall be maintained in good condition. Records of OSHA and DOT mandated inspections shall be supplied to HG&E for equipment owned by Contractor upon notice of contract award. HG&E does not reimburse the Contractor for consumable items.

All equipment shall be in satisfactory and safe condition. Contractor shall remove and replace any equipment deemed by HG&E to be in unsatisfactory, unsafe condition or otherwise unsuitable.

Contractor shall warrant that the vehicles furnished meet or exceed all Federal, State, and Local Laws/Regulations in effect from time to time. Contractor shall be solely responsible for any and all noncompliance consequences. HG&E reserves the right to cancel the contract for any non-compliance to this Invitation for Bid.

Contractor shall provide own portable toilet station for Contractor personnel on the jobsite.

Permits

HG&E has determined that no Federal or State permits or City Building Permits will be required. Contractor is responsible for obtaining all proper permitting requirements, related to construction activities, including but not limited to Dig Safe, oversized loads, temporary road closures, and temporary restrictions on the use of public facilities, including the Texon Park.

INSTRUCTIONS TO BIDDERS

Alternates

Bidders may propose alternates to the above requirements if the alternate proposal substantially meets the assembly specification and clearly defines the benefits in terms of economical, reliable, practical and/or better performing designs for similar uses. However, HG&E reserves the right to reject any or all alternate bids at its sole discretion.

Equal Employment and Small and/or Minority Business Requirements

It is the policy of HG&E that small and/or minority business enterprises shall have the maximum practicable opportunity to participate in the performance of public contracts. Bidder agrees that if this bid is accepted, he/she will not engage in employment practices which have the effect of discriminating against employees or prospective employees because of race, color, sex, religion, national origin, age, handicap or political belief or affiliation. In addition, bidder agrees by submittal of this bid, that he/she will abide by all applicable terms and provisions of the Governor's Non-Discrimination Clause and Small and/or Minority Business Clause, Executive Order No. 11246, as amended by Executive Order No. 11375.

Bidder agrees that if this bid is accepted and deficiencies in any aspect of its employment practices and /or MBE utilization are found as a result of review or investigation conducted by HG&E, the Contractor may be required to submit a written Affirmative Action Plan to HG&E for approval.

Health and Safety Standards

Construction under this contract must conform to Federal Occupational Health & Safety Standards. In order to assist Contractors to meet these standards, the Division of Industrial Safety & Hygiene offers a free, confidential, voluntary and expert consultation service.

Contractor may contact the Department of Labor & Industries Construction Service for information or to schedule a consultation visit by contacting the regional office at 165 Liberty St., Springfield, MA, Tel. (413) 734-1421.

Health and Safety Plan (HASP)

All Bidders shall be responsible for the development and implementation of a Health and Safety Plan (HASP). The HASP shall be written in compliance with applicable sections of OSHA 29 CFR 1926 and 1910, as well as state and local regulations. All Bidders must submit their HASP which shall include but not limited to the following:

(1) Bidder's Company Safety Manual

(2) Company Personnel

a. Role and Responsibilities

b. Employee qualifications/training (readily available upon request)

c. Employee Licenses & Certificates (readily available upon request)

(3) Hazard Identification and Controls

a. Job Hazard Analysis (process for identifying and mitigating hazards)

b. Competent Person Designations

(4) Communication

a. Emergency Procedure

b. Clinic/Hospital Directions

c. Incident Reporting and Analysis

d. Daily Job Briefings

e. Project Site Safety Orientation

f. SDS

The HASP shall be submitted to HG&E for comment as part of the bid submittal. Acceptance of a bid submittal that includes a HASP does not constitute acceptance of the HASP. HG&E reserves the right to comment, refuse or request changes of the HASP. HG&E will not accept a Bidder's Safety and Health Plan solely as their HASP submittal. Contractor shall make necessary adjustments immediately after receiving comments from HG&E and resubmit.

HG&E does not approve of nor endorses any HASP. It is the responsibility of the Contractor to develop and operate its own job safety and health programs.

The contents of the Health and Safety plan will be reviewed with each employee and Subcontractor annually and/or at the start of the contract. This will apply before the start of the Project, whenever there is a significant change, or whenever new workers arrive at the Project.

All of the Contractor's employees and Subcontractors shall sign off onto the HASP. This will verify that they have read and understand the contents of the HASP. A copy of the HASP will be posted or readily available for reference for all on sites. The HASP is a living document that can be amended as task, hazards and mitigations are realized.

Prevailing Wage Rates

Prevailing Wage Rates set by the Massachusetts Department of Labor and Industries shall be paid to all personnel engaged in work under this contract. The Contractor & Subcontractors will be required to submit to HG&E certified weekly payroll records and statement of compliance as required under MGL Ch. 149 Sec. 27B. Current Prevailing Wage Rates are attached.

Environmental Standards & Compliance

Requirements for environmental compliance are specified in Section 01 57 05 of the Specifications

Bid Form

Bids will be on a Fixed Lump Sum with Unit Price basis for select items and must be made on the completed Bid Form attached. All prices listed on the Bid Form are to be net and must reflect any prompt payment discounts. Prices quoted must be firm fixed prices and unit prices where indicated.

Unless otherwise indicated in the Invitation for Bid, all prices bid shall be for materials shipped FOB Holyoke, MA, freight prepaid and allowed.

Bids will not be accepted in any other form that is not accompanied by a completely filled out Bid Form attached hereto. Additional information or explanation of terms may be attached, but will not be a substitute for the Bid Form. All information expected to be considered in the award of the contract must be referenced on the Bid Form.

Items quoted which are not in complete accordance with this Invitation for Bid must be clearly labeled as alternates.

All information provided by the Bidder must be verifiable by documentation requested by HG&E. Failure to provide all information, inaccuracy or misstatement may be sufficient cause for rejection of the proposal or rescission of an award. Bidders are encouraged to provide any additional information describing operational abilities. Responses to each requirement in the Bid Form should be in order and clearly marked with the section number to which they respond.

Bidders must type or neatly print applicable information on the Bid Form. All blanks on the Bid Form must be completed. Bidders must label all spaces provided on the Bid Form either with the bid price or "N/A" when the item is not available/not applicable.

The individual signing the bid must initial any change or strikeout. The bid shall contain acknowledgement of receipt of any and all Addenda, the numbers of which must be filled in on the Bid Form.

Bids must be signed in the appropriate space provided for on the Bid Form. Bids signed by an agent must be accompanied by written proof of the right of the agent signing or other evidence of delegated authority to sign.

a. Bids by Corporations must be executed in the corporate name by the President, Vice-President, or other corporate officer accompanied by evidence of authority to sign (Certificate of Corporate

Vote), and the corporate seal must be affixed and attested by the secretary or assistant secretary.

b. Bids by Partnerships must be executed in the partnership's name and signed by a partner whose title must appear under the signature accompanied by evidence of authority to sign.
c. Bids by Individual must be executed in the individual's name by said individual.
d. Bids by Joint Venture must be executed in the joint venture's name by each member of the joint venture accompanied by evidence of authority to sign.
e. All names must be typed or printed in ink below the signature line.

Along with a completed Bid Form, all Bidders are required to furnish the following in order for his/her bid to be valid:

1. An original Bid Deposit, 5% of the total value of the bid
2. Signed Reimbursable Expenses Policy
3. Completed and signed Contractor Information Form
4. Site specific Health and Safety Plan (HASP)
5. Certified copy of Resolution of Board of Directors/Corporate Vote Document (naming the individual signing the bid an authorized signatory of the company).
6. IF Foreign Corporation, State of MA Secretary of State Foreign Corporation Certificate
7. Project Schedule
8. Resumes and relevant certifications of key personnel
9. A list of projects of similar scope and magnitude, for both the general Contractor and for the inflatable crest gate supplier (though not necessarily the same projects) shall be submitted for HG&E to review a Bidder's experience and qualifications as described in the evaluation criteria (qualifications) section below.
10. Proof that the Waiver of Subrogation endorsement required by this contract is already attached to the Bidder's current Workers' Compensation insurance policy

Notes:

i. Information currently on file with HG&E will not be accepted as part of this bid or bid submittal.
ii. Failure to submit any of the above items may result in the rejection of the bid.

Bid Deposit

All Bidders are required to submit a Bid Deposit. The amount of the Bid Deposit shall be 5% of the total value of the bid. Bid Deposits may be in the form of a certified, treasurer's, or cashier's check payable to HG&E from a responsible bank or trust company; cash; or a bid bond from a licensed surety payable to HG&E.

Bid Deposits will be returned within five (5) business days after the bid opening except for the three (3) apparent lowest responsible and eligible bidders. Upon execution and delivery of the contract, the Bid Deposit of the three (3) apparent lowest responsible and eligible bidders will be returned.

If the Contractor fails to enter into the contract or furnish any required bonds within the time specified in this Invitation for Bid together with any extensions granted in writing by HG&E, the amount of the check or bid bond (Bid Deposit) in whole or in part, shall be forfeited to HG&E.

Foreign Corporations

Pursuant to MGL c.30 s.39L, HG&E shall not approve as a Contractor or Subcontractor furnishing labor and materials for a part of any work, a foreign corporation which has not filed with HG&E a certificate of the State Secretary stating that such corporation has complied with requirements of Section 15.03 of subdivision A of Part 15 of Chapter 156D and further has filed all annual reports required by Sections 16.22 of subdivision B of Part 16 of said Chapter 156D and the date of such compliance.

Foreign corporations are defined as Contractors or Subcontractors that are incorporated outside the State of Massachusetts.

Build America, By America (BABA) Requirements

Suppliers shall be responsible for ensuring that the materials provided are compliant with Buy America (BABA) requirements and for providing applicable documentation and certification to that extent. All materials are subject to the domestic preference requirement in § 70914 of the Build America, Buy America Act, (BABA) Pub. L. No. 117-58, div. G, tit. IX, subtit. A, 135 Stat. 429, 1298 (2021), which requires that all steel, iron, manufactured products, and construction materials used in the project be produced in the United States. HG&E reserves the right to select a Supplier that cannot meet BABA requirements if the total cost of procurement from the non-BABA compliant Supplier is at least 30% less than the next closest BABA compliant Supplier or no BABA compliant bids are received.

Davis-Bacon Act Requirements

Work performed in response to this IFB is subject to compliance with the Davis-Bacon Act. Contractor shall be responsible for ensuring work is performed in compliance with the Davis-Bacon Act requirements and for providing applicable documentation and certification to that extent.

Evaluation Criteria

Qualifications

General Contractors shall have and demonstrate satisfactory quality and workmanship experience on hydropower and dam projects of similar scope and magnitude over a period of no less than ten (10) years. The inflatable crest gate supplier shall have and demonstrate satisfactory quality and workmanship experience replacing no less than five (5) inflatable gates in the United States over a period of no less than ten (10) years and have previously manufactured components of similar size and scope to that

described in this document, including having experience in replacing Bridgestone-type bladders and equipment. Bidders shall submit a list of references, with contact names and phone numbers, for similar installations.

Cost and Schedule

Bids shall be evaluated based on the lowest fixed lump sum cost provided for on the Bid Form, the sum of Items A-I.

The capability of the Bidder to furnish the structure(s) and complete installation within the project schedule will also be taken into consideration during bid evaluation.

Exceptions

Exceptions may deem a Bidder non-responsive. HG&E may, at its sole discretion, reject any bid in whole or in part based on exceptions taken. HG&E reserves the right to accept any non-material exception deemed to be acceptable at its sole discretion.

Safety

To qualify as a Contractor to perform the work as described safely, Bidders shall produce the following:

1. Recordable injury incidence rate for the last three years
2. Lost workday incidence rate for the last three years
3. Safety citations, violations or warnings from regulatory agencies over the last five years

Selection

The Bidder offering the lowest overall cost for work to be performed within the prescribed schedule having met qualifications and specifications, in HG&E's sole judgment, shall be awarded the contract.

Disqualification of Bidders

More than one bid for the same work from an individual, or a firm, partnership, corporation or an association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one bid for the work may be cause for disqualification of that Bidder and the rejection of all bids in which that Bidder is interested.

The following without limitation, are some additional causes which may be considered as sufficient for the disqualification of a bidder and the rejection of their bid:

1. Exceptions taken to any part of this Invitation for Bid or HG&E Contract.
2. Evidence of Collusion among Bidders.
3. Poor performance in the execution of work under a previous contract or contracts.
4. Failure to achieve reasonable progress on existing contract.
5. Default on previous contracts or failure to execute contract documents after award.

6. Failure to provide bid bond, certified check or cashier's check.
7. Failure to fully complete the Bid Form and submit required attachments.
8. Qualifiers regarding amounts, prices or specifications.

Contract Award

HG&E may conduct such investigations as HG&E deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Invitation for Bid and Contract Documents to HG&E's satisfaction within the prescribed time.

Bidders must provide information to HG&E as requested after the Bid Due Date in a timely manner if HG&E has any questions as to the specifications for any item(s) bid. Failure to submit in a timely manner may deem a Bidder and his/her bid unresponsive.

HG&E reserves the right to reject any or all bids, to waive any non-material informality or requirement in bids received. HG&E further reserves the right to award a contract based on information provided in the bids, with no further discussions with Bidders. HG&E further reserves the right to withdraw the Invitation for Bid with no contract award.

Pursuant to MGL c.30, s39M, the contract will be awarded to the lowest, responsible and eligible bidder. The contract will be awarded to the Bidder who, in the sole opinion of HG&E, can perform the work in accordance with the Invitation for Bid and is deemed to be in the best interest for HG&E.

Once the award is made, the successful Bidder will receive a telephone notification. The Bidder will then be expected to execute a contract, a sample of which is attached.

Bonds

Pursuant to MGL c.30, s39M, the successful Bidder shall furnish both a Payment Bond and Performance Bond in the amount of 100% of the total contract price.

Bond Terms

Premiums for the Payment and Performance Bonds are to be paid by the Contractor and are included in the proposed cost submitted in response to this Invitation for Bid. The Bond must be furnished to HG&E within five (5) days, Saturdays, Sundays and State of MA Holidays excluded, of the Notification of Contract Award, unless such time period is extended by written permission from HG&E.

Notification of Contract Award is hereby defined as the date and time the Contractor acknowledges receipt of the contract by signing the return receipt document and/or federal express slip that will accompany the contract sent by HG&E.

The Payment Bond shall be posted by a recognized surety company qualified to do business under the laws of the Commonwealth of Massachusetts and who is satisfactory to HG&E and in form satisfactory to HG&E. Any Payment Bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the bond.

The Payment Bond shall be executed by such sureties as are named in the "Listing of Certified Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch of the U.S. Department of Treasury.

Billing

Detailed invoices are to include a description of the work performed, location of the work, hours for each item of billing and all pertinent details as to the work performed. Invoices not submitted within thirty (30) days of the work may be refused for payment.

ALL invoices shall be accompanied by Weekly Certified Payroll Records and Statement of Compliance in full accordance with the MA Prevailing Wage Law, MGL c.149 s.26-27C. Invoices received without the required documentation, will not be processed for payment until such time when all the required forms and documentation is received by the Accounts Payable Department.

In no case shall payments be made for work not previously inspected and approved by an HG&E Representative. Contractor will not be paid for any work unless prior approval has been received from HG&E in writing, nor will HG&E pay for any work that, in the opinion of HG&E, fails to comply with this Invitation for Bid or HG&E requirements.

Payment Terms

HG&E agrees to pay the Contractor in full within thirty (30) days after delivery and acceptance of complying invoices, providing that all invoices are emailed to: **accountspayable@hged.com**

In the event invoices can't be emailed to HG&E, please mail them to:

Accounts Payable
Holyoke Gas & Electric
99 Suffolk Street
Holyoke, MA 01040

Invoices must be received before the 5th of the month in order to be paid by the City Treasurer on the 22nd of the same month. Invoices received after the 5th of the month will not be paid until the 22nd of the following month.

All materials provided under this Contract are exempt from the Sales and Use Taxes of the

Commonwealth of Massachusetts. The tax exemption number will be provided to the Contractor.

Insurance Requirements

Contractor shall have sufficient insurance in force during the term of the contract to protect HG&E for all claims arising out of the prosecution of the work under this contract. The Contractor shall arrange and maintain at its own expense the following forms of insurance covering his own total liability and the total liability of HG&E applying to all operations undertaken by Contractor, his agents and employees and shall consult with HG&E on all matters arising with respect to such insurance including the name of the insurer.

Said insurance will provide protection from claims set forth below which may arise out of or result from the Contractor's performance of the work and it's other obligations under the Contract Documents, whether it is to be performed by the Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the work, or by anyone whose acts any of them may be liable:

A. Claims under worker's compensation, disability benefits, and other similar employee benefit acts, *with waiver of subrogation in favor of HG&E;*
B. Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees, *with waiver of subrogation in favor of HG&E;*
C. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
D. Claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    i) By any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    ii) By any other person for any other reason.
E. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting there from; and
F. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

Holyoke Gas & Electric must be named as an "Additional Insured" for all insurance coverages listed below, except Workers Compensation. Contractor shall provide, as a minimum, the following insurance:

1. Bodily Injury Liability and Property Damage Liability Limits of at least $5,000,000/$5,000,000. The policy should provide Comprehensive Form General Liability - Premises/Operations, Products/Completed Operations Hazard, Contractual Insurance, Broad Form Property Damage, Independent Contractors, Personal Injury and Comprehensive General Liability Broad Form Supplement Endorsement.
2. Owned, Hired and Non-Owned Automobile Bodily Injury Coverage in the amount of $5,000,000/$5,000,000 and Property Damage in the amount of $5,000,000.

3. Worker's Compensation and Employers Liability - $500,000 each accident, *with waiver of subrogation in favor of HG&E.*
4. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting there from.

Along with the executed Contract, the Contractor shall provide proof of the above coverage by certificates naming HG&E as an 'Additional Insured' presented at 99 Suffolk Street, Holyoke, MA 01040.

Bid Protocol

All questions regarding this Invitation to Bid, or any proposed Contract Documents shall be directed in ***writing***, to:

Chi Wong
Purchasing Coordinator
Holyoke Gas & Electric
99 Suffolk Street, Holyoke, MA 01040
Tel 413.536.9308
Email cwong@hged.com

A Bidder may, without prejudice to himself, withdraw, modify, or correct a bid after it has been deposited with HG&E, provided the request for such withdrawal, modification, or correction is filed with HG&E in writing before the Bid Opening Date. The original bid as modified by such written communication will be considered as the proposal submitted by the Bidder.

If any person contemplating submitting a bid for the work covered by the Invitation for Bid is in doubt as to the meaning or intent of any part thereof, he/she shall at once notify HG&E in writing and request clarification prior to submitting his/her bid. All interpretations will be made only by formal written Addenda and shall be issued to all interested Bidders. In order to be reviewed and considered, questions must be received no less than four (4) days prior to the bid due date. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. HG&E will not be responsible for any other interpretation.

Written Addenda may be issued prior to the date of Bid Opening Date to clarify the Invitation for Bid or to reflect modification in the scope of work or terms and conditions. Written Addenda issued will be distributed to every person or organization to which the Invitation to Bid has been issued. The recipient shall acknowledge receipt of each Addendum in the submitted bid. All Addenda issued become a part of the Invitation for Bid. Bidders are responsible for determining that they have received all Addenda issued.

Bids Due

The right is hereby reserved to reject any bid not made on the form provided, to waive any nonmaterial irregularity or informality, to reject any or all bids, or to accept any bid which is deemed, at HG&E's sole discretion, to be in the best interest of Holyoke Gas & Electric

Bids must be submitted in a **SEALED** envelope in the form of one (1) original hard copy (Fully completed Bid Form with all required original signatures, and completed required submittals, supporting documents, etc.) and one(1) thumb drive, containing the same plainly marked, **"Holyoke Dam Inflatable Crest Gate Replacement Project"** and addressed to:

Mr. James M. Lavelle, Manager
Holyoke Gas & Electric
99 Suffolk Street
Holyoke, MA 01040

In order to be considered, bids must be received no later than **2:00 p.m. (EST) on May 2, 2025,** at which time the bids will be publicly opened and read. HG&E is not responsible for the premature opening of a bid not properly addressed and identified in accordance with this Invitation for Bid.

Bids may be mailed to the above address or delivered in person prior to the designated bid opening date and time. When mailing bids, Bidders must take into consideration standard postal delivery times. Oral, telegraphic, telephonic, electronic (e-mail) or facsimile bids are invalid and will NOT receive consideration. Bids received after the date and time specified above will be returned unopened.

Bids will be primarily in lump sums with select unit prices as specified and must be made on the completed Bid Form. All bids must be typewritten or written in ink. A bid containing an alteration or an erasure of any price contained in the bid, which is used in determining award of the bid, shall be rejected unless the alteration or erasure is corrected as herein provided. An alteration or erasure may be crossed out, and the correction thereof printed in ink or typewritten adjacent thereto, and initialed in ink by the person signing the bid.

In the case of identical low bids from two or more Bidders, HG&E may at his discretion utilize negotiation procurement methods with the tied low Bidders for that particular transaction, so long as the prices paid do not exceed the low tied bid price.

Prior to the date and time of bid opening, any submitted bid may be withdrawn or modified by notice in writing over the signature of the Bidder. Notice may be provided by telegraphic or facsimile means, provided that written confirmation is mailed and postmarked by the date and time of bid opening. Withdrawn bids may be re-submitted up to the date and time of bid opening.

MEASUREMENTS AND PAYMENTS

A. Fabrication & Delivery of Rubber Bladders & Clamp Plates (Bid Form, Item A)

1. Payment of the Lump Sum bid price for all necessary Fabrication and Material Delivery of the five (5) inflatable crest gates and clamping assemblies (i.e. manufacture, material shipment, etc.)

B. Site Mobilization / Demobilization (Bid Form, Item B)

1. Payment of the Lump Sum bid prices 1 through 4 for Item 'B' shall be full compensation for the planned annual mobilization and demobilization required for this project based upon annual river flow and access to the work area. If additional annual mobilizations are required to complete construction a contract amendment or change order will be required.

C. Inflatable Crest Gate # X (Bid Form Item 'Y')
(Crest Gates 1, 2, 3, 4, and 5 (#X) correspond to Bid Form, Items C, D, E, F and G ('Y') respectively.)

1. Payment of the Lump Sum price 1 for item 'Y' shall be full compensation for furnishing all labor, equipment, and material for constructing and maintaining a cofferdam and suitable working environment on crest gate #X. The Department will provide the steel pins that interface with the mounting holes in the dam's crest.
2. Payment of the Lump Sum price 2 for item 'Y' shall be full compensation for the removal, transportation, and disposal of the existing inflatable crest gate #X and clamping assembly.
3. Following the removal of crest gate #X the Contractor will submit to the Department and Engineer an inspection and estimate for concrete repair of the dam crest. Payment for concrete repairs will be in accordance with Units Prices specified in Bid Item 'H'.
4. Payment of the Lump Sum price for 3 for item "Y" shall be for full compensation for conducting tension testing of the anchor bolts and providing the results to the Department and Engineer. The number and location of the bolts to be tested varies by gate and is specified the Bid Form Item and attached testing data from installation. If more testing is determined necessary by the Department or Engineer, payment will be in accordance with the Unit Price specified in item "I". Should replacement of any anchor bolt be necessary, a change order will be required.
5. Payment of the Lump Sum price 4 for item 'Y' shall be in full compensation for furnishing all labor, equipment, and transportation for in the installation of the replacement gate #X and clamping assembly.
6. Payment of the Lump Sum price 5 for item 'C' shall be in full compensation for furnishing all labor, equipment and material for testing the operation of crest Gate #X.
7. Payment of the Lump Sum price 6 for item 'C' shall be in full compensation for furnishing all labor and equipment for the removal and disposal of the cofferdam on gate #X. The Department expects the steel flashboard pins be reused to the maximum extent possible and returned to the Department when no longer serviceable or required.

D. Concrete Repair (Bid Form, Item 'H')

1. Payment for Unit Price 1 through 8 for item 'H' shall be in full compensation for concrete repairs on the dam crest for the size of repair and quantity specified. Owner shall transmit to Contractor written direction on extent of concrete repairs required, as specified in Section 03 01 30, Paragraph 3.1.A.5.

E. Additional Work as Authorized by the Owner through Change Orders (Bid Form, Item 'I')

1. Payment of the Unit Price 1 for item 'I' shall be in full compensation for the 'evacuation' and remobilization of personnel, material, and equipment from the work site as directed by the Owner due to high water.
2. Payment of the Unit Price 2 for item 'I' shall be in full compensation for General Conditions and Equipment standby costs during times of high water when directed by the Owner to abandon the works site. Total compensation for this item will not exceed sixteen (16) days.
3. Payment of the Unit Prices 3 through 5 for item 'I' shall be in full compensation for replacement of flashboards after a high water event, for the span length specified.
4. Payment of the Unit Price 6 for item 'I' shall be in full compensation for repair of the downstream cofferdam after a high water event.
5. Payment of the Unit Price 7 for item 'I' shall be in full compensation for conducting tension testing of additional anchor bolts.

SAMPLE CONTRACT

CITY OF HOLYOKE, GAS & ELECTRIC DEPARTMENT

THIS AGREEMENT made this XX day of XXXXX 2025 by and between

XXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXX

Hereinafter called the Contractor, and City of Holyoke Gas & Electric Department, a municipal corporation duly established which owns and operates its own Municipal Gas and Electric Plants, hereinafter called the Department.

WITNESSETH, that the Department and Contractor, in consideration of Ten Dollars and other valuable considerations and covenants, and agreements herein contained, agree as follows:

1. **THE CONTRACTOR** will furnish all labor, supplies, equipment, tools, and all other facilities and things necessary or proper or incidental to:
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

according to the standard set out in 3. STANDARD OF WORK, below, and with first class materials.

2. **TO BEGIN WORK** The Contractor shall begin the work upon the signing of this contract and shall proceed to the completion before **XXXXXXXXXXXXXXXXX.**

3. **STANDARD OF WORK** All work to be done pursuant to this contract must be completed in full conformance with the following documents: HG&E *xxxxxxxxxxxxxxxxxxxxx Invitation for Bid, HG&E Terms and Conditions.* In evaluating this standard, the parties shall take into account the fact that the City of Holyoke Gas & Electric Department is a municipal lighting plant as described in General Laws, Chapter 164, Sections 34 through 69, inclusive. Contractor specifically acknowledges that the supplies, equipment, tools and all other facilities and things are being sold subject to all implied warranties and warranties imposed by law, including but not limited to, merchantability and fitness for a particular purpose.

4. **PAYMENTS BY DEPARTMENT** The Department will pay and the Contractor will accept in full consideration for the complete performance of this contract the XXXXXXXXXXXXXXXXXXXXXXXXXX. Sums which shall be paid as completely set forth in Section XX of the Invitation for Bid.

5. **EXTRA WORK OR CHANGES** The Department may order extra work or may make changes by altering, adding to or deducting from the work, and all changes shall be performed under the conditions of this contract and the Contractor shall have no claim for extra compensation in any case unless, before any change is made or any extra work done or materials furnished, the Department shall have ordered the change or extra work in writing in advance and shall have specified in writing the amount which shall be added or subtracted from the contract price thereby. Extra work shall be billed to the Department not later than fifteen (15) days after completion of each assignment of additional or changed work. No verbal agreement or conversation with any officer, agent or employee of the Department, either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained. No officer, agent or employee of Department, including

the Engineer, shall have any power or authority whatsoever to bind the Department or incur any obligation in its behalf to any Subcontractor, material supplier or other person in any manner whatsoever, except the Department Manager.

6. ASSIGN, SUBLET OR TRANSFER This contract or the right to receive payment there under shall not be assigned, sublet or transferred, in any way, in whole or in part except with the advance written consent of the Department.

7. INSURANCE AND INDEMNIFICATION The Contractor, at all times, shall provide protection to the Department by adequate insurance against all claims for injuries and damage to persons or property which may occur upon the premises during the progress of the work. The Contractor shall, before commencing performance of the contract, provide by insurance for the payment of compensation and the furnishing of benefits under General Laws, Chapter 152, to all persons to be employed under the contract and the Contractor shall continue such insurance in full force and effect during the term of the contract and waiving subrogation against HG&E. The Contractor shall furnish sufficient proof of compliance with this requirement in the form of a certificates of insurance naming the Department as an 'Additional Insured' before this contract shall be in effect. No cancellation of such insurance whether by the insurer or by the insured shall be valid unless written notice thereof is given by the party proposing cancellation to the other party, and to the Department at least 30 days prior to the intended effective date thereof, which date shall be expressed in said notice. Failure to provide and continue in force such insurance shall be deemed a material breach of contract and shall operate as an immediate termination thereof. Any notice of cancellation shall comply with the requirements of General Laws, Chapter 149, Sec. 34A. As additional consideration, Contractor indemnifies, holds harmless and defends with Department counsel, Department and its agents and employees from any and all claims, damages, losses and expenses, including without limitation attorneys and experts fees, arising directly or indirectly out of or resulting from performance of this contract.

8. STATUTES, ORDINANCES, ETC. Each and every provision of any statute, rule, regulation, or ordinance made by virtue of any statute, which is required by law to be inserted in the contract, shall be deemed to be inserted herein and the contract shall be construed always as if such provisions are included herein, including without limitation GL c 30 ss 39F-39P, c 44 s 31C and c 149. If any such provision is not included herein specifically through mistake, oversight, or misinterpretation of law or fact, then upon application of either party the contract shall be altered or amended to make a suitable insertion.

9. SAFETY Prior to commencement of any work, the Contractor shall submit a site specific Health & Safety Plan (HASP), which complies with OSHA 29 CFR 1910 and 1926, State and local regulations, and all other legal requirements. HG&E is a Gas, Electric, and Telecommunications Utility therefore all HASPs must comply with, 29 CFR 1910.268 and 1910.269, and all other legal requirements. The Contractor shall designate an employee to implement and oversee the HASP, and the HASP must be on-site through completion of the contract.

Acceptance of the HASP document by the Department does not constitute acceptance of the content of the Contractor's HASP, as it is intended that the Department shall only verify existence of such HASP. The Department shall not bear any responsibility or liability for the Contractor's completeness of and adherence to the HASP. The Contractor is solely responsible and liable for its HASP.

10. THE CONTRACTOR Shall conform to and comply with all the provisions of municipal ordinances, the General Laws of Massachusetts and the United States Code, including but not limited to, Chapters

7, 30, 62C, 111F and 149 of the General Laws of Massachusetts, relating to public works and other matters, whenever applicable including the requirements hereinbefore and hereinafter stated.

Materials or supplies delivered under this Contract must be accompanied by any necessary form relating to toxic or hazardous substances including, but not limited to, Material Safety Data Sheets required by the United States Code or the General Laws of Massachusetts. For guidance, the Contractor will use the Massachusetts Substance List (MSL) described in Chapter 111F of the General Laws of Massachusetts and 105 CMR 670.

The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor, and until the expiration of six years after final payment, Department and other public officials designated by the Department shall have the right to examine any books, documents, papers or records of the Contractor or of its Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or its Subcontractors.

11. EMPLOYEES Insofar as this contract is a contract for construction of a public work involving the employment of mechanics, teamsters, chauffeurs and laborers, preference shall first be given to citizens of the Commonwealth who have served in the Armed Forces of the United States in time of war and have been honorably discharged there from, or released from active duty therein, and who are qualified to perform the work to which the employment is related, and secondly to citizens of the Commonwealth generally and if they cannot be obtained in sufficient numbers, then to citizens of the United States. Preference shall be given at all times to veterans as defined by statute who are residents of the City of Holyoke.

12. WAGES The Contractor shall pay the minimum rates of wages for employees established for this work by the Commissioner of Labor and Industries under General Laws, Chapter 149, Section 27, and the schedule of wages so established are incorporated herein and made a part of this contract. Weekly payroll verification must be submitted to the Department on a weekly basis in accordance with General Laws, Chapter 149, Section 27B.

13. POLICE OFFICER Police Officer or Officers shall be provided and paid for the by the Department when deemed necessary.

14. TERMINATION The Department, on three days written notice, may suspend, postpone, abandon or terminate this contract, or any part hereof, and such action shall in no event be deemed a breach of contract. Such suspension, postponement, abandonment, or termination may come about for the convenience of the Department or as a result of the Contractor's failure to render to the satisfaction of the Department the services required of him under this contract, including the progress of work under such services. Upon receipt of written notice from the Department that this contract, or any part hereof, is terminated, the Contractor shall immediately cease operation of the work stipulated, and assemble all material that has been prepared, developed, furnished or obtained under the terms of this contract that may be in his possession or custody, and shall transmit the same to the Department on or before the fifteenth day following the receipt of the above-written notice of termination, together with his evaluation of the cost of the work performed. The Contractor shall be entitled to just and equitable payment in accordance with this contract for any uncompensated work satisfactorily performed prior to such notice.

The Department shall determine the amount of acceptable work performed by the Contractor under this contract. The Department's evaluation shall be used as a basis to determine the amount of compensation due

him for this work, provided it shall be made in good faith and supported by substantial evidence. In determining the value of the work performed by the Contractor prior to termination, no consideration will be given to profit which the Contractor might have reasonable expected to make on the uncompleted portion of the work.

15. WAIVER Any waiver by the Department of any violation or omission of any particular item of this contract or the plans or specifications shall be considered, always, only as a waiver of the particular violation or omission and shall not at any time be considered or construed as a waiver of any term of this contract or of any requirement of the plans and specifications nor shall any such waiver of any particular violation or omission in any way affect the obligation of the bond and the surety thereon given by the Contractor.

16. CONTRACTOR TO PAY The Contractor shall pay all claims for labor and materials and for equipment, insurance and all facilities employed in the performance of the contract without undue delay, shall defend and indemnify the Department against all such claims and against all claims for injuries or damages arising out of the performance of the contract and the manner or method in which the work is accomplished.

17. CHANGES, ALTERATIONS OR ADDITIONS Any changes, extensions of time, alterations or additions to this contract made in accordance with its terms or any changes in the work to be performed made in the plans or specifications, shall be deemed to be made under the provisions hereof and shall not affect the obligations of the bond or surety thereon; nor shall a failure to give notice of changes, alterations or additions to the surety on said bond affect the obligation of said surety, all of said notices being waived by the execution by said surety of the bond for the performance of the contract and the payment of all claims relating thereto.

18. BONDS This agreement shall not be in force nor shall it have any binding effect until and unless the Contractor shall furnish a satisfactory performance and payment surety bond conforming to the provisions of General Laws, Chapter 149, Sec. 29 and in form acceptable to the Department.

19. PERMITS AND NOTIFICATIONS Whenever the work to be done requires opening of a highway, it shall be the duty of the Contractor to obtain any necessary State or municipal permits for such work and to comply with all requirements of the authority issuing such a permit regarding the manner in which said opening shall be made and the highway replaced, and the time within which, and the circumstances under which the work may be performed, without extra cost to the Department. The Contractor is required, in keeping with General Laws, Chapter 82, Section 40, to notify other utilities of the proposed work.

20. ARBITRATION Any dispute or disagreement between the Department and Contractor arising under this contract shall be submitted to arbitration upon the request of either party, specifying the issue or issues in dispute and summarizing the party's claim with respect thereto. Copies of any such request shall be served on the opposing party. Within ten (10) days after receipt of such a request, authorized representatives of the Contractor and the Department shall confer and attempt to agree upon appointment of a single arbitrator. If such agreement is not accomplished, the Contractor or the Department may request appointment of a single arbitrator. If such agreement is not accomplished, the Contractor or the Department may request the American Arbitration Association to appoint an arbitrator in accordance with its Commercial Arbitration Rules, which rules shall govern the conduct of the arbitration in the absence of a contrary agreement by the Contractor and the Department.

The arbitrator shall conduct a hearing in Holyoke, Massachusetts, and within thirty (30) days thereafter, unless such time is extended by agreement of the parties, shall notify the parties in writing of his decision stating separately findings of fact and determinations of law. The arbitrator shall not have the power to add to or amend

the contract. Subject to such limitation, the decision of the arbitrator shall be final and binding on all parties except that either party may petition a court of competent jurisdiction for review of errors of law. The decision of the arbitrator shall determine and specify how the expenses of arbitration shall be allocated between the Department and the Contractor.

21. APPLICABLE LAW This agreement is made under and shall be governed by the laws of the Commonwealth of Massachusetts and by the courts of the Commonwealth in Hampden County.

22. SEVERABILITY If any one or more of the terms, provisions, promises, covenants or conditions of this contract shall to any extent be adjudged invalid, unenforceable, void or voidable for any reason whatsoever by a court of competent jurisdiction, each and all other remaining terms and provisions, covenants and conditions of this agreement shall not be affected thereby and shall be valid and enforceable to the fullest extent permitted by law.

23. LEGAL CERTIFICATION By acceptance of this contract, Contractor certifies that it has complied and will continue to comply with all ordinances, laws and regulations, including but not limited to all Massachusetts tax laws, and certifies that it is authorized to do business in Massachusetts.

IN WITNESS WHEREOF, signed this instrument, and the City of Holyoke Gas and Electric Department has caused the signature of its Manager, James M. Lavelle, to be hereto affixed for the Municipal Gas and Electric Commission.

IN PRESENCE OF:

CONTRACTOR

XXXXXXXXXXXXX

_____

By_____

Date:

CITY OF HOLYOKE
GAS AND ELECTRIC DEPARTMENT

_____

By_____
James M. Lavelle, Manager

Date:

By_____
City Auditor

Date:

TERMS & CONDITIONS

AGREEMENT

The following Terms & Conditions are hereby incorporated by reference into any Agreement or Purchase Order and shall constitute the entire understanding between HG&E and the Supplier and no modifications, rescission, waiver or termination of the Agreement or any of its Terms and Conditions, shall be binding on HG&E unless agreed to in writing by HG&E in advance.

Special Conditions, included in an Invitation for Bids, Request for Proposals, or Contract, are part of the Agreement or Purchase Order when referenced. If there is a conflict between the Contract or Purchase Order and these Terms and Conditions, these Terms and Conditions shall take precedence.

PERFORMANCE

If the Supplier shall fail in any respect to perform any obligation under the Agreement or Purchase Order with promptness and diligence, HG&E may cancel the Agreement or Purchase Order in part or in its entirety without liability to HG&E whatsoever for any portion(s) so canceled.

WARRANTY

The Supplier warrants to HG&E that the article(s) supplied and/or work performed under the Agreement or Purchase Order shall be free from all encumbrances and shall be in accordance with HG&E requirements, shall be new and free from defects in material, workmanship and shall meet all HG&E specifications, industry standards and instructions.

If the article(s) purchased and/or work performed does not meet the warranty above, HG&E, after determining a defect or non-conformance, will notify the Supplier by email. At the sole discretion of HG&E, the Supplier shall replace, repair or restore without cost to HG&E, any defects or non-conformance arising within one (1) year after date of delivery of the article(s) furnished and/or the work performed.

Any replacement, repair, or re-performed work and services furnished by the Supplier under aforesaid warranty shall carry one-year warranties on the same terms as the original work and/or services.

PATENTS, TRADEMARKS, COPYRIGHTS

It is mutually agreed and understood that the Agreement or Purchase Order includes assignment from Supplier of all royalties and costs arising from patents, trademarks and copyrights in any way involved with the work and/or services. If the Supplier, or any of its Subcontractors, are required or desires to use any design, device, material or process covered by letters, patents, trademark or copyright, the Supplier shall indemnify, defend with HG&E counsel and hold harmless HG&E from any and all claims for infringement by reason of use of any such patented design, device, material or process to be performed under the Agreement and shall further indemnify HG&E for any actions, claims, expenses, including without limitation attorneys and experts fees and expenses, and damage which HG&E incurs or may be obligated to pay by reason of such infringement and/or any investigation related thereto at any time during the performance or after the completion of the work. HG&E will give to the Supplier notification of any such action, claim, or proceeding and shall furnish the Supplier (at the Suppliers expense) all needed information and assistance to enable the Supplier to defend the same with HG&E counsel.

If any material, equipment or work in any action, claim or proceeding is held to constitute infringement or its use is enjoined, the Supplier, within 30 days after email notice from HG&E, shall either secure for HG&E, at the Supplier's

sole expense, the right to continue using said material, equipment or work by suspension of the injunction, by procuring for HG&E a license, or otherwise, or shall at the Supplier's sole expense and as HG&E may elect, replace such material, equipment or work or modify it so that it becomes non-infringing, or remove such infringing material, equipment or work and refund the sums paid theretofore by HG&E, all without injury or damage to any other property of HG&E.

INSPECTIONS AND EXPEDITING

All materials, equipment and/or work to be supplied under the Agreement or Purchase Order are subject to inspections and expediting by HG&E or its representatives. The Supplier shall allow HG&E or its representative reasonable access to the work place or the Supplier's Subcontractors.

COMPLIANCE WITH LAW

The Supplier shall give all notices required by law and comply with all laws, ordinances, rules and regulations relating to the conduct of the performance of the contract. Any provision required by law to be included herein shall be deemed included as a part of the Agreement or Purchase Order whether or not specifically referenced. The Supplier shall comply with all applicable federal, state and local laws, rules and regulations.

The Supplier also agrees to indemnify, defend with HG&E counsel and hold HG&E harmless from any and all damages, injuries, death and liabilities assessed against HG&E as a result of the Suppliers noncompliance therewith.

If the Supplier observes that the drawings or specifications are at variance with any law, ordinance, rule or regulation, HG&E shall be notified promptly in writing, and any necessary changes shall be made pursuant to HG&E's instructions or Change Order. If the Supplier performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and with giving such notice to HG&E, the Supplier shall bear all costs of required changes and be liable to HG&E for all expenses, damages, injuries, death and liabilities arising therefrom.

APPLICABLE LAW

The laws of the Commonwealth of Massachusetts shall govern the rights and obligations arising from the Agreement or Purchase Order; and any litigation between the parties shall occur only in Massachusetts courts in Hampden County.

TAXES

HG&E is an organization exempt from the payment of state and local taxes on tangible property and services and will not reimburse the Supplier for such taxes incurred by the Supplier in the performance of the Agreement or Purchase Order. TAX EXEMPTION NO. E046-001-393.

RISK OF LOSS

Risk of loss and/or liability for damages for any of the goods specified in the Agreement or Purchase Order shall remain with the Supplier until such goods are delivered and accepted by HG&E. All deliveries shall be F.O.B. Holyoke, Massachusetts unless otherwise designated by HG&E in the Agreement or Purchase Order.

IDENTIFICATION

The Supplier shall properly identify each shipment, by Purchase Order or Contract Number, commodity description and packing list. All items, packages, etc. must have clearly identifiable external markings or tags for ease of identification.

ASSIGNMENT

Neither the Agreement or Purchase Order nor any payment due or to become due hereunder shall be assignable by the Supplier without the prior written consent of HG&E in its sole discretion. Any such assignment(s) without HG&E's prior written consent shall be void.

Should HG&E agree to an assignment, the Supplier shall remain fully responsible for the acts and omissions of the Supplier's assignee and the Supplier shall indemnify, defend with HG&E counsel and hold HG&E harmless from any and all loss and expense arising out of the assignment.

AUDIT

The Supplier shall, at its own expense, keep and maintain complete records and books of account of its costs and expenses relating to the work in accordance with generally accepted accounting practices. Should a dispute arise between HG&E and the Supplier regarding amounts and/or credits under the Agreement, the Supplier hereby grants HG&E or its Representatives permission to audit such records and books of account at the Supplier's usual place of business at reasonable times.

CONFIDENTIALITY

Any of HG&E's drawings, specification or technical information used by the Supplier hereunder, shall remain the property of HG&E and shall be held in confidence by the Supplier and shall not be reproduced or disclosed to others without the advance written permission of HG&E in its sole discretion.

WAIVER

In the event HG&E fails to insist on strict performance of any of the terms and conditions or fails to exercise any of its rights and privileges hereunder, such a failure shall not constitute a waiver of such terms, conditions, rights or privileges.

COMPLETION OF CONTRACT

The Agreement or Purchase Order will not be considered complete until all specifications and requirements have been met and accepted by HG&E in its sole discretion. These requirements include, but are not limited to, HG&E's acceptance of all documentation, drawings, manuals, plans and publications.

SUPPLEMENTARY TERMS, CONDITIONS AND QUALIFICATIONS:

JOB PERFORMANCE

For labor related transactions, at all times, contract employees will personally present themselves and perform in a professional manner that reflects the high standard of work quality and customer service continually provided by HG&E.

HG&E maintains the right to discontinue the service, at any time, of any contract employee, contract crew, consultant, vendor or Contractor, due to unacceptable behavior, poor work ethics, unacceptable work performance, unsuitable appearance, and/or work standards or any other reason determined to be in the best interest of the HG&E as deemed by the HG&E's Senior Management Staff in its sole discretion.

The Supplier shall warrant work performance of employees in ability, knowledge, quality and quantity of work. Supplier will be solely responsible for any and all negligent or willful acts and inactions, and losses through their employees' and agents' acts.

HG&E reserves the right to cancel the contract due to Supplier's failure to comply with the performance standards, qualifications, and quality control, or non-compliance to any part of these specifications as determined by the HG&E Senior Management Staff in its sole discretion.

LIABILITY

The Supplier will indemnify, defend with HG&E counsel and hold harmless HG&E protection against any and all accidents, injuries, death, damages, or hurt, and any investigations related thereto, including without limitation attorneys and experts fees and expenses. HG&E is not responsible in any manner for any loss or damage that may happen to the work or to any part thereof, or to any person, persons or property whatsoever, or to any of the tools or materials used and employed in the performing and completion of the work.

DOWNTIME

HG&E will not compensate for any down time due to the Supplier's equipment failure, poor preparation, lack of appropriate tools for job assignments, or any other condition that results in the inability of the Supplier to perform the required work or furnish the required materials, equipment and/or supplies.

PRICING

Prices quoted to HG&E which resulted in issuance of a Purchase Order are not subject to change by Supplier or its supply chain.

PREVAILING WAGES

For contracts that require the payment of Prevailing Wage Rates to all personnel engaged in work, the Supplier warrants it will comply with all provisions and requirements as set forth by the Commonwealth of Massachusetts General Laws covering Prevailing Wage Rates, and shall indemnify, defend with HG&E counsel and hold harmless HG&E from all liability resulting, including without limitation attorneys and experts fees and expenses.

PAYMENT TERMS

Payment terms are net thirty (30) days after receipt of invoice by HG&E, if there are no disputes by HG&E with the invoices received. For contracts that require the payment of Prevailing Wage Rates to all personnel engaged in work, Invoices will not be processed for payment without Weekly Certified Payroll Reports and Statement of Compliance as required by Commonwealth of Massachusetts Laws relative to Prevailing Wages.

INSURANCE REQUIREMENTS

GENERAL REQUIREMENTS

Suppliers involved in contracts or work performed on or to HG&E property and/or within the HG&E service area must comply with the following insurance requirements and coverages. Coverages listed are minimum requirements and will apply unless otherwise stated and agreed to in writing by HG&E in advance.

HG&E SECURITY AGAINST LOSS OR LIABILITY

The Supplier agrees that it shall indemnify, defend with HG&E counsel and hold harmless HG&E and any and all of HG&E's or the City of Holyoke's officers, agents, consultants and employees from any loss, injury, death, damage, cost, charge or expense, whether direct or indirect and whether to persons or property, to which HG&E or said other party may be put or subjected, by reason of any act, action, neglect, omission or default on the part of the Supplier's officers, agents, or employees, or by reason for any casualty to the property and/or construction whether completed or not, including without limitation attorneys and experts fees and expenses, and all investigation costs related thereto.

In case any action or other proceeding shall be brought against HG&E or the City of Holyoke or any of HG&E's or the City of Holyoke's officers, agents, consultants or employees at any time on account of or by reason of any act, action, neglect, omission or default of the Supplier or any Subcontractor, or any of the Supplier's or Subcontractor's officers, agents, or employees, or by reason of any casualty to the property and/or assessment whether completed or not, the Supplier agrees to reimburse to HG&E all costs, charges, attorneys and experts fees and expenses, and all other expenses incurred for the defense and/or investigation thereof and any and all judgments that may be incurred by or obtained against HG&E or any of their officers, agents or employees in such suits or placed upon the property of HG&E, the property owner or any of their officers, agents, consultants or employees as a result of such suits or other proceedings.

Supplier shall provide HG&E annually Certificates of Insurance as evidence of all insurance. It is further agreed that Supplier shall name HG&E as an "Additional Insured" and provide HG&E a thirty (30) day written notice of cancellation and/or non-renewal.

LIABILITY INSURANCE

Personal Injury: The Supplier shall purchase and maintain public general liability insurance in an amount of at least $5,000,000.00 covering personal injuries or death suffered or alleged to have been suffered by any person or persons by reason of or in the course of operations under the contract, whether occurring by reason of acts or omissions of the Supplier or any Subcontractor or anyone directly or indirectly employed by them.

Property damage: The Supplier shall purchase and maintain public general liability insurance in an amount of at least $5,000,000.00 covering damages to property suffered or alleged to have been suffered by any person or persons by reason of or in the course of operations under the contract, whether occurring by reason of acts or omissions of the Supplier or any Subcontractor or anyone directly or indirectly employed by them.

WORKERS' COMPENSATION INSURANCE

Insurance Amount: The amount and type of such industrial accident or workers' compensation insurance shall be that required by these specifications for all employees under this contract who may come within the protection of such laws and in the absence of such laws, the amount and type shall be that required by the HG&E, and shall be in the amount of statutory limits required by Massachusetts law.

CASUALTY INSURANCE

Insurance Requirements: The Supplier shall purchase and maintain liability insurance covering the loss by casualty of all or any part of the contract and/or specifications whether completed or not, to indemnify itself from losses imposed by law or assumed under contract by the Supplier. Such casualty insurance shall be in an amount of no less than $5,000,000.00 and shall include but not be limited to, loss by, fire, earthquake, landslide, flood, weather, storm, damage resulting from faulty workmanship, construction and/or design and vandalism. The Supplier and HG&E shall each be named as "Insured or Additional Insured" as their interests may appear.

CERTIFICATION OF INSURANCE COVERAGE

All insurance required under this contract shall be provided on policy forms, from companies and through agencies satisfactory to HG&E in its sole discretion. The Supplier shall not cause any insurance policy to be canceled, permit any policy to lapse or reduce the amount of such insurance during the period of the contract. All insurance policies shall include a provision to the effect that the insurance policy shall not be subject to cancellation, lapse, or to a reduction in the amount of insurance until written notice has been delivered to HG&E by the insuring company stating the date that such cancellation, lapse or reduction shall be effective, which date shall be not less than thirty(30) days after the delivery of such notice.

Within ten (10) days after notification of acceptance of the proposal and prior to execution of the contract, the Supplier shall file with HG&E Certificates from their insurance companies certifying to the coverage of all insurance required herein and furnish copies of all insurance policies.

All Certificates of Insurance shall name HG&E as an "Additional Insured", shall contain a Waiver of Subrogation in favor of HG&E, shall be authenticated by the proper officer of the insured and shall certify the names of those insured, the type and amount of the insurance, the location and operations to which the insurance applies, the expiration date, and that the insuring company will give written notice to HG&E of at least thirty (30) days prior to the effective date of any cancellation, lapse, or reduction in limits. Said insurance will provide protection from claims set forth above and below which may arise out of or result from the Supplier's performance of the work and it's other obligations under the Contract Documents, whether it is to be performed by the Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the work, or by anyone whose acts any of them may be liable:

a. Claims under worker's compensation, disability benefits, and other similar employee benefit acts;

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

c. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

d. Claims for damages resulting from personal injury or death liability coverage which are sustained:

   i. By any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

   ii. By any other person for any other reason;

   iii. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting there from; and

iv. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

Insurance Period: Insurance shall be maintained in effect until final approval by HG&E of the completed contract.

Partial payment: The making of partial payments to the Supplier shall not create an insurable interest by or for HG&E or relieve the Supplier or Subcontractors of responsibility for any casualty occurring prior to final acceptance of said contract and specifications.

MINIMUM COVERAGES

HG&E must be named as an "Additional Insured" for all insurance coverages listed below. The Supplier shall provide, as a minimum, the following insurance:

1. Bodily Injury Liability and Property Damage Liability Limits of at least $5,000,000/$5,000,000. The policy should provide Comprehensive Form General Liability - Premises/Operations, Products/Completed Operations Hazard, Contractual Insurance, Broad Form Property Damage, Independent Contractors, Personal Injury and Comprehensive General Liability Broad Form Supplement Endorsement. HG&E must be named as Additional Insured.

2. Owned, Hired and Non-Owned Automobile Bodily Injury Coverage in the amount of $5,000,000/$5,000,000 and Property Damage in the amount of $5,000,000.

3. Worker's Compensation and Employers Liability - $1,000,000 each claim.

4. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting there from in the amount of $5,000,000/$5,000,000.

Holyoke Dam Inflatable Crest Gate Replacement Project

Bid Form

FROM:_____

Mr. James M. Lavelle, Manager
Holyoke Gas & Electric
99 Suffolk Street
Holyoke, MA 01040

Dear Mr. Lavelle:

A lump sum cost with unit price items is hereby submitted to fulfill the requirements of Holyoke Gas & Electric's **Holyoke Dam Inflatable Crest Gate Replacement Project** in accordance with the Invitation for Bid dated March 2025 and accompanying plans, drawings, and Contract Documents.

The undersigned Bidder proposes and agrees, if this bid is accepted, to enter into a contract with HG&E in the form included in the Contract Documents to perform all work as specified in the Contract Documents for the costs and within the times indicated below and in accordance with the other terms and conditions of the Contract Documents. *(Bidder shall enter the bid price in words and figures in the spaces below. Where a discrepancy occurs between the price in words and the price in figures, the price in words shall rule).*

The undersigned Bidder proposes to furnish, deliver and install a new inflatable crest gates and associated items (all work to be in strict accordance with the Invitation for Bid documents) for the Total Initial Lump Sum Cost of:

_____Dollars

($_____.____) Figures

The subdivision of the above proposed Contract Price is as follows:

A.	Fabrication & Delivery of Rubber Bladders & Clamp Plates	$_____	Lump Sum
B.	Site Mobilization / Demobilization		
1.	Site Mobilization 2026	$_____	Lump Sum
2.	Site Mobilization 2027	$_____	Lump Sum
3.	Site Demobilization 2026	$_____	Lump Sum
4.	Site Demobilization 2027	$_____	Lump Sum
C.	Inflatable Crest Gate #1		
1.	Installation of Cofferdam	$_____	Lump Sum
2.	Removal of Existing Gate Assembly	$_____	Lump Sum
3.	Testing of Anchor Bolts (15)	$_____	Lump Sum
4.	Installation of New Gate Assembly	$_____	Lump Sum

5.	Operational Testing of New Gate Assembly	$	Lump Sum
6.	Removal of Cofferdam	$	Lump Sum

D. Inflatable Crest Gate #2

1.	Installation of Cofferdam	$	Lump Sum
2.	Removal of Existing Gate Assembly	$	Lump Sum
3.	Testing of Anchor Bolts (54)	$	Lump Sum
4.	Installation of New Gate Assembly	$	Lump Sum
5.	Operational Testing of New Gate Assembly	$	Lump Sum
6.	Removal of Cofferdam	$	Lump Sum

E. Inflatable Crest Gate #3

1.	Installation of Cofferdam	$	Lump Sum
2.	Removal of Existing Gate Assembly	$	Lump Sum
3.	Testing of Anchor Bolts (66)	$	Lump Sum
4.	Installation of New Gate Assembly	$	Lump Sum
5.	Operational Testing of New Gate Assembly	$	Lump Sum
6.	Removal of Cofferdam	$	Lump Sum

F. Inflatable Crest Gate #4

1.	Installation of Cofferdam	$	Lump Sum
2.	Removal of Existing Gate Assembly	$	Lump Sum
3.	Testing of Anchor Bolts	$	Lump Sum
4.	Installation of New Gate Assembly	$	Lump Sum
5.	Operational Testing of New Gate Assembly	$	Lump Sum
6.	Removal of Cofferdam	$	Lump Sum

G. Inflatable Crest Gate #5

1.	Installation of Cofferdam	$	Lump Sum
2.	Removal of Existing Gate Assembly	$	Lump Sum
3.	Testing of Anchor Bolts (16)	$	Lump Sum
4.	Installation of New Gate Assembly	$	Lump Sum
5.	Operational Testing of New Gate Assembly	$	Lump Sum
6.	Removal of Cofferdam	$	Lump Sum

H. Concrete Repair

1.	Less than 2”, between 1-50 sqft of repair	$	per sqft
2.	Less than 2”, 50 sqft or more of repair	$	per sqft
3.	2” to 6” no rebar, between 1-50 sqft of repair	$	per sqft
4.	2” to 6” no rebar, 50 sqft or more of repair	$	per sqft
5.	2” to 6” with rebar, between 1-50 sqft of repair	$	per sqft
6.	2” to 6” with rebar, 50 sqft or more of repair	$	per sqft
7.	Greater than 6”, between 1-50 sqft of repair	$	per sqft

8.	Greater than 6", 50 sqft or more of repair	$ _____	per sqft

I. Additional Work as Authorized by the Owner through Change Orders

1.	'Evacuation' of Personnel, Material, and Equipment as directed by the Owner during times of highwater	$ _____	Per event
2.	Standby Cost for General Conditions and Equipment when the Owner has directed 'evacuation' (NTE 16 days)	$ _____	per day
3.	Replacement of flashboards after a high water event, 51' span	$ _____	per linear foot
4.	Replacement of flashboards after a high water event, 65' span	$ _____	per linear foot
5.	Replacement of flashboards after a high water event, 291' span	$ _____	per linear foot
6.	Repair of downstream cofferdam after a high water event	$ _____	per linear foot
7.	Testing of additional anchors	$ _____	per anchor

Addenda

This Bid includes Addenda numbered (list individually):___, ____, ____, ____, ____, ____.

References for Similar Work: (Provide contact name, company, job type and telephone #)

(1)_____

(2)_____

(3)_____

Safety

Please provide OSHA safety incidence rates for 2022, 2023, and 2024 for the following items:

	Recordable Injury Incidence Rate	Lost Workday Incidence Rate
2022	_____	_____
2023	_____	_____
2024	_____	_____

Note below any safety citations, violations or warnings from regulatory agencies over the last five years. (Attach additional sheets if necessary).

_____

_____

_____

Bidder's Acknowledgements

Bidder accepts all of the terms and conditions of the Bidding Documents, including without limitation, those dealing with the disposition of Bid Deposit (if applicable). The Bid will remain subject to acceptance for sixty (60) days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of HG&E.

Bidder's Representations

In submitting this Bid, Bidder represents that:

a) Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents and the Addenda, receipt of all which is hereby acknowledged.
b) Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and procurement of the material identified herein.
c) Bidder has given HG&E written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by HG&E is acceptable to Bidder.
d) The Bidding Documents are sufficient to indicate and convey understanding of all terms and conditions for the work for which this Bid is submitted.
e) Bidder is familiar with and is satisfied as to the working conditions that may affect cost, progress, and performance of the work.

f) Bidder is aware of the general nature of work to be performed as indicated by the Bidding Documents.

Bidder's Certifications

Bidder certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work, that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

This request is made under the authority of the Massachusetts General Laws, Chapter 30 Section 39S, which provides that the preceding Certification be furnished by persons submitting a bid or proposal for the construction, reconstruction, alteration, remodeling or repair of any public work estimated to cost more than $10,000, or construction, reconstruction, installation, demolition, maintenance, or repair of any public building estimated to cost more than $10,000.

Bidder certifies that, under the penalties of perjury, to the best of Bidder's knowledge and belief, that Bidder has filed all State tax returns and paid all State taxes required by law. Bidder certifies that Bidder is in compliance with all laws of the Commonwealth of Massachusetts relating to taxes and reporting of employees and Contractors, and withholding and remitting child support.

Approval of a contract or other agreement will not be granted unless this Certificate is completed and signed by the Bidder. This request is made under MGL c.62C s.49A, which provides, among other matters, that "no contract or other agreement for the purpose of providing goods, services or real estate to any of the foregoing agencies shall be entered into, renewed or extended with any person unless such person certifies in writing, under the penalties of perjury, that he/she has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support".

Bidder certifies that, under the penalties of perjury, this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity; Bidder certifies that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation; Bidder certifies that Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

This request is made under the authority of the Massachusetts General Laws Chapter 30 Section 39M which provides that the preceding Certification be furnished by persons submitting a bid or proposal for public building construction projects.

Bidder certifies under the penalties of perjury that Bidder is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of Section 29F of Chapter 29 of the General Laws, or any other applicable debarment provisions of any other Chapter of the General Laws, or any Rule or Regulation promulgated there under.

Approval of a contract or other agreement will not be granted unless this Certification is completed and signed by the Bidder. A Bidder who is presently debarred from public bidding will not be awarded a contract or agreement.

If a Foreign Corporation (Contractor or Subcontractor that is incorporated outside the State of Massachusetts), Bidder certifies Bidder will file with bid submittal to Owner a certificate of the State Secretary stating that Bidder's corporation has complied with requirements of Section 15.03 of subdivision A of Part 15 of Chapter 156D and further has filed all annual reports required by Sections

16.22 of subdivision B of Part 16 of said Chapter 156D and the date of such compliance.
This request is made under the authority of the Massachusetts General Laws, Chapter 30 Section 39L, which provides that the preceding Certification be furnished by persons submitting a bid or proposal for the construction, reconstruction, alteration, remodeling or repair of any public work estimated to cost more than $10,000, or construction, reconstruction, installation, demolition, maintenance, or repair of any public building estimated to cost more than $10,000.

Bidder certifies that Bidder has not solicited or induced any individual or entity to refrain from bidding; and Bidder certifies that Bidder has not engaged in corrupt, fraudulent, collusive, of coercive practices in competing for the Contract. For the purposes of this paragraph:

a) "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
b) "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of HG&E, (b) to establish bid prices at artificial noncompetitive levels, or (c) to deprive HG&E of the benefits of free and open competition;
c) "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of HG&E, a purpose of which is to establish bid prices at artificial, noncompetitive levels; and
d) "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

Bidder certifies that if awarded the Contract, it shall be his/her responsibility to ensure that:

a) All of its employees assigned to a job under this Contract will have all required licenses and certifications, and such licenses and certifications shall remain current throughout the course of the work.
b) All of its employees assigned to a job under this Contract will be properly trained for the job at hand.
c) All work under this Contract is performed in accordance with standard utility practice and in conformance with all applicable rules, standards, and laws.
d) The submitted Health and Safety Plan as approved by HG&E, is adhered to.
e) All tools and equipment utilized by the Contractor shall be appropriate for the job, in accordance with any applicable specifications, and maintained in good, properly functioning condition.

Attachments to this Bid

The following documents are attached to and made a condition of this Bid:

1. An original Bid Deposit, 5% of the total value of the bid
2. Signed Reimbursable Expenses Policy
3. Completed and signed Contractor Information Form
4. Site specific Health and Safety Plan (HASP)
5. Certified copy of Resolution of Board of Directors/Corporate Vote Document (naming the individual signing the bid an authorized signatory of the company).
6. IF Foreign Corporation, State of MA Secretary of State Foreign Corporation Certificate

7. Project Schedule
8. Resumes and relevant certifications of key personnel
9. A list of projects of similar scope and magnitude, for both the general Contractor and for the inflatable crest gate supplier (though not necessarily the same projects) shall be submitted for HG&E to review a Bidder's experience and qualifications as described in the evaluation criteria (qualifications) section above.
10. Proof that the Waiver of Subrogation endorsement required by this contract is already attached to the Bidder's current Workers' Compensation insurance policy

Bid Submittal

The bid is submitted by:

_____ Date_____
(Print Name of Firm Submitting this Bid)

_____ Phone No. _____
(Print Name and Title of Person Submitting this Bid)

_____ Email:_____
(Business Address)

_____ SS# or Federal ID #: _____
(City, State, and Zip Code)

If Bidder is:

An Individual

By _____

(Individual's Signature)

_____

(Printed or Typed Name of Individual)

Doing Business as_____

License or Registration Number:_____

Business Address: _____

_____

A Partnership

By_____

(Firm's Name)

By _____

(Partner's Signature)

_____

(Printed or Typed Name and Title of Partner)

License or Registration Number:_____

Business Address: _____

_____

_____

A Corporation

By_____

(Corporation's Name)

_____

(State of Incorporation)

By_____

(Signature of Officer Authorized to Sign)

_____

(Printed or Typed Name and Title of Officer Authorized to Sign)

(CORPORATE SEAL)

Attest

_____

(Secretary)

License or Registration Number:

_____

Business Address:

_____

A Joint Venture

By

_____

(Signature)

_____

(Printed or Typed Name)

_____

(Address)

By

_____

(Signature)

_____

(Printed or Typed Name)

_____

(Address)

(Each joint venture must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

NEW SUPPLIER/CONTRACTOR INFORMATION FORM

NOTE: A copy of the Supplier's/Contractor's W-9 Form must be submitted with this form. Please email the completed form and W-9 to accountspayable@hged.com.

SECTION 1 - GENERAL INFORMATION

Legal Business Name:

Payment Remit to Address:

City: State: Zip Code:

Federal Tax ID No:

SECTION 2 - CONTACT INFORMATION

Sales Rep Contact Name:

Sales Rep Email Address:

Sales Rep Telephone No:

A/R Contact Name:

A/R Email Address:

A/R Telephone No:

Form Completed By:

Date:

HG&E PAYMENT TERMS:

HG&E payment terms are net thirty (30) days after receipt of invoice, if there are no discrepancies with the invoices received.

For invoices that require the payment of Prevailing Wage Rates to all personnel engaged in work, invoices will not be processed for payment without Weekly Certified Payroll Reports and Statement of Compliance as required by Commonwealth of Massachusetts Laws relative to Prevailing Wages.

DRAWINGS

Northeast Generator Services Co. Drawings:

43733 – 40009 SH.1 Project Location Map and Drawing Index
43733 - 20001 Rubber Dam Compressor Building Mechanical Equipment and Piping Layout
43733 – 40009 SH. 2 Site Plan, Cross Section, and Details
43733 – 40009 SH. 3A Dam Concrete Plan, Elevation, And Notes
43733 – 40009 SH. 3B Concrete Sections and Details
43733 – 40009 SH. 4 Conduit Plan Sections and Details
43733 – 40009 SH. 5A Compressor Building Plan, Sections & Elevation
43733 – 40009 SH. 5B Compressor Building Plan, Sections & Elevation

Bridgestone Corporation Drawings:

RD-01G-001-3A-R2 Rubber Dam Anchoring Equipment
RD-01G-001-3B-R2 Rubber Dam Anchoring Equipment
RD-01G-001-3C-R1 Rubber Dam Anchoring Equipment
RD-01G-001-2A-R2 Rubber Dam Cross Section
RD-01G-001-2B-R2 Rubber Dam Cross Section
RD-01G-001-2C-R2 Rubber Dam Cross Section
RD-01G-001-1-R1 Rubber Dam Plan View & Front Elevation
RD-01G-001-4A-R2 Rubber Dam Rubber Body & Spacer Parts
RD-01G-001-4B-R2 Rubber Dam Rubber Body & Spacer Parts
RD-01G-001-4C-R1 Rubber Dam Rubber Body & Spacer Parts

PREVAILING WAGE RATES

MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: Holyoke Gas & Electric Department

Contract Number:

City/Town: HOLYOKE

Description of Work: This project will replace the five (5) inflatable rubber flash-board sections on the crest of the Holyoke Dam. The current rubber sections were installed in 2001 and have exceeded their service life.

Job Location: 25 Gatehouse Road

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F "rental of equipment" contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27.The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Issue Date: 03/04/2025 **Wage Request Number:** 20250304-008

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$39.95	$15.57	$20.17	$0.00	$75.69
	06/01/2025	$40.95	$15.57	$20.17	$0.00	$76.69
	12/01/2025	$40.95	$15.57	$21.78	$0.00	$78.30
	01/01/2026	$40.95	$16.17	$21.78	$0.00	$78.90
	06/01/2026	$41.95	$16.17	$21.78	$0.00	$79.90
	12/01/2026	$41.95	$16.17	$23.52	$0.00	$81.64
	01/01/2027	$41.95	$16.77	$23.52	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.02	$15.57	$20.17	$0.00	$75.76
	06/01/2025	$41.02	$15.57	$20.17	$0.00	$76.76
	12/01/2025	$41.02	$15.57	$21.78	$0.00	$78.37
	01/01/2026	$41.02	$16.17	$21.78	$0.00	$78.97
	06/01/2026	$42.02	$16.17	$21.78	$0.00	$79.97
	12/01/2026	$42.02	$16.17	$23.52	$0.00	$81.71
	01/01/2027	$42.02	$16.77	$23.52	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.14	$15.57	$20.17	$0.00	$75.88
	06/01/2025	$41.14	$15.57	$20.17	$0.00	$76.88
	12/01/2025	$41.14	$15.57	$21.78	$0.00	$78.49
	01/01/2026	$41.14	$16.17	$21.78	$0.00	$79.09
	06/01/2026	$42.14	$16.17	$21.78	$0.00	$80.09
	12/01/2026	$42.14	$16.17	$23.52	$0.00	$81.83
	01/01/2027	$42.14	$16.77	$23.52	$0.00	$82.43
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 3)* For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2024	$117.16	$10.08	$24.29	$0.00	$151.53
AIR TRACK OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.50	$9.65	$17.07	$0.00	$63.22
	06/02/2025	$37.75	$9.65	$17.07	$0.00	$64.47
	12/01/2025	$39.00	$9.65	$17.07	$0.00	$65.72
	06/01/2026	$40.30	$9.65	$17.07	$0.00	$67.02
	12/07/2026	$41.60	$9.65	$17.07	$0.00	$68.32
	06/07/2027	$43.00	$9.65	$17.07	$0.00	$69.72
	12/06/2027	$44.40	$9.65	$17.07	$0.00	$71.12
	06/05/2028	$45.90	$9.65	$17.07	$0.00	$72.62
	12/04/2028	$47.40	$9.65	$17.07	$0.00	$74.12
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.50	$9.65	$15.06	$0.00	$61.21
	06/01/2025	$37.75	$9.65	$15.06	$0.00	$62.46
	12/01/2025	$38.99	$9.65	$15.06	$0.00	$63.70
	06/01/2026	$40.29	$9.65	$15.06	$0.00	$65.00
	12/01/2026	$41.58	$9.65	$15.06	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
ASBESTOS WORKER (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)*	12/01/2024	$38.52	$14.50	$10.55	$0.00	$63.57
	06/01/2025	$39.42	$14.50	$10.55	$0.00	$64.47
	12/01/2025	$40.32	$14.50	$10.55	$0.00	$65.37

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT RAKER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.56	$13.78	$15.15	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER OPERATOR *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.56	$13.78	$15.15	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
BATCH/CEMENT PLANT - ON SITE *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.03	$13.78	$15.15	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.50	$9.65	$17.07	$0.00	$63.22
	06/02/2025	$37.75	$9.65	$17.07	$0.00	$64.47
	12/01/2025	$39.00	$9.65	$17.07	$0.00	$65.72
	06/01/2026	$40.30	$9.65	$17.07	$0.00	$67.02
	12/07/2026	$41.60	$9.65	$17.07	$0.00	$68.32
	06/07/2027	$43.00	$9.65	$17.07	$0.00	$69.72
	12/06/2027	$44.40	$9.65	$17.07	$0.00	$71.12
	06/05/2028	$45.90	$9.65	$17.07	$0.00	$72.62
	12/04/2028	$47.40	$9.65	$17.07	$0.00	$74.12
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.50	$9.65	$15.06	$0.00	$61.21
	06/01/2025	$37.75	$9.65	$15.06	$0.00	$62.46
	12/01/2025	$38.99	$9.65	$15.06	$0.00	$63.70
	06/01/2026	$40.29	$9.65	$15.06	$0.00	$65.00
	12/01/2026	$41.58	$9.65	$15.06	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2024	$48.12	$7.07	$20.60	$0.00	$75.79

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$31.28	$7.07	$13.22	$0.00	$51.57
2	65	$31.28	$7.07	$13.22	$0.00	$51.57
3	70	$33.68	$7.07	$14.23	$0.00	$54.98
4	75	$36.09	$7.07	$15.24	$0.00	$58.40
5	80	$38.50	$7.07	$16.25	$0.00	$61.82
6	85	$40.90	$7.07	$17.28	$0.00	$65.25
7	90	$43.31	$7.07	$18.28	$0.00	$68.66
8	95	$45.71	$7.07	$19.32	$0.00	$72.10

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)*	02/01/2025	$54.21	$11.49	$21.46	$0.00	$87.16
	08/01/2025	$56.36	$11.49	$21.46	$0.00	$89.31
	02/01/2026	$57.71	$11.49	$21.46	$0.00	$90.66
	08/01/2026	$59.91	$11.49	$21.46	$0.00	$92.86
	02/01/2027	$61.31	$11.49	$21.46	$0.00	$94.26

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 Springfield/Pittsfield*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$27.11	$11.49	$21.46	$0.00	$60.06
2	60	$32.53	$11.49	$21.46	$0.00	$65.48
3	70	$37.95	$11.49	$21.46	$0.00	$70.90
4	80	$43.37	$11.49	$21.46	$0.00	$76.32
5	90	$48.79	$11.49	$21.46	$0.00	$81.74

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.18	$11.49	$21.46	$0.00	$61.13
2	60	$33.82	$11.49	$21.46	$0.00	$66.77
3	70	$39.45	$11.49	$21.46	$0.00	$72.40
4	80	$45.09	$11.49	$21.46	$0.00	$78.04
5	90	$50.72	$11.49	$21.46	$0.00	$83.67

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL*OPERATING*	12/01/2023	$39.56	$13.78	$15.15	$0.00	$68.49
ENGINEERS LOCAL 98						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN	12/01/2024	$48.10	$9.65	$18.22	$0.00	$75.97
LABORERS - FOUNDATION AND MARINE	06/01/2025	$49.60	$9.65	$18.22	$0.00	$77.47
	12/01/2025	$51.10	$9.65	$18.22	$0.00	$78.97
	06/01/2026	$52.65	$9.65	$18.22	$0.00	$80.52
	12/01/2026	$54.15	$9.65	$18.22	$0.00	$82.02
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER	12/01/2024	$46.95	$9.65	$18.22	$0.00	$74.82
LABORERS - FOUNDATION AND MARINE	06/01/2025	$48.45	$9.65	$18.22	$0.00	$76.32
	12/01/2025	$49.95	$9.65	$18.22	$0.00	$77.82
	06/01/2026	$51.50	$9.65	$18.22	$0.00	$79.37
	12/01/2026	$53.00	$9.65	$18.22	$0.00	$80.87
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN	12/01/2024	$47.28	$9.65	$18.22	$0.00	$75.15
LABORERS - FOUNDATION AND MARINE	06/01/2025	$48.78	$9.65	$18.22	$0.00	$76.65
	12/01/2025	$50.28	$9.65	$18.22	$0.00	$78.15
	06/01/2026	$51.83	$9.65	$18.22	$0.00	$79.70
	12/01/2026	$53.33	$9.65	$18.22	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
LABORERS - ZONE 3 (BUILDING & SITE)	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
CARPENTER	03/01/2025	$43.26	$7.91	$18.15	$0.00	$69.32
CARPENTERS LOCAL 336 - HAMPDEN HAMPSHIRE FRANKLIN	09/01/2025	$44.21	$7.91	$18.15	$0.00	$70.27
	03/01/2026	$45.11	$7.91	$18.15	$0.00	$71.17
	09/01/2026	$46.06	$7.91	$18.15	$0.00	$72.12
	03/01/2027	$46.96	$7.91	$18.15	$0.00	$73.02

Apprentice - *CARPENTER - Local 336 Hampden Hampshire Franklin*

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$19.47	$7.91	$1.40	$0.00	$28.78
2	45	$19.47	$7.91	$1.40	$0.00	$28.78
3	55	$23.79	$7.91	$2.76	$0.00	$34.46
4	55	$23.79	$7.91	$2.76	$0.00	$34.46
5	70	$30.28	$7.91	$15.39	$0.00	$53.58
6	70	$30.28	$7.91	$15.39	$0.00	$53.58
7	80	$34.61	$7.91	$16.77	$0.00	$59.29
8	80	$34.61	$7.91	$16.77	$0.00	$59.29

Effective Date - 09/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$19.89	$7.91	$1.38	$0.00	$29.18
2	45	$19.89	$7.91	$1.38	$0.00	$29.18
3	55	$24.32	$7.91	$2.76	$0.00	$34.99
4	55	$24.32	$7.91	$2.76	$0.00	$34.99
5	70	$30.95	$7.91	$15.39	$0.00	$54.25
6	70	$30.95	$7.91	$15.39	$0.00	$54.25
7	80	$35.37	$7.91	$16.77	$0.00	$60.05
8	80	$35.37	$7.91	$16.77	$0.00	$60.05

Notes:

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	10/01/2024	$26.65	$7.02	$4.80	$0.00	$38.47
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2025	$27.75	$7.02	$4.80	$0.00	$39.57
	10/01/2026	$28.85	$7.02	$4.80	$0.00	$40.67

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
All Aspects of New Wood Frame Work						

Apprentice - *CARPENTER (Wood Frame) - Zone 3*

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$15.99	$7.02	$0.00	$0.00	$23.01
2	60	$15.99	$7.02	$0.00	$0.00	$23.01
3	65	$17.32	$7.02	$1.00	$0.00	$25.34
4	70	$18.66	$7.02	$1.00	$0.00	$26.68
5	75	$19.99	$7.02	$4.80	$0.00	$31.81
6	80	$21.32	$7.02	$4.80	$0.00	$33.14
7	85	$22.65	$7.02	$4.80	$0.00	$34.47
8	90	$23.99	$7.02	$4.80	$0.00	$35.81

Effective Date - 10/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$16.65	$7.02	$0.00	$0.00	$23.67
2	60	$16.65	$7.02	$0.00	$0.00	$23.67
3	65	$18.04	$7.02	$1.00	$0.00	$26.06
4	70	$19.43	$7.02	$1.00	$0.00	$27.45
5	75	$20.81	$7.02	$4.80	$0.00	$32.63
6	80	$22.20	$7.02	$4.80	$0.00	$34.02
7	85	$23.59	$7.02	$4.80	$0.00	$35.41
8	90	$24.98	$7.02	$4.80	$0.00	$36.80

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)*	07/01/2024	$44.56	$13.20	$19.23	$1.69	$78.68

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Springfield/Pittsfield*

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.28	$13.20	$16.30	$0.00	$51.78
2	60	$26.74	$13.20	$19.23	$1.69	$60.86
3	65	$28.96	$13.20	$19.23	$1.69	$63.08
4	70	$31.19	$13.20	$19.23	$1.69	$65.31
5	75	$33.42	$13.20	$19.23	$1.69	$67.54
6	80	$35.65	$13.20	$19.23	$1.69	$69.77
7	90	$40.10	$13.20	$19.23	$1.69	$74.22

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.03	$13.78	$15.15	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CRANE OPERATOR *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$43.06	$13.78	$15.15	$0.00	$71.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 3*	01/01/2025	$58.46	$9.95	$23.95	$0.00	$92.36

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.23	$9.95	$0.00	$0.00	$39.18
2	55	$32.15	$9.95	$6.66	$0.00	$48.76
3	60	$35.08	$9.95	$7.26	$0.00	$52.29
4	65	$38.00	$9.95	$7.87	$0.00	$55.82
5	70	$40.92	$9.95	$20.32	$0.00	$71.19
6	75	$43.85	$9.95	$20.93	$0.00	$74.73
7	80	$46.77	$9.95	$21.53	$0.00	$78.25
8	90	$52.61	$9.95	$22.74	$0.00	$85.30

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$47.00	$9.65	$18.40	$0.00	$75.05
	06/02/2025	$48.50	$9.65	$18.40	$0.00	$76.55
	12/01/2025	$50.00	$9.65	$18.40	$0.00	$78.05
	06/01/2026	$51.55	$9.65	$18.40	$0.00	$79.60
	12/07/2026	$53.05	$9.65	$18.40	$0.00	$81.10
	06/07/2027	$54.65	$9.65	$18.40	$0.00	$82.70
	12/06/2027	$56.25	$9.65	$18.40	$0.00	$84.30
	06/05/2028	$57.93	$9.65	$18.40	$0.00	$85.98
	12/04/2028	$59.60	$9.65	$18.40	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$48.00	$9.65	$18.40	$0.00	$76.05
	06/02/2025	$49.50	$9.65	$18.40	$0.00	$77.55
	12/01/2025	$51.00	$9.65	$18.40	$0.00	$79.05
	06/01/2026	$52.55	$9.65	$18.40	$0.00	$80.60
	12/07/2026	$54.05	$9.65	$18.40	$0.00	$82.10
	06/07/2027	$55.65	$9.65	$18.40	$0.00	$83.70
	12/06/2027	$57.25	$9.65	$18.40	$0.00	$85.30
	06/05/2028	$58.93	$9.65	$18.40	$0.00	$86.98
	12/04/2028	$60.60	$9.65	$18.40	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$47.75	$9.65	$18.40	$0.00	$75.80
	06/02/2025	$49.25	$9.65	$18.40	$0.00	$77.30
	12/01/2025	$50.75	$9.65	$18.40	$0.00	$78.80
	06/01/2026	$52.30	$9.65	$18.40	$0.00	$80.35
	12/07/2026	$53.80	$9.65	$18.40	$0.00	$81.85
	06/07/2027	$55.40	$9.65	$18.40	$0.00	$83.45
	12/06/2027	$57.00	$9.65	$18.40	$0.00	$85.05
	06/05/2028	$58.68	$9.65	$18.40	$0.00	$86.73
	12/04/2028	$60.35	$9.65	$18.40	$0.00	$88.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$48.00	$9.65	$18.40	$0.00	$76.05
	06/02/2025	$49.50	$9.65	$18.40	$0.00	$77.55
	12/01/2025	$51.00	$9.65	$18.40	$0.00	$79.05
	06/01/2026	$52.55	$9.65	$18.40	$0.00	$80.60
	12/07/2026	$54.05	$9.65	$18.40	$0.00	$82.10
	06/07/2027	$55.65	$9.65	$18.40	$0.00	$83.70
	12/06/2027	$57.25	$9.65	$18.40	$0.00	$85.30
	06/05/2028	$58.93	$9.65	$18.40	$0.00	$86.98
	12/04/2028	$60.60	$9.65	$18.40	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$47.75	$9.65	$18.40	$0.00	$75.80
	06/02/2025	$49.25	$9.65	$18.40	$0.00	$77.30
	12/01/2025	$50.75	$9.65	$18.40	$0.00	$78.80
	06/01/2026	$52.30	$9.65	$18.40	$0.00	$80.35
	12/07/2026	$53.80	$9.65	$18.40	$0.00	$81.85
	06/07/2027	$55.40	$9.65	$18.40	$0.00	$83.45
	12/06/2027	$57.00	$9.65	$18.40	$0.00	$85.05
	06/05/2028	$58.68	$9.65	$18.40	$0.00	$86.73
	12/04/2028	$60.35	$9.65	$18.40	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$47.00	$9.65	$18.40	$0.00	$75.05
	06/02/2025	$48.50	$9.65	$18.40	$0.00	$76.55
	12/01/2025	$50.00	$9.65	$18.40	$0.00	$78.05
	06/01/2026	$51.55	$9.65	$18.40	$0.00	$79.60
	12/07/2026	$53.05	$9.65	$18.40	$0.00	$81.10
	06/07/2027	$54.65	$9.65	$18.40	$0.00	$82.70
	12/06/2027	$56.25	$9.65	$18.40	$0.00	$84.30
	06/05/2028	$57.93	$9.65	$18.40	$0.00	$85.98
	12/04/2028	$59.60	$9.65	$18.40	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 3)*	08/01/2024	$78.11	$10.08	$24.29	$0.00	$112.48
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 3)*	08/01/2024	$49.19	$10.08	$24.29	$0.00	$83.56
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 3)*	08/01/2024	$83.69	$10.08	$24.29	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 3)*	08/01/2024	$117.16	$10.08	$24.29	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) *DRAWBRIDGE - SEIU LOCAL 888*	07/01/2020	$26.77	$6.67	$3.93	$0.16	$37.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ELECTRICIAN (Including Core Drilling) *ELECTRICIANS LOCAL 7*	12/29/2024	$51.06	$13.25	$15.06	$0.00	$79.37
	06/29/2025	$52.16	$13.50	$15.21	$0.00	$80.87
	12/28/2025	$53.26	$13.75	$15.36	$0.00	$82.37
	06/28/2026	$54.41	$14.00	$15.46	$0.00	$83.87
	01/03/2027	$55.56	$14.25	$15.56	$0.00	$85.37

Apprentice - *ELECTRICIAN - Local 7*

Effective Date - 12/29/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$20.42	$7.35	$0.61	$0.00	$28.38
2	45	$22.98	$7.35	$0.69	$0.00	$31.02
3	50	$25.53	$13.25	$7.47	$0.00	$46.25
4	55	$28.08	$13.25	$7.54	$0.00	$48.87
5	65	$33.19	$13.25	$9.74	$0.00	$56.18
6	70	$35.74	$13.25	$11.19	$0.00	$60.18

Effective Date - 06/29/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$20.86	$7.50	$0.63	$0.00	$28.99
2	45	$23.47	$7.50	$0.70	$0.00	$31.67
3	50	$26.08	$13.50	$7.53	$0.00	$47.11
4	55	$28.69	$13.50	$7.61	$0.00	$49.80
5	65	$33.90	$13.50	$9.84	$0.00	$57.24
6	70	$36.51	$13.50	$11.30	$0.00	$61.31

Notes:

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

Apprentice to Journeyworker Ratio:2:3****

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 41*	01/01/2025	$62.83	$16.28	$21.36	$0.00	$100.47
	01/01/2026	$63.68	$16.38	$21.76	$0.00	$101.82
	01/01/2027	$64.53	$16.48	$22.16	$0.00	$103.17

Apprentice - *ELEVATOR CONSTRUCTOR - Local 41*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$31.42	$16.28	$0.00	$0.00	$47.70
2	55	$34.56	$16.28	$21.36	$0.00	$72.20
3	65	$40.84	$16.28	$21.36	$0.00	$78.48
4	70	$43.98	$16.28	$21.36	$0.00	$81.62
5	80	$50.26	$16.28	$21.36	$0.00	$87.90

Effective Date - 01/01/2026

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$31.84	$16.38	$0.00	$0.00	$48.22
2	55	$35.02	$16.38	$21.76	$0.00	$73.16
3	65	$41.39	$16.38	$21.76	$0.00	$79.53
4	70	$44.58	$16.38	$21.76	$0.00	$82.72
5	80	$50.94	$16.38	$21.76	$0.00	$89.08

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 41*	01/01/2025	$43.98	$16.28	$21.36	$0.00	$81.62
	01/01/2026	$44.58	$16.38	$21.76	$0.00	$82.72
	01/01/2027	$45.17	$16.48	$22.16	$0.00	$83.81
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 98*	06/01/1999	$18.84	$4.80	$4.10	$0.00	$27.74
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 98*	06/01/1999	$21.33	$4.80	$4.10	$0.00	$30.23
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 98*	06/01/1999	$22.33	$4.80	$4.10	$0.00	$31.23
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 7*	12/29/2024	$51.06	$13.25	$15.06	$0.00	$79.37
	06/29/2025	$52.16	$13.50	$15.21	$0.00	$80.87
	12/28/2025	$53.26	$13.75	$15.36	$0.00	$82.37
	06/28/2026	$54.41	$14.00	$15.46	$0.00	$83.87
	01/03/2027	$55.56	$14.25	$15.56	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING *ELECTRICIANS LOCAL 7*	12/29/2024	$51.06	$13.25	$15.06	$0.00	$79.37
	06/29/2025	$52.16	$13.50	$15.21	$0.00	$80.87
	12/28/2025	$53.26	$13.75	$15.36	$0.00	$82.37
	06/28/2026	$54.41	$14.00	$15.46	$0.00	$83.87
	01/03/2027	$55.56	$14.25	$15.56	$0.00	$85.37
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.03	$13.78	$15.15	$0.00	$67.96

Apprentice - *OPERATING ENGINEERS - Local 98 Class 3*

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$23.42	$13.78	$15.15	$0.00	$52.35
2	70	$27.32	$13.78	$15.15	$0.00	$56.25
3	80	$31.22	$13.78	$15.15	$0.00	$60.15
4	90	$35.13	$13.78	$15.15	$0.00	$64.06

Notes:

Steps 1-2 are 1000 hrs.; Steps 3-4 are 2000 hrs.

Apprentice to Journeyworker Ratio:1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$27.01	$9.65	$15.06	$0.00	$51.72
	06/01/2025	$28.09	$9.65	$15.06	$0.00	$52.80
	12/01/2025	$28.09	$9.65	$15.06	$0.00	$52.80
	06/01/2026	$29.21	$9.65	$15.06	$0.00	$53.92
	12/01/2026	$29.21	$9.65	$15.06	$0.00	$53.92
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE III*	03/01/2025	$43.26	$7.91	$18.15	$0.00	$69.32
	09/01/2025	$44.21	$7.91	$18.15	$0.00	$70.27
	03/01/2026	$45.11	$7.91	$18.15	$0.00	$71.17
	09/01/2026	$46.06	$7.91	$18.15	$0.00	$72.12
	03/01/2027	$46.96	$7.91	$18.15	$0.00	$73.02

Apprentice - *FLOORCOVERER - Local 2168 Zone III*

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$19.47	$7.91	$1.38	$0.00	$28.76
2	45	$19.47	$7.91	$1.38	$0.00	$28.76
3	55	$23.79	$7.91	$2.76	$0.00	$34.46
4	55	$23.79	$7.91	$2.76	$0.00	$34.46
5	70	$30.28	$7.91	$15.39	$0.00	$53.58
6	70	$30.28	$7.91	$15.39	$0.00	$53.58
7	80	$34.61	$7.91	$16.77	$0.00	$59.29
8	80	$34.61	$7.91	$16.77	$0.00	$59.29

Effective Date - 09/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$19.89	$7.91	$1.38	$0.00	$29.18
2	45	$19.89	$7.91	$1.38	$0.00	$29.18
3	55	$24.32	$7.91	$2.76	$0.00	$34.99
4	55	$24.32	$7.91	$2.76	$0.00	$34.99
5	70	$30.95	$7.91	$15.39	$0.00	$54.25
6	70	$30.95	$7.91	$15.39	$0.00	$54.25
7	80	$35.37	$7.91	$16.77	$0.00	$60.05
8	80	$35.37	$7.91	$16.77	$0.00	$60.05

Notes: Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.25	$13.78	$15.15	$0.00	$68.18
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATORS/LIGHTING PLANTS *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$35.80	$13.78	$15.15	$0.00	$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 1333*	06/01/2020	$39.18	$10.80	$10.45	$0.00	$60.43

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *GLAZIER - Local 1333*

Effective Date - 06/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.59	$10.80	$1.80	$0.00	$32.19
2	56	$22.04	$10.80	$1.80	$0.00	$34.64
3	63	$24.49	$10.80	$2.45	$0.00	$37.74
4	69	$26.94	$10.80	$2.45	$0.00	$40.19
5	75	$29.39	$10.80	$3.15	$0.00	$43.34
6	81	$31.83	$10.80	$3.15	$0.00	$45.78
7	88	$34.28	$10.80	$10.45	$0.00	$55.53
8	94	$36.73	$10.80	$10.45	$0.00	$57.98

Notes:

Apprentice to Journeyworker Ratio:1:3

GRADER/TRENCHING MACHINE/DERRICK *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.56	$13.78	$15.15	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 63*	01/01/2025	$42.23	$12.20	$18.74	$2.13	$75.30
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 7*	12/29/2024	$51.06	$13.25	$15.06	$0.00	$79.37
	06/29/2025	$52.16	$13.50	$15.21	$0.00	$80.87
	12/28/2025	$53.26	$13.75	$15.36	$0.00	$82.37
	06/28/2026	$54.41	$14.00	$15.46	$0.00	$83.87
	01/03/2027	$55.56	$14.25	$15.56	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 63*	01/01/2025	$42.23	$12.20	$18.74	$2.13	$75.30
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) *PLUMBERS & PIPEFITTERS LOCAL 104*	03/17/2024	$49.21	$9.55	$17.10	$0.00	$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PLUMBERS & PIPEFITTERS LOCAL 104*	03/17/2024	$49.21	$9.55	$17.10	$0.00	$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.50	$9.65	$15.06	$0.00	$61.21
	06/01/2025	$37.75	$9.65	$15.06	$0.00	$62.46
	12/01/2025	$38.99	$9.65	$15.06	$0.00	$63.70
	06/01/2026	$40.29	$9.65	$15.06	$0.00	$65.00
	12/01/2026	$41.58	$9.65	$15.06	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)*	09/01/2024	$45.54	$14.75	$19.61	$0.00	$79.90
	09/01/2025	$48.27	$14.75	$19.61	$0.00	$82.63
	09/01/2026	$51.01	$14.75	$19.61	$0.00	$85.37

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Springfield*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.77	$14.75	$14.32	$0.00	$51.84
2	60	$27.32	$14.75	$15.37	$0.00	$57.44
3	70	$31.88	$14.75	$16.43	$0.00	$63.06
4	80	$36.43	$14.75	$17.49	$0.00	$68.67

Effective Date - 09/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.14	$14.75	$14.32	$0.00	$53.21
2	60	$28.96	$14.75	$15.37	$0.00	$59.08
3	70	$33.79	$14.75	$16.43	$0.00	$64.97
4	80	$38.62	$14.75	$17.49	$0.00	$70.86

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)*	03/16/2024	$40.66	$8.25	$22.70	$0.00	$71.61

Apprentice - *IRONWORKER - Local 7 Springfield*

Effective Date - 03/16/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$24.40	$8.25	$22.70	$0.00	$55.35
2	70	$28.46	$8.25	$22.70	$0.00	$59.41
3	75	$30.50	$8.25	$22.70	$0.00	$61.45
4	80	$32.53	$8.25	$22.70	$0.00	$63.48
5	85	$34.56	$8.25	$22.70	$0.00	$65.51
6	90	$36.59	$8.25	$22.70	$0.00	$67.54

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$35.75	$9.65	$17.07	$0.00	$62.47
	06/02/2025	$37.00	$9.65	$17.07	$0.00	$63.72
	12/01/2025	$38.25	$9.65	$17.07	$0.00	$64.97
	06/01/2026	$39.55	$9.65	$17.07	$0.00	$66.27
	12/07/2026	$40.85	$9.65	$17.07	$0.00	$67.57
	06/07/2027	$42.25	$9.65	$17.07	$0.00	$68.97
	12/06/2027	$43.65	$9.65	$17.07	$0.00	$70.37
	06/05/2028	$45.15	$9.65	$17.07	$0.00	$71.87
	12/04/2028	$46.65	$9.65	$17.07	$0.00	$73.37

Apprentice - *LABORER - Zone 3 Building & Site*

Effective Date - 12/02/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$21.45	$9.65	$17.07	$0.00	$48.17
2	70	$25.03	$9.65	$17.07	$0.00	$51.75
3	80	$28.60	$9.65	$17.07	$0.00	$55.32
4	90	$32.18	$9.65	$17.07	$0.00	$58.90

Effective Date - 06/02/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.20	$9.65	$17.07	$0.00	$48.92
2	70	$25.90	$9.65	$17.07	$0.00	$52.62
3	80	$29.60	$9.65	$17.07	$0.00	$56.32
4	90	$33.30	$9.65	$17.07	$0.00	$60.02

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$35.75	$9.65	$15.06	$0.00	$60.46
	06/01/2025	$37.00	$9.65	$15.06	$0.00	$61.71
	12/01/2025	$38.24	$9.65	$15.06	$0.00	$62.95
	06/01/2026	$39.54	$9.65	$15.06	$0.00	$64.25
	12/01/2026	$40.83	$9.65	$15.06	$0.00	$65.54

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LABORER (Heavy & Highway) - Zone 3*

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$21.45	$9.65	$15.06	$0.00	$46.16
2	70	$25.03	$9.65	$15.06	$0.00	$49.74
3	80	$28.60	$9.65	$15.06	$0.00	$53.31
4	90	$32.18	$9.65	$15.06	$0.00	$56.89

Effective Date - 06/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.20	$9.65	$15.06	$0.00	$46.91
2	70	$25.90	$9.65	$15.06	$0.00	$50.61
3	80	$29.60	$9.65	$15.06	$0.00	$54.31
4	90	$33.30	$9.65	$15.06	$0.00	$58.01

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$35.75	$9.65	$17.07	$0.00	$62.47
	06/02/2025	$37.00	$9.65	$17.07	$0.00	$63.72
	12/01/2025	$38.25	$9.65	$17.07	$0.00	$64.97
	06/01/2026	$39.55	$9.65	$17.07	$0.00	$66.27
	12/07/2026	$40.85	$9.65	$17.07	$0.00	$67.57
	06/07/2027	$42.25	$9.65	$17.07	$0.00	$68.97
	12/06/2027	$43.65	$9.65	$17.07	$0.00	$70.37
	06/05/2028	$45.15	$9.65	$17.07	$0.00	$71.87
	12/04/2028	$46.65	$9.65	$17.07	$0.00	$73.37

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$35.75	$9.65	$17.07	$0.00	$62.47
	06/02/2025	$37.00	$9.65	$17.07	$0.00	$63.72
	12/01/2025	$38.25	$9.65	$17.07	$0.00	$64.97
	06/01/2026	$39.55	$9.65	$17.07	$0.00	$66.27
	12/07/2026	$40.85	$9.65	$17.07	$0.00	$67.57
	06/07/2027	$42.25	$9.65	$17.07	$0.00	$68.97
	12/06/2027	$43.65	$9.65	$17.07	$0.00	$70.37
	06/05/2028	$45.15	$9.65	$17.07	$0.00	$71.87
	12/04/2028	$46.65	$9.65	$17.07	$0.00	$73.37

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$35.67	$9.65	$17.20	$0.00	$62.52
	06/02/2025	$36.92	$9.65	$17.20	$0.00	$63.77
	12/01/2025	$38.17	$9.65	$17.20	$0.00	$65.02
	06/01/2026	$39.47	$9.65	$17.20	$0.00	$66.32
	12/07/2026	$40.77	$9.65	$17.20	$0.00	$67.62
	06/07/2027	$42.17	$9.65	$17.20	$0.00	$69.02
	12/06/2027	$43.57	$9.65	$17.20	$0.00	$70.42
	06/05/2028	$45.07	$9.65	$17.20	$0.00	$71.92
	12/04/2028	$46.57	$9.65	$17.20	$0.00	$73.42
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$38.75	$9.65	$17.07	$0.00	$65.47
	06/02/2025	$40.00	$9.65	$17.07	$0.00	$66.72
	12/01/2025	$41.25	$9.65	$17.07	$0.00	$67.97
	06/01/2026	$42.55	$9.65	$17.07	$0.00	$69.27
	12/07/2026	$43.85	$9.65	$17.07	$0.00	$70.57
	06/07/2027	$45.25	$9.65	$17.07	$0.00	$71.97
	12/06/2027	$46.65	$9.65	$17.07	$0.00	$73.37
	06/05/2028	$48.15	$9.65	$17.07	$0.00	$74.87
	12/04/2028	$49.65	$9.65	$17.07	$0.00	$76.37
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$35.75	$9.65	$17.07	$0.00	$62.47
	06/02/2025	$37.00	$9.65	$17.07	$0.00	$63.72
	12/01/2025	$38.25	$9.65	$17.07	$0.00	$64.97
	06/01/2026	$39.55	$9.65	$17.07	$0.00	$66.27
	12/07/2026	$40.85	$9.65	$17.07	$0.00	$67.57
	06/07/2027	$42.25	$9.65	$17.07	$0.00	$68.97
	12/06/2027	$43.65	$9.65	$17.07	$0.00	$70.37
	06/05/2028	$45.15	$9.65	$17.07	$0.00	$71.87
	12/04/2028	$46.65	$9.65	$17.07	$0.00	$73.37
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$35.75	$9.65	$17.07	$0.00	$62.47
	06/02/2025	$37.00	$9.65	$17.07	$0.00	$63.72
	12/01/2025	$38.25	$9.65	$17.07	$0.00	$64.97
	06/01/2026	$39.55	$9.65	$17.07	$0.00	$66.27
	12/07/2026	$40.85	$9.65	$17.07	$0.00	$67.57
	06/07/2027	$42.25	$9.65	$17.07	$0.00	$68.97
	12/06/2027	$43.65	$9.65	$17.07	$0.00	$70.37
	06/05/2028	$45.15	$9.65	$17.07	$0.00	$71.87
	12/04/2028	$46.65	$9.65	$17.07	$0.00	$73.37
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LASER BEAM OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE*	02/01/2025	$43.84	$11.49	$20.78	$0.00	$76.11
	08/01/2025	$44.75	$11.49	$20.78	$0.00	$77.02
	02/01/2026	$45.83	$11.49	$20.78	$0.00	$78.10
	08/01/2026	$47.59	$11.49	$20.78	$0.00	$79.86
	02/01/2027	$48.71	$11.49	$20.78	$0.00	$80.98

Apprentice - *MARBLE-TILE FINISHER-Local 3 Marble/Tile (Spr/Pitt)*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.92	$11.49	$20.78	$0.00	$54.19
2	60	$26.30	$11.49	$20.78	$0.00	$58.57
3	70	$30.69	$11.49	$20.78	$0.00	$62.96
4	80	$35.07	$11.49	$20.78	$0.00	$67.34
5	90	$39.46	$11.49	$20.78	$0.00	$71.73

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.38	$11.49	$20.78	$0.00	$54.65
2	60	$26.85	$11.49	$20.78	$0.00	$59.12
3	70	$31.33	$11.49	$20.78	$0.00	$63.60
4	80	$35.80	$11.49	$20.78	$0.00	$68.07
5	90	$40.28	$11.49	$20.78	$0.00	$72.55

Notes:

Apprentice to Journeyworker Ratio:1:5

MARBLE MASON/TILE LAYER(SP/PT)SeeBrick
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE

See "BRICK/STONE/ARTIFICIAL MASONRY(INCL.MASONRY WATERPROOFING)

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.56	$13.78	$15.15	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANIC/WELDER/BOOM TRUCK *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.03	$13.78	$15.15	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 3) *MILLWRIGHTS LOCAL 1121 - Zone 3*	01/06/2025	$43.48	$10.08	$21.22	$0.00	$74.78
	01/05/2026	$45.76	$10.08	$21.22	$0.00	$77.06

Apprentice - *MILLWRIGHT - Local 1121 Zone 3*

Effective Date - 01/06/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$23.91	$10.08	$5.36	$0.00	$39.35
2	65	$28.26	$10.08	$6.34	$0.00	$44.68
3	75	$32.61	$10.08	$18.78	$0.00	$61.47
4	85	$36.96	$10.08	$19.76	$0.00	$66.80

Effective Date - 01/05/2026

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$25.17	$10.08	$5.36	$0.00	$40.61
2	65	$29.74	$10.08	$6.34	$0.00	$46.16
3	75	$34.32	$10.08	$18.78	$0.00	$63.18
4	85	$38.90	$10.08	$19.76	$0.00	$68.74

Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 $5.72, Step 2 $6.66)
Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:4

MORTAR MIXER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
OILER *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$35.02	$13.78	$15.15	$0.00	$63.95
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS VI *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$32.74	$13.78	$15.15	$0.00	$61.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 3*	01/01/2025	$58.46	$9.95	$23.95	$0.00	$92.36

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.23	$9.95	$0.00	$0.00	$39.18
2	55	$32.15	$9.95	$6.66	$0.00	$48.76
3	60	$35.08	$9.95	$7.26	$0.00	$52.29
4	65	$38.00	$9.95	$7.87	$0.00	$55.82
5	70	$40.92	$9.95	$20.32	$0.00	$71.19
6	75	$43.85	$9.95	$20.93	$0.00	$74.73
7	80	$46.77	$9.95	$21.53	$0.00	$78.25
8	90	$52.61	$9.95	$22.74	$0.00	$85.30

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2025	$41.23	$9.65	$19.90	$0.00	$70.78

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 3*

Apprentice - *PAINTER Local 35 Zone 3 - Spray/Sandblast - New*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.62	$9.95	$0.00	$0.00	$30.57
2	55	$22.68	$9.95	$4.43	$0.00	$37.06
3	60	$24.74	$9.95	$4.83	$0.00	$39.52
4	65	$26.80	$9.95	$5.23	$0.00	$41.98
5	70	$28.86	$9.95	$17.49	$0.00	$56.30
6	75	$30.92	$9.95	$17.89	$0.00	$58.76
7	80	$32.98	$9.95	$18.29	$0.00	$61.22
8	90	$37.11	$9.95	$19.10	$0.00	$66.16

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 3*	01/01/2025	$38.55	$9.95	$19.90	$0.00	$68.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 3 - Spray/Sandblast - Repaint*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.28	$9.95	$0.00	$0.00	$29.23
2	55	$21.20	$9.95	$4.43	$0.00	$35.58
3	60	$23.13	$9.95	$4.83	$0.00	$37.91
4	65	$25.06	$9.95	$5.23	$0.00	$40.24
5	70	$26.99	$9.95	$17.49	$0.00	$54.43
6	75	$28.91	$9.95	$17.89	$0.00	$56.75
7	80	$30.84	$9.95	$18.29	$0.00	$59.08
8	90	$34.70	$9.95	$19.10	$0.00	$63.75

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	01/01/2025	$39.83	$9.95	$19.90	$0.00	$69.68

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 3*

Apprentice - *PAINTER - Local 35 Zone 3 - BRUSH NEW*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.92	$9.95	$0.00	$0.00	$29.87
2	55	$21.91	$9.95	$4.43	$0.00	$36.29
3	60	$23.90	$9.95	$4.83	$0.00	$38.68
4	65	$25.89	$9.95	$5.23	$0.00	$41.07
5	70	$27.88	$9.95	$17.49	$0.00	$55.32
6	75	$29.87	$9.95	$17.89	$0.00	$57.71
7	80	$31.86	$9.95	$18.29	$0.00	$60.10
8	90	$35.85	$9.95	$19.10	$0.00	$64.90

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 3*	01/01/2025	$37.15	$9.95	$19.90	$0.00	$67.00

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 3 - BRUSH REPAINT*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.58	$9.95	$0.00	$0.00	$28.53
2	55	$20.43	$9.95	$4.43	$0.00	$34.81
3	60	$22.29	$9.95	$4.83	$0.00	$37.07
4	65	$24.15	$9.95	$5.23	$0.00	$39.33
5	70	$26.01	$9.95	$17.49	$0.00	$53.45
6	75	$27.86	$9.95	$17.89	$0.00	$55.70
7	80	$29.72	$9.95	$18.29	$0.00	$57.96
8	90	$33.44	$9.95	$19.10	$0.00	$62.49

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$35.75	$9.65	$15.06	$0.00	$60.46
	06/01/2025	$37.00	$9.65	$15.06	$0.00	$61.71
	12/01/2025	$38.24	$9.65	$15.06	$0.00	$62.95
	06/01/2026	$39.54	$9.65	$15.06	$0.00	$64.25
	12/01/2026	$40.83	$9.65	$15.06	$0.00	$65.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$39.78	$15.57	$20.17	$0.00	$75.52
	06/01/2025	$40.78	$15.57	$20.17	$0.00	$76.52
	12/01/2025	$40.78	$15.57	$21.78	$0.00	$78.13
	01/01/2026	$40.78	$16.17	$21.78	$0.00	$78.73
	06/01/2026	$41.78	$16.17	$21.78	$0.00	$79.73
	12/01/2026	$41.78	$16.17	$23.52	$0.00	$81.47
	01/01/2027	$41.78	$16.77	$23.52	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 3)*	08/01/2024	$49.19	$10.08	$24.29	$0.00	$83.56
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 3)*	08/01/2024	$49.19	$10.08	$24.29	$0.00	$83.56

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 3*

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$22.14	$10.08	$2.53	$0.00	$34.75
2	55	$27.05	$10.08	$5.07	$0.00	$42.20
3	70	$34.43	$10.08	$19.22	$0.00	$63.73
4	80	$39.35	$10.08	$21.76	$0.00	$71.19

Notes:

% Indentured BEFORE 8/1/2020, 50/60/70/75/80/80/90/90
1$58.97/2$63.88/3$68.80/4$71.26/5&6 $73.72/7&8 $78.64

Apprentice to Journeyworker Ratio:1:5

PIPELAYER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PLUMBER & PIPEFITTER *PLUMBERS & PIPEFITTERS LOCAL 104*	03/17/2024	$49.21	$9.55	$17.10	$0.00	$75.86

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PLUMBER/PIPEFITTER - Local 104*

Effective Date - 03/17/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$22.14	$9.55	$10.10	$0.00	$41.79
2	50	$24.61	$9.55	$10.10	$0.00	$44.26
3	55	$27.07	$9.55	$10.10	$0.00	$46.72
4	60	$29.53	$9.55	$10.10	$0.00	$49.18
5	65	$31.99	$9.55	$10.10	$0.00	$51.64
6	70	$34.45	$9.55	$10.10	$0.00	$54.10
7	75	$36.91	$9.55	$10.10	$0.00	$56.56
8	80	$39.37	$9.55	$10.10	$0.00	$59.02
9	80	$39.37	$9.55	$17.10	$0.00	$66.02
10	80	$39.37	$9.55	$17.10	$0.00	$66.02

Notes: **1:1,2:5,3:9,4:12

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PLUMBERS & PIPEFITTERS LOCAL 104*	03/17/2024	$49.21	$9.55	$17.10	$0.00	$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWDERMAN & BLASTER *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.75	$9.65	$17.07	$0.00	$63.47
	06/02/2025	$38.00	$9.65	$17.07	$0.00	$64.72
	12/01/2025	$39.25	$9.65	$17.07	$0.00	$65.97
	06/01/2026	$40.55	$9.65	$17.07	$0.00	$67.27
	12/07/2026	$41.85	$9.65	$17.07	$0.00	$68.57
	06/07/2027	$43.25	$9.65	$17.07	$0.00	$69.97
	12/06/2027	$44.65	$9.65	$17.07	$0.00	$71.37
	06/05/2028	$46.15	$9.65	$17.07	$0.00	$72.87
	12/04/2028	$47.65	$9.65	$17.07	$0.00	$74.37
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.75	$9.65	$15.06	$0.00	$61.46
	06/01/2025	$38.00	$9.65	$15.06	$0.00	$62.71
	12/01/2025	$39.24	$9.65	$15.06	$0.00	$63.95
	06/01/2026	$40.54	$9.65	$15.06	$0.00	$65.25
	12/01/2026	$41.83	$9.65	$15.06	$0.00	$66.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.56	$13.78	$15.15	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 98* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2023	$39.03	$13.78	$15.15	$0.00	$67.96
READY-MIX CONCRETE DRIVER *TEAMSTERS 404 - Construction Service (Northampton)*	05/01/2024	$26.14	$11.82	$7.25	$0.00	$45.21
RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
ROLLER OPERATOR *OPERATING ENGINEERS LOCAL 98* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2023	$38.42	$13.78	$15.15	$0.00	$67.35
ROOFER (Coal tar pitch) *ROOFERS LOCAL 248*	10/02/2024	$42.38	$10.35	$18.00	$0.00	$70.73
	07/16/2025	$43.88	$10.35	$18.00	$0.00	$72.23
	10/02/2025	$44.88	$10.35	$18.00	$0.00	$73.23
	07/16/2026	$46.88	$10.35	$18.00	$0.00	$75.23
For apprentice rates see "Apprentice- ROOFER"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 248*	10/02/2024	$41.88	$10.35	$18.00	$0.00	$70.23
	07/16/2025	$43.38	$10.35	$18.00	$0.00	$71.73
	10/02/2025	$44.38	$10.35	$18.00	$0.00	$72.73
	07/16/2026	$46.38	$10.35	$18.00	$0.00	$74.73

Apprentice - *ROOFER - Local 248*

Effective Date - 10/02/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$25.13	$10.35	$0.00	$0.00	$35.48
2	65	$27.22	$10.35	$18.00	$0.00	$55.57
3	70	$29.32	$10.35	$18.00	$0.00	$57.67
4	75	$31.41	$10.35	$18.00	$0.00	$59.76
5	80	$33.50	$10.35	$18.00	$0.00	$61.85
6	85	$35.60	$10.35	$18.00	$0.00	$63.95
7	90	$37.69	$10.35	$18.00	$0.00	$66.04
8	95	$39.79	$10.35	$18.00	$0.00	$68.14

Notes:

Steps are 750 hrs.Roofer(Tear Off)1:1; Same as above

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROOFER SLATE / TILE / PRECAST CONCRETE *ROOFERS LOCAL 248*	10/02/2024	$42.38	$10.35	$18.00	$0.00	$70.73
	07/16/2025	$43.88	$10.35	$18.00	$0.00	$72.23
	10/02/2025	$44.88	$10.35	$18.00	$0.00	$73.23
	07/16/2026	$46.88	$10.35	$18.00	$0.00	$75.23
For apprentice rates see "Apprentice- ROOFER"						
SCRAPER *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$39.03	$13.78	$15.15	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$38.42	$13.78	$15.15	$0.00	$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-PROPELLED POWER BROOM *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$35.80	$13.78	$15.15	$0.00	$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 63*	01/01/2025	$42.23	$12.20	$18.74	$2.13	$75.30

Apprentice - *SHEET METAL WORKER - Local 63*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$19.00	$5.49	$4.86	$0.85	$30.20
2	50	$21.12	$6.10	$5.40	$0.94	$33.56
3	55	$23.23	$6.71	$9.71	$1.15	$40.80
4	60	$25.34	$7.32	$9.71	$1.23	$43.60
5	65	$27.45	$7.93	$9.71	$1.31	$46.40
6	70	$29.56	$8.54	$9.71	$1.39	$49.20
7	75	$31.67	$9.15	$9.71	$1.47	$52.00
8	80	$33.78	$9.76	$17.66	$1.78	$62.98
9	85	$35.90	$10.37	$17.66	$1.86	$65.79
10	90	$38.01	$10.98	$17.66	$1.94	$68.59

Notes:

Apprentice to Journeyworker Ratio:1:3

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.24	$15.57	$20.17	$0.00	$75.98
	06/01/2025	$41.24	$15.57	$20.17	$0.00	$76.98
	12/01/2025	$41.24	$15.57	$21.78	$0.00	$78.59
	01/01/2026	$41.24	$16.17	$21.78	$0.00	$79.19
	06/01/2026	$42.24	$16.17	$21.78	$0.00	$80.19
	12/01/2026	$42.24	$16.17	$23.52	$0.00	$81.93
	01/01/2027	$42.24	$16.77	$23.52	$0.00	$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.53	$15.57	$20.17	$0.00	$76.27
	06/01/2025	$41.53	$15.57	$20.17	$0.00	$77.27
	12/01/2025	$41.53	$15.57	$21.78	$0.00	$78.88
	01/01/2026	$41.53	$16.17	$21.78	$0.00	$79.48
	06/01/2026	$42.53	$16.17	$21.78	$0.00	$80.48
	12/01/2026	$42.53	$16.17	$23.52	$0.00	$82.22
	01/01/2027	$42.53	$16.77	$23.52	$0.00	$82.82
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 669*	04/01/2023	$47.43	$11.45	$16.61	$0.00	$75.49

Apprentice - *SPRINKLER FITTER - Local 669*

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$21.34	$8.22	$0.00	$0.00	$29.56
2	50	$23.72	$8.22	$0.00	$0.00	$31.94
3	55	$26.09	$11.45	$7.20	$0.00	$44.74
4	60	$28.46	$11.45	$8.35	$0.00	$48.26
5	65	$30.83	$11.45	$8.35	$0.00	$50.63
6	70	$33.20	$11.45	$8.60	$0.00	$53.25
7	75	$35.57	$11.45	$8.60	$0.00	$55.62
8	80	$37.94	$11.45	$8.60	$0.00	$57.99
9	85	$40.32	$11.45	$8.60	$0.00	$60.37
10	90	$42.69	$11.45	$8.60	$0.00	$62.74

Notes:

Apprentice to Journeyworker Ratio:1:1

TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 7*	12/29/2024	$51.06	$13.25	$15.06	$0.00	$79.37
	06/29/2025	$52.16	$13.50	$15.21	$0.00	$80.87
	12/28/2025	$53.26	$13.75	$15.36	$0.00	$82.37
	06/28/2026	$54.41	$14.00	$15.46	$0.00	$83.87
	01/03/2027	$55.56	$14.25	$15.56	$0.00	$85.37

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 7*

Effective Date - 12/29/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$20.42	$7.35	$0.61	$0.00	$28.38
2	45	$22.98	$7.35	$0.69	$0.00	$31.02
3	50	$25.53	$13.25	$7.47	$0.00	$46.25
4	55	$28.08	$13.25	$7.54	$0.00	$48.87
5	65	$33.19	$13.25	$9.74	$0.00	$56.18
6	70	$35.74	$13.25	$11.19	$0.00	$60.18

Effective Date - 06/29/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$20.86	$7.50	$0.63	$0.00	$28.99
2	45	$23.47	$7.50	$0.70	$0.00	$31.67
3	50	$26.08	$13.50	$7.53	$0.00	$47.11
4	55	$28.69	$13.50	$7.61	$0.00	$49.80
5	65	$33.90	$13.50	$9.84	$0.00	$57.24
6	70	$36.51	$13.50	$11.30	$0.00	$61.31

Notes:
Steps are 800 hours

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE*	02/01/2025	$64.74	$11.49	$23.59	$0.00	$99.82
	08/01/2025	$66.89	$11.49	$23.59	$0.00	$101.97
	02/10/2026	$68.24	$11.49	$23.59	$0.00	$103.32
	08/01/2026	$70.44	$11.49	$23.59	$0.00	$105.52
	02/01/2027	$71.84	$11.49	$23.59	$0.00	$106.92

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TERRAZZO FINISHER-Local 3 Marble/Tile (Spr/Ptt)*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.37	$11.49	$23.59	$0.00	$67.45
2	60	$38.84	$11.49	$23.59	$0.00	$73.92
3	70	$45.32	$11.49	$23.59	$0.00	$80.40
4	80	$51.79	$11.49	$23.59	$0.00	$86.87
5	90	$58.27	$11.49	$23.59	$0.00	$93.35

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$33.45	$11.49	$23.59	$0.00	$68.53
2	60	$40.13	$11.49	$23.59	$0.00	$75.21
3	70	$46.82	$11.49	$23.59	$0.00	$81.90
4	80	$53.51	$11.49	$23.59	$0.00	$88.59
5	90	$60.20	$11.49	$23.59	$0.00	$95.28

Notes:

Apprentice to Journeyworker Ratio:1:5

TERRAZZO MECHANIC *BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE*	02/01/2025	$65.82	$11.49	$23.56	$0.00	$100.87
	08/01/2025	$67.97	$11.49	$23.56	$0.00	$103.02
	02/01/2026	$69.32	$11.49	$23.56	$0.00	$104.37
	08/01/2026	$71.52	$11.49	$23.56	$0.00	$106.57
	02/01/2027	$72.92	$11.49	$23.56	$0.00	$107.97

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TERRAZZO MECH - Local 3 Marble/Tile (Spr/Pitt)*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.91	$11.49	$23.56	$0.00	$67.96
2	60	$39.49	$11.49	$23.56	$0.00	$74.54
3	70	$46.07	$11.49	$23.56	$0.00	$81.12
4	80	$52.66	$11.49	$23.56	$0.00	$87.71
5	90	$59.24	$11.49	$23.56	$0.00	$94.29

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$33.99	$11.49	$23.56	$0.00	$69.04
2	60	$40.78	$11.49	$23.56	$0.00	$75.83
3	70	$47.58	$11.49	$23.56	$0.00	$82.63
4	80	$54.38	$11.49	$23.56	$0.00	$89.43
5	90	$61.17	$11.49	$23.56	$0.00	$96.22

Notes:

Apprentice to Journeyworker Ratio:1:5

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$51.28	$9.65	$18.22	$0.00	$79.15
	06/01/2025	$52.78	$9.65	$18.22	$0.00	$80.65
	12/01/2025	$54.28	$9.65	$18.22	$0.00	$82.15
	06/01/2026	$55.83	$9.65	$18.22	$0.00	$83.70
	12/01/2026	$57.33	$9.65	$18.22	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$47.07	$9.65	$18.22	$0.00	$74.94
	06/01/2025	$48.57	$9.65	$18.22	$0.00	$76.44
	12/01/2025	$50.07	$9.65	$18.22	$0.00	$77.94
	06/01/2026	$51.62	$9.65	$18.22	$0.00	$79.49
	12/01/2026	$53.12	$9.65	$18.22	$0.00	$80.99
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$46.95	$9.65	$18.22	$0.00	$74.82
	06/01/2025	$48.45	$9.65	$18.22	$0.00	$76.32
	12/01/2025	$49.95	$9.65	$18.22	$0.00	$77.82
	06/01/2026	$51.50	$9.65	$18.22	$0.00	$79.37
	12/01/2026	$53.00	$9.65	$18.22	$0.00	$80.87
For apprentice rates see "Apprentice- LABORER"						
TRACTORS *OPERATING ENGINEERS LOCAL 98*	12/01/2023	$38.42	$13.78	$15.15	$0.00	$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.82	$15.57	$20.17	$0.00	$76.56
	06/01/2025	$41.82	$15.57	$20.17	$0.00	$77.56
	12/01/2025	$41.82	$15.57	$21.78	$0.00	$79.17
	01/01/2026	$41.82	$16.17	$21.78	$0.00	$79.77
	06/01/2026	$42.82	$16.17	$21.78	$0.00	$80.77
	12/01/2026	$42.82	$16.17	$23.52	$0.00	$82.51
	01/01/2027	$42.82	$16.77	$23.52	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)*	12/01/2024	$59.18	$9.65	$19.00	$0.00	$87.83
	06/01/2025	$60.68	$9.65	$19.00	$0.00	$89.33
	12/01/2025	$62.18	$9.65	$19.00	$0.00	$90.83
	06/01/2026	$63.73	$9.65	$19.00	$0.00	$92.38
	12/01/2026	$65.23	$9.65	$19.00	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	12/01/2024	$61.18	$9.65	$19.00	$0.00	$89.83
	06/01/2025	$62.68	$9.65	$19.00	$0.00	$91.33
	12/01/2025	$64.18	$9.65	$19.00	$0.00	$92.83
	06/01/2026	$65.73	$9.65	$19.00	$0.00	$94.38
	12/01/2026	$67.23	$9.65	$19.00	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	12/01/2024	$51.25	$9.65	$19.00	$0.00	$79.90
	06/01/2025	$52.75	$9.65	$19.00	$0.00	$81.40
	12/01/2025	$54.25	$9.65	$19.00	$0.00	$82.90
	06/01/2026	$55.80	$9.65	$19.00	$0.00	$84.45
	12/01/2026	$57.30	$9.65	$19.00	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2024	$53.25	$9.65	$19.00	$0.00	$81.90
	06/01/2025	$54.75	$9.65	$19.00	$0.00	$83.40
	12/01/2025	$56.25	$9.65	$19.00	$0.00	$84.90
	06/01/2026	$57.80	$9.65	$19.00	$0.00	$86.45
	12/01/2026	$59.30	$9.65	$19.00	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.24	$15.57	$20.17	$0.00	$75.98
	06/01/2025	$41.24	$15.57	$20.17	$0.00	$76.98
	12/01/2025	$41.24	$15.57	$21.78	$0.00	$78.59
	01/01/2026	$41.24	$16.17	$21.78	$0.00	$79.19
	06/01/2026	$42.24	$16.17	$21.78	$0.00	$80.19
	12/01/2026	$42.24	$16.17	$23.52	$0.00	$81.93
	01/01/2027	$42.24	$16.77	$23.52	$0.00	$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR *LABORERS - ZONE 3 (BUILDING & SITE)*	12/02/2024	$36.00	$9.65	$17.07	$0.00	$62.72
	06/02/2025	$37.25	$9.65	$17.07	$0.00	$63.97
	12/01/2025	$38.50	$9.65	$17.07	$0.00	$65.22
	06/01/2026	$39.80	$9.65	$17.07	$0.00	$66.52
	12/07/2026	$41.10	$9.65	$17.07	$0.00	$67.82
	06/07/2027	$42.50	$9.65	$17.07	$0.00	$69.22
	12/06/2027	$43.90	$9.65	$17.07	$0.00	$70.62
	06/05/2028	$45.40	$9.65	$17.07	$0.00	$72.12
	12/04/2028	$46.90	$9.65	$17.07	$0.00	$73.62
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 3 (HEAVY & HIGHWAY)*	12/01/2024	$36.00	$9.65	$15.06	$0.00	$60.71
	06/01/2025	$37.25	$9.65	$15.06	$0.00	$61.96
	12/01/2025	$38.49	$9.65	$15.06	$0.00	$63.20
	06/01/2026	$39.79	$9.65	$15.06	$0.00	$64.50
	12/01/2026	$41.08	$9.65	$15.06	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WATER METER INSTALLER *PLUMBERS & PIPEFITTERS LOCAL 104*	03/17/2024	$49.21	$9.55	$17.10	$0.00	$75.86
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

All apprentices must be registered with the Division of Apprenticeship Training (DAS) in accordance with M.G.L. c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L. c. 149, §§ 26-27D. Apprentice ratios are established by DAS pursuant to M.G.L. c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements (CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate. Parties having questions regarding what ratio to use should contact DAS.

City of Holyoke Gas and Electric Department

HOLYOKE DAM INFLATABLE CREST GATE REPLACEMENT PROJECT

Technical Specifications

Issued for Bid

Issue Date: March 21, 2025

HDR Project No. 10396163

TABLE OF CONTENTS

SECTION 01 11 00

SUMMARY OF WORK

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Definitions
2. Project Information
3. Location and Description of Work
4. Easements and Rights-Of-Way
5. Performance of Work
6. Others Retained by Owner for the Project
7. Work by Owner
8. Work Quality
9. Discrepancies
10. Field Measurements
11. Contractor's Use of Site
12. Occupancy Prior to Final Acceptance
13. Bid Information

1.2 DEFINITIONS

A. Project Name: The Project Name shall appear on all Project documentation as follows: City of Holyoke Gas & Electric Department, Holyoke Dam Inflatable Crest Gate Replacement Project.

B. Owner:

City of Holyoke Gas & Electric Department (HG&E)
Attn: Derek Ferguson
30 Water Street
Holyoke, MA 01040
Telephone: (413) 536-9425
Email: dferguson@hged.com

1. Owner's Representative shall be any duly authorized employee or agent of the Owner.

C. Engineer:

HDR Engineering, Inc.
Attn: Adam Jones, P.E.
75 John Roberts Road, Unit B1
South Portland, ME 04106
Telephone: (207) 239-3820
Email: adam.jones@hdrinc.com

Copy to:
HDR Engineering, Inc.
Attn: Tessa Carty
75 John Roberts Road, Unit B1
South Portland, ME 04106
Telephone: (207) 239-3881
Email: tessa.carty@hdrinc.com

D. Contractor: The Company or Firm to whom the contract is awarded. The following terms shall mean the Contractor or others engaged in the work on his behalf:
   1. Installer
   2. Supplier
   3. Subcontractor
   4. Fabricator

E. Inflatable Crest Gate Supplier (Supplier): The Company or Firm that will be retained by the Contractor to supply the new inflatable crest gate system.

F. Contract Documents: All specifications, drawings, conditions, referenced documents, permits, and agency requirements.

G. Furnish: Except as otherwise defined in greater detail, the term “furnish” is used to mean supply and deliver to the project site, or destination as specified by the Owner, ready for unloading, unpacking, assembly, erection, installation, etc. applicable to each.

H. Install: Except as otherwise defined in greater detail, the term “install” is used to describe operations at the project site, including component unloading, unpacking, assembly, erection, placing, anchoring, aligning, finishing, protecting, cleaning and all work as applicable in each instance in accordance with the specification, drawings, and other associated proposal and contract documents.

I. Provide: Except as otherwise defined in greater detail, the term “provide” means furnish and install, complete and ready for intended purpose and, as applicable in each instance and in accordance with the specification, drawings and other associated proposal and contract documents.

J. Accept: “Accept” or “acceptance” by Owner or Engineer with regard to Contractor’s submittals, applications, requests, components, services, etc., limited to the acceptance responsibilities of the Owner and Engineer as stated. Such acceptance shall not release the Contractor from responsibility to fulfill all contract requirements.

1.3 PROJECT INFORMATION

A. The City of Holyoke Gas and Electric Department (HG&E) owns and operates the Holyoke Project (Project). The Project is located on the Connecticut River and the adjacent canal system, in the city of Holyoke and town of South Hadley, Massachusetts. The project consists of the Holyoke Dam and abutment structures, the Hadley Falls Station powerhouse, and a complex system of canals and canal level

regulating structures. The Project is licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2004-MA.

B. The Holyoke Dam is the primary spillway for the project. It was originally constructed of rubble masonry finished with ashlar granite, but the crest of the dam was replaced with concrete after it was damaged in the 1936 flood of record. The overall length of the crest of the dam is 1,020 feet from abutment to abutment.

C. In 2001, the Owner installed a five-bay inflatable crest gate system with a total length of 984 feet and a height of 3.5 feet. Per the design drawings provided in Appendix B, three of the sections are 289 feet in length, one section is 48 feet in length, and one section is 62 feet in length. A bascule gate near the right end acts as a sluice. The descriptors right and left, as used in these documents, are referenced looking downstream. All elevations are referenced to the local Holyoke Datum.

D. The existing inflatable crest gate bladders have surpassed the manufacturer's recommended life expectancy, are showing signs of damage and weathering, and need to be replaced. Additionally, concrete cracks and spalls have been observed along the crest of the spillway and need to be repaired. The work described in these specifications includes replacement of the inflatable crest gate bladders and associated hardware and repair of concrete cracks and spalls within or near the crest gate footprint.

1.4 LOCATION AND DESCRIPTION OF WORK

A. The Work is located at the Holyoke Project, 25 Gatehouse Road, Holyoke, MA 01040.

B. Work indicated in the Specifications or indicated elsewhere in the Contract Documents is part of the Work, regardless of whether indicated below. The Work includes, but is not limited to, the following:

1. Verification of existing site conditions.
2. Procurement of five inflatable crest gate rubber bladders, accessories, and clamp plates to replace the existing inflatable crest gate system in kind.
3. Establish, maintain, provide security, and restore the site as necessary for site access and material storage work areas. A site plan is provided as Appendix A of these Specifications.
4. In order to perform all work, the Contractor will need to install and maintain flashboards and pins (pins provided by HG&E) in the spillway sections to be replaced at the time of replacement. Flashboard pin sockets remain in the crest from the previous installation and will be used to install a temporary flashboard cofferdam, but the Contractor will need to provide the safety equipment and transport system for cleaning out the sockets and installing and maintaining the flashboard system during construction. The top of boards is at elevation 103.1 feet. To maintain the stability of the spillway and to comply with FERC dam safety criteria, it is important that the flashboards collapse as intended during floods that overtop the flashboards by a prescribed level. For this reason, the flashboard pins and boards shall be of the size, schedule, and material, as used in the original flashboard design, provided in Appendix D, and shall not be

modified in any way. In consultation with the Contractor, the Owner will drawdown the reservoir on windy days to reduce the potential for wave overtopping. Owner will provide the flashboard pins. Contractor shall furnish and install the boards as described in Appendix D. Flashboards shall be installed only in the spillway bays that the Contractor is actively working, while the inflatable crest gates in the other spillway bays remain operational. In addition to the cost to install a cofferdam for each bay, the lump sum price shall include the cost to replace the flashboards on the largest bay two additional times due to damage from two potential high water events. The Contractor will be paid on a unit price basis based on the span length of the flashboards, in accordance with the Contract terms, for flooding that results in additional loss of flashboards.

5. Contractor shall remove and replace eel water attraction piping and other equipment to allow apron access from Upper Riverside Park upon mobilizing and demobilizing. Owner will describe and coordinate the work that needs to be performed and the schedule for removal and replacement. The work will be pointed out and discussed during the mandatory bid walkthrough.
6. Installation of Jersey barriers or sandbags on the downstream apron, to a minimum top elevation of 73.0 feet, as necessary to protect the Work when spillway bays are in operation. Repair of the tailwater cofferdam for floods will be the responsibility of the Contractor. Necessary repairs due to damage as a result of floods resulting in a tailwater elevation exceeding 73.0 feet will be paid on a time and materials basis, in accordance with the Contract Terms.
7. Construction of scaffold, stairways, and all other access measures as necessary to remove the existing crest gates, install the flashboards, and install and test the crest gate system. Access measures shall be designed to be removed prior to flood overtopping or to survive flood overtopping.
8. Removal and disposal of existing rubber bladders and clamp plates. Existing anchors, and mechanical and electrical components of the existing system are to remain.
9. Inspection of the embedded flanges, valves, and airlines and cleaning of the embedded supply and return lines from the existing inflatable crest gate. Prior to installing bladders, Contractor shall blow out all inflation/deflation and condensation lines between blockhouse and exit point in applicable bay.
10. Tension testing of the existing anchor bolts.
11. Concrete repairs as required on the dam crest. The scope of this work will be identified after site access is established and shall be conducted on a unit price basis.
12. Loading, transporting, unloading, and storage of the new inflatable crest gate system.
13. Installation of rubber bladders, including clamping and torquing of the inflatable crest gate system.
14. Furnishing and installing all other components needed for a complete and operable inflatable crest gate system.

15. Start-up of inflatable crest gate system, including test operation, air-tightness testing of the bladders, water-tightness testing of the clamping assemblies, and adjustment of settings of the mechanical and electrical equipment. These items should be performed with the inflatable crest gate vendor's technical representative onsite.
16. Regrading and repaving as necessary to restore the site and access area to its original condition.
17. All other work necessary to complete the crest gate system installation, including mobilization and demobilization, establishing work areas, staging, stairways, etc., design and construction of pollution containment measures and temporary construction facilities.
18. Contracting Method: The new inflatable crest gate system will be procured and installed under a single prime construction Contract.

C. Owner-Furnished Equipment and Services:

1. Embedded components and controls for the existing inflatable crest gate system are to be re-used. Components damaged by the Contractor will be replaced at the Contractor's expense.

1.5 EASEMENTS AND RIGHTS-OF-WAY

A. Easements and Rights-of-Way - General:

1. Confine construction operations within Owner's property, public rights-of-way, easements obtained by Owner, and limits shown, and property for which Contractor has made arrangements directly with property Owner(s).
2. Use care in placing construction tools, machinery and equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic.
3. Do not enter private property outside the construction limits without permission from the Owner of the property.

B. Within Highway and Railroad Rights-of-Way:

1. Permits required for the permanent facilities will be obtained by Owner. Contractor shall obtain and pay for work permits and fees for safety and inspection forces to be furnished by the right-of-way Owner.
2. Work performed and Contractor's operations within rights-of-way, including railroad and highway rights-of-way, shall comply with requirements of right-of-way Owner and Owners of facilities thereon, and with applicable work permits, and orders of authorities having jurisdiction over right-of-way.

1.6 PERFORMANCE OF WORK

A. Contractor will enter into a Contract with the Owner and shall perform the Work as an independent Contractor and not as an employee or agent of Owner or Engineer.

B. Contractor shall execute the Work with diligence and complete the Work within the applicable time set forth in the Contract. Contractor shall work overtime, extra shifts, or

provide any other methods as required to meet the completion date at no extra cost to Owner.

C. Contractor shall organize and execute the Work so as to comply at all times with the requirements of scheduling as set out in the Contract.

D. The actual order of the Work and the method of executing the Work shall be the responsibility of Contractor and shall be such as to ensure safety, satisfactory quality, and rapid and economical completion of the Work in harmony and cooperation with other parties.

E. Contractor shall give full information in advance of his plans for carrying on each part of the Work, including copies of working drawings and information as to conditions, capacity, and capability of Contractor's facilities. If at any time before the commencement or during the progress of the Work, any part of Contractor's facilities or any of his methods of executing the Work appear to the Owner's Representative to be inadequate to ensure the required quality, or rate of progress of the Work, Owner's Representative may require Contractor to change or improve his facilities, plant, or methods. Contractor shall promptly comply with requirements; but neither compliance with such requirements nor failure of Owner's Representative to issue such requirements shall relieve Contractor from his obligation to secure the degree of quality of work and the rate of progress required by the Contract. Contractor alone shall be responsible for the safety and adequacy of his plant and methods.

F. Contractor shall confine his plant, operations, and material to the work areas as required by Owner's Representative.

G. Contractor shall employ only competent and skillful workers on the Work. Owner's Representative may notify Contractor when any employee on the Work is, in his opinion, incompetent or disorderly, or has refused to carry out the provisions of the Contract or has used threatening or abusive language to any person on the Work representing Owner or Engineer, or is otherwise unsatisfactory. Upon Contractor's receipt of such notice, such employee shall be discharged immediately from the Work and shall not be employed again on the project, except with the written permission of Owner's Representative.

H. During performance of the Work, Contractor shall not hire employees of Owner, Engineer, others in contract with Owner, or their Subcontractors without written release from such employer. Contractor shall be solely responsible for employees leaving his employ for any reason until such employee has left the site.

I. Contractor shall be completely responsible for notifying his suppliers, Subcontractors, and others engaged in the Work on his behalf of all requirements under the Contract. This applies to Technical Specifications and drawing requirements, as well as contractual commitments.

J. Contractor shall coordinate its work with Owner and other Contractors to minimize interferences.

1.7 WORK BY OWNER

A. Owner will perform the following in connection with the Work:

1. Operate all existing valves, flow-control gates, pumps, equipment, and appurtenances that will affect Owner's operations, unless otherwise specified or indicated.
2. Owner will operate the inflatable crest gate system as necessary to pass floods that exceed the capacity of available generation and will coordinate crest gate operations with the Contractor to allow evacuation of the work area (spillway crest, spillway apron, and other areas that will or could be inundated). Contractor will plan, coordinate, and communicate work and lock-out tag-out procedures to allow the Owner to operate the crest gates within 1 hour of notification by the Owner. The Contractor shall be required to continuously coordinate with the Owner regarding planned construction operations, the operation of the available inflatable crest gates, and spillway operations over nights and weekends. Contractor shall include a standby cost for evacuating the site as a unit price item in their bid.
3. Provide isolation and tagging of system equipment prior to start of Work.
4. Owner will not provide any utilities or services unless explicitly stated in these specifications.
    a. Power through a meter socket is available on the Holyoke side of the river upon coordination with the Owner.

1.8 WORK QUALITY:

A. Shop and field work shall be performed by workers skilled and experienced in the fabrication and installation of the work involved. All work required by the Contract Documents shall be performed in accordance with the best practices of the various trades involved and in accordance with the reviewed shop drawings, the specifications, and applicable regulations and permits of local, state, and federal agencies.

B. All work shall be erected and installed plumb, level, square and true or true to indicated angle, and in proper alignment and relationship to the work of other trades. All finished work shall be free from defects and damage.

C. The Owner's Representative reserves the right to reject any materials and work quality that are not considered to be up to the highest standards of the various trades involved. Such inferior material or work quality shall be repaired or replaced, as directed, at no additional cost to the Owner.

1.9 DISCREPANCIES:

A. If the Contractor, in the course of the Work, finds any discrepancies between the Specifications or any errors or omissions in dimensions or instructions given by the Specifications, he shall immediately notify the Owner's Representative and Engineer, in writing. Any work performed after such discovery, unless authorized by the Owner in writing, shall be at the Contractor's expense.

B. It is the responsibility of the Contractor to ensure the replaced portions of the system work as intended and as described within this Specification. Upon review of the Contract Documents and verification of site conditions, the Contractor shall inform the Owner of any necessary modifications, additional equipment, etc. in order for the system to work as intended.

1.10 WORK SEQUENCE:

A. Work shall proceed in accordance with the Project Milestone Schedule, as outlined in the Bid Documents and Contract.

1.11 FIELD MEASUREMENTS:

A. Contractor shall secure all field measurements required for proper and accurate fabrication and installation of the work. Exact measurements are the responsibility of the Contractor.

B. All dimensions shall be verified by the Contractor in the field, including:

1. Obtain line and grade from benchmarks, base lines, and other reference points presently established.
2. Provide labor, tools, stakes, and materials as required to establish temporary or permanent reference marks in connection with the work.
3. Perform detailed measurements and transfer elevations as required to lay out and construct work. The Contractor shall also furnish or obtain templates, patterns, and setting instructions required for the installation of the Work. All dimensions shall be verified by the Contractor in the field.

1.12 CONTRACTOR'S USE OF SITE

A. Use of Site - General:

1. Relocate stored materials and equipment that interfere with operations of Owner, other Contractors, and others performing work for Owner.
2. The Contractor is responsible for all temporary power installations, distribution, cords, and design. All power needs shall be submitted to the Owner with the proposed temporary power distribution design.

B. Owner will occupy the Site jointly with Contractor during construction for performance of Owner’s typical operations. Coordinate with Owner in all construction operations to minimize conflicts between Contractor and Owner’s employees and others under Owner’s control.

C. The Contractor may use Upper Riverside Park to Work and access the dam apron. Trailers may be located at Hadley Station if necessary, as coordinated with Owner. See Appendix A for a Site Plan.

D. Limitations on what material and equipment that can be left in the waterway depends on river conditions and coordination with the Owner. Weekly and daily coordination will be required. Contractor shall provide contact information to the HG&E system operator for at least one individual who can be at the site and can complete evacuation within 6 hours on nights and weekends.

1.13 OCCUPANCY PRIOR TO FINAL ACCEPTANCE:

A. The Owner reserves the right to occupy any portion or unit or all of the Project's areas when the Owner deems such to be suitable for occupancy, provided such occupancy does not impede the Contractor's performance of the work.

B. The Owner also reserves the right to move equipment and supplies into portions of the Project that have been substantially complete, provided this occupancy will not delay the progress of the work.

C. If the Contractor has any objection to such proposed occupancy, he shall file his objection in writing with the Owner immediately after notification of intent to occupy.

D. If the Contractor is chargeable with unwarranted delay in final clean-up of punch list items or other requirements of the Contract Documents, the Owner may occupy portions or all of the Project without the approval of the Contractor.

PART 2 - BID INFORMATION

2.1 BID INFORMATION

A. Refer to the Invitation for Bid (IFB) document for bid information.

Part 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 14 33

WORK IN RIGHTS-OF-WAY

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. General requirements for:
      a. Work in street and highway rights-of-way.

B. Scope:
   1. Contractor shall obtain necessary permits, arrange and pay for inspections required by each right-of-way owner, and pay all charges for the Work in each right-of-way where the Work will be performed.
   2. Comply with applicable rules, regulations, permits, and standards of right-of-way owner.
   3. As indicated in other Article(s) of this Section, Owner has obtained or will obtain occupancy permits or similar permits required by owners of rights-of-way for the permanent location of Owner's facilities within the subject right-of-way. Contractor shall obtain necessary Work permits and similar permits necessary for installing the Work in and adjacent to each subject right-of-way.

1.2 WORK IN STREET AND HIGHWAY RIGHTS-OF-WAY

A. Owners of streets or highway rights-of-way in which the Work will be performed include:
   1. Street or highway name: Carew Street and the Texon Mill Park access roads.
      a. Jurisdiction: City of South Hadley, MA.
      b. Method: Site Access.
      c. Occupancy Permit: Is not required.
      d. Maintain not less than one lane(s) of traffic in each direction during the Work.
      e. Special Requirements: None.

B. Provide Traffic Control During Construction as Required by Jurisdiction.

1.3 SUBMITTALS

A. Informational Submittals: Submit the following:
   1. Permits:
      a. Copy of Work permit obtain from owner of each right-of-way in which Work will be performed.
      b. Submit prior to starting Work in or adjacent to the associated right-of-way.

Part 2 - PRODUCTS

2.1 MATERIALS

A. Materials used shall be in accordance with requirements of associated right-of-way owner and the Contract Documents.

Part 3 - EXECUTION

3.1 PREPARATION AND PROTECTION

A. Contractor shall implement means necessary to prevent accidents caused or influenced by the Work. Provide flaggers, temporary barriers, barricades, lights, signs, and other temporary measures to provide safe conditions during the Work.

3.2 INSTALLATION

A. Utility Crossings of Rights-of-Way:
   1. Provide materials, equipment, piping, and appurtenances required for crossings of existing underground facilities and aboveground facilities, utilities, and structures.
   2. Furnish and maintain at the site sufficient additional pipe fittings, adapters, and short lengths of required utility carrier pipe (quantities to be determined by Contractor) to expedite providing complete installation of utility carrier piping without unduly long period for open excavations in or adjacent to rights-of-way. Such pipe fittings, adapters, and short pieces are eligible for payment when properly installed and are in accordance with the Contract Documents.

B. Pavement:
   1. When fill is stabilized in accordance with requirements of owner of the street or highway right-of-way and the Contract Documents, replace roadway subbase material and pavement with materials as required by the Contract Documents and, if not expressly required, replace with pavement of similar type and equal thickness to the pavement in place prior to start of the Work.
   2. Paving shall comply with requirements of owner of the street or highway right-of-way and the Contract Documents.

C. Restoration for Other than Paved Areas:
   1. Restore disturbed areas of rights-of-way in accordance with associated permits and the Contract Documents. Where permits and the Contract Documents do not expressly address the type or extent of such restoration, restore all areas disturbed during the Work to condition equal to or better than preconstruction conditions.
   2. If owner of the right-of-way requires restorations beyond that required by the Contract Documents and applicable permits, promptly advise Engineer and submit Change Proposal in accordance with the Contract Documents. Obtain authorization in accordance with the Contract prior to performing any Work not in accordance with or beyond the scope of the Contract Documents.

END OF SECTION

SECTION 01 31 13

PROJECT COORDINATION

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for:
    a. Project coordination when the Project is implemented using a single prime construction Contract.
    b. Coordination meetings.
    c. Coordination drawings and layout drawings.

B. Scope:

1. Contractor shall coordinate the Work, whether performed by Contractor's employees or by Subcontractors, Suppliers, or others for whom Contractor is responsible, to provide Work in accordance with the Contract Documents.
2. Coordinate the Work with testing entities and inspectors (whether hired by Contractor, Owner, or others) employed on the Project, forces of Owner and facility manager (if other than Owner), and other Contractors retained by Owner or facility manager, and other entities with which the Work needs to be coordinated.
3. Requirements for preconstruction meetings are in Section 01 31 19 – Project Meetings.
4. Requirements for construction progress meetings are in Section 01 31 19 – Project Meetings.

C. Related Requirements:

1. Include, but are not necessarily limited to, the following:
    a. Section 01 11 00 – Summary of Work.
    b. Section 01 14 33 – Work in Rights-of-Way.
    c. Section 01 31 19 – Project Meetings.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordination – General:
    a. In accordance with the General Conditions as may be modified by the Supplementary Conditions, and Section 01 11 00 – Summary of Work, Contractor shall coordinate the Work with, and cooperate with, other Contractors, utility owners and their Contractors, owners of transportation facilities and their Contractors, Owner's and facility manager's workers at the site, and other entities working at or adjacent to the site.
    b. Coordinate the Work with owners of rights-of-way indicated in Section 01 14 33 – Work in Rights-of Way.

2. Advise other Contractors (if any) of schedule for the Work to allow other Contractors sufficient time to perform their Work that must be performed prior to the Work. Coordinate and communicate with other Contractors and other entities when the Work must be performed prior to the Work of others and make good-faith efforts to avoid delaying Work of others.
3. Coordination, Inspection, and Observation to Ensure Quality:
    a. Contractor shall continuously inspect the Work throughout the Project to ensure that the Work complies with the Contract Documents.
    b. Inspect (including testing, where required or necessary) substrates and surfaces on which the Work will be constructed, applied, adhered, or attached, to ensure substrate and surface conditions are appropriate for providing Work in accordance with the Contract Documents.
4. Contractor is not responsible for, or liable for, damage or loss unless damage or loss resulted from action, inaction, or negligence of Contractor, or Subcontractor(s), Supplier(s), or other entity for whom Contractor is responsible. This provision does not mitigate or reduce Contractor's responsibility for security for the Work, in accordance with the Contract.

B. Coordination Meetings:
1. Contractor's Coordination Meetings:
    a. Schedule, attend, chair, and actively participate in coordination meetings deemed appropriate by Contractor for purposes of coordinating the Work of Contractor's employees, Subcontractors, Suppliers, and others for whom Contractor is responsible.
    b. Frequency, location, date, time, and duration of Contractor's coordination meetings are at Contractor's discretion. Record and distribute to attendees and other members of Contractor's team a record of topics discussed, decisions made, and other relevant matters at Contractor's coordination meetings.
    c. Engineer, Resident Project Representative (if any), Owner, and Owner's Site Representative (if any) will not attend Contractor's coordination meetings.

Part 2 - PRODUCTS – (NOT USED)

Part 3 - EXECUTION – (NOT USED)

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preconstruction, progress, and other Project meetings.

B. Related Sections include but are not necessarily limited to:

1. Division 00 – Procurement and Contracting Requirements
2. Division 01 – General Requirements

1.2 PRECONSTRUCTION MEETING

A. Meet with the Owner and Engineer for a pre-construction conference at a time mutually agreed upon after the Contract is awarded, but before any Work is performed.

B. The Contractor will schedule a meeting with the Owner, Contractor's Subcontractors, and their respective representatives, and the Engineer. The Contractor shall schedule this meeting once they have prepared their draft proposed schedule.

1. The purpose of the meeting will be to clarify construction contract administration procedures, to establish lines of authority and communication, and identify duties and responsibilities of the parties.

C. The agenda for the meeting shall cover at least the following items:

1. Procedural and Administrative:
    a. Personnel and Teams:
        1) Designation of roles and personnel.
        2) Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
        3) Subcontractors and Suppliers in attendance.
        4) Authorities having jurisdiction.
    b. Procedures for communications and correspondence, including electronic communication protocols.
    c. Copies of the Contract Documents and availability.
2. The Work and Scheduling:
    a. General scope of the Work.
    b. Phasing and sequencing.
    c. Preliminary Progress Schedule.
    d. Critical path activities.
3. Safety:
    a. Contractor's safety representative.
    b. Emergency procedures and accident reporting.

c. Temporary Emergency Action Plan (TEAP), as described in Section 35 20 16.
d. Emergency contact information.
e. Hazardous materials communication program.

4. Coordination:
   a. Coordination of Subcontractors and Suppliers.
   b. Coordination with Owner's operations.
   c. Progress meetings – schedule and frequency.
   d. Coordination meetings.
5. Submittals:
   a. Current critical submittals:
      1) List of emergency contact information.
      2) Notice of elements of Contractor's safety program with which Owner and Engineer are to comply.
      3) Site use plan.
      4) Identification of initial, critical Shop Drawings and product data.
6. Testing and inspections:
   a. Owner-hired and Contractor-hired.
   b. Identification of Owner-hired testing entity and special inspectors.
   c. Responsibility for advising testing entity and special inspectors of need for services.
7. Record documents.

D. The Owner's Representative will compile meeting minutes from the transcribed record of the meeting and electronically distribute copies to all participants.

E. Pre-Construction Conference Submittals:
   1. The names and telephone numbers of Contractor's Superintendent and Office Manager.
   2. List of personnel authorized to sign change orders and receive progress payments.
   3. The name, address, and telephone numbers of two or more persons employed by the Contractor who can be reached at any time of the day or night to handle emergency matters.
   4. A list of all Subcontractors that will Work on the Project, a description of Work they will perform, and a contact list for each Subcontractor with phone numbers and address.
   5. A draft proposed Construction Schedule.
   6. Material Safety Data Sheets for all hazardous chemical products to be used by the Contractor on this Project.
   7. Temporary Erosion and Sediment Controls Plan.
   8. Traffic Control Plan.

1.3 PROGRESS MEETINGS

A. Weekly progress meetings will be held at a location determined by the Owner's Representative, unless otherwise arranged.

B. Attendees will include the Owner, Owner's Representative, Engineer, Contractor, Subcontractors, and Suppliers' Representatives as may be needed, other Contractors working at the site, and other interested or affected parties.

C. Preliminary Agenda: Be prepared to discuss in detail the topics indicated below. Revised agenda, if any, will be furnished to Contractor prior to associated progress meeting(s). Progress meeting agenda may be modified by the Owner's Representative during the Project as necessary.

1. Review, comment, and amendment (if necessary) of minutes of previous progress meeting.
2. Review of progress since the previous progress meeting.
3. Planned progress through next progress meeting.
4. Review of Progress Schedule:
    a. Review of the contract times; Contractor's ability to comply with contract times.
    b. Identification of critical path activities.
    c. Schedules for fabrication and delivery of materials and equipment.
    d. Corrective measures, if necessary, including recovery schedule(s).
5. Submittals:
    a. Review status of critical Submittals.
    b. Review revisions to Schedule of Submittals.
6. Contract Modifications:
    a. Requests for interpretation.
    b. Written clarifications.
    c. Field Orders.
    d. Proposal Requests.
    e. Change Proposals.
    f. Work Change Directives.
    g. Change Orders.
    h. Claims.
7. Applications for progress payments:
    a. Status and deadline for submittal.
    b. Stored materials and equipment; observation by Engineer or Owner's Representative; documents required.
    c. Set-offs to which Owner is entitled (as applicable).
    d. Other matters related to progress payments.
8. Problems, conflicts, and observations.
9. Quality standards, testing, and inspections.
10. Coordination between Project participants.
11. Site management issues, including vehicular access and parking, traffic control, security, status of temporary controls and temporary utilities, site maintenance and cleaning, and other site matters.
12. Safety and protection.

13. Permits.
14. Construction photographic documentation.
15. Record documents status.
16. Completion matters (as appropriate):
    a. Status of checkout, startup, field quality control activities.
    b. Status of training of facility operations and maintenance (O&M) personnel and O&M manuals.
    c. Partial utilization; inspection for substantial completion.
    d. Punch list status (as applicable).
    e. Other closeout matters (if any).
17. Other business.

D. Minutes of Meeting:

1. The Owner's Representative will compile minutes of each Project meeting and will furnish electronic copies to the Contractor.

1.4 OTHER MEETINGS

A. Other meetings will be required to facilitate progress of the Work. These include, but are not limited to the following:

1. Pre-Installation Conferences:
    a. Coordinate and schedule with Engineer for each material, product, or system specified.
        1) Conferences to be held prior to initiating installation, but not more than two weeks before scheduled initiation of installation.
        2) Conferences may be combined if installation schedule of multiple components occurs within the same two-week interval.
        3) Review manufacturers recommendations and Contract Documents Specification Sections.

Part 2 - PRODUCTS – (NOT USED)

Part 3 - EXECUTION – (NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Administrative and procedural requirements for Contractor's construction Progress Schedules and related Submittals, including:
    a. Administrative requirements regarding progress Schedules.
    b. Qualifications of Progress Schedule preparer and related personnel.
    c. Submittals of Progress Schedules and associated schedule-related Submittals.
    d. Initial Progress Schedules.
    e. Look-ahead schedules.
    f. Progress Schedule updates.
    g. Time impact analyses.
    h. Recovery schedules.

B. Scope:

1. Contractor shall prepare and submit to Owner's Representative required Progress Schedules and related Submittals, as required by this Section and elsewhere in the Contract Documents. Maintain and update Progress Schedules and related Submittals throughout the Project.
2. Owner, facility manager (if other than Owner), Engineer, and others involved with the Project have the right to rely on accuracy of Contractor-prepared Progress Schedule.
3. Owner's Representative's review or acceptance of the Progress Schedule or related Submittals, and Owner's Representative's comments on and expressed opinions concerning activities in the Progress Schedule and related Submittals, and progress of the Work, does not control Contractor's independent judgment concerning construction means, methods, techniques, sequences and procedures, unless the associated means, method, technique, sequence, or procedure is required by the Contract Documents. Contractor is solely responsible for complying with the Contract Dates.

C. Related Requirements: Include, but are not necessarily limited to:

1. Section 01 11 00 - Summary of Work.
2. Section 01 31 19 – Project Meetings

1.2 REFERENCES

A. Defined Terms and Terminology:

1. Terminology: The following are not defined terms and are not indicated with initial capital letters but, when used in this Section, have the meaning indicated below, whether applied to the singular or plural thereof.
   a. “Activity” is an element of the Work that has the following specific characteristics: consumes time, requires resources, has a definable start and finish, is assignable, and is measurable.
   b. “Baseline Progress Schedule” means the version of the Progress Schedule (for the entire Project) initially accepted by the Owner and Engineer. In the event of subsequent modifications to the Project, Contractor, Owner, and Engineer may mutually agree that a subsequent revision of the Progress Schedule constitutes a new baseline Progress Schedule that supersedes the prior baseline Progress Schedule.
   c. “Constraint” means an imposed date on the Progress Schedule or an imposed time between activities. The Contract Dates are constraints.
   d. “CPM Progress Schedule” means a computerized Progress Schedule in critical path method (CPM) format, for the entire Work, indicating interrelationships between elements of the Work; indicates sequences, dates, and durations for Work performed to date; indicates sequences, dates, and duration for incomplete Work yet to be performed; indicates constraints; and indicates the critical path for the Work. All schedule submittals shall be provided as both scheduling software program files and pdf files.
   e. “Critical path” is the continuous chain of activities, from start to completion of the Work, with the longest duration for completion within the Contract Dates.
   f. “Early finish” means the earliest date an activity can finish according to the assigned relationships among the activities in the Progress Schedule.
   g. “Early start” means the earliest possible date an activity can start according to the assigned relationships among activities in the Progress Schedule.
   h. “Float” means the time difference between the calculated duration of an activity chain on the Progress Schedule and the critical path.
   i. “Late finish” means the latest date an activity on the Progress Schedule can finish without extending the Contract Dates.
   j. “Late start” means the latest date an activity on the Progress Schedule can start without extending the Contract Dates.
   k. “Schedule date” (and similar terms, whether used in this Section or Project communications related to Progress Schedules) mean the “early start” and “early finish” date for the associated activity. “Late start” and “late finish” dates are for determining float and do not represent the schedule dates.
   l. “Total float” means the total number of days an activity (or chain of activities) on the Progress Schedule can be delayed without affecting the Contract Dates.
   m. “Work areas” and “work system” means a logical breakdown of the Work elements or a group of activities which, when collectively assembled, are readily identifiable on the Project (for example: yard piping, a structure or building, a treatment process, or other logical grouping).

1.3 ADMINISTRATIVE REQUIREMENTS

A. General Provisions on Progress Schedules:

1. This Section augments requirements for the Progress Schedule, and Contractor's control of the Work, indicated in the General Conditions, as may be augmented by the Supplementary Conditions.

B. Use of Float:

1. Float belongs to the Owner and may be used to accommodate changes in the Work, or to mitigate the effect of events delaying the Work or compliance with the Contract Dates.
2. Changes or delays that influence activities that have float and do not extend the critical path do not justify changes in the Contract Dates.

C. Factors Affecting the Progress Schedule:

1. In preparing and updating the Progress Schedule, take into consideration: preparing and signing subcontracts and purchase orders, complying with Submittal requirements and Submittal review times, fabricating materials and equipment, source quality control (including required shop tests and inspections), shipping and deliveries, field quality control (including required field tests and inspections at the Site), Work by Subcontractors, coordination with others (such as other Contractors including those indicated in Section 01 11 00 – Summary of Work, utility Owners, and Owners of transportation facilities), compliance with all Laws and Regulations and permits, availability of construction equipment and machinery, abilities of workers, weather conditions, condition of the Site, seasonal restrictions, restrictions in operations at the Site and coordination with Owner's (or facility manager's) operations, training of facility operation and maintenance personnel, checkout, startup, adjusting and balancing, and other factors that have the potential to affect completion of the Work within the Contract Dates.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Progress Schedule Preparer.
   a. Contractor shall prepare and update of the Progress Schedule using qualified personnel experienced in: (1) construction scheduling, (2) the scheduling software required for the Project, and (3) serving as Progress Schedule preparer on construction projects of similar type, size, and complexity as the Project.
   b. Progress Schedule preparer shall have not less than two years' experience using the required schedule software on construction projects of similar type, size, and complexity as the Project.

1.5 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Planned Work Schedule:

a. Submit initial and updated (as necessary) planned work schedule, in accordance with this Section's "initial Progress Schedule" Article.

2. Progress Schedule:
   a. Acceptable Progress Schedule ("Baseline Progress Schedule").
3. Look-Ahead Schedules:
   a. Submit 14-day look-ahead schedule at each construction progress meeting, in accordance with this Section's "Look-Ahead Schedules" Article.
4. Progress Schedule Updates:
   a. Progress Schedule updates shall comply with requirements of this Section, and shall include updated Progress Schedule and associated, required, schedule-related Submittals.
   b. Submit updated Progress Schedule prior to each associated construction progress meeting. When a Progress Schedule remains unchanged from one construction progress meeting to the next, submit written statement expressly so stating.
5. Time Impact Analyses: Submit in accordance with this Section.
6. Recovery Schedules: Submit in accordance with this Section.

1.6 INITIAL PROGRESS SCHEDULE

A. Applicability of this Article:
   1. This Article addresses the initial Progress Schedules and selected, related Submittals required at the outset of the Project's construction phase, through Owner's Representative's acceptance of the Progress Schedule and its related Submittals.
   2. Subsequent Progress Schedule Submittals, including Progress Schedule updates, recovery schedules, and other schedule-related Submittals, shall comply with software, type, organization, content, and similar requirements of this Article.

B. Type and Organization of Progress Schedules:
   1. Prepare Progress Schedules using Microsoft Project or Oracle Primavera P6 software, unless other scheduling software is acceptable to Owner.
   2. Sheet Size: 22 inches by 34 inches, unless otherwise accepted by Owner and Engineer.
   3. Time Scale: Indicate first date of each work week.
   4. Activity Assignments and Designations:
      a. Limit activities, where possible, excluding fabrication of materials and equipment, to durations not longer than 10 days. Activities shall be definable and measurable. For example, an activity described only as, "Concrete," will likely be unacceptable.
      b. Assign to each activity an appropriate, unique numerical designation and description.
      c. Numerical designation shall incorporate the associated Specifications section number.

d. Activity description shall include sufficient detail to clearly communicate the intended activity. Descriptions shall include identifiers for physical locations of work area or work system, such as (where appropriate): column lines, stationing (for linear projects), and elevations. Indicate unique description for each activity.
e. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
f. Group construction into work area sub-schedules (that are part of the Progress Schedule) by activity.
g. Clearly indicate, as activities separate from installation, necessary and required curing periods.

5. Indicate interfaces and dependencies with preceding, concurrent, and follow-on activities, including those associated with the Work, other Contractors at the Site, Owner and facility manager, Owner's consultants (including Engineer), authorities having jurisdiction, and others as appropriate. Clearly indicate activities not under Contractor's control.
6. Progress Schedules shall be CPM Progress Schedules.
7. Indicate on the separate Schedule of Submittals dates for submitting and reviewing Shop Drawings, product data Submittals, Samples, and other required Submittals. Coordinate Progress Schedule with the Schedule of Submittals.
8. Clearly indicate the critical path on the Progress Schedule.
9. All schedules shall be submitted as software files and as pdf files.

C. Planned Work Schedule:

1. Within 21 days of the Effective Date of the Contract, indicate to Owner's Representative's the work days and hours proposed by Contractor. Also indicate planned non-work days, such as Contractor's holidays, weekends, and the like.
2. Enforce Subcontractors' and Suppliers' (when at the Site) compliance with Contractor's work schedule submitted to Owner's Representative's.
3. In the event of changes, submit to Owner's Representative's revised work schedule. Furnish such Submittal not less than three days prior to changing Contractor's work schedule, except in event of unanticipated emergency.

D. Preliminary Progress Schedule:

1. Within 7 days after the Contract Dates commence running, Contractor shall submit to Owner's Representative's the preliminary Progress Schedule covering the entire Project, with associated schedule-related Submittals required in this Section's "Submittals" Article.
2. Owner's Representative's will perform timely review of the preliminary Progress Schedule.

E. Initial Acceptance of Progress Schedule:

1. Not less than 10 days before submission of the first Application for Payment, a scheduling conference attended by Contractor, Progress Schedule preparer, Owner, and Engineer, and others as appropriate will be held to review for acceptability to Owner and Engineer the preliminary Progress Schedule and

associated schedule-related Submittals. Following the scheduling conference, Contractor shall have five days to make corrections and adjustments and to complete and resubmit the Progress Schedule and associated schedule-related Submittals. Contractor will not be eligible for first progress payment until acceptable Progress Schedule and associated schedule-related Submittals are submitted to Owner's Representative and are acceptable to Owner's Representative.

2. Submit acceptable Progress Schedule, together with associated schedule-related Submittals in accordance with this Section's "Submittals" Article and Section 01 33 00 - Submittal Procedures. Also submit acceptable form of Progress Schedule in its native (executable) format generated by the scheduling software.
3. The Progress Schedule will be acceptable to Owner's Representative if it provides an orderly progression of the Work to completion within the Contract Dates, in accordance with the Contract Documents.
4. Initially-accepted Progress Schedule shall be identified as the baseline Progress Schedule.

1.7 PLANNED COMPLETION DIFFERENT FROM THE CONTRACT DATES:

A. If the Progress Schedule accepted by Owner's Representative indicates completion date(s) different than the Contract Dates, the Contract Dates are not thereby changed.

1. Where the Progress Schedule accepted by Owner's Representative indicates date(s) by which the Work, or designated portion thereof, will (a) achieve a Contractually stipulated Milestone, or (b) be substantially complete, or (c) all the Work will be complete and ready for final payment, earlier than the Contract Dates ("early completion date"), Contractor shall, not less than 120 days prior to the associated Contract Time, prepare and submit a Change Proposal setting forth Contractor's request to modify the Contract Dates to an earlier date, which may or may not be the same as the scheduled early completion date. The Contract Dates can be modified only via a Change Order.
2. In the event the Progress Schedule accepted by Owner's Representative indicates one or more early completion dates and the Contract Dates have not been reduced, Owner may, at Owner's option, use available float without Owner being liable for Contractor's costs to remain onsite, mobilized, and working (whether on the original scope of the Work or for modified Work) beyond the scheduled early completion date(s), as long as the Work will be completed within the Contract Dates.
3. When the Work will not be completed within the Contract Dates, the Contract Documents' provisions concerning delays and changes in the Contract Dates govern.

1.8 LOOK-AHEAD SCHEDULES

A. Look-Ahead Schedules – General:

1. Look-ahead schedules are short-duration, often more-detailed, time-based schedules for the Work to be performed during the coming month or other required span of the look-ahead schedule.
2. Purpose of look-ahead schedules is to present, for Project stakeholders, including Owner, facility manager (if other than Owner), Engineer, Owner-hired testing and inspection entities, other Contractors working at or adjacent to the Site, utility Owners, transportation facility Owners, and others as necessary, Contractor's detailed, time-based plan for performing the Work during the period covered by the timespan of the look-ahead schedule.
3. This Section's "Submittals" Article indicates the required span and frequency of look-ahead schedules.
4. Each look-ahead schedule shall be fully coordinated and consistent with the current Progress Schedule update.
5. Submit look-ahead schedules concurrent with construction progress meetings, in accordance with Section 01 33 00 – Submittal Procedures. Also submit look-ahead schedules in native (executable) format.

B. Organization and Content of Look-Ahead Schedules:

1. Look-ahead schedules shall be prepared from the current Progress Schedule update, of the same type, using the same software, content, and organization required in this Section for initial Progress Schedules.
2. Activity designations on look-ahead schedules shall incorporate the associated activity designations from the Progress Schedule.
3. Sheet Size: Format look-ahead schedules to sheet size of 11 inches by 17 inches, unless other sheet size is acceptable to Owner's Representative.
4. Look-ahead schedules should generally be more-detailed than the Progress Schedule. Activity durations on look-ahead schedules should not exceed five days.

1.9 PROGRESS SCHEDULE UPDATES

A. Updates – General:

1. Update the Progress Schedule not less-often than once per month. If during progress of the Work events develop that necessitate changes in the initially accepted Progress Schedule (baseline Progress Schedule), identify updated Progress Schedules sequentially as "Progress Schedule Revision "1," "2," "3," and continuing in sequence as required. Number the Progress Schedule submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Starting with first Progress Schedule update, and continuing with each subsequent update, indicate on the Progress Schedule the actual start and finish dates of each activity that is completed or is currently underway. Inaccurate representation of completed or in-progress activities will be grounds for Owner's Representative's non-acceptance of the Progress Schedule update.

3. Progress Schedule updates shall be based on retained logic. Progress override logic is not allowed.
4. Required scheduling software, and schedule organization, format, and content for updated Progress Schedules are identical to that required in this Section for initial Progress Schedules.
5. Transmittal Letter:
    a. Furnish each Progress Schedule update Submittal with transmittal letter expressly indicating the following:
        1) List of activities and dates changed since the previous Progress Schedule Submittal.
        2) Clear indication of the activities on the Project's critical path.
        3) List of Work performed since the previous Progress Schedule Submittal.
        4) Discussion of problems causing delays, anticipated duration of delays, and proposed countermeasures.
    b. Required transmittal letter does not count as contractually-required notice of Change Proposal or Claim, nor any other notice required by the Contract Documents. Separately prepare and transmit such notices in accordance with the Contract Documents.
6. Submit to Owner's Representative updated Progress Schedule, together with associated schedule-related Submittals, in accordance with this Section's "Submittals" Article and Section 01 33 00 - Submittal Procedures. Also submit updated Progress Schedule in its native (executable) format generated by the scheduling software.

1.10 TIME IMPACT ANALYSIS

A. Time Impact Analyses – General:

1. Prepare and submit time impact analysis when one or more of the following occurs: (a) Change Proposal is prepared; (b) Work Change Directive is issued that will affect the Progress Schedule; or (c) when delays occur.
2. Time impact analysis shall illustrate influence of each Change Order, Work Change Directive, allowance authorization, or delay, as applicable, on Contractor's ability to comply with the Contract Dates and Progress Schedule constraints.
3. In performing time impact analysis, use Progress Schedule having revision date closest to and prior to the event giving rise to the delay or other change in the Work.
4. Indicate in time impact analysis activities on the Project's critical path prior to the event giving rise to the delay or other Change in the Work; activities added, extended, or deleted as a result of the delay or change in the Work; and impact of such changes on the Project's critical path activities.
5. Indicate in time impact analysis activities not within Contractor's control.
6. Time impact analysis shall demonstrate the time impact, based on date the Change Order, Work Change Directive, or allowance authorization was given to Contractor or, as applicable, date the delay started to occur; the status of the Work at that time; and activity duration of affected activities. Activity duration

used in time impact analysis shall be those included in most recent Progress Schedule update accepted by Owner's Representative, closest to start of the delay or start of the Change Order, Work Change Directive, or allowance authorization as adjusted by mutual, written agreement of the parties and Owner's Representative.

7. Timing of Time Impact Analysis:
   a. Submit time impact analysis with Change Proposal.
   b. When time impact analysis is not part of a Change Proposal, submit each time impact analysis within 15 days after the following, as applicable:
      1) Start of the delay.
      2) After Contractor's receipt of Work Change Directive.
   c. When Contractor does not submit time impact analysis for a specific change or delay, within the specified period for such submittal, such non-submittal will indicate extension of the Contract Dates is not needed.

B. Evaluation by Owner's Representative and Acceptance:

1. Owner's Representative's evaluation of each time impact analysis comprised of complete information will be completed in timely manner (in accordance with the Contract Documents) after Owner's Representative's receipt.
2. When time impact analysis is incomplete or otherwise inappropriate, Owner's Representative will furnish comments to Contractor. When time impact analysis is complete and apparently appropriate, its acceptability will be indicated by associated Contract modification or allowance authorization.
3. Changes in the Contract Dates will be made only by Change Order.
4. When mutual agreement is reached between the parties on effect of the change or delay in the Project, incorporate into the next Progress Schedule update the associated Progress Schedule revisions illustrating the influence of changes and delays.

1.11 RECOVERY SCHEDULES

A. Recovery Schedules – General:

1. When updated Progress Schedule indicates the ability to comply with the Contract Dates falls 10 days or more behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Dates, Contractor shall prepare and submit to Owner's Representative Contractor's recovery schedule.
2. Recovery schedule is a Progress Schedule demonstrating Contractor's plan to accelerate the Work to achieve compliance with the Contract Dates. If achieving the Contract Dates is not feasible, Contractor's recovery schedule shall indicate Contractor's plan to recover as much of the lost time as possible to complete the Work as close as possible to the Contract Dates.
3. Submit recovery schedule within 10 days after submittal of updated Progress Schedule where need for recovery schedule is indicated.

B. Recovery Schedule Report:

1. With each recovery schedule Submittal, include recovery schedule narrative report, manually prepared by Contractor, on Contractor's company letterhead, indicating name of person responsible for preparing the recovery schedule and report.
2. Recovery schedule report shall verbally indicate Contractor's plan for accelerating the Work and recovering lost time, and shall indicate the total number of days expected to be recovered by Contractor's implementation of the recovery schedule. Clearly indicate how the intended actions will recover lost time.
3. Contractor is fully responsible for complying with the Contract Documents, including the Contract Dates.

C. Implementation of Recovery Schedule:

1. At no additional cost to Owner, do one or more of the following, as appropriate: (a) furnish additional labor, (b) provide additional construction equipment and machinery, (c) provide suitable materials to accelerate the Work, (d) employ additional work shifts, (e) expedite procurement of materials and equipment to be incorporated into the Work or otherwise expedite delivery of such items, (f) provide other needed resources, and (g) provide other measures necessary to complete the Work within the Contract Dates.
2. Upon acceptance of recovery schedule by Owner's Representative, incorporate recovery schedule into the next Progress Schedule update.

D. Contractor's Failure to Recover Lost Time:

1. Contractor's refusal, failure, or neglect to take appropriate measures to recover lost time, or to submit a recovery schedule, shall constitute reasonable evidence that Contractor is not prosecuting the Work, or designated part of the Work, with diligence to ensure completion in accordance with the Contract Dates. Such action or inaction by Contractor shall constitute sufficient basis for Owner to exercise remedies available to Owner under the Contract Documents.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Definition of various types of Submittals.
2. Coordination requirements for Submittals.
3. General provisions concerning Submittals.
4. Schedule of Submittals.
5. Contractor's preparation of Submittals, including:
   a. Numbering.
   b. Marking.
   c. Organization and content.
   d. Proposed "or-equals," substitutes, and deviations from Contract requirements.
   e. Electronic Documents Submittals.
   f. Contractor's review and approval of each Submittal.
   g. Resubmittals.
6. Contractor's transmittal of Submittals, including transmittal letters, transmittal and delivery method, and delivery of Samples, Closeout Submittals, and Maintenance Materials Submittals.
7. Engineer's review, including:
   a. Timing.
   b. Meaning of Engineer's Submittal action code(disposition) assigned.
   c. Delivery of Engineer's responses on Submittals.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, incidentals, and other effort necessary to furnish Shop Drawings, product data Submittals, Samples, and other Submittals in accordance with the Contract Documents.
2. This Section's Article, "General Provisions Concerning Submittals" includes a summary of the Contract Documents' locations of Submittals requirements.
3. Shop Drawings, product data Submittals, Samples, and other Submittals, whether or not approved or accepted by Owner, are not Contract Documents. Owner's approval or acceptance, as applicable, of a Submittal does not alter or modify the Contract Documents.
4. Engineer and Owner have the right to rely on Contractor's representations and certifications made regarding each Submittal.

C. Related Requirements: Include but are not limited to:

1. Section 01 14 33 – Work in Rights-Of-Way
2. Section 01 32 16 – Construction Progress Schedule
3. Section 01 57 05 – Temporary Controls
4. Section 01 65 00 – Product Delivery Requirements
5. Section 01 66 00 – Product Storage and Handling Requirements
6. Section 01 77 19 – Closeout Requirements
7. Section 01 78 39 – Project Record Documents
8. Section 02 41 00 – Demolition
9. Section 03 01 30 – Repair and Rehabilitation of Existing Concrete
10. Section 03 05 05 – Post-Installed Anchor Testing and Inspection
11. Section 35 20 16 – Inflatable Crest Gate System Supply
12. Section 35 20 17 - Inflatable Crest Gate System Installation

1.2 REFERENCES

A. References – Introduction:

1. This Article presents definitions and terminology used in this Section and throughout the Contract Documents.
2. Types of Submittals:
   a. Submittal types are classified as follows: (1) Action Submittals, (2) Informational Submittals, (3) Closeout Submittals, and (4) Maintenance Materials Submittals.
   b. Type of each required Submittal is indicated in the associated Specifications section. When Submittal type is not clearly indicated in the associated Specifications section, Submittal will be classified as indicated in this Article. Submit request for interpretation when Contractor is uncertain of required Submittal type.

B. Action Submittals:

1. Action Submittals require an explicit, written approval or other appropriate action by Owner (or other entity to whom the Submittal is required to be furnished, in accordance with the Contract Documents) before Contractor may release the associated item(s) for raw materials procurement, fabrication, production, and shipping.
2. Unless otherwise indicated in the Contract Documents, Action Submittals include the following:
   a. Shop Drawings.
   b. Product data.
   c. Samples.
   d. Testing plans for quality control activities required by the Contract Documents.

C. Informational Submittals:

1. Informational Submittals are so indicated in the Contract Documents. Unless otherwise indicated, Informational Submittals include certifications, evaluation reports, results of source quality control activities, results of field quality control activities, Supplier instructions, reports of Suppliers' visits to the Site, sustainable design Submittals (that are not Closeout Submittals), delegated design Submittals that are not "instruments of service" Submittals, qualifications statements, and others.
2. Informational Submittals, when submitted in accordance with the Contract and indicating full compliance with the Contract Documents, do not require explicit response from Engineer (or other entity to whom the Submittal is to be delivered). Copy of Engineer's Submittals log is available to Contractor upon Contractor's written request.
3. When Informational Submittal does not indicate full compliance with the Contract Documents, Engineer (or other entity to which Submittal is to be delivered) will indicate the non-compliance in a written response to Contractor.

D. Closeout Submittals:

1. Closeout Submittals are indicated in the Contract Documents and are, in general, required before the associated Work is completed, unless earlier submittal is required by the Contract Documents.
2. Unless indicated otherwise in the Contract Documents, Closeout Submittals include maintenance contracts, operation and maintenance data, warranties, bonds (other than performance and payment bonds required prior to the start of construction), record documents, sustainable design closeout Submittals, software, keys, and others.
3. Closeout Submittals are processed in the same manner as described above for Informational Submittals.

E. Maintenance Materials Submittals:

1. Maintenance materials include spare parts, extra materials, tools, and similar items required to be furnished in accordance with the Contract Documents.
2. Furnish required physical maintenance materials, delivered to Owner or facility manager (if other than Owner), as applicable, at the location(s) indicated in the Contract Documents, for the corresponding required Maintenance Materials Submittals.
3. Maintenance Materials Submittals are documentation of delivery to Owner's or facility manager, and their acceptance of, required physical maintenance materials.
4. Maintenance Materials Submittals are processed in the same manner as described above for Informational Submittals.

F. Additional Terms:

1. The following terms have the meanings indicated below, regardless of whether such terms are indicated using initial capital letters, and apply to singular and plural of each:

a. “Product data” means illustrations, standard schedules, performance charts, Supplier’s published instructions, brochures, diagrams, and other information furnished by Contractor to illustrate or describe materials or equipment for some portion of the Work. In general, product data are manufacturers’ pre-published information on the items proposed to be incorporated into the Work. Product data includes manufacturer’s catalog pages and similar documents with Contractor-made markings and indications of proposed products and proposed options.

b. The term “Shop Drawings,” is defined as following: Shop Drawings include: (1) fabrication and assembly drawings, usually having a title block, or (2) schedules, prepared specifically for the Project. Here, “schedules” means a Project-specific summary of systems and components, such as a schedule of HVAC equipment, schedules of doors and door hardware, or windows, or a schedule of paint systems by room and surface, or other, similar Project information in a tabular format. In contrast, construction Progress Schedules, Schedules of Submittals, and Schedules of Values are not Shop Drawings.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Furnish Submittals well in advance of need for the associated material or equipment, or procedure (as applicable), in the Work and with ample time necessary for delivery of materials and equipment and to implement procedures following Owner’s approval or acceptance of the associated Submittal.
2. Work covered by a Submittal will not be included in payments by Owner until approval or acceptance (as applicable) of related Submittals has been obtained in accordance with the Contract Documents.

1.4 GENERAL PROVISIONS CONCERNING SUBMITTALS

A. Locations of Requirements:

1. Requirements concerning Submittals are generally located as follows:

a. General Conditions, as may be modified by the Supplementary Conditions, applicable to the Project.

b. This Section, which presents general requirements for Submittals applicable to the Project.

c. The “Submittals” Article of the various Specifications sections, which indicates the required Submittals for the associated Work. Furnish all Submittals required by the Contract Documents regardless of whether explicitly indicated in the associated Specifications’ “Submittals” Article.

B. This Section augments and supplements the requirements of the General Conditions, as may be modified by the Supplementary Conditions, relative to Submittals.

C. All documents shall be in English and shall use units, terminology, and symbols that are standard in the United States of America.

1.5 SCHEDULE OF SUBMITTALS

A. Informational Submittals: Submit the following:

1. Schedule of Submittals:

a. Timing:

1) Furnish Schedule of Submittals within 14 days of receipt of contract award.
2) Submit updated Schedule of Submittals with each submittal of the updated Progress Schedule.

b. Content: In accordance with this Section. Requirements for content of preliminary Schedule of Submittals and subsequent Submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all Submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Clearly indicate Submittals that are on the Project's critical path. Indicate the following for each Submittal:

1) Date by which Submittal will be received by Engineer.
2) Whether Submittal will be for a substitution or "or-equal".
3) Date by which Engineer's response is required. Allow not less than 14 days for Engineer's review, starting on Engineer's actual receipt of each Submittal. Allow increased time for large or complex Submittals.
4) For Submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of others (if any).

c. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules in Section 01 32 16 - Construction Progress Schedule.

d. Coordinate Schedule of Submittals with the Progress Schedule.

e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate Submittals on the Project's critical path, or that places extraordinary demands on Engineer for time and resources, is unacceptable. Do not include Submittals not required by the Contract Documents.

f. In preparing Schedule of Submittals:

1) Considering the nature and complexity of each Submittal, allow sufficient time for reviews and revisions.
2) Allow reasonable time for: Engineer's review and processing of Submittals, for Submittals to be revised and resubmitted, and for returning Submittals to Contractor.
3) Identify and accordingly schedule Submittals that are expected to have long anticipated review times.

1.6 PREPARATION OF SUBMITTALS

A. Prior to Submittal Preparation:

1. The General Conditions, as may be modified by the Supplementary Conditions, address Contractor's responsibility for submitting for Owner's acceptance

identification of Subcontractors and Suppliers. Obtain Owner's acceptance before entering into subcontracts and purchase orders for the Work.

2. Comply with the Contract Documents relative to terms and conditions of subcontracts and purchase orders for the Work.

B. Submittal Identification:

1. Submittal Number: Shall be a unique number assigned to each individual Submittal. Assign Submittal numbers as follows:
   a. First part of Submittal number shall be the applicable Specifications section number, followed by a hyphen.
   b. Second part of Submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate Submittal furnished under the associated Specifications section.
   c. Example: Submittal number for the third Submittal furnished for Section 10 14 00 - Signage, would be "10 14 00-003".
2. Review Cycle Number: Each resubmittal of a given Submittal shall be indicated with a lower-case letter designation:
   a. No letter designation for initial (first) submittal of the Submittal number.
   b. "a" shall indicate first resubmittal of the Submittal number.
   c. "b" shall indicate second resubmittal of the Submittal number.
3. Examples:

Example Description	Submittal Identification	
	Submittal No.	**Review Cycle**
Initial (first) review cycle of the third Submittal furnished under Section 10 14 00 – Signage	10 14 00-003-	
Second review cycle (first resubmittal) of third Submittal furnished under Section 10 14 00 - Signage	10 14 00-003-	a

C. Marking of Submittals:

1. Mark on each page of each Submittal and each individual component submitted with Submittal number and applicable Specifications paragraph.
2. Mark each page of each Submittal with the Submittal page number.
3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Engineer.
4. For product data Submittals, operation and maintenance data Submittals, and other Submittals:
   a. Mark options to be furnished using broad, dark arrows or "clouds" clearly drawn around the relevant text or diagrams. Do not use highlighter for indicating options and features.

b. Indicate options and features not furnished using clear strikeouts through the text or diagrams.

D. Submittal Organization and Content – General:

1. Page or Sheet Size; Furnish Submittals with one or more of the following page or sheet sizes: (a) 8.5 inches by 11 inches; (b) 11 inches by 17 inches; (c) 22 inches by 34 inches; unless another sheet size is acceptable to Engineer.
2. Language: All parts of each Submittal shall be in the English language.
3. Units of Measurement: Clearly indicate units of measurement on Shop Drawings, product data Submittals, record documentation, and operation and maintenance data Submittals.
4. Organize each Submittal logically to facilitate ease of understanding and review.
5. To the extent practicable, arrange Submittal information in same order as requirements are written in the associated Specifications section.
6. Each Submittal shall cover Work under only one Specifications section.
7. To the extent practicable, package together Submittals for the same Specifications section. Do not furnish required information piecemeal.
8. For large or complex Submittals, include a title page and table of contents.
9. Include appropriately labeled fly sheets to separate distinct parts of each Submittal.
10. Ensure legibility of all pages in each Submittal.
11. Minimize extraneous and unnecessary information in Submittals for materials and equipment. Do not submit information not relevant to the Submittal and associated requirements of the Contract Documents.
12. Contractor's, Subcontractor's, and Supplier's written comments on Shop Drawings and product data diagrams shall be colored green.
13. Do not submit under Specifications sections with title that include "Basic Requirements," unless the subject material or equipment is specified, in total, in a Specifications section with the words, "Basic Requirements" in its title.

E. Electronic Documents Submittals:

1. Format: Electronic Documents Submittals shall be "portable document format" (.PDF) files unless expressly required otherwise by applicable provisions of the Contract Documents.
2. Electronic Documents Submittals must be electronically searchable when delivered to Engineer and other recipients.
3. Organization and Content:
   a. Each Electronic Documents Submittal shall be one file; do not divide individual Submittals into multiple Electronic Documents files each unless file size will exceed 20 MB.
   b. When Submittal is large or contains multiple parts, furnish PDF file with suitably titled electronic bookmark for each section of the Submittal.
   c. Content shall be identical to paper or other original Submittal. First page of each Electronic Documents Submittal shall be transmittal letter required in this's Paragraph 1.7.A.

4. Quality and Legibility: Electronic Documents Submittal files shall be made from the original and shall be clear and legible. Markings applied by Contractor, Subcontractor, or Supplier shall be clear, distinct, and readily apparent. Electronic Documents file shall be full size of original documents. Properly orient all pages for convenient reading on a computer display; do not furnish pages sideways or upside-down.
5. Contractor to provide sufficient internet service, software, and systems with capability appropriate for transmitting the necessary files and receiving responses from Engineer or other entities as required.
6. Check not less than once per day for distribution of Electronic Documents Submittals responses and related Electronic Documents correspondence.

F. Proposed “Or-Equals,” Substitutes, and Deviations from Contract Requirements:

1. “Or-Equals”:
   a. Contractor’s request for approval of “or-equals” is to be presented via the associated Action Submittal(s).
   b. Expressly and prominently indicate, “Proposed Or-Equal” on the associated Action Submittals when Submittal is for an “or-equal”.
   c. Submittals requesting approval of an “or-equal” but not accompanied by the required, supplemental information will be deemed incomplete by Engineer and returned to Contractor without approval.
2. Substitutes:
   a. Contractor’s request for approval of substitute is separate from the associated Action Submittal(s). Action Submittals that request approval of a substitute when a separate, formal substitution request (furnished in accordance with the Contract Documents) was not previously furnished to Engineer, followed by formal approval in via an appropriate contract modification (typically either a Field Order or Change Order), will be deemed by Engineer as non-compliant with the Contract Documents and will be returned to Contractor without approval.
   b. Contractor is solely responsible for delays incurred due to substitutes proposed via Submittals that have not been previously duly approved via an appropriate Contract modification.
   c. Action Submittals for items or procedures approved via an appropriate Contract modification shall include a copy of the Contract modification in which the substitute was approved.
3. Submittals with Proposed Deviations from Contract Requirements:
   a. All deviations from the Contract Documents shall be documented in a Change Order Request and shall not be implemented until the Change Order Request is accepted by Owner.
   b. When Submittal proposes deviations from requirements of the Contract Documents, the Submittal shall clearly and expressly indicate each proposed deviation, with reference to all affected drawings and Specification sections.
   c. Also comply with this Section’s provision, in the Article below, on Contractor’s transmittal letter expressly alerting Engineer to the proposed deviations.

d. Comply with requirements of the Contract regarding substitutes and “or-equals”.
e. When deviation is proposed, also appropriately revise text of Contractor’s approval, from that required below in this Article.
f. When Submittal includes deviations from Contract requirements and either the Submittal itself, Contractor’s transmittal letter, or both, do not comply fully with Contract requirements for indicating deviations in Submittals and giving separate written notice thereof, Owner’s approval of such deviations will be deemed null and void unless Owner’s written response to the Submittal has expressly acknowledged such deviation and indicated Owner’s approval thereof.
g. Contractor is solely responsible for delays and costs incurred due to any and all Submittals with deviations from Contract requirements that were not properly, expressly indicated and approved in accordance with the Contract Documents. Deviations not duly approved in accordance with the Contract Documents may be deemed defective Work. Contractor is solely responsible for remedying defective Work and all associated cost and time impacts.

G. Contractor’s Approval of Submittals:

1. Contractor’s Review: Before transmitting Submittals to Engineer, review each Submittal to:
   a. Ensure proper coordination of the Work.
   b. Determine that each Submittal is in accordance with Contractor’s desires.
   c. Verify that Submittal contains sufficient information for Engineer to determine compliance with the Contract Documents.
2. Incomplete or inadequate Submittals will be returned without detailed review by Engineer.
3. Contractor’s Approval Stamp and Signature:
   a. Each Submittal furnished shall bear Contractor’s approval stamp (or facsimile thereof) and signature, as evidence that the Submittal has been reviewed and approved by Contractor and verified as complete and in accordance with the Contract Documents.
   b. Submittals without Contractor’s approval and signature (as required by the contract Documents) will be returned to Contractor without further review by Engineer and deemed incomplete.
   c. Engineer reserves the right to reject as incomplete Submittals where Contractor’s approval signature appears computer-generated or reproduced without the active involvement or review of Contractor’s signatory.

d. Contractor's approval shall contain the following text:

Project Name: Holyoke Dam Inflatable Crest Gate Replacement Project
Contractor's Name: _____ Date: _

---------- *Reference* ----------

Submittal Title: _____ Specifications:
Section: _____ Page No.: ___
Paragraph No.: _____ Drawing No.: [_____] of ____
Location of Work: _____

Submittal No. and Review Cycle: _____
Coordinated by Contractor with Submittal Nos.: _____

_____

I hereby certify that Contractor has satisfied Contractor's obligations under the Contract Documents relative to Contractor's review and approval of this Submittal, including: (1) reviewed and coordinated the Submittal with other Submittals and with the requirements of the Work and the Contract Documents; (2) determined and verified all: field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal, (b) 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 (c) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; (3) confirmed the Submittal is complete with respect to all related data included in the Submittal; and (4) clearly and expressly indicated all proposed deviations (if any) from the requirements of the Contract Documents both in the Submittal itself and in the Submittal's transmittal letter. Accordingly, this Submittal is hereby approved for Contractor by:

Approved for Contractor by: _____

4. The Contractor shall apply a Massachusetts P.E. stamp on all relevant construction drawings such as lifting devices and structural platforms supplied by Contractor.

H. Resubmittals:

1. Contractor shall furnish Submittals with such completeness, accuracy, and compliance with the Contract Documents to obtain Owner's approval or acceptance, as applicable, without the total quantity of Submittals furnished, including all initial Submittals and all resubmittals, exceeding 125% of the number of Submittals indicated on the Schedule of Submittals initially accepted

by Engineer, plus a corresponding percentage of the quantity of Submittals required by Change Orders, Work Change Directives, and Field Orders.

2. Do not increase the scope of prior review cycle of the same Submittal.
3. Indicate on Contractor's transmittal letter how Submittal was revised from previous review cycle of the Submittal and where the revisions or corrections are located within the resubmittal.
4. Expressly address and provide response for all components previously transmitted by Engineer on prior review cycles of the subject Submittal. Where resubmittal lacks complete response to Engineer's prior comments, Engineer may deem such resubmittal as incomplete and return it to Contractor without further review.
5. Where part of the Submittal's prior review cycle was expressly approved or accepted, as applicable, by Engineer, do not include such items in subsequent resubmittals.
6. Indicate, "Not Yet Resolved—To Be Resubmitted at a Later Date" for any items not approved in prior review cycle of the Submittal for items not included in the subject resubmittal. Engineer reserves the right to deem incomplete Submittals "Not Approved" or "Revise and Resubmit". Furnishing incomplete or partial resubmittals is discouraged.
7. Resubmittal of Previously Approved or Accepted Items:
    a. Do not resubmit on a given item previously approved or accepted, as applicable, by Owner, without Owner's advance consent. Consent will be given for bona-fide unavailability of a previously approved or accepted item where Contractor has acted in good faith in a timely manner with due diligence to comply with the Contract Dates.
    b. Destroy or conspicuously mark "SUPERSEDED" on all documents having previously received Owner's approval or acceptance, as applicable, that are superseded by a resubmittal.

1.7 TRANSMITTAL OF SUBMITTALS BY CONTRACTOR

A. Contractor's Transmittal Letters for Submittals:

1. Furnish separate transmittal letter with each Submittal. Use transmittal form attached to this Section (as Exhibit 01 33 00-A) unless other transmittal form is acceptable to Engineer at the start of the Project's construction.
2. When transmittal form other than this Section's Exhibit 01 33 00-A is acceptable to Engineer, at beginning of each transmittal, include a reference heading indicating: Contractor's name, Owner's name, Project designation, Contract designation, transmittal number, and Submittal number (with review cycle).
3. "Or-Equals": When the Submittal is proposing an "or-equal," expressly so indicate on transmittal form submitted by Contractor.
4. Proposed Deviations from Contract Requirements: When the Submittal proposes deviations from requirements of the Contract Documents, transmittal letter shall specifically describe each proposed deviation:

B. Submittal Delivery Method:

1. This provision presents general requirements for delivery or all Submittals unless otherwise required elsewhere in the Contract Documents.
2. Furnish Submittals to Owner and each other entity indicated in the Contract Documents as receiving a Submittal directly from Contractor.

C. Samples - Transmittal and Delivery:

1. Labeling and Tagging Samples:
   a. Securely label or tag each Sample with Submittal identification number.
   b. Label or tag shall include clear space at least 4 inches by 4 inches in size for affixing Engineer's review stamp indicating disposition assigned by Engineer.
   c. Label or tag shall not cover, conceal, or alter Sample's appearance or features.
   d. Label or tag shall not be separated from the Sample.
2. Timing: Deliver required Samples concurrently with other Action Submittals required for the same element of the Work, unless other delivery time frame is indicated in the Schedule of Submittals accepted by Engineer.
3. Quantity Required:
   a. Where the Contract Documents require a Sample as a field mock-up, provide Sample at the Site or in the Work at location acceptable to Engineer. Provide the quantity of field mock-ups required by the contract Documents; if not otherwise shown or specified, provide one of each required field mock-up.
   b. For reasonably portable Samples, deliver the quantity of Samples required in the associated Specifications. If quantity of Samples is not indicated in the associated Specifications section, deliver to Engineer not less than three identical Samples of each item for which Sample is required.
   c. Samples will not be returned to Contractor. If Contractor requires Sample(s) for Contractor's use, so advise Engineer in writing and furnish additional copies of the Sample. Contractor is responsible for furnishing, shipping, and transporting additional Samples.
4. Locations for Delivery of Reasonably Portable Samples for Review:
   a. Deliver one physical Sample to Owner's Site Representative's field office at the Site.
   b. Deliver balance of required physical Samples to Engineer at address indicated in this Article for receipt of Submittals, unless otherwise directed by Engineer.

D. Closeout Submittals –Transmittal and Delivery:

1. Furnish the following Closeout Submittals in accordance with general requirements for transmitting and delivering Submittals, indicated above in this Article: maintenance contracts; warranty bonds (when required) and other bonds required for specific materials, equipment, or systems; warranty documentation; and sustainable design closeout documentation (when required). On documents such as maintenance contracts and bonds, include on each document furnished original ("wet") signature of entity issuing said document. When original "wet" signatures are required, furnish such Submittals to Engineer both on original

paper and as Electronic Documents, and to other entities furnish as indicated above in this Article for general requirements for Submittals.

2. Operations and Maintenance Manuals.
3. Record Documents: Submit in accordance with Section 01 78 39 - Project Record Documents.
4. Software: In addition to software installed on Owner's computer system, furnish number of copies of software required in the Specifications section where the software is specified. Preferred means of transmittal is via secure file transfer directly to Owner (or facility manager, if other than Owner) via secure file transfer method mutually acceptable to software developer and the receiving entity. When secure file transfer is used, submit to Engineer documentation signed or electronically acknowledged by Owner that the files were received. Where such software is available only on the software developer's portable media, furnish such software on software developer's original, portable media, sealed in software developer's original, unopened, clearly labeled packaging.

E. Maintenance Materials Submittals – Delivery:

1. Deliver physical maintenance materials required by the Contract Documents in accordance with applicable provisions of the Contract.
2. Submit documentation of delivery of Maintenance Materials Submittals in accordance with general requirements for Submittals as indicated in this Section.

1.8 ENGINEER'S REVIEW OF SUBMITTALS

A. This Article applies to review of all Submittals by Engineer or other entity to whom the Contract Documents require such Submittal be furnished.

B. Timing:

1. Timing of Engineer's review will be in accordance with the Schedule of Submittals accepted by Engineer.
2. When Submittal is delivered to Engineer on a date other than that indicated in the Schedule of Submittals accepted by Engineer, duration of Engineer's review may differ from that indicated in the Schedule of Submittals, based on Engineer's availability and resources. Engineer will make good-faith effort to furnish responses to Submittals in a timely manner.
3. Contractor is responsible for communicating to Engineer when a Submittal is on the Project's critical path.

C. Engineer's Review:

1. Markings:
   a. Comments or responses marked directly on Submittal by Engineer (or other entity reviewing Submittal) will be colored red.
   b. Engineer may also present narrative comments on a comment sheet inserted by Engineer into the Submittal or included on Engineer's transmittal letter for the Submittal. Such comments will be in black text. When a separate

comment sheet is included by Engineer, such sheet will be clearly identified as Engineer's comments.

2. Engineer's review and disposition assigned to Submittal are subject to the following:
   a. Submittal disposition is subject to: Engineer's comments on the Submittal; disclaimer language on Engineer's Submittal transmittal letter; Engineer's Submittal review stamp (when used) or equivalent (when used); and this provision.
   b. Engineer's review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.
   c. Contractor shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner's directions, and all Laws and Regulations. Contractor is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.
   d. Engineer is not responsible for resubmittals not yet furnished by Contractor or tracking Contractor's progress on resubmittals.
3. Documents not required by the Contract Documents but nonetheless furnished by Contractor as submittals will not be reviewed by Engineer.

D. Meaning of Submittal disposition Assigned by Engineer:
   1. Action Submittals:
      a. "No comments noted" (Action Code A): Upon return of Submittal marked "no comments noted," order, ship, or fabricate materials and equipment included in the Submittal or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents.
      b. "Revise per comments" (Action Code B): Upon return of Submittal marked "revise per comments," order, ship, or fabricate materials and equipment included in the Submittal or otherwise proceed with the Work in accordance with the Submittal and the Contract Documents, and in accordance with Engineer's comments and notes indicated in Engineer's Submittal response. Resubmit the Submittal addressing comments for the Engineer's record.
      c. "Revise and Resubmit" (Action Code C): Upon return of Submittal marked "Revise and Resubmit," make the revisions necessary and indicated and resubmit to Engineer for approval.
      d. "Respond to notes" (Action Code D): This disposition indicates material or equipment that cannot be approved. "respond to notes" disposition may also be applied to Submittals that are incomplete. Upon return of Submittal marked "respond to notes," repeat initial submittal procedure utilizing approvable material or equipment, with a complete Submittal clearly indicating all information required.

2. Informational, Closeout, and Maintenance Materials Submittals:
    a. “Accepted” (Action Code F): Information included in Submittal complies with the applicable requirements of the Contract Documents and is acceptable. No further action by Contractor is required relative to such Submittal, and the Work covered by the Submittal may proceed. Materials and equipment with Submittals with this disposition may be shipped or operated, as applicable. Submittals assigned “Accepted” by Engineer (or other reviewing entity) does not indicate Engineer’s acceptance of the associated Work, which is indicated only as set forth in Section 01 77 19 – Closeout Requirements.
    b. “Not Acceptable” (Action Code G): Submittal, or part thereof, does not indicate full compliance with applicable requirements of the Contract Documents and is not acceptable. Provide labor, materials, equipment, services, and incidentals necessary to properly and accurately revise Submittal and resubmit to indicate acceptability and compliance with the Contract Documents
3. Other:
    a. “Submittal Not Reviewed” (Action Code E): Documents so marked by Engineer are not required by the Contract Documents. Submittals may also be marked with this disposition when information in the document was previously reviewed and approved or accepted by Engineer, as applicable.

E. Distribution of Engineer’s Responses:
1. Unless otherwise indicated in the Contract Documents, Engineer will distribute written responses (as Electronic Documents) to Submittals to the following:
    a. Contractor.
    b. Owner.
    c. Owner’s Site Representative.
    d. Engineer’s file.
2. Paper copies of Engineer’s Submittal responses will not be distributed unless otherwise required by the Contract Documents or otherwise agreed to by Engineer.
3. Contractor is responsible for forwarding Engineer’s Submittals responses to Subcontractors and Suppliers as appropriate, and for coordinating the Work of all trades.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION

3.1 ATTACHMENTS

A. The documents listed below, following this Section’s “End of Section” designation, are part of this Specifications Section:
1. “Exhibit 01 33 00-A – Transmittal for Submittal No. [_____]” (one page).

END OF SECTION

Exhibit 01 33 00-A

Transmittal for Submittal No. [_____]-[_____]

Project Name: Holyoke Dam Inflatable Crest Gate Replacement Project		Date Received:	
Project Owner: Holyoke Gas & Electric		Checked By:	
Contractor:	Engineer: HDR Engineering	Log Page:	
Address:	Address: 75 John Roberts Road, Unit B1 South Portland, ME 04106	HDR No.: 10396163	
		Spec Section:	
		Drawing/Detail No.:	
Attn (Contractor):	Attn: Adam Jones, PE; Tessa Carty	Review Cycle	
Date Transmitted by Contractor:	Date of Engineer's Response Transmittal:		

Item No.	Submittal No.	Description (indicate number of copies where paper copies of physical Samples are returned)	Manufacturer	Supplier Dwg or Data No.	Engineer's Disposition (Action Code) *
1					
2					
3					
4					

Contractor's Remarks *(insert text)*:

Engineer's Remarks *(insert text):*

* **Legend for Action Code** indicated above, assigned by Engineer:

Action Submittal: A – No comments noted B – Revise per comments C – Revise and Resubmit D – Respond to notes	E – Submittal Not Reviewed Informational, Closeout, or Maintenance Materials Submittal: F – Accepted G – Not Acceptable

Engineer's Disclaimer (for Submittals that do not involve delegated design):

a. Submittal action code is subject to: Engineer's comments on the Submittal, comment sheets (if any), and this transmittal letter; disclaimer language on Engineer's Submittal review stamp or equivalent; and Specifications Section 01 33 00 – Submittal Procedures.

b. Engineer's review is only for general compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, and for general compliance with the information given in the Contract Documents.

c. Contractor shall be solely responsible for complying with the Contract Documents, as well as with Supplier instructions consistent with the Contract Documents, Owner's directions, and Laws and Regulations. Contractor is solely responsible for obtaining, correlating, confirming, and correcting dimensions at the Site; quantities; information and choices pertaining to fabrication processes; means, methods, sequences, procedures, and techniques of construction; safety precautions and programs incident thereto; and for coordinating the work of all trades.

Reviewed for HDR by:	**Date of Engineer's Review:**

Distribution:	Contractor		File		Field		Owner		Other	

SECTION 01 57 05

TEMPORARY CONTROLS

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for temporary controls during construction, including:
   a. Temporary erosion and sediment controls.
   b. Pollution control.

B. Scope:

1. Contractor shall provide and maintain materials, equipment, labor, services, and temporary construction as necessary and required to control environmental conditions at the Site and adjacent areas during construction.
2. Contractor shall pay all costs, including fines and civil penalties, if any, for failure to implement and maintain temporary controls in accordance with the Contract Documents and Laws and Regulations. Contractor is not eligible for increase in Contract Price or Contract Times due to failure to comply with requirements for temporary controls.
3. Maintain temporary controls until no longer necessary or required. Provide temporary controls at all times when Contractor is working at the Site.

C. Related Requirements:

1. Include, but are not necessarily limited to, the following:
2. Section 01 74 00 - Cleaning.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements:

1. The Contractor shall adhere to all applicable permit conditions, environmental regulation, and restrictions during all phases of the Project. Contractor and Subcontractor(s) will report environmental field issues to HG&E Environmental Health & Safety Department. Audits shall be conducted by Contractor to ensure the compliance of all regulations and permit conditions and restrictions are followed.

1.3 SUBMITTALS

A. Action Submittals:

1. Submit the following:
   a. Shop Drawings:
      1) Plan for construction staging and maintenance of the Site relative to erosion and sediment controls. Indicate on a site plan, approximate areas of planned disturbance of soils and soil cover

over time during the Project. For areas not indicated in the Contract Documents as being disturbed and that Contractor proposes to disturb, Shop Drawing shall include proposed erosion and sediment control measures for the additional areas.

b. Product Data:

1) Other materials proposed for temporary erosion and sediment controls, when requested by Engineer.

B. Informational Submittals:

1. Submit the following:

a. Field Quality Control:

1) When requested by Engineer, promptly obtain and submit results of field measurements and field test data substantiating compliance of Contractor's temporary controls with the Contract Documents.

Part 2 - PRODUCTS (NOT USED)

Part 3 - EXECUTION

3.1 POLLUTION CONTROL

A. Pollution Control – General:

1. Provide means, methods, and facilities necessary and required to prevent contamination of soil, water, and atmosphere caused by accumulation or discharge of substances and materials that are either noxious, polluting, or both, from or caused by construction and related activities.
2. Construction equipment and machinery shall comply with Laws and Regulations.

B. Spills and Contamination:

1. Perform emergency containment, cleanup, and remedy of spills and contamination resulting from construction and related activities. Promptly remove and properly dispose of contaminated soils and liquids.
2. Excavate contaminated material and properly dispose of off-Site and replace with suitable compacted fill and appropriate cover.

C. Protection of Surface Water and Groundwater:

1. Provide and maintain appropriate, temporary measures to prevent harmful substances from entering surface water, groundwater, and drinking water. Prevent disposal of wastes, effluents, chemicals, and the like into or adjacent to groundwater, surface water, drainage routes (including swales, ditches, and storm sewers) and drinking water.
2. Do not refuel equipment within the waterway (i.e., on the apron).
3. Obtain sewerage system owner's consent and approval prior to discharging into sanitary sewers or combined sewers. Do not discharge

pollutants not in accordance with Laws and Regulations into combined sewers, or sewers tributary to combined sewers, when wet weather overflows to receiving waters may occur.

D. Atmospheric Pollutants:

1. Provide and maintain temporary controls for atmospheric pollutants resulting from construction and related activities, whether to outdoor or indoor atmospheres.
2. Prevent harmful dispersal of pollutants into atmosphere.
3. Do not discharge exhaust from internal combustion engines or combustion operations into buildings, structures, or near ventilation intakes for buildings or structures.
4. Prevent toxic and noxious concentrations of chemicals, fumes, and vapors.

3.2 EROSION AND SEDIMENT CONTROLS

A. Installation and Maintenance of Temporary Erosion and Sediment Controls – General:

1. General Provisions:
   a. Provide temporary erosion and sediment controls as necessary for compliance with Laws and Regulations.
   b. Provide erosion and sediment controls as the Work progresses into areas where ground cover was previously undisturbed.
   c. Use necessary and required methods to appropriately control erosion and sediment transport in storm water runoff, including using soil conservation-oriented construction practices (including scheduling and sequencing), vegetative measures, and temporary physical controls.
   d. Use best management practices (BMP) in accordance with Laws and Regulations, and regulatory requirements indicated in this Section‘s “Quality Assurance” Article (unless more-stringent requirements are shown or indicated in the Contract Documents), to control erosion and sediment transport in storm water runoff during the Project.
   e. Plan and execute disturbances of soils and soil cover and earthwork by methods to control storm water runoff from exposed soil (including stockpiles, borrow areas, and spoil disposal areas), banks of surface waters affected by the Work, and discharges of groundwater to prevent erosion and sediment transport.
   f. Where areas must be cleared for storage of materials or equipment, or for temporary facilities, provide measures for regulating storm water discharges and controlling erosion and sediment transport. Where Owner is a co-permittee with Contractor for applicable permits, or when plans for temporary erosion and sediment controls were sealed and signed by Engineer, such methods are subject to Engineer’s approval or acceptance, as applicable.
   g. Provide erosion and sediment controls, including stabilization of soils, at the end of each workday.

2. Before commencing activities that will disturb soil or soil cover at the Site or other areas to be occupied by Contractor during the Project, provide all appropriate temporary erosion and sediment controls required by the Contract Documents for the areas where soil or soil cover will be disturbed.
3. Vegetation Removal and Disturbance:
    a. Remove only those shrubs, grasses, trees, and other vegetation that must be removed for construction.
    b. Protect undisturbed vegetation. Do not wantonly or unnecessarily drive construction vehicles and equipment over undisturbed vegetation and soil cover.
    c. Promptly stabilize exposed soil where vegetation or soil cover was unnecessarily disturbed. Fill and restore ruts and damage to vegetation and soil cover caused by wanton or unnecessary passage of construction vehicles and equipment.
4. Access Roads and Parking Areas:
    a. When possible, locate and construct temporary access roads and parking areas to avoid adverse effects on the environment.
    b. Provide measures to regulate drainage, avoid erosion and sediment transport in storm water runoff, and minimize damage to vegetation and soil cover.
5. Inspection and Maintenance:
    a. Periodically inspect areas of non-stabilized, erodible soils, including all areas of soil cover disturbance and stockpiles, for evidence of start of erosion and sediment transport. Promptly implement corrective action as necessary and appropriate to control erosion and sediment transport. Continue inspections and corrective action until soils are permanently stabilized and permanent vegetation has been appropriately established.
    b. Inspect not less often than once per week and after each precipitation event of 0.5 inch of water or greater.
    c. Repair or replace damaged erosion and sediment controls within 24 hours of Contractor becoming aware of such damage.
    d. Periodically remove sediment that has accumulated in or behind sediment and erosion controls. Remove sediment not less often than when sediment is at approximately one-half of storage capacity of associated control element, unless more-frequent interval is indicated elsewhere in the Contract Documents. Properly dispose of sediment.
6. Duration of Temporary Erosion and Sediment Controls:
    a. Maintain temporary erosion and sediment controls in effective, working condition until soil cover of the associated storm water drainage area has been permanently stabilized.
7. Work Stoppage:
    a. If the Work is temporarily stopped or suspended for any reason, Contractor shall provide additional temporary controls necessary to

prevent environmental damage to the Site and adjacent areas while the Work is stopped or suspended.

b. When temporary erosion and sediment controls remain in place during periods of stopped or suspended Work, continue to perform Contractor's obligations relative to periodic inspection and maintenance of temporary erosion and sediment controls, including removal of accumulated sediment.

8. Failure to Provide Adequate Temporary Erosion and Sediment Controls:

a. If Contractor repeatedly fails to satisfactorily control erosion and sediment transport in storm water runoff, Owner reserves the right to use Owner's own forces or employ third-party Contractors for temporary erosion and sediment control. Owner's costs for such work, including engineering and inspection costs, will be deducted from amounts due Contractor, as set-offs in accordance with the Contract Documents.

B. Silt Fencing:

1. Provide and maintain silt fencing in a vertical plane where necessary or required.
2. Locations of Temporary Silt Fencing:

a. Where possible, provide silt fencing along contour lines, so each run of silt fencing is at the same elevation.

b. On slopes, provide temporary silt fencing at intervals that do not exceed the maximum indicated in the following table:

Silt Fence Spacing on Slopes	
Slope (percent)	Maxim Allowable Length of Slope Above Each Silt Fence (feet)
2 and less	150
2.1 to 5	100
5.1 to 10	50
10.1 to 20	25
20.1 to 25	20
25.1 to 40	15
40.1 to 50	10

c. Provide temporary silt fencing around perimeter of each stockpile of topsoil, general fill material, and excavated spoil material. Install silt fencing before expected soil is subject to precipitation. Maintain until stockpile is removed.

d. Do not install temporary silt fencing at the following types of locations:

1) Area of concentrated storm water flows such as ditches, swales, or channels.

2) Where rock or rocky soils prevent full and uniform anchoring of silt fencing.
3) Across upstream or discharge ends of storm water conduits.

3. Installation:
   a. Securely fasten wire mesh to posts, and securely fasten filter cloth to wire mesh.
   b. When two sections of filter cloth are adjacent to each other, fold over edges and overlap by not less than 6 inches and securely fasten to wire mesh.
   c. Embed posts in the ground to the depth necessary for proper controls; embed posts to not less than 16 inches below ground.
   d. Filter cloth and wire mesh shall extend not less than 8 inches below ground and not less than 16 inches above ground.
   e. Remove accumulated sediment from behind silt fencing as necessary or required. Repair and reinstall silt fencing as necessary or required.
4. Maintenance:
   a. Do not allow formation of concentrated storm water flows on slopes above temporary silt fencing unless so shown or indicated in the Contract Documents. If unauthorized concentrated storm water flows occur, stabilize the slope via other appropriate stabilization methods as necessary and required to prevent flow of concentrated storm water flows toward temporary silt fencing.

C. Straw Bale Dike
1. Provide temporary straw bale dikes where necessary or required, including in swales, along contours, and along toe of slopes.
2. Provide temporary straw bales in shallow excavation as wide as the bale and approximately 4 to 6 inches below surrounding grade.
3. Ends of straw bales shall tightly abut ends of adjacent straw bales.
4. Securely install each straw bale using two support posts, driven into the ground not less than 1.5 to 2 feet below bottom of straw bale. Top of post shall be flush with top of straw bale. Angle first post for each straw bale toward the previously-installed straw bale.
5. Frequently inspect straw bales and repair or replace as required. Remove accumulated sediment and debris from behind straw bales.

D. Mulching and Soil Stabilization:
1. Use mulching to temporarily stabilize exposed soil, including spoil and fill materials.
   a. Immediately following final grading, provide mulch and stabilize with mats or netting, or sprayed soil stabilization emulsion with fiber additive.
   b. Application of mulching for soil stabilization shall be as follows.
      1) Non-Rotted Straw or Salt Hay: Provide 1.5 to two tons per acre.
      2) Soil stabilization emulsions, when used, shall be applied in accordance with manufacturer's instructions and shall be applied with mulch or stabilization fibers.

3) Wood-Fiber or Paper-Fiber Application: Provide 1,500 pounds per acre, installed by hydroseeding.

c. Where mats or netting are used:
   1) Cover entire area to be stabilized with mats or netting.
   2) Provide anchoring trenches at the top and bottom of slopes to receive mats or netting. Bury at least the top and bottom ends of mat or netting, 4 inches or more wide, at top and bottom of slope. Ensure that mesh or netting is secure and will not wash out over time. Tamp trench full of soil. 4 inches from trench, secure mat or netting with appropriate staples at intervals of 10 inches.
   3) Overlap adjacent strips of mat or netting by not less than 4 inches.

E. Protection of Storm Water Drainage Inlets and Catch Basins:

1. Protect each drainage inlet and catch basin that has potential to receive storm water runoff from exposed soils and does not discharge into a storm water settlement basin.
2. Provide temporary inlet filter bags inside of drainage inlet or catch basin in accordance with inlet filter bag manufacturer's instructions. Secure inlet filter bag with the structure's grate or by other acceptable means.
3. Inlet filter bags shall not pose any obstruction above the preconstruction elevation of the drainage inlet or catch basin grate that would necessitate or require temporary barricades or warning lights.
4. When removing sediment from inlet filter bags, do not dump filter bag's contents into the drainage inlet or catch basin. Promptly remove from drainage inlets and catch basins sediment accidentally dumped into the structure.
5. Remove sediment from inlet filter bags, or replace inlet filter bags, when inlet filter bag is not more than half-full.

F. Temporary Stone Construction Entrance:

1. Where shown on the Drawings, and where construction vehicles will regularly transition to paved surfaces from unstabilized surfaces, provide temporary stone construction entrance. Contractor vehicles and mobile construction equipment and machinery shall use temporary stone construction entrances.
2. Provide temporary stone construction entrances of the width, length, and thickness shown or indicated on the Drawings. When not shown or indicated on the Drawings, temporary stone construction entrance shall be not less than 50 feet long, by 20 feet wide, by 8 inches deep.
3. Installation:
   a. Ensure that subgrade under each temporary stone construction entrance is suitably dense for the intended purpose and dry. Suitably prepare subgrade as necessary for temporary stone construction entrance.

b. Provide on subgrade a layer of geotextile separation fabric, installed in accordance with geotextile separation fabric manufacturer's recommendations for separation.
c. Provide stone on installed geotextile separation fabric. Grade the stone for passage of vehicles.

4. Maintenance:
   a. Maintain temporary stone construction entrance at not less than the minimum required thickness. Add stone as required to maintain thickness.
   b. When upper layer of temporary stone construction entrance becomes contaminated with soil, mud, or other material, remove the contaminated material and replace with clean stone.
   c. Using water to wash down temporary construction entrance or paved areas onto which soil material has been tracked is unacceptable.

3.3 REMOVAL OF TEMPORARY CONTROLS

A. Removals – General:
   1. Unless otherwise indicated elsewhere in this Section in requirements for respective temporary controls, upon completion of the associated Work and when temporary controls are no longer necessary, remove temporary controls and restore the Site to condition in accordance with the Contract Documents; if condition is not shown or indicated, restore the Site to pre-construction condition.
   2. After soils are permanently stabilized, remove from the Site temporary erosion and sediment controls.

END OF SECTION

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for:
   a. Coordination of deliveries.
   b. Preparing materials and equipment for shipping from the production or fabrication facility, including packaging.
   c. Shipment.
   d. Delivery of materials and equipment to the Site.
   e. Inspection upon delivery and remedy of damaged, deteriorated, or otherwise defective items, and remedy of missing or lost items.

B. Scope:

1. Contractor shall make all arrangements for packaging, shipping, delivering, inspecting upon delivery, and unloading upon delivery materials and equipment necessary and required for the Work.
2. Contractor shall provide all labor, materials, equipment, tools, incidentals, and services necessary to have materials and equipment properly packaged, shipped, and delivered to the Site, and all related Work required by the Contract Documents.

C. Related Requirements: Include but are not limited to:

1. Section 01 66 00 – Product Storage and Handling Requirements
2. Section 35 20 16 – Inflatable Crest Gate System Supply

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate shipping and delivery of materials and equipment with anticipated shipping requirements, such as allowing sufficient time for customs inspections on international shipments, availability of shipping services and facilities, and seasonal concerns (such as shipments that may be influenced by major tropical storms and predictable, typical weather).
2. Coordinate shipping and delivery of materials and equipment to the Site and other locations where such items may be stored prior to delivery to the Site. Coordinate such shipments and deliveries with the progress of the Work and status of adequate facilities, whether temporary storage or permanent installation locations, necessary to properly store and safeguard materials and equipment to be incorporated into the Work.

3. Where possible, deliver to the Site materials and equipment as close as possible to when such items will be incorporated into appropriately protected, permanent installation location.
4. The address of the shipment delivery point is: 30 Water Street, Holyoke, MA 01040.
5. The Owner is able store items that are not to be installed immediately upon arrival.

1.3 SUBMITTALS

A. Informational Submittals: Submit the following:

1. A hard copy of each shipping list shall accompany each shipment and an electronic copy of each shipping list, including the shipping arrangements and delivery date, shall be submitted electronically to the Owner. The product descriptions on the bill of materials on the shop drawings, shipping lists, and labelling on shipping crates or other packaging shall be identical, so that all items can be tracked between the bill of materials, shipping lists, and shipped materials. Final electronic shipping lists, with the delivery date and location, shall be submitted after each shipment has been received by Owner.

1.4 PREPARATION FOR SHIPMENT

A. Factory Assembly:

1. When practical, factory-assemble materials and equipment. Mark or tag separate parts and assemblies to facilitate field assembly.

B. Temporary Protection:

1. Appropriately cover, with strippable, protective coating or other material, machined parts and unpainted, uncoated, or unprotected surfaces subject to damage or deterioration caused by weather elements or environment,
2. To extent practical, strippable, removable, disposable protective materials shall be recyclable.
3. To extent practical, strippable, removable, and disposable protective items shall be type resulting in minimum waste and cleanup upon removal.
4. Protection of Electrical Equipment, Instrumentation and Controls, Items with Computer Chips Solid-State Devices, and Other Electronics:
    a. Provide appropriate temporary protection of electrical equipment, microprocessors, and other electronics from humidity, moisture, and corrosion by appropriate packaging, protection, desiccants, and volatile corrosion inhibitor (VCI) blocks.
    b. Immediately prior to shipment, provide new, fresh desiccants and ensure integrity of other protective materials.

C. Packaging:

1. Package materials and equipment to facilitate handling, and protect materials and equipment from damage during shipping, handling, and storage.
2. Mark, label, or tag, on outside of each package, crate, and container, to indicate associated:
   a. Purchase order number.
   b. Bill of lading number.
   c. Delivery address (including facility name, where applicable).
   d. Owner's contract designation or Project name.
   e. Contractor name.
   f. Purchasing Subcontractor's name (as applicable).
   g. Contents by name and designation within the Work (for example, "Influent Pump No. 1"),
   h. Approximate weight of container, crate, package, including packaging.
   i. Special instructions for handling and protection during shipment and unloading.
3. The Site may be listed as the "ship to" or "delivery" address; but Owner or facility manager shall not be listed as recipient of shipment unless otherwise directed in writing by Engineer.
4. Truthfully and accurately mark, label, or tag items for shipment and delivery.
5. Include all Safety Data Sheets (SDS) pertaining to the applicable material in their shipments.
6. Protect materials and equipment with appropriate, temporary packaging or protection when such items may rotate or move during shipment.
7. Protect materials and equipment from exposure to weather elements, adverse environments, and keep thoroughly dry and dust-free. Protect painted surfaces against impact, abrasion, discoloration, and other damage and deterioration.
8. Lubricate bearings and other items requiring lubrication, in accordance with manufacturer's written instructions.

1.5 SHIPPING

A. Notification of Shipments:

1. Keep Owner informed of delivery of all materials and equipment to be incorporated into the Work.
2. The Contractor shall notify plant personnel of shipping date and time and estimated time of arrival. Arrival should be planned for a weekday, which is Monday through Friday unless the Owner is notified otherwise.
3. Owner or Engineer may request notice of certain shipments, at which point the Contractor shall furnish to Owner and Engineer written notice of anticipated delivery date and specific location (at the Site or

Contractor's storage location, as applicable), which should be provide seven days in advance of the delivery.

B. Do not ship materials and equipment until:
   1. Related Shop Drawings, product data, Samples, shop testing plan Submittals, and other Submittals required by the Contract Documents are approved by Owner, including, but not necessarily limited to, all Action Submittals associated with the materials and equipment being delivered.
   2. Manufacturer's written instructions for handling, storing, and installing the associated materials and equipment have been submitted to and accepted by Engineer, in accordance with the Specifications.
   3. Results of source quality control activities (factory testing and inspections), when required by the Contract Documents for the subject materials or equipment, have been submitted to and accepted by Engineer.
   4. Facilities required for handling materials and equipment, in accordance with the Contract Documents and manufacturer's instructions, are in place and available at the delivery location.
   5. Required storage facilities and protection measures have been provided.

C. The Owner will not be responsible for any payments related to shipment. The Contractor will be responsible for payment of all shipping charges and permits for parts required to complete the scope of this specification including any charges related to expedition of materials to meet the scheduled agreed upon by the Owner and Contractor.

D. The Contractor shall notify the Owner at least two (2) weeks prior to any shipment. If special shipping arrangements are required, such as oversized loads or railroads, permits shall be obtained from the Massachusetts Department of Transportation (DOT) and Hampden County along with other state DOTs as required. The Contractor shall notify the Owner three (3) business days prior to making such shipments.

E. Shipping roadway constraints, including access to the physical job site, shall be considered by the Contractor and included in all costs and scheduling.

F. Loss or Damage During Shipment:
   1. Contractor is responsible for all loss, damage, and deterioration to materials and equipment incurred during shipment and delivery.
   2. Contractor is not eligible for extension of Contract Dates or increase in the Contract Price due to delays or costs incurred due to loss, damage, or deterioration during shipment.

1.6 DELIVERY

A. Scheduling and Timing of Deliveries:

1. Arrange deliveries of materials and equipment in accordance with the Progress Schedule accepted by Owner and Engineer and in ample time to facilitate inspection and observation prior to installation.
2. Schedule deliveries to minimize space required for, and duration of, storage of materials and equipment at the Site or other delivery location, as applicable.
3. Coordinate deliveries to avoid conflicting with the Work and conditions at the Site, and to accommodate the following:
    a. Work of other Contractors at or adjacent to the Site, Owner, and others.
    b. Storage space limitations.
    c. Availability of appropriate construction equipment and machinery, tools, and qualified personnel for inspecting, unloading, and handling materials and equipment.
    d. Owner's use of premises.
4. Deliver materials and equipment to the Site during regular working hours.
5. Deliver materials and equipment to avoid delaying the Work and the Project.

B. Deliveries:

1. Provide Contractor's telephone number to shipper; do not provide Owner's telephone number to shipper or carrier.
2. Arrange for deliveries while Contractor's personnel are at the Site. Contractor shall receive and coordinate shipments upon delivery. Shipments delivered to the Site when Contractor is not present will be refused by Owner, and Contractor shall be responsible for the associated delays and costs, including demurrage.
3. Comply with environmental permits for any Hazardous Materials, as applicable.

C. Containers and Marking:

1. Have materials and equipment delivered in manufacturer's original, unopened, labeled containers.
2. Clearly mark partial deliveries of component parts of materials and equipment to identify materials and equipment, to allow easy accumulation of parts, and to facilitate assembly.

D. Inspection of Materials and Equipment Upon Delivery:

1. Immediately upon delivery, visually but critically inspect shipment to verify that:
    a. Materials and equipment comply with the Contract Documents and approved or accepted (as applicable) Submittals.
    b. Quantities are correct.

c. Materials and equipment are undamaged and of required quality.
d. Containers and packages are intact and labels are complete and legible.

2. Eligibility for Payment:
   a. Materials and equipment are not eligible for payment until duly inspected and determined to be in accordance with the Contract Documents and Owner-approved Submittals, without damage or deterioration.
   b. No payment can be made for damaged, deteriorated, or otherwise defective items.
   c. No payment can be made for missing or lost items.
   d. Other provisions of the Contract Documents may establish other preconditions for payment for delivered material and equipment.
3. Damaged, Deteriorated, and Otherwise Defective Items:
   a. Promptly remove from the Site damaged, deteriorated, or defective materials and equipment and expedite delivery of new, undamaged materials and equipment.
   b. Promptly remedy incomplete or lost materials and equipment.
   c. Furnish materials and equipment in accordance with the Contract Documents, to avoid delaying progress of the Work.
   d. Promptly advise Engineer in writing: (1) when damaged, deteriorated, incomplete, or otherwise defective materials and equipment are delivered, and (2) associated impact on the Progress Schedule.

E. Handling of Materials and Equipment Upon Delivery:
1. Any specialty lifting devices used in loading the equipment at the Contractor's facility shall be furnished for unloading and handling at the destination and shall become the property of the Owner.
2. Provide construction equipment and machinery, tools, and qualified personnel necessary to unload and handle materials and equipment, by methods that prevent damaging, defacing, and soiling materials and equipment and packaging.
3. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
4. Provide additional protection during unloading and handling as necessary to prevent scraping, marring, and otherwise damaging materials and equipment and adjacent surfaces.
5. Unload and handle materials and equipment by methods that prevent bending, warping, and overstressing.
6. Lift heavy components only at designated lifting points.
7. Unload and handle materials and equipment in safe manner and as recommended by manufacturer to prevent damage. Do not drop, roll, or skid materials and equipment off delivery vehicles or at other times during unloading and handling.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for:
   a. Payment considerations for stored materials and equipment.
   b. Handling of materials and equipment.
   c. Storage of materials and equipment, including:
      1) General provisions for storage.
      2) Storage locations.
      3) Protection of stored items.
      4) Storage of items containing Constituents of Concern.
      5) Outdoor, uncovered storage.
      6) Outdoor, covered storage.
      7) Fully-protected storage.
      8) Removal of temporary storage facilities and restoration of storage areas.
   d. Maintenance of storage.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, services, lands, and incidentals necessary and required to store and handle materials and equipment to be incorporated into the Work, and other materials and equipment at the site, adjacent areas, and offsite storage areas.

C. Related Requirements: Include but are not limited to:

1. Section 01 65 00 - Product Delivery Requirements.

1.2 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment:

1. Materials and equipment delivered but not suitably stored and protected will not be eligible for payment.
2. Engineer may recommend reduction in payment, and Owner may reduce payments to Contractor (“set-offs”) by an appropriate amount when stored items are subsequently revealed to be improperly stored or protected.
3. Payment for Suitably Stored Items:
   a. Requirements for payment for materials and equipment delivered and suitably stored, but not yet incorporated into the Work, are in the General Conditions, as may be modified by the Supplementary Conditions.
   b. Materials and equipment delivered and suitably stored, but not yet incorporated into the Work, will not be eligible for payment until the

inspection upon delivery, required in Section 01 65 00 – Product Delivery Requirements, is completed and Engineer concurs that such items generally appear to be in good condition, in accordance with the Contract Documents, and are of the required quality and quantity.

1.3 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Affidavits of Inspection and Maintenance Performed on Mechanical and Electrical Equipment in Long-Term Storage:
   a. Submit in accordance with requirements of Article 3.1 of this Section.
2. Other Records of Inspection and Maintenance of Stored Materials and Equipment:
   a. Establish and maintain such records as required by this Section.
   b. Submit to Engineer or Owner (as applicable) within three days of Contractor's receipt of such request.

B. Action Submittal: Submit the following:

1. For any materials that will need to be hoisted or lifted by the Owner, submit a lifting plan at least 14 days prior to when the lift will occur.
2. Design and fabrication drawings for the lifting beam to be used for handling and installing the bladder shall be submitted at least 14 days prior to use of the lifting beam. The Contractor shall determine if the lifting beam design is required to be stamped by a Professional Engineer. If required, design and fabrication drawings must be stamped by a Professional Engineer in the State of Massachusetts.

1.4 HANDLING

A. Handling of Materials and Equipment – General:

1. Handle materials and equipment to be incorporated into the Work in accordance with the Contract Documents and manufacturer's written instructions.
2. During handling and assembling of materials and equipment:
   a. Maintain validity of manufacturers' warranties.
   b. Comply with: Section 01 65 00 – Product Delivery Requirements
   c. Do not drop, drag (without appropriate rollers or skids), or scrape materials and equipment.
   d. Use proper construction equipment and machinery, and tools, operated by sufficient number of qualified personnel.
   e. Maintain materials and equipment in neutral position.
   f. Do not exert undue stress on materials and equipment.
   g. Do not deform, bend, or damage materials and equipment.
   h. Do not deform or mar shafts, bearings, or other parts.

B. Additional Requirements for Hoisting and Lifting:

1. When lifting or hoisting, support materials and equipment from appropriate lifting points using proper hooks and suitable nylon lifting straps, chains, and cables. Do not mar or scrape surfaces of materials and equipment during handling.
2. Do not support rigging from building or structure without written approval of Engineer.
3. Contractor is responsible for and shall remedy damage to building, structure, and existing hoisting equipment and elevators, resulting from Contractor's operations.

1.5 STORAGE

A. Storage – General:

1. Contractor shall make all arrangements and provide all measures necessary and required for, and pay all costs associated with, storing materials and equipment.
2. Store materials and equipment in accordance with the Contract Documents and manufacturer's written instructions. In event of conflict between the Contract Documents and manufacturer's written instructions regarding storage and protection, comply with the more-stringent, more-protective requirements.
3. Records:
   a. Establish and maintain up-to-date account of materials and equipment in storage, to facilitate preparation of progress payment requests, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing.
   b. Submit affidavits of inspection and maintenance of mechanical and electrical equipment in long-term storage in accordance with this Section's Article 3.1 ("Maintenance of Storage").
4. Arrange stored materials and equipment to allow easy access for observation or inspection by Owner, Engineer, Owner's Site Representative (OSR), Owner-hired testing and inspection entities, and authorities having jurisdiction.
5. Inspect and maintain stored materials and equipment in accordance with this Section's Article 3.1 ("Maintenance of Storage").

B. Storage Location:

1. When on-site storage is insufficient, Contractor shall provide additional lands for storage facilities as necessary and required for the Work.
2. Restrictions on Storage Locations:
   a. Do not store materials or equipment in structures being constructed unless approved by Engineer in writing.
   b. Do not use lawns, landscaped areas, or private property for storage without written permission of property owner.

C. Protection of Stored Items – General:

1. Store materials and equipment indicated below to ensure preservation of quality and fitness for intended uses in the Work, including proper protection against damage and deterioration resulting from: water (including precipitation, flood, and other), moisture, humidity, wind, dust, freezing, and outdoor ambient air high temperature. Temperature and humidity inside crates, containers, storage structures, and packaging may be significantly higher than outdoor ambient air temperature.
2. Store in indoor, climate-controlled storage all materials and equipment subject to damage or deterioration by water, moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner and Engineer.
3. Do not open manufacturer's crates, containers, and packaging until time of installation, unless recommended by the manufacturer or otherwise required in the Contract Documents.
4. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
5. Electrical Equipment, Instrumentation and Controls, Items Containing Computer Chips, Solid-State Devices, and Other Electronics:
    a. Contractor shall obtain, coordinate, and comply with specific temperature, humidity, and environmental limitations on materials and equipment because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.
    b. Protect from water, moisture, humidity, dust, heat, cold, and other potentially harmful elements and environments. Space heaters provided in equipment shall be connected and operating at all times until equipment is connected to active, permanent, electrical power.
    c. Provide inside each electrical panel, control panel, and other enclosures with electronic device(s) each of the following: (1) desiccant, (2) volatile corrosion inhibitor (VCI) blocks, (3) moisture indicator, and (4) maximum- and minimum-indicating thermometer.
    d. Check panels and equipment not less than once per month. Replace desiccant, VCI, and moisture indicator the earlier of: (1) as often as necessary, or (2) every six months.
    e. Establish and maintain certified record of daily maximum and minimum temperature and humidity in storage facility. Such records shall be available for Engineer's and Owner's inspection upon request. Certified record of monthly inspection, noting maximum and minimum temperature for month, condition of desiccant, VCI, and moisture indicator, shall be available to Engineer and Owner upon request.

6. Finished Surfaces:
    a. Protect finished surfaces against impact, abrasion, discoloration, and other damage.
    b. Remedy, in accordance with requirements of item manufacturer and finishing system manufacturer damaged, marred, or deteriorated finishes, to Engineer's satisfaction.
7. Contractor is fully responsible for loss, damage, and deterioration, including theft and vandalism, to stored materials and equipment.

D. Storage of Materials or Equipment Containing Constituents of Concern:
1. Prevent contamination of personnel, storage areas, the site, and adjacent areas.
2. Comply with Laws and Regulations and other provisions of the Contract Documents relative to Constituents of Concern and Hazardous Environmental Conditions.

E. Uncovered Storage:
1. The following materials may be stored outdoors without cover and on supports, so there is no contact with the ground:
    a. Reinforcing steel.
    b. Precast concrete materials.
    c. Structural steel.
    d. Metal stairs.
    e. Handrails and railings.
    f. Grating.
    g. Checker plate.
    h. Metal access hatches, such as floor doors, roof hatches, and the like.
    i. Castings.
    j. Fiberglass items.
    k. Rigid electrical conduit, except PVC-coated conduit.
    l. Fencing intended for permanent, outdoor installation.
    m. Piping, except PVC or chlorinated PVC (CPVC) pipe.

F. Covered Storage:
1. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
    a. Grout and mortar materials.
    b. Masonry units.
    c. Metal decking.
    d. Rough lumber.
    e. Soil materials and granular materials such as aggregate.
    f. PVC and CPVC pipe.
    g. PVC-coated electrical conduit.
    h. Filter media.

2. Properly and fully secure covers against coming loose in strong winds.
3. Install coverings properly sloped to prevent accumulation of water.
4. Loose Soil Material and Loose Granular Material:
    a. Store such materials in well-drained areas.
    b. Prevent mixing of such materials with foreign matter. Provide underlying separation layer or store on solid, impervious surface, where appropriate.
    c. Provide temporary erosion and sediment controls for stockpiled soil materials.

G. Fully-Protected Storage:

1. Store all materials and equipment not indicated in the provisions above regarding uncovered storage and covered storage on supports, in buildings, trailers, or other suitable temporary storage facility with concrete or wood flooring, solid and impervious roof, and fully closed walls on all sides.
2. Covering with visqueen plastic sheeting or similar material in storage space without floor, roof, and walls is unacceptable.
3. Provide heated storage for materials and equipment that could be damaged or deteriorate by low temperatures or freezing.
4. Provide air-conditioned storage for materials and equipment that could be damaged or deteriorate by high temperature or humidity.
5. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
6. Maintain temperature and humidity at levels recommended by materials and equipment manufacturers.
7. Prevent infestation of stored items by pests and rodents. Promptly and properly remedy such infestation when apparent.

H. Removal of Temporary Storage Facilities and Restoration of Storage Areas:

1. Completely remove temporary storage facilities when no longer necessary for the Work.
2. Restore areas used for storage and areas occupied by temporary storage facilities in accordance with the Contract Documents.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION

3.1 MAINTENANCE OF STORAGE

A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:

1. Condition and status of storage facilities is adequate to provide required storage conditions.
2. Required environmental conditions are maintained on continuing basis.

3. Materials and equipment exposed to weather elements or other environment are not adversely affected.

B. Mechanical and Electrical Equipment in Long-Term Storage:

1. Meaning of the term “long-term storage’ is as established in written instructions of manufacturer of associated materials or equipment.
2. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer’s written instructions for servicing each item, with notice of enclosed instructions shown on exterior of crate, container, or packaging.
3. Frequency of inspections and maintenance of stored items shall be in accordance with manufacturer’s written instructions.
4. For mechanical equipment with bearings and shafts, manually rotate shaft during inspection and maintenance, as recommended by equipment manufacturer.
5. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is connected to permanent electrical power supply.
6. Other requirements for maintenance during storage of electrical equipment, instrumentation and controls, items with computer chips, solid-state devices, and other electronics are in this Section’s provision on general protection during storage.

C. Affidavits:

1. Submit to Engineer affidavit for each time maintenance and inspection was performed on materials and equipment in long-term storage. Affidavit shall be signed by Contractor and entity performing the inspection and maintenance on the stored items.
2. Indicate on affidavit:
   a. Date of inspection.
   b. Personnel involved and employer of each.
   c. Condition of storage environment.
   d. Specific stored items inspected, equipment condition, problems observed, problems corrected, maintenance tasks performed, and other relevant information.
   e. Signature of Contractor’s person responsible for the inspection and maintenance.
   f. Signed and notarized statement by items’ manufacturer indicating whether storage conditions and tasks performed are suitable for continued compliance with manufacturer’s warranties.
3. Submit each affidavit, complete, not later than seven days after performing associated inspection and maintenance.

END OF SECTION

SECTION 01 74 00

CLEANING

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for keeping the Site free of accumulations of waste materials during construction ("progress cleaning").
2. Cleaning for Substantial Completion and prior to final inspection (collectively, "closeout cleaning").

B. Scope:

1. Contractor shall perform cleaning during the Project, including progress cleaning, as condition precedent to Substantial Completion, upon completion of the Work, and as required by this Specifications section, and elsewhere in the Contract Documents.
2. Maintain in a clean manner the Site, the Work, and areas adjacent to or affected by the Work.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Fire Protection Association (NFPA):
   a. 241, Safeguarding Construction, Alteration, and Demolition Operations.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION

3.1 PROGRESS CLEANING

A. Progress Cleaning – General:

1. Clean the Site, work areas, and other areas occupied by Contractor not less than weekly. Dispose of waste materials in accordance with the following:
   a. Comply with NFPA 241 for removing combustible waste materials and debris.
   b. Do not hold non-combustible materials at the Site more than three days if the ambient air temperature is expected to rise above 80 degrees F. When ambient air temperature is less than 80 degrees F, dispose of non-combustible materials within seven days of their generation.

c. Provide suitable containers for storage of waste materials and debris. Avoid generation of odors and creation of nuisances.
d. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately.

B. Progress Cleaning – Site:

1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions.
2. Not less than weekly, brush-sweep roadways and paved areas at the Site and adjacent areas used by construction vehicles or otherwise affected by construction activities.

C. Progress Cleaning – Work Areas:

1. Clean areas where the Work is in progress to maintain an extent of cleanliness necessary for proper execution of the Work and safety of personnel.
2. Remove liquid spills promptly. Where spills may have harmful effects on health, safety, protection of facilities, or the environment, immediately report spills to Owner, Engineer, and authorities having jurisdiction, in accordance with the Contract Documents and Laws and Regulations.
3. Where dust would impair proper execution of or quality of the Work, broom-clean or vacuum entire work area, as necessary.
4. Concealed Spaces: Remove waste material and debris from concealed spaces before enclosing the space.

D. Progress Cleaning – Installed Work:

1. Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of installed materials and equipment, using only cleaning agents and methods specifically recommended by material or equipment Supplier.
2. If Supplier does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health and property and that will not damage or mar exposed surfaces.

E. Progress Cleaning – Exposed Surfaces:

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.

F. Progress Cleaning – Cutting and Patching:

1. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, trailings and cuttings, and similar materials.
2. Thoroughly clean piping, ductwork, conduits, and similar features before applying patching material, paint, or other finishing materials.
3. Restore damaged insulation and coverings on piping, cutwork, and similar items to its pre-construction condition.

G. Waste Disposal:

1. Properly dispose of waste materials (including surplus materials, debris, rubbish, and other waste) off the Site.
2. Do not burn or bury waste materials at the Site.
3. Remove waste material and rubbish from excavations before backfilling.
4. Do not discharge volatile or hazardous substances, such as mineral spirits, oil, or paint thinner, into storm sewers, gutters, sanitary sewers, or other location in the environment. Dispose of such materials in accordance with Laws and Regulations.
5. Do not discharge wastes to surface waters, drainage routes, or groundwater.
6. Contractor is solely responsible for complying with Laws and Regulations regarding storing, transporting, and disposing of waste generated by Contractor's operations or brought to the Site by Contractor.

H. During handling and installation of materials and equipment, clean and protect construction in progress and adjoining materials and equipment already in place. Apply protective covering where necessary or required for protection from damage or deterioration, until Substantial Completion.

I. Clean completed construction as frequently as necessary throughout the construction period.

3.2 CLOSEOUT CLEANING

A. Complete the following prior to requesting inspection for Substantial Completion:

1. Clean and remove from the Site waste material (including rubbish and debris) and other foreign and undesirable items and substances.
2. Sweep broom-clean paved areas suitable for access by vehicles.
3. Remove spills and stains or petroleum, oils, solvents, other chemicals, and other foreign and undesirable deposits.
4. Hose-clean sidewalks and loading areas.
5. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
6. Surface waterways and drainage routes (including storm sewers, gutters, and ditches) shall be open and clean.
7. Repair pavement, roads, sod, and other areas affected by construction operations and restore to specified condition; if condition is not specified, restore to preconstruction condition.
8. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of spatter, grease, stains, fingerprints, films, and similar foreign and undesirable substances.
9. Remove non-permanent tags and labels.
10. Surface Finishes:

a. Touch-up and otherwise repair and restore chipped, scratched, dented or otherwise marred surfaces to specified finish and match adjacent surfaces.
b. Do not paint over “UL” or similar labels, including mechanical and electrical nameplates.

11. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint, and mortar droppings, and other foreign or undesirable substances.
12. Clean plumbing fixtures to sanitary condition, free of stains, including stains resulting from water exposure.
13. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Engineer.

B. Complete the following prior to requesting final inspection:

1. After Substantial Completion of all the Work, following completion of items of incomplete or damaged Work (“punch list Work”), clean “punch list Work” areas in accordance with Paragraph 3.2.A of this Specifications Section.
2. Remove field offices, Contractor’s storage sheds, and remaining stockpiles.

END OF SECTION

SECTION 01 77 19

CLOSEOUT REQUIREMENTS

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for:

1. Substantial Completion.
2. Final inspection.
3. Request for final payment and acceptance of the Work.

1.2 SUBSTANTIAL COMPLETION

A. Substantial Completion – General:

1. Prior to requesting inspection for Substantial Completion, perform the following for the substantially completed Work:
   a. Materials and equipment for which Substantial Completion is requested shall be fully ready for their intended use, including full operating and monitoring capability in automatic, manual, and other operating modes set forth in the Contract Documents.
   b. Complete field quality control Work, including inspections and testing at the Site, indicated in Specifications sections for individual materials and equipment items and related Contract Documents. Submit results of, and obtain Engineer's acceptance of, field quality control tests and inspections required by the Contract Documents.
   c. Complete checkout and startup in accordance requirements of the Specifications for the various materials and equipment in the substantially completed Work, and related Contract Documents.
   d. Cleaning for Substantial Completion shall be completed in accordance with Section 01 74 00 - Cleaning.
   e. Spare parts, tools, and extra materials shall be delivered and accepted in accordance with the Contract Documents and documentation of Owner's acceptance thereof has been submitted to Engineer in acceptable form.
   f. Training of the facility's operations and maintenance personnel shall be completed in accordance with the Contract Documents.
   g. Submit and obtain Engineer's acceptance of final operations and maintenance manuals.
   h. Obtain and submit to Engineer all required permits, inspections, and approvals of authorities having jurisdiction for the substantially completed Work to be occupied and used by Owner.
   i. Complete other tasks that the Contract requires be completed prior to Substantial Completion.
2. Sample letter for Contractor's request for inspection for Substantial Completion is attached to this Specifications section. Use the model

language of the sample letter, modified to suit the Project and the needs of Contractor's request.

3. Unless decided otherwise by Owner and Engineer, form of certificate of Substantial Completion will be EJCDC C-625, "Certificate of Substantial Completion" (2018 edition or later), prepared by Engineer.
4. Refer to the Agreement for requirements regarding consent of surety to partial release of or reduction in retainage.

1.3 FINAL INSPECTION

A. Final Inspection – General:

1. Prior to requesting final inspection, verify that all the Work is fully complete and ready for final payment. Partial checklist for this purpose is attached to this Specifications section.
2. Sample letter for Contractor to request final inspection is attached to this Specifications section. Use the model language of the sample letter, modified to suit the Project.

1.4 REQUEST FOR FINAL PAYMENT AND ACCEPTANCE OF THE WORK

A. Procedure:

1. After successful completion of the final inspection, submit request for final payment in accordance with the Agreement and using procedure specified in this Specifications section.
2. Acceptance of the Work:
    a. Upon Owner's concurrence that the Work is complete and ready for final payment (as a result of the final inspection and other communications between the parties and Owner) and receipt of the final Application for Payment, accompanied by other required Contract closeout documentation, all in accordance with the Contract Documents, Engineer will issue to Owner and Contractor a notice of acceptability of the Work.
    b. Unless decided otherwise by Owner and Engineer, form of acceptance will be EJCDC C-626, "Notice of Acceptability of Work," (2018 edition or later).
    c. Nothing other than receipt of such notice of acceptability from Engineer constitutes acceptance of the Work.
    d. Receipt of Owner's notice of acceptability of the Work does not relieve Contractor of Contractor's continuing obligations under the Contract, including correction period obligations, warranty obligations, indemnification obligations, insurance requirements, and Contractor's other obligations following acceptance of the Work by Owner and final payment. Such obligations shall commence and remain in effect as indicated elsewhere in the Contract Documents.

B. Request for final payment shall include:

1. List, on Contractor's letterhead, of all Change Proposals, Claims, and disputes that Contractor believes are unsettled. If there are no such Change Proposals, Claims, or disputes, so indicate in writing.
2. Consent of Surety to Final Payment:
    a. Acceptable form includes AIA G707, "Consent of Surety to Final Payment" (1994 or later edition), or other form acceptable to Owner.
3. Releases of Liens:
    a. Submit complete and legally effective releases (satisfactory to Owner) of all Liens filed in connection with the Work, regardless of whether such Lien was filed by Contractor, Subcontractor, or Supplier.
    b. Each release of Lien shall be signed by an authorized representative of the entity submitting the release of Lien, and shall include Contractor's, Subcontractor's, or Supplier's (as applicable) corporate seal, when applicable.
4. Waivers of Lien Rights:
    a. Submit legally-binding waivers of rights to file Liens, acceptable to Owner, as required in the General Conditions (as may be modified by the Supplementary Conditions) from Contractor and each Subcontractor and Supplier that furnished or provided labor, material, or equipment totaling $1,000 or more for the Work.
    b. Furnish final list of Subcontractors and Suppliers indicating final amount of the associated subcontract or purchase order for each. Include on the list all lower-tier Subcontractors and Suppliers retained by higher-tier Subcontractors and Suppliers.
    c. Each waiver of Lien rights shall be signed by an authorized representative of the entity submitting waiver of Lien rights, and shall include Contractor's, Subcontractor's, or Supplier's (as applicable) corporate seal, when applicable.
    d. Waiver of Lien rights may be conditional upon receipt of final payment.
    e. Required Affidavits: Submit the following:
        1) Affidavit of payment of debts and claims, submitted by Contractor. Acceptable form includes AIA G706, "Contractor's Affidavit of Payment of Debts and Claims" (1994 or later edition), or other form acceptable to Owner, and;
        2) Affidavit of release of Liens, submitted by Contractor. Acceptable form includes AIA G706A, "Affidavit of Release of Liens" (1994 or later edition).
        3) Each affidavit shall be signed by an authorized representative of Contractor and shall bear Contractor's corporate seal, as applicable.
    f. In the event Contractor is unable to obtain one or more required waivers of Lien rights, recourse is set forth in the General Conditions, as may be modified by the Supplementary Conditions.

g. Where all required waivers of Lien rights and affidavits are not submitted:

1) Submit letter on Contractor's letterhead indicating the Subcontractor(s) and Supplier(s) for whom such waivers or releases were not obtained, amount owed to such entity, reason(s) why such amount was not previously paid and indicate how Contractor intends to fulfill its obligations and assure Owner that associated debts and claims are paid.
2) In lieu of the releases or waivers of Liens specified in this section, and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied.
3) If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors or Suppliers.
4) Evidence satisfactory to Owner that all title issues (not otherwise addressed by releases of Liens, waivers of Lien rights, and related documentation required in this section) have been resolved and that title will pass to Owner free and clear of other title defects or will so pass upon final payment.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION

3.1 ATTACHMENTS

A. The documents listed below, following this Specification section's "End of Section" designation, are part of this Specifications section:

1. Sample letter for Contractor's use in requesting inspection for Substantial Completion (two pages).
2. Sample partial checklist to identify readiness for final inspection (four pages).
3. Sample letter for Contractor's use in requesting final inspection (one page).

B. In the model language of the attached sample letters for Contractor to request inspection for Substantial Completion and the final inspection, italicized language in brackets, e.g., "[insert date]" indicates instructions to the drafter of the letter and often indicates specific information to be inserted by Contractor;

do not include bracketed, italicized text in the final version of the letter(s) prepared for the Project. Non-italicized language in brackets is optional language; use the appropriate language to complete the actual letter for the Project and edit where required to suit the specific circumstances.

END OF SECTION

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING INSPECTION FOR SUBSTANTIAL COMPLETION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

City of Holyoke Gas & Electric Department (HG&E) Attn: Derek Ferguson
30 Water Street
Holyoke, MA 01040
Telephone: (413) 536-9425 Email: dferguson@hged.com

Subject:
Holyoke Dam Inflatable Crest Gate Replacement Project Request for Inspection for Substantial Completion

Dear Mr. Derek Ferguson:

In our opinion, [all of] [or] [a portion of] the Work under the above-referenced Contract is substantially complete as of [insert month, day, year on which Substantial Completion was achieved]. [The specific portion of the Work that we believe is substantially complete is [insert identification of that portion of the Work that is substantially complete].]

Enclosed is our listing of uncompleted Work items ("punch list"). We hereby request: (1) That the Engineer schedule and perform the inspection for Substantial Completion as soon as possible, and (2) Issuance of the certificate of Substantial Completion.

Upon Substantial Completion, we propose the following relative to apportionment of responsibilities between the Owner and the Contractor:

1. Security, Protection, Insurance:
    a. Site Security: [insert proposal; address whether Owner or Contractor will be responsible for security of the Site].
    b. Protection of the Substantially Completed Work: [insert proposal; address whether Owner or Contractor will be responsible for protection].
    c. Property Insurance: [insert proposal; typically Owner assumes responsibility for property insurance upon Substantial Completion]
2. Operation and Maintenance:
    a. Operation: [insert proposal; address whether Owner or Contractor will be responsible for operating the substantially completed Work].
    b. Maintenance: [insert proposal; address whether Owner or Contractor will be responsible for maintaining the substantially completed Work].

3. Utilities: [for each of the following, indicate whether Owner or Contractor will be responsible for utilities and services, or whether responsibility will be shared; if shared, indicate proposed cost-sharing]
    a. Electricity: [insert proposal].
    b. Natural Gas/Fuel/Heating: [insert proposal].
    c. Water Supply: [insert proposal].
    d. Wastewater: [insert proposal].
    e. Communications (Telephone, Internet, Video): [insert proposal].

We understand that the Contract's correction period for the Work covered by the certificate of Substantial Completion commences on the Substantial Completion date documented in said certificate.

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]
[Signatory's title]

Attachments:
Preliminary list of uncompleted Work items ("punch list"; [##] pages)

Copies:
Adam Jones, P.E.
HDR
75 John Roberts Road, Unit B1
South Portland, ME 04106
Telephone: (207) 239-3820
Email: adam.jones@hdrinc.com

SAMPLE PARTIAL CHECKLIST TO IDENTIFY READINESS FOR FINAL INSPECTION

Project: Holyoke Dam Inflatable Crest Gate Replacement

Contractor: [_____]

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
1. All Submittals, including all Shop Drawings and Samples, approved or accepted by Owner	☐		☐	☐	☐		
Remarks:							
1. Final services completed by Suppliers	☐		☐	☐	☐		
Remarks:							
2. Final Work completed by Subcontractors	☐		☐	☐	☐		
Remarks:							

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
3. Permits closed out and regulatory compliance transitioned from construction to operations	☐		☐	☐	☐		
Remarks:							
4. All outstanding change issues are addressed and all Change Proposals submitted	☐		☐	☐	☐		
Remarks:							
5. All Change Proposals and Claims are resolved	☐		☐	☐	☐		
Remarks:							
6. All defective Work of which Contractor is aware has been corrected in accordance with the Contract Documents	☐		☐	☐	☐		
Remarks:							

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
7. Issues related to Constituents of Concern and potential Hazardous Environmental Condition have been fully addressed	☐		☐	☐	☐		
Remarks:							
8. All spare parts, tools, and extra materials have been furnished in accordance with the Contract Documents, and documentation thereof submitted to Engineer	☐		☐	☐	☐		
Remarks:							
9. All final operations & maintenance manuals have been submitted and accepted by Engineer	☐		☐	☐	☐		
Remarks:							
10. Manufacturer warranties and software license(s) furnished	☐		☐	☐	☐		

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
Remarks:							
11. Instruction and training of operations and maintenance personnel is complete and records of training submitted	☐		☐	☐	☐		
Remarks:							
12. MBE/WBE/DBE/VBE compliance report(s) submitted (when applicable)	☐		☐	☐	☐		
Remarks:							
13. All field engineering Submittals, including survey data, furnished	☐		☐	☐	☐		
Remarks:							
14. All Work on “punch list” is complete in accordance with the Contract Documents	☐		☐	☐	☐		

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
Remarks:							
15. All record documents submitted to and accepted by Engineer	☐		☐	☐	☐		
Remarks:							
16. Contractor is fully demobilized from the Site	☐		☐	☐	☐		
Remarks:							
17. All Site restoration is complete	☐		☐	☐	☐		
Remarks:							
18. Final cleaning of all work areas is complete	☐		☐	☐	☐		
Remarks:							

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
19. Releases of Liens and waivers of Lien rights (or acceptable alternative) obtained from Subcontractors and Suppliers	☐		☐	☐	☐		
Remarks:							
20. Evidence of Contractor liability insurance furnished for correction period	☐		☐	☐	☐		
Remarks:							
21. All other required Contract closeout documents obtained	☐		☐	☐	☐		
Remarks:							
Remarks:							

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
22. All other Work and documentation required prior to final payment is complete and provided in accordance with the Contract Documents	☐		☐	☐	☐		
Remarks:							

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING FINAL INSPECTION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

City of Holyoke Gas & Electric Department (HG&E) Attn:
Derek Ferguson
30 Water Street
Holyoke, MA 01040
Telephone: (413) 536-9425 Email:
dferguson@hged.com

Subject:
Holyoke Dam Inflatable Crest Gate Replacement Project Request for Final Inspection

Dear Mr. Derek Ferguson:

The Work under the above-referenced Contract is complete and ready for final payment as of [insert month, day, year on which final completion was achieved]. We hereby request that the Engineer schedule and perform the final inspection as soon as possible. Upon successful completion of the final inspection, we will submit our final Application for Payment accompanied by the required Contract closeout documentation in accordance with the Contract Documents.

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]
[Signatory's title]

Attachments:
None

Copies:
Adam Jones, P.E. HDR
75 John Roberts Road, Unit B1
South Portland, ME 04106
Telephone: (207) 239-3820 Email:
adam.jones@hdrinc.com

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for Project record documents, to supplement record documents requirements of the General Conditions, as may be modified by the Supplementary Conditions.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Engineer Project record documents in accordance with the Contract Documents.

C. Related Sections include but are not necessarily limited to:

1. Section 01 33 00 – Submittal Procedures

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Obtain necessary field measurements and record all data required for Project record documents before covering up the Work or building on subsequent phases of the Work.
2. Promptly after obtaining measurements and information, record the data and information on Project record documents.
3. Where a licensed, registered professional land surveyor is retained on the Project, whether by Contractor or others, to perform field measurements and record other data for as-constructed Project or Site conditions, coordinate with such entity and schedule and perform the Work accordingly. Allow surveyor sufficient time and proper conditions for performing surveyor's work. Assist the surveyor as necessary in performance of surveyor's responsibilities.

B. Monthly Status Evaluation:

1. Not less than once per month, as a condition precedent to submitting Application for Payment, Contractor's site superintendent will meet with either Engineer or Owner's Representative at the Site to review status of Contractor's Project record documents.
2. When Engineer or Owner's Representative directs corrections to Project record documents, promptly make such corrections on the Project record documents. Engineer's or Owner's Representative's directions or lack thereof do not in any way relieve or mitigate Contractor's sole responsibility for the accuracy, completeness, and clarity of Project record documents.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Recorder of Changes and Field Conditions on Project Record Documents:

a. Contractor's staff at the Site shall include not less than one person with suitable training and drafting (drawing) experience to record on the Project record documents changes made and field conditions encountered.

b. Recorder of changes and field conditions on the Project record documents shall possess not less than two semesters of drafting (drawing) training in a classroom, either in high school, college, or bona-fide vocational school.

c. Upon Engineer's request, submit name of proposed recorder at the Site, resume', or list of relevant experience, and copy of credentials of completion of such drafting (drawing) course(s).

d. If original recorder of changes and field conditions is replaced, promptly advise Engineer and Owner's Representative in writing and submit to Engineer qualifications of proposed replacement.

1.4 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Qualifications Statements:

a. When requested by Engineer, submit qualifications of proposed recorder of changes and field conditions for Project record documents at Contractor's field office at the Site. Qualifications shall comply with the "Quality Assurance" Article of this Specifications section.

B. Closeout Submittals: Submit the following:

1. Record Documentation:

a. Prior to readiness for final payment, submit to Engineer one copy of Project's final record documents and obtain Engineer's acceptance of same. Submit complete record documents; do not make partial Submittals without Engineer's concurrence.

b. Submit the following Project record documents:

1) Record Drawings, including those issued via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

2) Record project manual, including Specifications, indicating changes made via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

c. Submit record documents with transmittal letter on Contractor's letterhead in accordance with requirements in Section 01 33 00 - Submittal Procedures.

2. Certifications:
    a. Record documents Submittal shall include certification, with original signature of official authorized to sign legally-binding contracts on behalf of Contractor, reading as follows:
        1) (Contractor's legal/contractual entity name) has maintained, continuously updated, and submitted Project record documentation in accordance with the Contract Documents, for the HG&E, Holyoke Dam Inflatable Crest Gate Replacement Project. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

By: [_____] (signature) Print
Name: [___] Title: [_____]

1.5 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain complete sets of the following record documents:
    1. Drawings, Specifications, and Addenda;
    2. Shop Drawings, Samples, and other Submittals, including records of test results, approved or accepted as applicable, by Owner;
    3. Change Orders, Work Change Directives, Field Orders, allowance authorizations;
    4. Copies of all interpretations and clarifications issued;
    5. Photographic documentation;
    6. Survey data; and
    7. All other documents pertinent to the Work.

B. Promptly make Project record documents available for review upon request of Engineer, or Owner.

C. Do not use Project record documents for any purpose other than serving as Project record.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

A. Recording Changes, Field Conditions, and Other Information – General:
    1. At the start of the Project, label each record document to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
    2. Keep record documents current consistent with the progress of the Work. Make entries on record documents within two working days of receipt of information required to record the change, field condition, or other pertinent information.

3. Do not permanently conceal the Work until required information has been recorded for Project record documents.
4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Engineer-accepted Project record documents.
5. Marking of Entries:
    a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to Project record documents.
    b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files in “portable document format” (.PDF) files.
    c. Date each entry on record documents.
    d. Indicate changes by drawing a “cloud” around the change(s) indicated.
    e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on copy of the Drawings. Submittal of Contractor- originated or -produced drawings as a substitute for recording changes on a copy of the Drawings is unacceptable.
2. Record changes on plans, sections, elevations, schematics, schedules, and details as required for clarity, accuracy, and completeness, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction including:
    a. Field changes of dimensions, arrangements, and details.
    b. Changes made in accordance with Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
    c. Changes in details on the Drawings. Submit additional details prepared by Contractor when required to document such changes.
4. Recording Changes for Schematic Layouts:
    a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by Contractor subject to acceptance by Engineer.
    b. Record on the Project record documents all revisions to schematics on the Drawings, including: piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Drawings. Show and indicate actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.
    c. When dimensioned plans and dimensioned sections or elevations on the Drawings show the Work schematically, indicate on the Project record documents, by dimensions accurate to within one inch in the field,

centerline location of items of Work such as conduit, piping, ducts, and similar items

1) Clearly identify each item of the Work by accurate notations such as “cast iron drain,” “rigid electrical conduit,” “copper waterline,” and similar descriptions.
2) Show by symbol or by note the vertical location of each item of the Work; for example, “embedded in slab,” “under slab,” “in ceiling plenum,” “exposed,” and similar designations. For piping not embedded, also indicate elevation dimension relative to Project elevation datum.
3) Descriptions shall be sufficiently detailed to be related to the Specifications.

d. Engineer may furnish written waiver of requirements relative to schematic layouts shown on plans, sections, and elevations when, in Engineer’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on such waiver(s) being issued.

5. Supplemental Drawings:

a. In some cases, drawings produced during construction by Engineer or Contractor supplement the Drawings and shall be included with Project record documents submitted by Contractor. Supplemental record drawings shall include drawings or sketches that are part of Change Orders, Work Change Directives, Field Orders, and allowance authorizations and that cannot be incorporated into the Drawings because of space limitations.

b. Supplemental drawings submitted with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.

c. When supplemental drawings developed by Contractor using computer-aided drafting/design (CAD), building information models (BIM), or civil information models (CIM) software are to be included in record drawings, submit electronic files for such drawings as part of record drawing Submittal. Label such files, “Supplemental Record Drawings,” including with Contractor’s name, Project name, and Contract designation.

C. Specifications and Addenda:

1. Mark each Specifications section to record:

a. Manufacturer, trade name, catalog number, and Supplier of each material and equipment item actually furnished.

b. Changes made by Addendum, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

1.7 ELECTRONIC DOCUMENTS FURNISHED BY ENGINEER

A. CAD, BIM, or CIM files of the Drawings will be furnished by Engineer upon the following conditions:

1. Contractor shall submit to Engineer a letter on Contractor letterhead requesting CAD, BIM, or CIM files of the Drawings and indicating specific definition(s) or description(s) of how such Electronic Documents will be used

by Contractor, and specific description of benefits to Owner (including credit proposal, if applicable) if the request is granted.

2. Engineer does not guarantee that Electronic Documents are available in the format(s) requested by Contractor. Some projects may have Drawings developed using only CAD software instead of BIM or CIM software. Engineer will not create BIM or CIM files for Contractor if such files do not already exist.
3. Contractor shall sign Engineer's standard agreement with Contractor for release of Electronic Documents and shall abide by the provisions of such agreement for release of Electronic Documents.
4. Layering system incorporated in CAD, BIM, and CIM files shall be maintained as transmitted by Engineer. CADD, BIM, and CIM files transmitted by Engineer containing cross-referenced files shall not be bound by Contractor. Drawing cross-references and paths shall be maintained. If Contractor alters layers or cross-reference files, Contractor shall restore all layers and cross-references prior to submitting Project record documents to Engineer.
5. Contractor shall submit Project record drawings to Engineer in same CAD, BIM, or CIM format that files were furnished to Contractor.

B. Microsoft Word files of Specifications:

1. Requirements for Engineer's potential release of word processing files of the Specifications or other written documents in native format are the same as those for Drawings.
2. When Specifications are released in native format, Contractor shall submit record specifications in the same format, with all changes tracked using Microsoft Word's "track changes" feature.
3. Do not modify the formatting of the native files furnished by Engineer. If formatting changes are made without Engineer's authorization, remedy the formatting to the same condition and status as when the files were first delivered to Contractor. Such remedy shall be at Contractor's expense.
4. Comply with all requirements of this Specifications section regarding record specifications.
5. After delivery of record specifications Submittal to Engineer, delete from Contractor's files the native word processing files. Contractor may retain a PDF version of such files for Contractor's records.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 02 41 00

DEMOLITION

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General provisions applicable to all demolition and removals.
2. Disposal of demolition debris, materials, and equipment.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, tools, and incidentals as shown, specified, and/or required for demolition, removals, and disposal Work.
2. The Work under this Specifications section includes, but is not necessarily limited to:
    a. Demolition, removal, and disposal of existing materials and equipment as required in the Scope of Work, including removal of the existing inflatable crest gate system and demolition of portions of the concrete crest that are to be repaired.
3. Demolitions and removals indicated in other Specifications sections shall comply with requirements of this Specifications section.
4. Pay all costs associated with transporting and, as applicable, disposing of materials and equipment resulting from demolition and removals Work.

C. Related Requirements:

1. Section 01 11 00 – Summary of Work

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Fire Protection Association (NFPA):
    a. 241, Safeguarding Construction, Alteration, and Demolition Operations.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Review procedures under this and other Specifications sections and coordinate the Work that will be performed with or before demolition and removals.

1.4 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Procedure Submittals:

a. Demolition and Removal Plan: Not less than four weeks prior to starting demolition Work, submit acceptable plan for demolition and removal Work, including:

1) Other proposed procedures as applicable.
2) Equipment proposed for use in demolition operations.
3) Recycling/disposal facility(ies) proposed, including facility Owner, facility name, location, and processes. Include copy of appropriate permits and licenses, and compliance status.
4) Planned demolition operating sequences.
5) Detailed schedule of demolition Work in accordance with the Schedule accepted by Engineer.

2. Notification of Intended Demolition Start: Submit in accordance with Paragraph 3.1.A of this Specifications Section.

1.5 SITE CONDITIONS

A. Owner makes no representation of condition or structural integrity of area(s) to be demolished or where removals are required by the Contract Documents.

Part 2 - PRODUCTS - (NOT USED)

Part 3 - EXECUTION

3.1 PREPARATION

A. Notification:

1. Not less than 48 hours prior to commencing demolition or removal of each bladder section, advise Owner and Engineer in writing of planned start of demolition Work and coordinate each phase of the demolition. Do not start removals without permission of Owner.
2. Where demolition or removals have potential to affect adjacent properties, occupants, streets, or other public thoroughfare, transportation facilities, and utilities, furnish required notices to Owners and occupants of properties, buildings, and structures that may be affected by the demolition of removal.
3. In accordance with Laws and Regulations, furnish to authorities having jurisdiction, including emergency services as necessary, appropriate notices of planned demolition and removals.
4. Submit to Owner copies of notices furnished to adjacent property Owners, occupants, and authorities having jurisdiction.

B. Protection of Adjacent Areas and Facilities:

1. Perform demolition and removal Work in manner that prevents damage and injury to property, structures, occupants, the public, and facilities. Do not

interfere with use of, and free and safe access to and from, structures and properties unless allowed by the Contract Documents otherwise allowed in writing by Owner.

2. Closing or obstructing of roads, drives, sidewalks, and passageways adjacent to the Work is not allowed unless indicated otherwise in the Contract Documents. Conduct the Work with minimum interference to vehicular and pedestrian traffic.
3. Provide temporary partitions between demolition work areas and (a) areas that will be occupied during demolition and removals, and (b) areas accessible to the public or visitors. Temporary partitions shall be sturdy, braced plywood in good condition, of dimensions sufficient to adequately screen demolition work from view of occupants, public, and visitors. Maintain temporary partitions in place until demolition and removals work in the subject area is complete or until other Work requires removal of temporary partitions.
4. Provide appropriate temporary barriers, lighting, sidewalk sheds, and other necessary protection.
5. Repair damage to facilities that are to remain when such damage results from Contractor's operations.

C. Remediation:

1. If unanticipated Hazardous Environmental Conditions are believed to be encountered during demolition and removals, comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

3.2 DEMOLITION - GENERAL

A. Locate construction equipment used for demolition Work and remove demolished materials and equipment to avoid imposing excessive loading on supporting and adjacent walls, floors, framing, facilities, and Underground Facilities.

B. Pollution Controls:

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit emissions of dust and dirt to lowest practical level.
2. Do not use water when water may create hazardous or objectionable conditions such as icing, flooding, or pollution.
3. Clean adjacent structures, facilities, properties, and improvements of dust, dirt, and debris caused by demolition Work, in accordance with Section 01 74 00 – Cleaning.
4. Comply with all federal, state, and local environmental and pollution control regulations, best practices, and permit conditions.

C. Explosives:

1. Explosives are not allowed at the Site. Do not use explosives for demolition and removal Work.

3.3 STRUCTURAL REMOVALS

A. Remove structures to lines and grades shown or indicated, unless otherwise directed by Engineer. Where limits are not shown or indicated, limits shall be four inches outside item to be installed. Removals beyond limits shown or indicated shall be at Contractor's risk and expense and such excess removals shall be reconstructed to satisfaction of Engineer without additional cost to Owner.

B. Recycling and Reuse of Demolition Materials:

1. All concrete, brick, tile, masonry, roofing materials, reinforcing steel, structural metals, miscellaneous metals, plaster, wire mesh, and other items contained in or upon building or structure to be demolished shall be removed, transported, and disposed of away from the Site, unless otherwise approved by Owner.
2. Do not use demolished materials as fill or backfill adjacent to structures, in pipeline trenches, or as subbase under structures or pavement.

C. Where parts of existing structures are to remain in service following demolition, remove the portions shown or indicated for removal, repair damage, and leave the structure in proper condition for the intended use.

1. Remove concrete and masonry to the lines shown or indicated by sawing, drilling, chipping, and other suitable methods. Leave the resulting surfaces true and even, with sharp, straight corners that will result in neat joints with new construction and be satisfactory for the purpose intended.
2. Do not damage reinforcing bars beyond the limits of concrete and masonry removal. Do not saw-cut beyond the limits to be removed.
3. Reinforcing bars that are exposed at surfaces of removed concrete and masonry that will not be covered with new concrete or masonry shall be removed to 1.5 inches below the final surface. Repair the resulting hole, with repair mortar for concrete and grout for masonry, to be flush with the surface.
4. Where existing reinforcing bars are shown or indicated to extend into new construction, remove existing concrete so that reinforcing bars are clean and undamaged.

D. Anchorages and Protruding Metals:

1. Where equipment or material anchored to concrete or masonry are removed and anchors are not to be re-used, and where existing metals (and to be removed) protrude from concrete, remove the anchors and other metal to not less than 1.5 inches beneath surface of concrete or masonry member. Repair the resulting hole, using repair mortar for concrete and grout for masonry, to be flush with the surface.
2. Alternately, when the anchor is stainless steel, the anchor may be cut flush with the surface of the concrete or masonry, when so approved by Owner.

E. Where anchoring materials, including bolts, nuts, hangers, welds, and reinforcing steel, are required to attach the Work to existing construction,

provide such materials under this Specifications section, unless specified elsewhere in the Contract Documents.

F. Remove concrete and masonry by sawing, drilling, chipping, and other suitable methods. Leave the resulting surfaces true and even, with sharp, straight corners that will result in neat joints with new construction and be satisfactory for the purpose intended.

G. Do not damage reinforcing bars beyond the area of concrete and masonry removal. Do not saw-cut beyond the area to be removed.

1. Reinforcing bars that are exposed at surfaces of removed concrete and masonry that will not be covered with new concrete or masonry shall be removed to 1.5 inches below the final surface. Repair the resulting hole, with repair mortar for concrete and grout for masonry, to be flush with the surface.
2. Where existing reinforcing bars are shown or indicated to extend into new construction, remove existing concrete so that reinforcing bars are clean and undamaged.

H. Removal of Anchorages and Protruding Metals:

1. Where equipment or material anchored to concrete or masonry are removed and anchors are not to be re-used, and where existing metals (and to be removed) protrude from concrete, remove the anchors and other metal to not less than 1.5 inches beneath surface of concrete or masonry member. Repair the resulting hole, using repair mortar for concrete and grout for masonry, to be flush with the surface.
2. Alternately, when the anchor is stainless steel, the anchor may be cut flush with the surface of the concrete or masonry, when so approved by Owner.

I. Where anchoring materials, including bolts, nuts, hangers, welds, and reinforcing steel, are required to attach the Work to existing construction, provide such materials under this Specifications section, unless specified elsewhere in the Contract Documents.

J. Rubber Bladder Removal

1. Remove the anchor bolt nuts for each span, inspect the nuts, and if suitable in the opinion of the Owner, save the nuts and re-use them.
2. Maintain and protect existing anchor bolts for securing the inflatable crest gates.
3. Remove and dispose of the upper clamp plates.
4. Remove and dispose of the bladders and all internal hoses, spacers and other equipment, except for existing airline fittings used to attach the airlines to the bladders which shall be removed and recovered without damage and saved for re-use, as recommended by the Supplier.
5. Remove and dispose of the bottom clamp plates. These plates are likely epoxied in place. Removal shall be conducted in a manner that fully removes

all epoxy but prevents damage to the concrete substrate. If plate removal results in concrete over-break, the Contractor shall notify the Owner and Engineer and develop a removal and repair plan to protect the crest concrete and restore damaged areas to acceptable condition.

6. Photographs shall be taken of the full length of the crest of the dam and embedded anchoring system following removal. These photographs shall be provided to the Owner, Engineer, and Bladder Supplier.

3.4 DISPOSAL OF DEMOLITION DEBRIS

A. Disposal – General:

1. Promptly remove from the Site all debris, waste, rubbish, material, and equipment resulting from demolition and removal operations. Promptly upon completion of demolition and removal operations, remove from the Site construction equipment used in demolition Work.
2. Do not sell demolition materials or removed equipment at the Site. If materials, equipment, or debris will be sold by Contractor, remove the items from the Site and perform the sale or transaction elsewhere, in accordance with Laws and Regulations.
3. Cleaning and Removal of Debris: Comply with Section 01 74 00 - Cleaning.

B. Transportation and Disposal:

1. Non-Hazardous Materials, Equipment, and Debris: Properly transport and dispose of non-hazardous demolition materials, equipment, and debris at appropriate landfill or other suitable location, in accordance with Laws and Regulations. Non-hazardous material does not contain Constituents of Concern such as (but not limited to) asbestos, PCBs, petroleum, hazardous waste, radioactive material, or other material designated as hazardous in Laws or Regulations.
2. Hazardous Materials, Equipment, and Debris: When handling and disposal of items containing Constituents of Concern is included in the Work, properly transport and dispose of such items in accordance with the Contract Documents and Laws and Regulations.

C. Submit to Engineer information required in this Specification Section on proposed facility(ies) where demolition materials, equipment, and debris will be recycled. Upon request, Engineer or Owner, shall be allowed to visit recycling facility(ies) to verify adequacy and compliance status. During such visits, recycling facility operator shall cooperate and assist Engineer and Owner.

END OF SECTION

SECTION 03 01 30

REPAIR AND REHABILITATION OF EXISTING CONCRETE

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Condition surveys of the crest of the dam for each bay.
2. Preparation and assessment of existing concrete for repair and rehabilitation:
   a. Concrete removal for repairs.
   b. Preparation of exposed reinforcing steel.
3. Repair of damaged (and deteriorated) concrete.
   a. Application of repair concrete.
   b. Repair of exposed items embedded in concrete.

B. Scope:

1. Contractor shall provide all materials, equipment, labor, tools, services, and incidentals necessary to repair and rehabilitate the existing concrete crest in locations where it is damaged or deteriorated.

1.2 PRICE AND PAYMENT PROCEDURES

A. Unit Prices:

1. The Work of this Section is United Price Work

B. Measurement:

1. Quantities of this Section's Unit Price Work:
   a. Unit Price Work of this Section shall be measured for payment prior to commencement of the associated Work in each work area.
   b. Work not measured in advance for payment will not be eligible for payment by Owner.

1.3 REFERENCES

A. Payment:

1. Payment for repair and rehabilitation of existing concrete shall be based on the depth of the repair and quantity repaired. The following payment categories will be used:
   a. Less than 2", between 1 to 50 square feet (SF) of repair.
   b. Less than 2", 50 SF or more of repair.
   c. 2" to 6" no rebar, between 1 to 50 square feet (SF) of repair.
   d. 2" to 6" no rebar, 50 SF or more of repair.

e. 2” to 6” with rebar, between 1 to 50 square feet (SF) of repair.

f. 2” to 6” with rebar, 50 SF or more of repair.

g. Greater than 6”, between 1 to 50 square feet (SF) of repair.

h. Greater than 6”, between 50 SF or more of repair.

B. Terminology:

1. This provision indicates terminology used in this Section and in other Contract Documents that coordinate with this Section. Such terminology may or may not be indicated using initial capital letters and, when used in relation to the Work of this Section, have the meanings indicated below.
2. "Existing concrete damage" means damage to existing concrete surfaces deeper than 1/8 inches, such as:
   a. Concrete corrosion.
   b. Corroded items embedded within concrete or through the concrete surface.
   c. Spalls
   d. Cracking
3. “Installer” means the entity installing or applying repair materials at the Site. The terms “installer” and “applicator” have the same meaning. Installer or applicator may be Contractor or Subcontractor.
4. “MPII” means, “manufacturer’s printed installation instructions”.
5. “Rehabilitation” means repairing and restoring concrete to structurally- sound, durable condition suitable for the structure’s intended purpose as determined by Engineer, including repair of existing concrete damage in accordance with this Section and other applicable provisions of the Contract Documents.
6. “Water-bearing structure” means concrete structure with a surface that is normally, or may be, in contact with water or process fluids or slurries during typical operation of the completed Project, including, but not limited to: tanks, channels, wet wells, distribution chambers, dams, and the like.
   Also, where specifically indicated on the Drawings, “water-bearing structures” includes basements and structures extending below the ordinary, wet-season groundwater surface.
7. Other terminology used in this Section is consistent with terminology of ACI CT.

C. Reference Standards:

1. American Concrete Institute (ACI):
   a. CT, Concrete Terminology.
   b. 117, Specification for Tolerances for Concrete Construction and Materials.
   c. 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
   d. 308, Standard Practice for Curing Concrete.

e. 318, Building Code Requirements for Structural Concrete.
f. 347, Guide to Formwork for Concrete.

2. ASTM International (ASTM):
   a. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   b. C33, Standard Specification for Concrete Aggregates.
   c. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   d. C94/C94M, Standard Specification for Ready-Mixed Concrete.
   e. C138, Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
   f. C143, Standard Test Method for Slump of Hydraulic Cement Concrete.
   g. C150, Standard Specification for Portland Cement.
   h. C172, Standard Practice for Sampling Freshly Mixed Concrete.
   i. C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
   j. C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
   k. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
   l. C150, Standard Specification for Portland Cement.
   m. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
   n. C494, Standard Specification for Chemical Admixtures for Concrete.
   o. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
   p. C881, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
   q. C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
   r. D1682, Breaking Load and Elongation of Textile Fabric.
   s. D4060, Abrasion Resistance of Organic Coatings by the Taber Abraser.
   t. D4258, Standard Practice for Surface Cleaning Concrete for Coating.
   u. D4259, Standard Practice for Abrading Concrete.
   v. D4263, Indicating Moisture in Concrete by the Plastic Sheet Method.
   w. D7234, Standard Test Method for Pull-off Adhesion Strength of Coatings on Concrete Using Portable Pull-off Adhesion Tests.
3. International Concrete Repair Institute (ICRI).
   a. 310.1R, Guide for Surface Preparation.
   b. 310.1R, Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Steel Corrosion.

4. Society for Protective Coatings/NACE International (SSPC/NACE):
    a. SP 6/NACE No. 3, Commercial Blast Cleaning.
    b. SP 13/NACE No. 6, Surface Preparation of Concrete.

1.4 QUALITY ASSURANCE

A. Qualifications:
    1. Installer:
        a. Installer of materials for rehabilitation of existing concrete shall possess not less than five years of relevant experience performing concrete rehabilitation of similar type, scope, and complexity to that required for this Project.
        b. Submit documentation of qualifications and experience in sufficient detail to demonstrate to Engineer's satisfaction compliance with requirements of this Section's qualifications requirements.
    2. Ready mixed concrete batch plant certified by NRMCA and Massachusetts Department of Transportation (MassDOT).
    3. Concrete testing agency:

B. Contractor to use concrete mixes approved by MassDOT, as described in Section 2.3 below.

1.5 SUBMITTALS

A. Action Submittals: Submit the following:
    1. Results of the crest concrete condition survey specified in Section 3.1.A.
    2. Shop Drawings:
        a. Schedule (table) indicating, for each type of concrete rehabilitation Work required by this Section, the material type and product manufacturer proposed for each application.
    3. Concrete mix designs proposed for use.
        a. Concrete mix design submittal to include the following information:
            1) Sieve analysis and source of fine and coarse aggregates.
            2) Test for aggregate organic impurities.
            3) Test for deleterious aggregate per ASTM C1293.
            4) Proportioning of all materials.
            5) Type of cement with mill certificate for cement.
            6) Type of fly ash with certificate of conformance to specification requirements.
            7) Slump.
            8) Air content.
            9) Brand, type, ASTM designation, and quantity of each admixture proposed for use.
            10) 28-day cylinder compressive test results of trial mixes per ACI 318 and as indicated herein.
    4. Product Data:
        a. Manufacturer's published, technical data for each manufactured material proposed for use in the Work of this Section.

b. Manufacturer's written certification that proposed materials comply with associated reference standards cited in this Section.

B. Informational Submittals: Submit the following:

1. Certifications:

a. Laboratory test reports (for previously-tested materials identical to those to be furnished) and material manufacturer's certificates verifying that ingredients comply with the Contract Documents and have a minimum of six months' residual shelf life at the time of shipment to the Site.

b. Certification from Supplier stating that material is suitable for the intended use on this Project.

c. Certification that materials proposed for use are compatible with each other, when such materials will contact each other, and will not interfere with bonding of future floor or wall finishes.

2. Test and Evaluation Reports:

a. Results of pre-rehabilitation condition survey required in this Section's Article 3.1.

3. Manufacturer's Instructions:

a. Manufacturer's instructions for all concrete rehabilitation materials, for handling, storing, and installing materials.

4. Qualifications Statements:

a. Installer: Documentation of qualifications in accordance with this Section's "Quality Assurance" Article.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with material manufacturer's written instructions and recommendations regarding delivery, handling, and storage or materials to be incorporated into the Work.

B. Storage:

1. Store materials in tightly-sealed, original containers, off the ground and in dry location with humidity controls.
2. Do not store in direct sunlight.
3. Protect materials from temperature extremes and avoid freezing temperatures.

Part 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Repair Mortar:

a. Sika Corporation.

b. Or equal.

2. Anti-Corrosion Bonding Agent:
    a. Sika Corporation.
    b. Euclid Chemical Company.
    c. Master Builders Solutions.
    d. Or equal.
3. Epoxy Bonding Adhesive:
    a. Sika Corporation.
    b. Euclid Chemical Company.
    c. Or equal.
4. Form coating:
    a. Richmond "Rich Cote."
    b. Industrial Lubricants "Nox-Crete Form Coating."

2.2 MATERIALS

A. Materials that will be in direct contact with potable water or water that will be treated to become potable shall be certified in accordance with ANSI/NSF 61 and suitable for prolonged immersive exposure to chlorinated water with a total residual of up to 5 mg/l.

B. Portland Cement: Conform to ASTM C150 Type II.

C. Fly Ash:
    1. ASTM C618, Class F or Class C.
    2. Nonstaining.
        a. Hardened concrete containing fly ash to be uniform light gray color.
    3. May use 6% loss on ignition for non-air-entrained concrete.
    4. Maximum loss on ignition: 6%.
    5. Compatible with other concrete ingredients.
    6. Obtain proposed fly ash from a source approved by the State Highway Department in the state where the Project is located for use in concrete for bridges.

D. Admixtures:
    1. Air entraining admixtures: ASTM C260.
    2. Water reducing, retarding, and accelerating admixtures:
        a. ASTM C494 Type A through E.
        b. Conform to provisions of ACI 212.3R.
        c. Do not use retarding or accelerating admixtures unless specifically approved in writing by Owner and at no cost to Owner.
        d. Follow manufacturer's instructions.
        e. Use chloride free admixtures only.
    3. Maximum total water soluble chloride ion content contributed from all ingredients of concrete including water, aggregates, cementitious materials and admixtures by weight percent of cement:

a. 0.10 all concrete.

4. Do not use calcium chloride.
5. Pozzolanic admixtures: ASTM C618.
6. Provide admixtures of same type, manufacturer and quantity as used in establishing required concrete proportions in the mix design.

E. Aggregates:

1. Normal weight concrete: ASTM C33, except as modified below.
2. Fine aggregate:
   a. Clean natural sand.
   b. No manufactured or artificial sand.
3. Coarse aggregate:
   a. Crushed rock, natural gravel, or other inert granular material.
   b. Maximum amount of clay or shale particles: 1%.
4. Gradation of coarse aggregate:
   a. Lean concrete and concrete topping: Size #7.
   b. All other concrete: Size #57 or #67.

F. Bonding Agents:

1. Bonding agents and adhesives shall have pot life that allows proper placement of new material against existing material in accordance with manufacturer's written instructions.
2. For repair of existing concrete damage, when no reinforcing steel is exposed, use epoxy bonding adhesive.
3. For repair of existing concrete damage, when reinforcing steel is exposed, use anti-corrosion bonding agent.

G. Water:

1. Potable.
2. Clean and free from deleterious substances.
3. Free of oils, acids and organic matter.

H. Repair Mortar:

1. Two component, polymer-modified, cementitious mortar.
   a. SikaTop-122 Plus by Sika Corporation.
   b. Or equal.

I. Anti-Corrosion Bonding Agent:

1. Three-component, moisture tolerant, cementitious bonding agent manufactured for purpose of bonding fresh concrete to hardened concrete and providing anti-corrosion coating to embedded reinforcing materials.
   a. Sika Armatec 110 EpoCem by Sika Corporation.
   b. Duralprep A.C. by Euclid Chemical Company.
   c. Or equal.

J. Epoxy Bonding Adhesive:
   1. For use where bonding new concrete or patch material to existing concrete.
   2. Two-component, moisture insensitive adhesive manufactured for purpose of bonding fresh concrete to hardened concrete.
      a. Sikadur 32 Hi-Mod LPL by Sika Corporation.
      b. Euco No. 452 MV by Euclid Chemical Company.
      c. Or equal.

K. Forms:
   1. Prefabricated or job built.
   2. Wood forms:
      a. 5/8 or 3/4 inches 5-ply structural plywood of concrete form grade.
      b. Built-in-place or prefabricated type panel.
   3. Metal forms:
      a. Metal forms may be used except for aluminum in contact with concrete.
      b. Forms to be tight to prevent leakage, free of rust and straight without dents to provide members of uniform thickness.
   4. Chamfer strips: Clear white pine, surface against concrete planed.

L. Form Ties:
   1. Commercially fabricated for use in form construction.
      a. Field fabricated ties are unacceptable.
   2. Constructed so that ends or end fasteners can be removed without causing spalling at surfaces of the concrete.
   3. 3/4 inches minimum diameter cones on both ends.
   4. Embedded portion of ties to be not less than 1-1/2 inches from face of concrete after ends have been removed.
   5. Cone size:
      a. 3/4 inches minimum diameter cones on both ends.
      b. Depth of cone not to exceed the concrete reinforcing cover.
   6. Form release: Nonstaining and shall not prevent bonding of future finishes to concrete surface.

2.3 CONCRETE MIXES

A. General:
   1. All concrete for repairs greater than 15 cubic feet to be ready mixed concrete conforming to ASTM C94/C94M unless otherwise accepted by the Engineer.
   2. Contractor shall use MassDOT approved concrete mix designs in conformance with MassDOT Item 905: “4000 PSI, 3/8 INCH, 660 CEMENT CONCRETE” for repair areas between 2” and 6” deep and Item 904: “4000 PSI, ¾ INCH, 610 CEMENT CONCRETE” for repair

areas deeper than 6", at their option. Contractor to submit proposed mix design and the MassDOT pre-approval letter.

3. Provide concrete of specified quality capable of being placed without segregation and, when cured, of developing all properties required.
4. All concrete to be normal weight concrete.
5. Provide pozzolan content for all cast-in-place construction.

B. Slump - 4 inches maximum, 1 inch minimum:

1. Measured at point of discharge of the concrete into the concrete construction member.
2. 8 inches maximum after addition of superplasticizer (if used).
3. Concrete of lower than minimum slump may be used provided it can be properly placed and consolidated.
4. Pumped concrete:
    a. Provide additional water at batch plant to allow for slump loss due to pumping.
    b. Provide only enough additional water so that slump of concrete at discharge end of pump hose does not exceed maximum slump specified and the maximum specified water-cement ratio is not exceeded.
5. Slump may be adjusted in the field through the use of water reducers.
    a. Coordinate dosage and mixing requirements with concrete supplier.
6. Determine slump per ASTM C143.

C. Fly ash:

    a. For cast-in-pace concrete only, a maximum of 25% by weight of Portland cement content per cubic yard may be replaced with fly ash at rate of 1 pound fly ash for 1 pound of cement.
    b. When fly ash is used, the water to cementitious materials ratio shall not exceed the maximum value specified herein.

D. Required average strength to exceed the specified 28-day compressive strength by the amount determined or calculated in accordance with the requirements of Chapter 5 of ACI 318 using the standard deviation of the proposed concrete production facility.

Part 3 - EXECUTION

3.1 PREPARATION AND ASSESSMENT

A. Condition Surveys (per bay):

1. Contractor, Inflatable Crest Gate Supplier, and Owner's Site Representative shall jointly perform condition survey of the crest of the dam before scheduling and performing the associated repair Work.
2. Prior to Condition Survey:
    a. Submit to Owner and Engineer, and obtain Owner's acceptance, of procedure for performing condition survey. Indicate proposed date(s) of

the condition survey and other procedures for inspecting and documenting extent of concrete repair Work to be performed.

b. Prior to the condition survey, power-wash all concrete surfaces within the scope of the concrete repair Work. Power-wash at not less than 4,000 psi using orbital nozzle.

3. Condition survey shall include, but is not necessarily limited to:
   a. Visual inspection for:
      1) Deficiencies in joints.
      2) Cracks.
      3) Leakage and efflorescence.
      4) Scaling.
      5) Spalling
      6) Exposed reinforcing.
      7) Previous repairs.
   b. Delamination survey.
4. Results of Condition Survey:
   a. Submit written results of condition survey to Owner and Engineer promptly following the condition survey at the Site.
   b. Condition survey results shall clearly indicate the location, nature, size, length, width, and depth of all deficiencies in existing concrete in the area(s) surveyed.
   c. Owner and Engineer will use results of condition survey to determine extent of repair Work required.
5. Owner's Direction to Contractor:
   a. After consulting with Engineer as necessary, Owner will transmit to Contractor written direction on extent of concrete repairs required.
   b. Owner will issue such direction promptly after Owner's receipt of acceptable results of condition survey. Directions for visually obvious repairs will be issued within 24 hours of survey. For complicated or unanticipated conditions allow in the Progress Schedule 14 days for issuance of Owner's written direction.
   c. Where such Work would either exceed Contract quantities of associated Unit Price Work or requires Work not in the Contract's bid/pay items, an appropriate Contract modification will be issued.

B. Concrete Removal:
1. Remove all loose and unsound concrete from areas to be repaired, in accordance with ICRI Guideline 310.1R, as modified by the Contract Documents.
2. Removals:
   a. Remove deteriorated concrete using appropriate mechanical means to obtain a surface profile of 1/16 inches to 1/8 inches deep with new fractured aggregate surface. The area to be repaired shall not be less than 1/2 inches in depth.

b. At areas of damage or deterioration of existing concrete, saw-cut the perimeter of unsound concrete surface areas, to depth of not less than 1/2 inches.
c. Saw-cuts to be perpendicular to or slightly undercutting existing concrete surface. Concrete removal boundaries shall be straight and aligned parallel to opposite boundary edges resulting in repair areas that are approximately rectangular.
d. Remove all existing concrete from within the saw-cut repair boundary to of not less than 1/2 inches.
e. Featheredges are unacceptable.

3. Clean surfaces of repair areas in accordance with ASTM D4258 to remove dust, dirt, grease, and other contaminants prior to abrasive blasting, chipping, grinding or wire brushing.
4. Abrasive-blast surfaces in accordance with ASTM D4259 and SSPC SP 13/NACE No. 6 to completely open defects down to sound concrete and remove laitance.
5. Concrete removal shall extend along any exposed existing reinforcing to locations along the bar that are free of bond inhibiting corrosion and where the bar is well-bonded to surrounding concrete.
6. Surfaces receiving repairs shall be saturated surface dry (SSD). Water migrating through cracks in a repair area shall be totally stopped prior to application of repair material by grouting, chemical injection, or other means acceptable to Owner. Install according to manufacturer's recommendations.

C. Preparing Exposed Steel Reinforcing:

1. Clean and prepare exposed embedded steel reinforcing in accordance with ICRI Guideline 310.1R and the Contract Documents.
2. Where one-half or more of the steel reinforcing diameter is exposed, either by existing conditions or concrete removal, bond between concrete and steel reinforcing is inhibited or lost completely, or corrosion is present, remove concrete to provide not less than 1 inch clearance around the entire perimeter and along the entire exposed length of the steel reinforcing.
3. If existing, exposed steel reinforcing is cut through, cracked, or cross- sectional area is reduced by more than 20%, provide new steel reinforcing bar the same size as existing steel reinforcing. Lap the new bar with existing within repair area in accordance with ACI requirements. Coat all new and existing steel reinforcing with anti-corrosion bonding agent, as specified in this Section. Clean exposed reinforcing in accordance with SSPC-SP6.

3.2 INSTALLATION AND APPLICATION

A. Environmental Conditions for Installation:

1. Do not repair existing concrete damage when ambient temperature is or is expected to be below 50 degrees F. If necessary to maintain the progress Schedule, enclose and heat area to between 50 and 70 degrees F during

repair of surface defects and curing of patching material. Use only indirect fired heating using clean-burning fuel.

2. If proper environmental conditions do not comply with the Contract Documents, do not perform the Work until such conditions are acceptable. Provide means to bring conditions into compliance by providing temporary environmental controls, enclosures, and other temporary construction and temporary facilities.
3. Contractor is not eligible for changes in Contract Dates or Contract Price for delays or costs incurred to bring environmental conditions for installation into compliance.

B. Existing Concrete Damage Repair:

1. Form repairs to match the existing curve of the dam crest. Place concrete in a continuous operation for each repair area.

C. Repair of Exposed Embedded Items in Concrete:

1. This provision addresses repair and rehabilitation of corroded metal items embedded in existing concrete. Existing concrete damage by corrosion of embedded metal shall be repaired in accordance with this Section's Paragraph 3.2.B.
2. Preparation:
   a. Fully expose extent of metal corrosion within each embedded item by chipping to sound material.
   b. Prepare exposed reinforcing steel attached to or adjacent to embedded, corroded metal items in accordance with this Section's Paragraph 3.1.D.
   c. If existing concrete has been removed during chipping and repair of metal item, prepare repair area in accordance with this Section's Paragraph 3.1.C.
   d. Remove corrosion on embedded metal item and corrosion on exposed reinforcing steel by cleaning in accordance with SSPC SP6.
3. Repair:
   a. Where no existing concrete has been removed or damaged adjacent to embedded metal item:
      1) On surface of embedded metal item, provide two coats of epoxy coating in accordance with coating manufacturer's recommendations.
         i) Color of First Coating: Red.
         ii) Color of Second Coating: Gray.
      2) Before applying second coat, allow first coat of epoxy coating to fully cure in accordance with coating manufacturer's recommendations.
   b. Where areas of existing concrete have been removed or damaged adjacent to embedded metal item:
      1) Patch area of removed or damaged concrete in accordance with this Section's Paragraph 3.2.B.

2) Provide on surface of embedded metal item two coats of epoxy coating in accordance with coating manufacturer's recommendations.
   i) Color of First Coat: Red.
   ii) Color of second Coat: Gray.
3) Before applying second coating, allow first coat of epoxy coating to fully cure in accordance with coating manufacturer's recommendations.

D. Repair of Areas Less than 2" Deep

1. The repair material shall be repair mortar.
2. Application of Repair Mortar:
   a. Apply scrub coat to substrate using a mason's brush to fill all pores and voids. Force material against edge of repair, working toward center.
   b. Before scrub coat dries, apply repair mortar. Sections that sag shall be removed and reinstalled.
   c. Minimum ambient, surface, and material temperature should be 50°F and rising at the time of application.
   d. Do not apply when rain is expected. If unexpected rain occurs, the repair shall either be protected from the rain or removed and replaced during better weather conditions
3. Finishing: Steel trowel to provide a smooth surface without ridges or fins. Use a straight edge to maintain a flat surface with a tolerance of 1/16 inch and finish surface shall be free of trowel marks.

E. Repair of Areas Between 2" and 6" Deep

1. The repair material shall be superplasticized concrete with 3/8-inch peastone aggregate.
   a. Prime the existing concrete with anti-corrosion bonding agent. Brush into surface with a mason's brush or spray with Goldblatt Pattern pistol.
   b. Place fresh concrete within 18 hours of bonding agent application.

F. Repair of Areas Deeper than 6"

1. The repair material shall be superplasticized concrete with 3/4-inch aggregate, unless otherwise accepted by the Engineer.
2. Prime the existing concrete with an anti-corrosion bonding agent. Brush into surface with mason's brush or spray with Goldblatt Pattern pistol.
3. Place fresh concrete within 18 hours of bonding agent application, or as recommended in the MPI.

G. Extend existing control, construction, and expansion joints through concrete repairs.

H. For repairs of existing concrete damage, finish of repaired areas shall match the finish of existing adjacent concrete surface.

3.3 CURING

A. Curing of concrete repairs:

1. Perform curing of repair mortar immediately after final finishing.

2. Perform curing by combination of covering repair Work with wet burlap and applying liquid membrane-forming curing compound.
3. Employ methods and sequence to maintain moisture for not less than seven days.

3.4 FIELD QUALITY CONTROL

A. Observations and Inspections:

1. Owner will witness surface preparation, substrate moisture conditions, and installation of materials indicated in this Section. Such observations do not relieve Contractor from obligation to comply with the Contract Documents.
2. Owner-retained special inspector shall be present while material manufacturer's technical representatives are at the Site instructing Contractor's structural concrete repair personnel, Contractor's joint sealant system personnel, and installers in the use of the associated material(s).

B. Defective Work:

1. Defective Repair:
   a. Any and all repairs are defective Work when one or more of the following occurs:
      1) Repair is not properly finished and in accordance with specified tolerances.
   b. Promptly remove and remedy defective concrete repair Work in accordance with the Contract Documents.
2. Damaged Work:
   a. Before acceptance of the Work (following final inspection in accordance with the Contract Documents), neatly repair damaged surfaces, corners of concrete, and finish.
   b. When performing surface remedial repairs, finish areas to smooth, dense watertight condition.
   c. Replace unsatisfactory concrete patching Work.
3. Corrective Work:
   a. If correction of defective Work (under this Section) is necessary, remove defective Work. Key area to be remedied, clean, and soak surface with water and patch with approved materials. Patch concrete to match existing adjacent concrete surfaces.
   b. Clean surface cavities resulting from form ties, other holes, honeycomb spots, broken corners and edges, and other effects. Saturate with water and point with a mortar of patching material paste. Comply with patching material manufacturer's recommendations concerning placement, pot life, and curing.
   c. Prepare pointing material not more than 30 minutes prior to use. Cure mortar patches properly. Carefully tool contraction and articulated joints in completed Work and keep them free of concrete. Where necessary, leave joint filler exposed for its full length with clean and true edges.

d. Tolerance deviations and other surface defects may also be corrected, when approved by Owner, by grinding high areas of swales.
e. Where remedial work is unsatisfactory, completely remove such Work and replace with new Work in accordance with the Contract Documents.

4. Defective Joint Sealant System Work:
   a. If a defective joint sealant system is observed, notify Owner.

C. Suppliers' Services:

1. Manufacturers' factory-trained technical representatives of concrete repair materials shall be at the Site prior to and during first installation of the materials furnished under this Section to review surface preparation, surface moisture conditions and adhesion testing, and proposed installation methods. Compensation for which is part of the associated unit price for such Work.

3.5 POST-CONSTRUCTION OBLIGATIONS

A. Concrete Surface Repair:

1. Measurement will be the area, in square feet or cubic foot, of existing, concrete surface area repaired, measured in one or more appropriate geometric shapes such as rectangles, squares, triangles, and trapezoids, at the concrete surface.
2. Item Includes (all in accordance with the Contract Documents):
   a. As indicated in Section 03 01 30 - Repair and Rehabilitation of Existing Concrete.
3. Not included in this bid/pay item:
   a. As indicated in Section 03 01 30 - Repair and Rehabilitation of Existing Concrete.
4. Payment: Unit price per square foot or cubic foot, for this item will be full compensation for Work for surface repair of the type indicated for existing concrete, and all related Work, performed under this item, complete in accordance with the Contract Documents, and not specifically included under other bid/pay items or contracts.

END OF SECTION

SECTION 03 05 05

POST-INSTALLED ANCHOR TESTING AND INSPECTION

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Contractor requirements for testing of existing anchors.

B. Related Requirements: Include but are not necessarily limited to:

1. Section 01 11 00 – Summary of Work

1.2 RESPONSIBILITY AND PAYMENT

A. Hire a qualified testing agency to perform tension testing of the existing post-installed anchors along the crest of Holyoke Dam and provide test results to the Owner and Engineer.

B. Duties and Authorities of Testing Agency/Service Provider:

1. Any Testing Agency/Service Provider or agencies and their representatives retained by Contractor or Owner for any reason are not authorized to revoke, alter, relax, enlarge, or release any requirement of Contract Documents, nor to reject, approve or accept any portion of the Work.
2. Testing Agency/Service Provider shall inform the Contractor, Owner and Engineer regarding acceptability of or deficiencies in the existing post-installed anchors that fail to fulfill requirements of the Contract Documents.
3. Testing Agency to submit test reports and inspection reports to Owner, Engineer and Contractor immediately after they are performed.
4. Owner retains the responsibility for ultimate rejection or approval of any portion of the Work.

1.3 QUALITY ASSURANCE

A. Reference Standards:

1. American Concrete Institute (ACI):
   a. 355.2, Seismic Testing of Post-Installed Concrete and Masonry Anchors in Cracked Concrete.
   b. 355.4, Qualification of Post-Installed Adhesive Anchors in Concrete.

B. Qualifications:

1. Contractor’s Testing Agency:
   a. Meeting requirements of ASTM E329 and ASTM C94.
   b. Provide evidence of recent inspection by CCRL of NBS, and correction of deficiencies noted.

1.4 DEFINITIONS

A. Testing Agency/Service Provider: An independent professional testing/inspection firm or service hired by Contractor or by Owner to perform testing, inspection or analysis services as directed, and as provided in the Contract Documents.

1.5 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Tension testing reports in accordance with Paragraph 3.1G of this Specification Section.

Part 2 - PRODUCTS – (NOT USED)

Part 3 - EXECUTION

3.1 TENSION TESTING OF EXISTING POST-INSTALLED ANCHORS

A. Employ a testing agency to perform visual inspections and tension testing of existing clamp plate anchors at the crest of the dam after the existing rubber bladders and clamping plates have been removed.

B. The testing agency shall furnish all necessary equipment to perform the anchor testing as described herein. This includes using a center-hole jack that has sufficient jack stroke to handle the expected elongation in the exposed length of the anchors to be tested. The jack shall be capable of holding a steady load (within 5 percent of the test load) without additional jacking for at least 10 seconds.

C. The testing will be performed on a total of 212 anchors, unless defective anchors are encountered. Anchors to be tested will be at the discretion of the Owner. Results of the tension testing performed in 2001 is provided in Appendix F. The cost of this planned testing shall be included in the Lump Sum price of the contract and divided among the individual bays as indicated in the schedule of values in the bid documents.

D. The proof load shall be specified by the Engineer following review of inflatable crest gate design submittals.

E. Provide access for the testing agency to places where anchors are located so that required testing can be accomplished.

F. Testing procedure:

1. Load the anchor to the proof load and record the initial elongation/movement using a dial gage that is supported independently of the jacking frame.

2. Hold the load and record the adhesive anchor elongation/movement again after a minimum of 10 seconds after the steady load has been established.

3. Notify Engineer and Owner immediately if the anchor is deficient, as described below.
4. Stop anchor testing if more than 5 anchors fail load tests until Owner and Engineer have reviewed the test results.
5. Submit test results to the Owner and Engineer within 24 hours of testing.
6. Tests and inspections of anchorages shall comply with ACI 355.2 and/or ACI 355.4 as applicable.

G. Deficient adhesive anchors
   1. Adhesive anchors shall be considered to be deficient if:
      a. The adhesive anchor pulls out during tension testing.
      b. Measured elongation is outside the limit specified by the Engineer, which will be specified with the proof test load.

H. The Engineer may require that additional adhesive anchors be installed, and tension tested to correct the deficient anchors. In addition, the Engineer may require additional tension testing of adhesive anchors that were installed near or in the same timeframe as the deficient adhesive anchors. Should Owner and Engineer determine that additional anchor testing is required due to failure or inspection, testing will be performed on a time and materials basis.
   1. Tests and inspections of anchorages shall comply with ACI 355.2 and/or ACI 355.4 as applicable.

I. All test reports shall include:
   1. Results of all tests as specified in this Section, including description of failure if any – steel rupture, rod pull out, excessive movement, etc.
   2. Date and time each test was performed.
   3. Exact locations of the anchor tested and the work area represented by the test. The existing anchors shall be numbered or labeled continuously from left to right, or right to left, so that each anchor can easily be identified again in the field if issues or concerns are noted in test reports.
   4. Unusual observations, including reason that additional testing, if any, was performed.

END OF SECTION

SECTION 35 20 16
INFLATABLE CREST GATE SYSTEM SUPPLY

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Procurement of an inflatable crest gate system.

B. Related Sections include but are not necessarily limited to:

1. Section 01 11 00 – Summary of Work
2. Section 35 20 17 – Inflatable Crest Gate System Installation

1.2 SCOPE OF WORK

A. This Specification Section covers procurement of an inflatable crest gate system as described herein.

B. The Contractor is to retain an Inflatable Crest Gate Supplier (referred to as Supplier through the rest of the specification section) to execute the following Work:

1. The Project includes replacement of the 5 inflatable crest gate spans shown on the original 2001 Northeast Generation Services Construction drawings, provided in Appendix B, and the 2001 Bridgestone shop drawings, provided in Appendix C, and included as part of this contract.
2. Design, fabrication, and delivery of five reinforced-rubber, air-inflated crest gates (crest gates) for the inflatable crest gate sections of Holyoke Dam including the bladders, internal spacers, internal inflation/deflation tubing, embedded and clamping plates, replacement nuts for the existing anchorage, and all other ancillary equipment and specialty tools necessary to install and maintain a fully functional crest gate system, while reusing the existing spillway crest and pier concrete, anchors, and embedded inflation and deflation piping, and condensate drain piping with as little modification as possible, without adversely affecting the performance, reliability, or life expectancy of the new system. Supplier shall clearly identify changes to the concrete, piping, anchors or other existing Work that are necessary to maintain system integrity and warranties with the Contractor's bid.
3. Provide installation, operation, start-up testing, maintenance manuals, and design assistance as necessary to maintain compatibility between items provided under this Section and items from the existing crest gate system that are to remain.
4. Provide on-site technical representatives from the Bladder Vendor to monitor construction and start-up testing. Different on-site technical

representatives may be needed during the different phases of construction based on required specialty.

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. Japanese Land Development Technical Research Center (LDTRC):
   a. Technical Standard of Rubberized Fabric Inflatable Weirs, 1983 or latest edition.
2. Japanese Institute of Irrigation and Drainage (JIID):
   a. Headworks – Volume 2, 1989 or latest edition.
3. Japanese Ministry of Land, Infrastructure and Transport and Tourism (MLIT):
   a. Technical Standards for Rubber Bodies used as inflatable gates and as actuators for Steel-Rubber Gates, 2015 or latest edition.
4. FERC Engineering Guidelines for the Evaluation of Hydropower Projects:
   a. Chapter 10, Other Dams, dated October 1997.
5. American Institute of Steel Construction (AISC):
   a. 360-16, Specification for Structural Steel Buildings.
6. American Society for Testing and Materials (ASTM)
   a. A29, General requirements for Steel Bars, Carbon and Alloy, Hot Wrought
   b. A36, Carbon Structural Steel
   c. A53, Pipe, Steel, Black and Hot Dipped, Zinc-Coated Welded and Seamless
   d. A123, Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   e. A153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   f. A193, Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service
   g. A312, Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
   h. A325, Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
   i. A403, Wrought Austenitic Stainless Steel Piping Fittings
   j. A536-84(2019)e1, Ductile Iron Castings
   k. A563, Carbon and Alloy Steel Nuts
   l. A572, High-Strength Low-Alloy Columbium-Vanadium Structural Steel
   m. C501, Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
   n. D751, Coated Fabrics
   o. D1149, Rubber Deterioration – Cracking in an Ozone Controlled Environment
   p. F1554, Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

B. Where provisions of the above codes, standards, and specifications are in conflict with one another or these specifications, the Engineer shall be notified in writing for a resolution.

C. The Owner will audit the Supplier's methods, procedures, and processes for compliance with the quality assurance program and the quality standards of this Specification and reserves the right to witness the Supplier's quality control test at the Supplier's facility.

1.4 SUBMITTALS

A. Action Submittals - Submit the following:

1. Experience with similar Projects, as described in the IFB document, to be submitted with Contractor's bid.
2. Quality Assurance and Testing Plan
    a. Thirty (30) calendar days prior to commencement of Work, the Contractor shall prepare and submit to the Owner an electronic copy of Supplier's quality assurance plan, which shall list all intended testing and inspections and shall indicate the schedule and location of such testing and inspections. The Owner will return one (1) electronic copy of the checklist to the Contractor indicating the inspections and tests they anticipate to witness.
3. Complete Shop Drawings showing crest gate fabrication and installation details and pressure maintenance system schematics shall be submitted within 4 weeks of the Contract award. Shop Drawings shall include the following:
    a. Layout drawings of the crest gates showing all necessary plans, elevations, and section views to prepare the spillways and abutments and to install the crest gates and all appurtenances.
    b. Loading diagrams showing all loads applied to the bolts, foundations, and abutments.
    c. Piping, mechanical, and electrical equipment schematic diagrams, or modifications <u>if needed</u> to existing drawings.
    d. Inflation/deflation rates based on the existing pipe sizes.
    e. Normal operating and maximum allowable bladder pressures.
    f. Bladder thickness, number of plies, and reinforcement.
    g. Embed plates, clamping plates, and anchor bolt sizes and material specifications. Note, existing embed plates and anchor bolts to be reused. Supplier to verify existing anchor rod size and material is acceptable for reuse.
    h. Concrete crest finish requirements and verification that the spillway crest, in its current condition, is suitable as a bearing surface for the new bladders, from a geometric concrete surface condition perspective.
    i. The weight of the bladders and other major equipment, including the total weight of each bladder, reel, and other packaging material.

j. Inflation air quality requirements or limitations, if any, including maximum and minimum air temperature, moisture, sunlight, ozone, or contaminant limitations.

k. Water quality limitations or requirements, if any, including maximum and minimum temperature, pH, or contaminant limitations.

4. Qualifications of Field Representatives

   a. Qualifications of field representatives who will oversee crest gate installation, including the specific previous projects they have worked on and client contact information, shall be submitted 30 days prior to the start of installation.

5. Operation and Maintenance Manuals

   a. The Contractor shall furnish the Owner with one electronic and one printed copy of complete instruction manuals for installation, operation, and maintenance of each item of equipment. At least one month prior to the expected 90-percent completion date, the Contractor shall submit to the Owner for review and approval all manuals in accordance with the requirements specified herein.

   b. Manuals shall include operating and maintenance information on all new systems and items of equipment. The submittal shall also include full repair instructions including brand names of materials to be used, and contacts, with telephone numbers for specialty repair Contractors; “Nameplate” data for all equipment; detailed instructions for start-up, normal operation, shutdown procedures, and control techniques; and a guide to troubleshooting the system.

B. Informational Submittals - Submit the following:

1. A design, fabrication, and delivery schedule for Shop Drawings and equipment shall be submitted within 30 days of the contract award, or receipt of final specifications.
2. Submit updated schedules every month until the crest gates and all other components are delivered to the site.
3. Submit Certified Test Reports verifying compliance of the bladder material with the specifications and Supplier's submittals.
4. Submit Material Safety Data Sheets for all applicable materials to be furnished by the Supplier.
5. Manufacturer’s catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.
   a. Clearly mark each copy to identify all pertinent materials, products or models, or information.
   b. Show dimensions and clearances required.

Part 2 - PRODUCTS

2.1 SUPPLIERS

A. Allowable Suppliers include:

1. Atlantic Fluid Technologies (representing Dyrhoff Ltd.)

2. Mecan Hydro (representing Floecksmuehle)
3. Obermeyer Hydro, Inc.
4. Or equal, as approved Owner.

B. All representatives of the Supplier communicating with the Owner or Engineer shall be fluent in English.

2.2 MATERIALS

A. General: All materials shall be new and of the best commercial quality for the intended purpose, with a minimum design operating life of 30 years. All equipment, materials, and articles enumerated below shall be tested. Materials shall conform to and testing shall be in accordance with the applicable requirements of the standards listed or approved equal. Materials not covered by detailed Specifications shall be approved materials of the highest commercial quality as normally used for this type of equipment considering strength, ductility, durability, best engineering practice, and the purpose for which the part is to be used. Unless so directed by the Owner, tests on these items will not be required, but such items will be subject to the approval of the Owner. Tests, if directed, shall be in conformity with approved modern methods for the particular item and class of Work. All piping, bolts and nuts, electrical equipment, and other materials shall be to U.S. standard sizes.

B. Crest gates:

1. Material: Nylon-reinforced rubber, unless approved otherwise by Owner. Provide ozone and ultraviolet protection by the addition of Ethylene Propylene Diene Monomer (EPDM) integral with the rubber fabric. Minimum fabric thickness shall be 0.67 inches unless otherwise approved by the Owner. The allowable tolerance shall be +/- 10 percent of the crest gate thickness. The fabric shall have a minimum thickness of 0.2 inch of cover rubber over the first layer of nylon reinforcing unless otherwise approved by the Owner. The fabric shall be black in color. The rubber body shall be tested to conform to the following minimum requirements. Supplier shall verify that the minimum requirements shown are satisfactory and consistent with the current state of the practice, and/or shall propose and comply with more stringent requirements where appropriate. Exceptions from the specified thickness shall include documentation of at least five sites with bladders of the same or larger diameter that have been in service for at least ten years with verification that there have been no durability or service issues.
    a. Tensile breaking strength of the combined fabric shall be a minimum of 1,000 pounds per linear inch in the circumferential direction and a minimum of 700 pounds per linear inch in the longitudinal direction when tested in accordance with ASTM D751, Grab Method.
    b. Heat aging of the rubber at 212 degrees F for four (4) days shall yield a tensile breaking strength of not less than 1,420 psi at minimum elongation of 300 percent at breaking.
    c. Water resistance test of the rubber shall show a maximum volume change of 20 percent and a minimum tensile breaking strength of 1,420

psi at 350 percent minimum elongation at breaking when subjected to water at 158 degrees F for four (4) days.

d. The tongue tear strength of the combined fabric shall be a minimum of 300 pounds when tested in accordance with ASTM D751.
e. The adhesion between the nylon canvas and the rubber shall be tested in accordance with ASTM D751. The adhesion shall be a minimum of 34 pounds per linear inch before aging and a minimum of 22 pounds per linear inch after aging in 158 degrees Fahrenheit (F) for 96 hours.
f. The ozone test of the rubber shall show no abnormality in appearance when subjected to an ozone test conducted at 100 ppm, 104 degrees F, and 50 percent elongation, for 96 hours minimum, in accordance with ASTM D1149.
g. The abrasion test of the combined fabric shall show less than 0.03 cubic inch of abrasion when subjected to the Tabor abrasion test using an H18 stone with a 2.2-pound load for 1,000 repetitions as modified from ASTM C501.
h. Elongation of the rubber at breaking shall not be less than 400 percent.

C. Other components:

1. All steel components shall be stainless steel, or corrosion resistant galvanized if Inflatable Crest Gate Supplier confirms there will be dissimilar metal issues with the existing stainless steel anchor bolts.
2. Carbon steel plate shall confirm to ASTM A36 or other standard acceptable to Engineer.
3. Carbon steel post-installed anchors and compatible nuts shall conform to ASTM F1554 Grade 105 galvanized.
4. Carbon steel shall be hot-dipped galvanized as follows:
   a. ASTM A153 for galvanizing iron and steel hardware.
   b. ASTM A123 for galvanizing rolled, pressed, and forged steel shapes, plates, bars, and strips 1/8 inch thick and heavier.
   c. ASTM A386 for galvanizing assembled steel products.
5. Stainless steel plate shall conform to ASTM A240 Grade 304. Stainless steel fasteners shall conform to ASTM F593 & F594 for studs and nuts.
6. All plastic or rubber components shall be ozone and ultraviolet resistant and shall remain flexible and functional over the full range of anticipated temperatures.
7. Describe material types and specifications for all other components in the required submittals.
8. Provide all specialty tools and equipment necessary for bladder and other material handling and installation, including wrenches, spreader bars, and other equipment. Specialty equipment includes equipment that cannot be readily obtained through normal suppliers.

2.3 DESIGN

A. General: The Supplier has sole responsibility for the design and/or specification of the bladder, and verification that the existing anchorage is suitable for re-use, based on performance testing. The new system shall match the original inflatable crest gate system performance. The inflatable crest gate system design shall provide for a minimum 30-year life and shall account for all static, dynamic, and fatigue loading conditions likely to be applied.

B. Configuration: Refer to the Drawings in Appendix B and C for plans and sections of the existing inflatable crest gate system that the new inflatable crest gate systems should be designed to replace. The specified elevation of the top of the crest gate when fully inflated is a minimum value. The top of the crest gate must be at or above this elevation for the full length of the spillway.

C. Design Loads and Operating Conditions

1. Location: The inflatable crest gate systems shall be installed at Holyoke Dam in the City of Holyoke, Hampden County, Massachusetts, United States.
2. Datum: All elevations (including the elevations in the Appendix B and C drawings) are referenced to the Holyoke local datum. To convert to the National Geodetic Vertical Datum of 1929 (NGVD29), subtract 2.53 feet.
3. Hydraulic Conditions:
    a. Headwater:
        1) Permanent crest elevation (crest gate section): 99.6 feet.
        2) Normal water surface elevation: 103.1 feet.
        3) Inflow Design Flood (IDF) water surface elevation: 117.73 feet.
        4) Maximum water surface elevation before crest gate is deflated (excluding wave run-up): 104.20 feet.
    b. Tailwater:
        1) Normal operating condition: No tailwater.
        2) Maximum tailwater surface elevation during IDF: 88.23 feet
    c. Ice Loading:
        1) Maximum sheet thickness: 2.0 feet. Flow ice may be thicker than 2.0 feet.
        2) Static and dynamic ice pressures will be applied.
    d. Wind loading:
        1) Maximum wind speed: 115 miles per hour.
        2) Consider wind pressure on downstream face of the crest gate with the reservoir full but exposed to wave action.
    e. Debris loading:
        1) Inflatable crest gate system will be exposed to floating timber, trees, trash, and ice. Ice may contain embedded gravel, metal, or timber.
    f. Air temperature range: -25 degrees F minimum, 115 degrees F maximum.
        1) Note that the crest gate temperature may exceed the maximum air temperature. The Supplier shall determine the maximum anticipated

crest gate temperature and shall design and detail the crest gate accordingly.

g. Water temperature:
   1) 75 degrees F maximum.
   2) 30 degrees F minimum.

h. Concrete Surface Profile: The existing spillway surface consists of concrete with the profile shown on the drawings in Appendix B. The Supplier shall verify that the bladder will resist abrasion damage for the anticipated 30-year life of the crest gate and that the curvature is acceptable. If the Supplier takes exception to this requirement, the Supplier shall specify allowable surface irregularity and radius requirements with the quotation.

D. Factors of Safety

1. Bladder: Minimum factor of safety of 8 after rubberization and adhesion.

2.4 OPERATING REQUIREMENTS

A. General Requirements: The crest gates shall be inflatable with air and designed for installation on the existing concrete crests. The inflatable crest gate systems shall operate within the specified temperature range and shall support the specified static, dynamic, and fatigue loads. The inflatable crest gate systems shall be designed to operate in a fully inflated mode for extended periods of overtopping without experiencing oscillation or wear. Specific measures for controlling oscillation in overtopping conditions shall be incorporated in the design. Contractor shall notify Owner, with their bid, if operation in the partially deflated condition is not allowed. The system shall be designed such that when deflated, the crest gate shall extend above the concrete crest no more than the height of the clamping system at the upstream edge of the deflated crest gate and no more than twice the crest gate fabric thickness, plus the thickness of the inflation/deflation tubing at the top of the crest. The average change in height of the permanent crest with the crest gate deflated shall be less than 3 inches.

B. Anchoring: The anchoring system shall be designed for maximum reliability, air tightness, ease of installation, and maintenance, and the supplier shall confirm that the existing anchors are adequate for reuse. Air tightness shall be made by the mechanical pressure across the open end as provided by the clamping system. Air sealing materials shall not be used. The clamping design shall provide for the possibility of, at some later date, unclamping and reclamping the gates without damaging the gate fabric. Nuts shall be provided on the underside of the bottom clamp plate and the topside of the upper clamp plate, as was done for the installation of the existing clamps, so that the clamp plates can be tightened without placing the entire bolt in tension.

C. Spillway Crest Gate Inflation/Deflation Rate. Supplier shall verify that the deflation/inflation times noted below will be satisfied, or shall provide their best estimate of times:

1. Maximum time to completely deflate: 30 minutes.

2. Maximum time to completely inflate: 60 minutes.

D. V-Notch Formation: Based on the existing geometry of the spillway crest, if Supplier determines it to be necessary to force potential V-notch formation to a specific location, the Supplier shall notify the Engineer for review. If modifications to the dam crests are needed to accomplish this, Supplier shall provide details within 8 weeks of notice to proceed.

E. Testing:

1. The bladders shall be tested for airtightness by pressurizing the bladder to a pressure of 0.70 times the design pressure, or to a pressure determined by the Owner, with the reservoir below the permanent crest elevation. While the pressure is maintained, the entire clamping assembly and any questionable sections of the bladders, as determined by the Owner's Representative, shall be completely sprayed with a fine spray of soapy water, and carefully observed for bubbles or other signs of leakage. Any leaks shall be repaired. The test pressure shall then be held for a period of 6 hours under stable ambient temperature conditions with the blowers off and the bladder pressure continuously monitored. Overpressure relief must be maintained at all times. A pressure drop of 10 percent or more of the test pressure shall constitute a failure of the pressure test. The source of air loss shall be identified, and the leaks repaired.
2. The reservoir level shall then be raised to the normal water surface elevation. The crest of the dam shall be thoroughly observed for evidence of water leakage under the sealing plates or through the clamping mechanisms. All leaks shall be repaired, as directed by the Owner's Representative. The reservoir water adjacent to the upstream face of the bladders shall be observed for leakage, as indicated by air bubbles.
3. The bladders shall be test operated with full water load by fully lowering and raising the bladders through 2 or more cycles.

F. Start-Up: The Supplier shall provide technical assistance to determine and modify as necessary the crest gate operating pressures and blower and control valve operation.

G. Verification: Following installation, testing, and start-up, the Supplier shall provide a letter verifying that the crest gates were installed, tested, and operated in compliance with the Supplier's standards.

2.5 ADJUSTING

A. The Contractor shall be on-site during testing of the inflatable crest gate system and shall perform adjustments to the components they have installed for the system to operate properly as directed by the Owner.

B. The Contractor shall clearly identify costs associated with repair of defects in Owner-provided materials prior to repair.

Part 3 - EXECUTION

3.1 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. For product delivery, storage, and handling requirements, see Section 01 65 00 – Product Delivery Requirements.

B. The bladder shall be shipped in a roll with a supporting framework capable of supporting the bladder on end or as it is unrolled suspended from an axle. The bladder shall be loaded to allow it to be unrolled from right to left, looking downstream, with the bolting to start at the right end.

END OF SECTION

SECTION 35 20 17
INFLATABLE CREST GATE SYSTEM INSTALLATION

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation of the crest gates, including field quality control and start-up and testing.

B. Related Sections include but are not necessarily limited to:

1. Section 01 11 00 – Summary of Work
2. Section 02 41 00 – Demolition
3. Section 03 01 30 – Repair and Rehabilitation of Existing Concrete
4. Section 03 05 05 – Post-Installed Anchor Testing and Inspection
5. Section 35 20 16 – Inflatable Crest Gate System Supply

1.2 SCOPE OF WORK

A. This Specification Section covers installation of an inflatable crest gate system as described herein.

B. Installation of the crest gates includes the following Work:

1. Loading, unloading, handling, and storage of the inflatable crest gate system.
2. Verification of existing site conditions.
3. Installation of the full inflatable crest gate system and clamps, including clamping and torquing of inflatable crest gate system.
4. Connecting the new inflatable crest gate system to the existing inflation and air treatment equipment, which includes existing piping in the piers and crest.
5. The Contractor shall furnish and install all other components needed for a complete and operable inflatable crest gate system.
6. Start-up testing of inflatable crest gate system, including test operation, air-tightness testing of the bladders, water-tightness testing of the clamping assemblies, and adjustment of settings of the mechanical and electrical equipment. These items shall be performed with the Supplier's technical representative onsite.

1.3 QUALITY ASSURANCE

A. All Work shall be conducted in accordance with the Specifications, Project drawings, Supplier's Drawings, Supplier's Installation Manual, and Supplier's Start-Up and Commissioning Manual. In the event of conflicts between the above documents, the Engineer shall be contacted to resolve discrepancies.

B. An On-site Technical Representative from the Inflatable Crest Gate Supplier will be on site at certain times during installation of the inflatable crest gate system and for start-up testing. The Contractor shall comply with the recommendations of the Technical Representative. The Contractor shall notify the Owner in writing immediately if recommendations of the Technical Representative are considered to be contrary to the Work as described in the Contract Documents.

C. Perform testing in accordance with Section 3.3 of this Specification Section and the Vendor's Start-Up and Commissiong Manual.

1.4 SPECIAL PROJECT REQUIREMENTS

A. During performance of the Work, the Owner will maintain the headpond at elevation 102.5 – 103.0 feet under normal flow conditions for the installation of the new inflatable crest gate, if possible. Contractor shall install a flashboard system, as described in Appendix D, to allow installation of the new crest gate system with the reservoir at or near this elevation range. The period that the headpond needs to be controlled for the installation and removal of each flashboard section and installation of each inflatable crest gate section will be determined and scheduled jointly by the Contractor and the Owner. Contractor has sole responsibility for the safety of Contractor personnel working behind the flashboards. While the Owner has successfully and safely worked below the flashboard system described in Appendix D, if the Contractor determines that the Owner control is not sufficient to allow construction of the crest gates, Contractor shall design, furnish, and install a bulkhead to allow construction in the dry with the reservoir at elevation 103.0 feet The primary means to pass flow in excess of the turbine capacity at the Project is the trash sluice gate section and the crest gates. The Contractor shall be prepared for overtopping of the spillway crest during a storm event and that during such events, work shall be temporarily suspended. Coordination with the Owner is required to allow adequate notification for such storm events. Accordingly, during such storm events when work is temporarily suspended, equipment and personnel must be temporarily removed from the dam crest or downstream face, and equipment on the headpond located near the spillway, including barges, must be temporarily moved away from the spillway. The Contractor shall take appropriate measures to protect personnel and equipment during this work.

B. The Contractor shall establish an effective means of communication with the Owner to allow response to rising water levels that may overtop the spillway, whether it be storm induced or project operation induced. A means to provide effective reaction and response time for such events must be established by the Contractor.

C. The Contractor shall monitor weather forecasts continuously during the work and be in constant contact with the plant operator. In the event that significant rainfall is forecast, the Contractor and Owner's Representative and shall meet to establish a plan for removing equipment and personnel and evacuating the dam crest and downstream face.

1.5 SUBMITTALS

A. Action Submittals - Submit the following:

1. Temporary Emergency Action Plan:

a. The Contractor shall submit a Temporary Emergency Action Plan (TEAP) to the Owner's Representative for approval at least 45 days prior to the start of any work at the site. In development and implementation of this plan, the Contractor shall be aware of the weather, especially predicted precipitation events, during the performance of this work. This plan shall include, as a minimum, requirements of the Owner's Temporary Emergency Action Plan, which will be provided later, and shall be expanded to include the operations described by this Contract. The plan shall clearly indicate all means of monitoring reservoir levels and notifying personnel, and all means of egress from the work site. The requirements of the TEAP shall be thoroughly reviewed with all personnel before they are allowed to enter the site.

2. Work Plan:

a. At least 7 days prior to work on the dam, the Contractor shall submit a detailed work plan to the Owner's Representative for review and acceptance. The work plan shall be sufficient in detail to show the methods for general access to the work area, means of accessing the crest of the spillway and methods to be used to expedite temporary removal of equipment from the spillway during a storm event and replacement of equipment back to the spillway.

1.6 PROJECT RECORD DOCUMENTS

A. Contractor shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Owner and Engineer Project record documents for the installation of the inflatable crest gate system in accordance with Section 01 78 39 - Project Record Documents. This includes updates to the specifications, inflatable crest gate drawings, and installation and operation manuals.

Part 2 - PRODUCTS

2.1 MATERIALS

A. Grout

1. Bladder Clamp Plates

b. Spillway (where grout thickness is ½ inch or less): Non-sag epoxy gel, Sikadur 23 or Engineer-approved equal.

c. Bonding compound for non-sag epoxy gel: Sikagard 75 or Engineer-approved equal.

d. Abutment transitions (where grout thickness is greater than ½ inch): Non-shrink cementitious grout, Five Star Grout or Engineer-approved equal. For grout thickness greater than 2 inches, grout shall be extended with 3/8 inch peastone.

Part 3 - EXECUTION

3.1 EXAMINATION

A. The Contractor is to examine all inflatable crest gate system components upon delivery. Any defects in the inflatable crest gate system components shall be documented to the Owner within 24 hours of discovery. Defective materials shall not be installed.

B. Installation constitutes acceptance of existing concrete crest surface and responsibility for system performance.

3.2 INSTALLATION

A. The bladders shall be carefully protected at all times and handled to prevent damage.

B. Grouting of Bladder Clamp Plates:
   1. Spillway and abutment – Apply non-sag epoxy gel to the underside of the base plate and to the concrete substrate as necessary to completely fill the space between the plate and the substrate and to provide a watertight seal. Apply bonding agent to concrete that has cured less than 28 days prior to applying epoxy, as recommended by manufacturer.
   2. Abutment transition and other areas where the grout thickness exceeds ½ inch – completely fill the space between the embedded plate and the substrate to provide a watertight seal using non-shrink grout, extended with 3/8-inch clean, washed, non-reactive stone when the thickness exceeds two inches. The Contractor shall submit details and procedures for grout installation including form configuration and method for providing a head on the grout. Dry packing will not be allowed. Uniformly heat substrate and grout material, without concentrated heat being applied to the concrete, to 55°F for installation when ambient temperature is below 40°F. Tenting may be required. Maintain 55°F for 48 hours after installation. Repair all areas that leak, as observed during test operation of the bladder.

C. The Supplier shall provide an on-site technical representative during installation of the crest gates and start-up testing.
   1. The on-site technical representative shall be fluent in English. The on-site technical representative shall cooperate with the Owner.
   2. Notification: The Supplier's engineering personnel and on-site technical representative shall notify the Owner in writing within 24 hours of observation of any observed deficiencies in the details, construction, or installation of the inflatable crest gate system that may affect the performance or operation of the system.

D. Pre-installation Inspection: The Supplier's On-site Technical Representative and the Owner's Representative shall inspect the crest of the dam and embedded anchoring system hardware within 24 hours of removal of the existing bladder. The

technical representative shall notify the Owner as soon as possible of any issues or discrepancies discovered in the dam which may hinder the successful installation of the rubber dam body.

E. Pre-installation Meeting: A pre-installation meeting to be attended by the Supplier's On-site Technical Representative, the Owner's Representative, and key personnel of the Contractor performing the installation of the rubber dam bladders will be held within two (2) days prior to the scheduled installation of the rubber dam bladders. During this meeting, the technical representative shall provide the attendees with information regarding the proper procedures for installing the rubber dam body and related equipment.

The Owner has limited control over the river flows, and overtopping of the spillway may occur. The Contractor shall install and clamp down the rubber bladders as quickly as possible to prevent damage in the event the powerhouse hydraulic capacity is exceeded and the spillway is overtopped. The Contractor shall take all necessary steps to secure partially installed bladders in place in the event overtopping flows are anticipated.

3.3 TESTING

J. Testing: The completed inflatable crest gate systems shall be test operated following installation in accordance with the procedure outlined in Section 35 20 16, Paragraph 2.4.E. Contractor shall provide any exceptions to this procedure, in writing, within 4 weeks of Contract award, and shall provide an alternate procedure that satisfies the intent of testing, which is to verify that the inflatable crest gate system is air tight, water tight, and inflates and deflates completely within the time span required by the Specifications and estimated by the Supplier.

END OF SECTION

APPENDIX A

SITE PLAN


Crest Gate Replacement
Legend
Dam Apron Access
Eel Attraction Water Supply Pipe
Hadley Station
Lower River Side Park
Potential Trailer Locations
N
Google Earth
600 ft

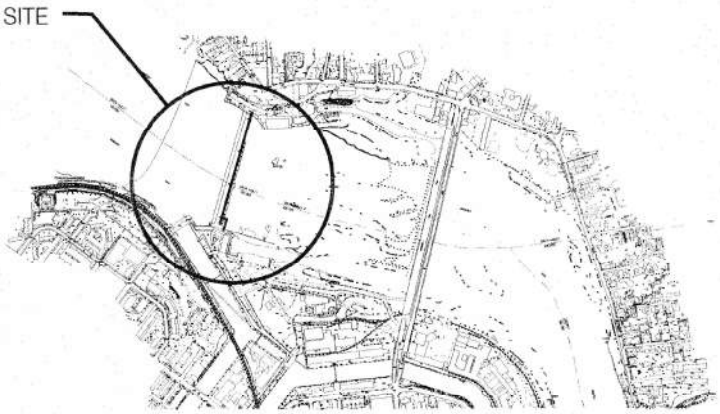
APPENDIX B

2001 NORTHEAST GENERATION SERVICES CO.

CONSTRUCTION DRAWINGS

THE HOLYOKE WATER POWER COMPANY

RUBBER FLASHBOARD DAM INSTALLATION ON THE HOLYOKE DAM



PROJECT LOCATION MAP

SCALE IN FEET

DRAWING INDEX

NGS DRAWINGS:

43733-40009 SH.1 – PROJECT LOCATION MAP AND DRAWING INDEX
43733-40009 SH.2 – SITE PLAN, CROSS-SECTION AND DETAILS
43733-40009 SH.3A – DAM CONCRETE PLAN, ELEVATION AND NOTES
43733-40009 SH.3B – DAM CONCRETE SECTIONS AND DETAILS
43733-40009 SH.4 – CONDUIT PLAN, SECTIONS AND DETAILS
43733-40009 SH.5A – RUBBER DAM COMPRESSOR BUILDING CONCRETE FOUNDATION PLAN, ELEVATIONS & NOTES
43733-40009 SH.5B – RUBBER DAM COMPRESSOR BUILDING CONCRETE FOUNDATION SECTIONS
43733-20001 – RUBBER DAM COMPRESSOR BUILDING MECHANICAL EQUIPMENT & PIPING LAYOUT
43733-33001 – RUBBER DAM COMPRESSOR BUILDING ELECTRICAL POWER PLAN
43733-35002 – RUBBER DAM COMPRESSOR BUILDING LIGHTING PLAN
43717-34002 – CONDUIT PLANS AND DETAILS – SERVICE POWER
43735-10006 – GATEHOUSE CONTROL ROOM CONDUIT LAYOUT

REFERENCE DRAWINGS OF EXISTING DAM AND PROJECT FACILITIES:

43742-40001 (DMD-49) – Holyoke Dam Crest Repairs – 1968
43742-40002 (DMA-14) – South Hadley Falls Abutment – 1895
43742-40023 (DMD-24) – Section of Stone Dam – 1936 Replacement
43742-40029 (DMD-30) – Steel Forms for Dam Crest – 1936
43742-40030 (DMD-31 – Repair to Crest of Masonry Dam – 1936
43742-40044 (DMD-10) – Section of Stone Dam – 1894
43717-45002 – Access Bridge & Ramp to Apron – 1962
43717-68003 Fill and Raise Training Wall at Dam Apron – 1951
Bulkhead Pier for Fabridam – 1962
90051A – Plan Showing Connecticut River Bottom Scale 1" = 60'
90051b – Plan Showing Connecticut River Bottom Contours Scale 1" = 60'

BRIDGESTONE RUBBER DAM DRAWINGS:

RD-01G-001-1-R1 – Plan View and Front Elevation
RD-01G-001-2A-R2 – Cross Section, Span 1
RD-01G-001-2B-R2 – Cross Section, Spans 2,3,4
RD-01G-001-2C-R2 – Cross Section, Span 5
RD-01G-001-3A-R2 – Anchoring Equipment, Span 1
RD-01G-001-3B-R2 – Anchoring Equipment, Spans 2,3,4
RD-01G-001-3C-R1 – Anchoring Equipment, Span 5
RD-01G-001-4A-R2 – Rubber Body and Spacer Parts, Span 1
RD-01G-001-4B-R2 – Rubber Body and Spacer Parts, Spans 2,3,4
RD-01G-001-4C-R1 – Rubber Body and Spacer Parts, Span 5

EMX ELECTRICAL AND CONTROLS DRAWINGS:

HLYK – 01, 02, 03, 04 Motor and Valve Schematics
HLYK – 05 – Communication Diagram
HLYK – 06, 07, 08 – PLC Inputs – Onboard
HLYK – 09 – PLC Outputs – Expansion Module
HLYK – 10 – PLC Analog Inputs – Expansion Module 1
HLYK – 11 – PLC Analog Inputs – Expansion Module 2
HLYK – 12 – PLC Analog Inputs – Expansion Module 3
HLYK – 13 – PLC Analog Inputs – Expansion Module 4
HLYK – 14 – PLC Analog Inputs – Expansion Module 5
HLYK – 15 – Interconnection Diagram
HLYK-301 – Enclosure Layout
HLYK 401 – Panel Layout

ROTONDO PRECAST DRAWINGS:

Precast Concrete Building PB10-14-8

REVISIONS DURING CONSTRUCTION	P.I.M. # 01-004				
A	3-12-01	ISSUED FOR BID	RMG		
B	3-16-01	Re-ISSUED FOR BID	RMG		
C	6-11-01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

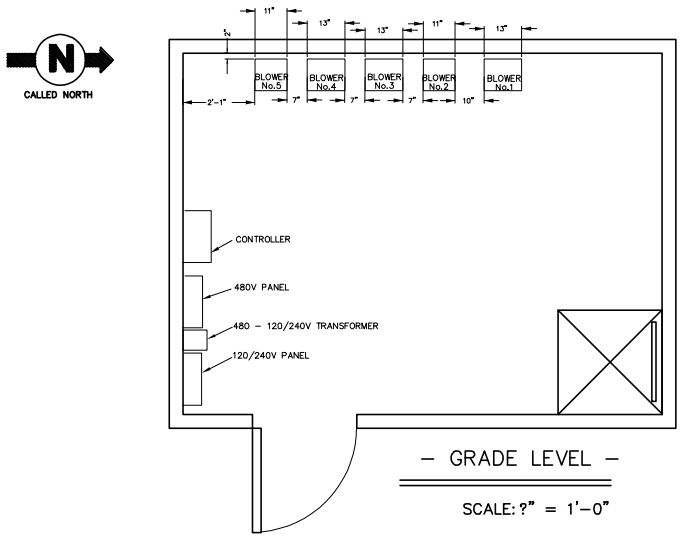
CAD
NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED.

Northeast Generation Services Co

TITLE: THE HOLYOKE WATER POWER CO.

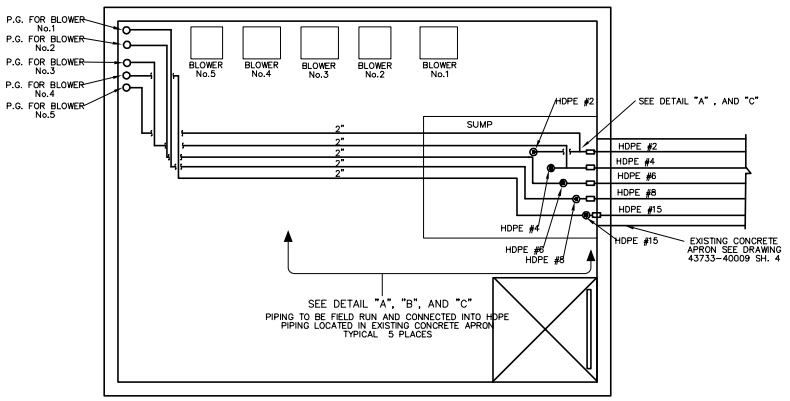
TITLE: HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION
PROJECT LOCATION MAP AND DRAWING INDEX
HOLYOKE, MA.

DRN	CHK	APP
RMG	WJB	WJB
DATE: 3-12-01	DATE:	DATE: 3-12-01	DATE: 3-12-01
SCALE: AS SHOWN	DWG NO:	
P.I.M.: 01-004	43733 – 40009 SH. 1	



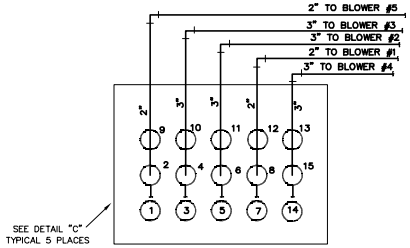
– GRADE LEVEL –

SCALE: ?" = 1'–0"



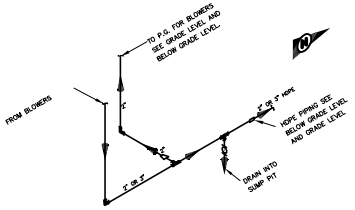
– BELOW GRADE LEVEL –

SCALE: NONE



DETAIL "A"

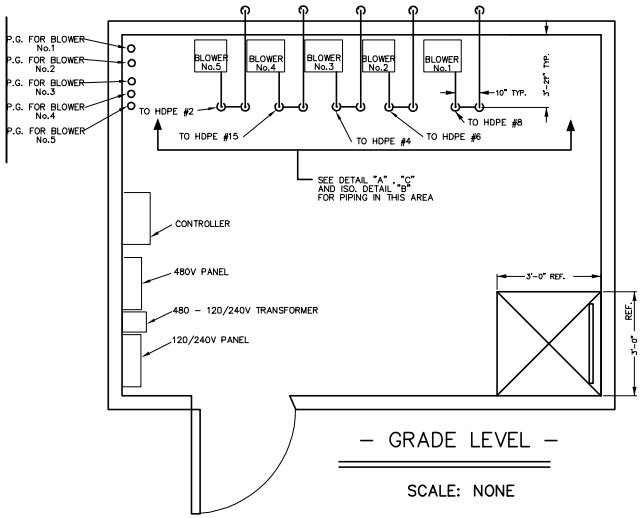
SCALE: NONE



DETAIL "C"

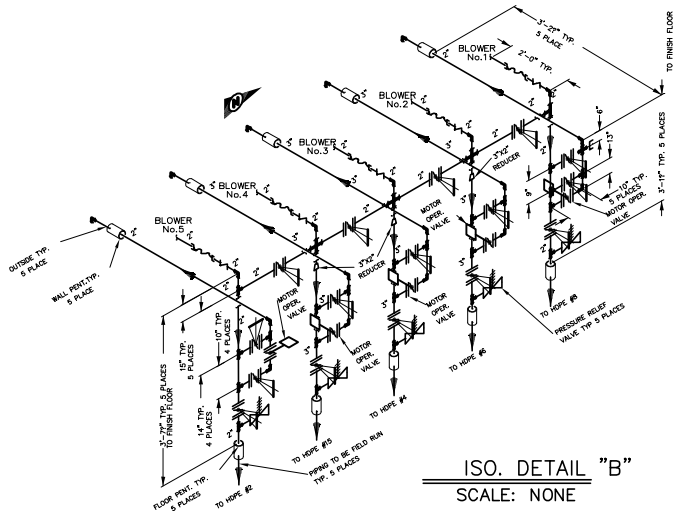
TYPICAL PIPING CONNECTION FOR P. G. AND DRAIN

SCALE: NONE



– GRADE LEVEL –

SCALE: NONE



ISO. DETAIL "B"

SCALE: NONE

NOTES:
1. ALL DIMENSION TO BE FIELD VERIFY
2. VALVES TO BE SUPPLY BY OWNER
3. PIPING TO BE SEAMLESS CARBON STEEL SCHEDULE 40 INSIDE BUILDING ONLY

REVISIONS DURING CONSTRUCTION	P.I.N. #

ST	01-004 P.A.#	1 NO.	11/00 DATE	AS-BUILT PER W. C. DRAWING REVISIONS	SDB BY	SDB CHK.	JWG APP.	APP.

THE HOLYOKE WATER POWER CO.

HOLYOKE DAM

RUBBER DAM COMPRESSOR BUILDING

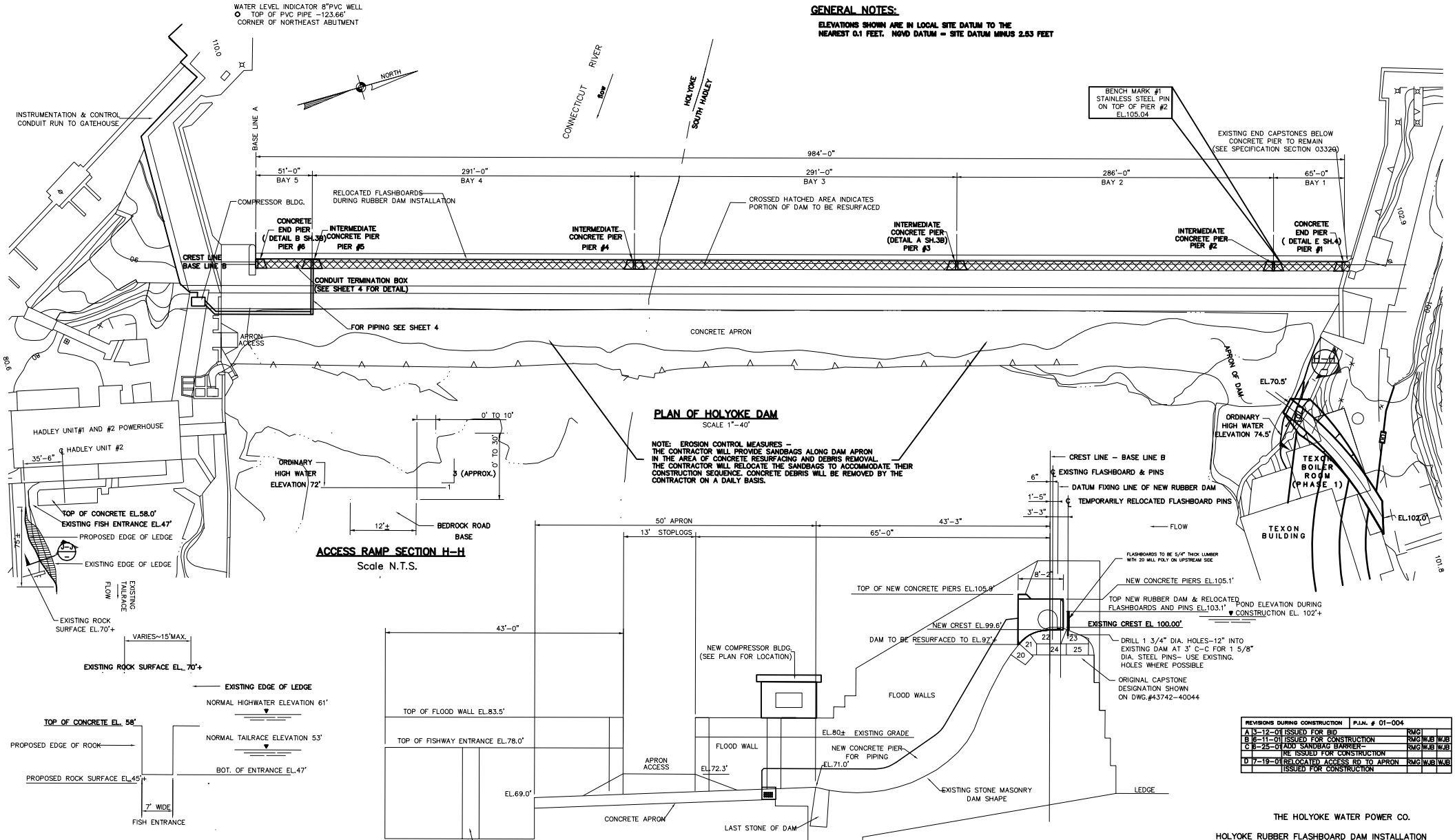
MECHANICAL EQUIPMENT AND PIPING LAYOUT

HOLYOKE, MASSACHUSETTS

SDB	WJB	WJB
4–01	4–01–01	4–01–01
AS SHOWN	43733–20001	
01–004		

GENERAL NOTES:

ELEVATIONS SHOWN ARE IN LOCAL SITE DATUM TO THE NEAREST 0.1 FEET. NGVD DATUM = SITE DATUM MINUS 2.53 FEET



PLAN OF HOLYOKE DAM

SCALE 1"-40'

NOTE: EROSION CONTROL MEASURES - THE CONTRACTOR WILL PROVIDE SANDBAGS ALONG DAM APRON IN THE AREA OF CONCRETE RESURFACING AND DEBRIS REMOVAL. THE CONTRACTOR WILL RELOCATE THE SANDBAGS TO ACCOMMODATE THEIR CONSTRUCTION SEQUENCE. CONCRETE DEBRIS WILL BE REMOVED BY THE CONTRACTOR ON A DAILY BASIS.

SECTION J-J

Scale 1"=20'

ACCESS RAMP SECTION H-H

Scale N.T.S.

CROSS SECTION OF DAM LOOKING SOUTH

SCALE 1"-8'

	01-004	1	12-3-01	AS-BUILT PER FALCON PROJECT 01-004	RMG	WJB	WJB	
MF	P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.

REVISIONS DURING CONSTRUCTION		P.I.N. # 01-004		
A	3-12-01	ISSUED FOR BID	RMG	
B	6-11-01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB
C	8-25-01	ADD SANDBAG BARRIER- RE ISSUED FOR CONSTRUCTION	RMG	WJB	WJB
D	7-19-01	RELOCATED ACCESS RD TO APRON ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

THE HOLYOKE WATER POWER CO.

HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION

SITE PLAN, CROSS SECTION AND DETAILS

HOLYOKE, MA.

RMG	WJB	WJB
3-12-01	3-12-01	3-12-01
AS SHOWN		
01-004	43733 - 40009 SH. 2	

Concrete notes

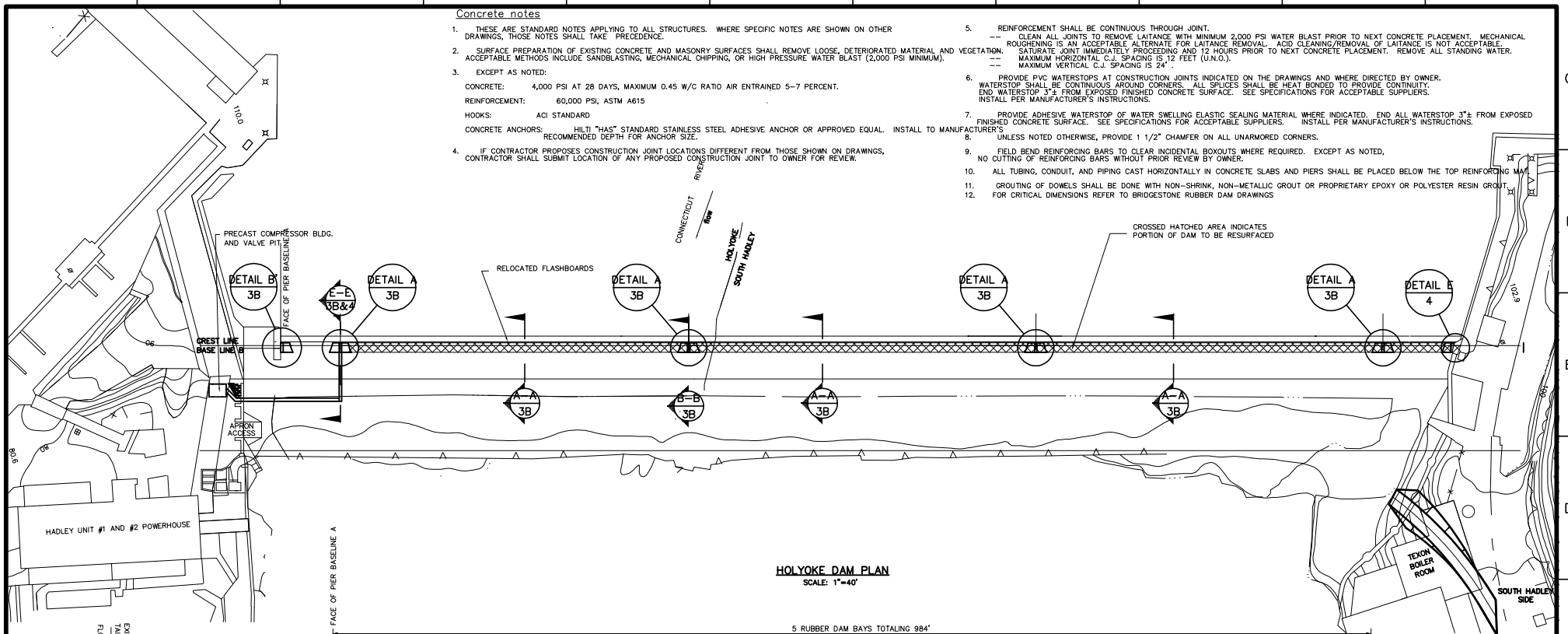
1. THESE ARE STANDARD NOTES APPLYING TO ALL STRUCTURES. WHERE SPECIFIC NOTES ARE SHOWN ON OTHER DRAWINGS, THOSE NOTES SHALL TAKE PRECEDENCE.
2. SURFACE PREPARATION OF EXISTING CONCRETE AND MASONRY SURFACES SHALL REMOVE LOOSE, DETERIORATED MATERIAL AND VEGETATION. ACCEPTABLE METHODS INCLUDE SANDBLASTING, MECHANICAL CHIPPING, OR HIGH PRESSURE WATER BLAST (2,000 PSI MINIMUM).
3. EXCEPT AS NOTED:

   CONCRETE: 4,000 PSI AT 28 DAYS, MAXIMUM 0.45 W/C RATIO AIR ENTRAINED 5–7 PERCENT.

   REINFORCEMENT: 60,000 PSI, ASTM A615

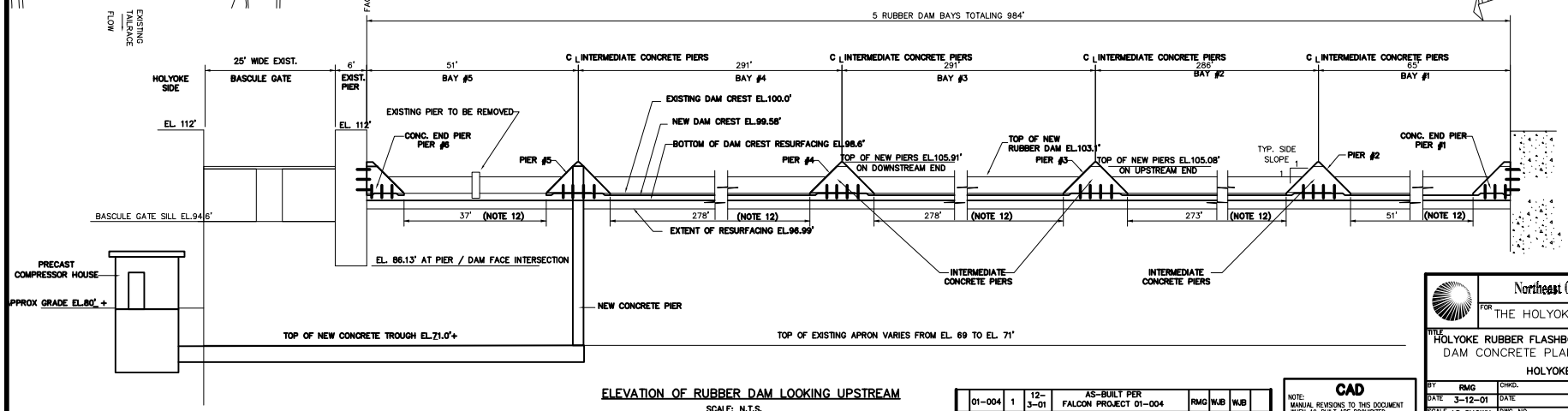
   HOOKS: ACI STANDARD

   CONCRETE ANCHORS: HILTI "HAS" STANDARD STAINLESS STEEL ADHESIVE ANCHOR OR APPROVED EQUAL. INSTALL TO MANUFACTURER'S RECOMMENDED DEPTH FOR ANCHOR SIZE.
4. IF CONTRACTOR PROPOSES CONSTRUCTION JOINT LOCATIONS DIFFERENT FROM THOSE SHOWN ON DRAWINGS, CONTRACTOR SHALL SUBMIT LOCATION OF ANY PROPOSED CONSTRUCTION JOINT TO OWNER FOR REVIEW.
5. REINFORCEMENT SHALL BE CONTINUOUS THROUGH JOINT.
   -- CLEAN ALL JOINTS TO REMOVE LAITANCE WITH MINIMUM 2,000 PSI WATER BLAST PRIOR TO NEXT CONCRETE PLACEMENT. MECHANICAL ROUGHENING IS AN ACCEPTABLE ALTERNATE FOR LAITANCE REMOVAL. ACID CLEANING/REMOVAL OF LAITANCE IS NOT ACCEPTABLE.
   -- SATURATE JOINT IMMEDIATELY PROCEEDING AND 12 HOURS PRIOR TO NEXT CONCRETE PLACEMENT. REMOVE ALL STANDING WATER.
   -- MAXIMUM HORIZONTAL C.J. SPACING IS 12 FEET (U.N.O.).
   -- MAXIMUM VERTICAL C.J. SPACING IS 24'.
6. PROVIDE PVC WATERSTOPS AT CONSTRUCTION JOINTS INDICATED ON THE DRAWINGS AND WHERE DIRECTED BY OWNER. WATERSTOP SHALL BE CONTINUOUS AROUND CORNERS. ALL SPLICES SHALL BE HEAT BONDED TO PROVIDE CONTINUITY. END WATERSTOP 3"± FROM EXPOSED FINISHED CONCRETE SURFACE. SEE SPECIFICATIONS FOR ACCEPTABLE SUPPLIERS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
7. PROVIDE ADHESIVE WATERSTOP OF WATER SWELLING ELASTIC SEALING MATERIAL WHERE INDICATED. END ALL WATERSTOP 3"± FROM EXPOSED FINISHED CONCRETE SURFACE. SEE SPECIFICATIONS FOR ACCEPTABLE SUPPLIERS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
8. UNLESS NOTED OTHERWISE, PROVIDE 1 1/2" CHAMFER ON ALL UNARMORED CORNERS.
9. FIELD BEND REINFORCING BARS TO CLEAR INCIDENTAL BOXOUTS WHERE REQUIRED. EXCEPT AS NOTED, NO CUTTING OF REINFORCING BARS WITHOUT PRIOR REVIEW BY OWNER.
10. ALL TUBING, CONDUIT, AND PIPING CAST HORIZONTALLY IN CONCRETE SLABS AND PIERS SHALL BE PLACED BELOW THE TOP REINFORCING MAT.
11. GROUTING OF DOWELS SHALL BE DONE WITH NON-SHRINK, NON-METALLIC GROUT OR PROPRIETARY EPOXY OR POLYESTER RESIN GROUT.
12. FOR CRITICAL DIMENSIONS REFER TO BRIDGESTONE RUBBER DAM DRAWINGS



HOLYOKE DAM PLAN

SCALE: 1"=40'



ELEVATION OF RUBBER DAM LOOKING UPSTREAM

SCALE: N.T.S.

	01-004	1	12-3-01	AS-BUILT PER FALCON PROJECT 01-004	RMG	WJB	WJB	
MJ	P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.

CAD

NOTE: MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED.

Northeast Generation Services Co.

FOR THE HOLYOKE WATER POWER CO.

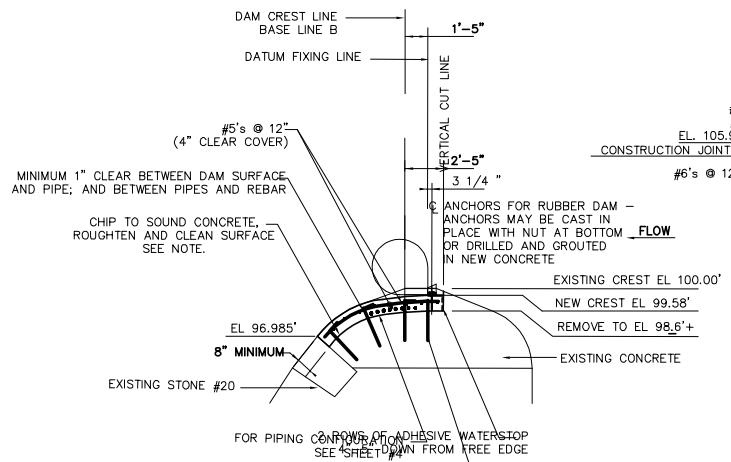
TITLE: HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION
DAM CONCRETE PLAN, ELEVATION AND NOTES
HOLYOKE, MA.

BY	CHKD.	APP.	APP.
RMG		WJB	WJB
DATE 3-12-01	DATE	DATE 3-12-01	DATE 3-12-01

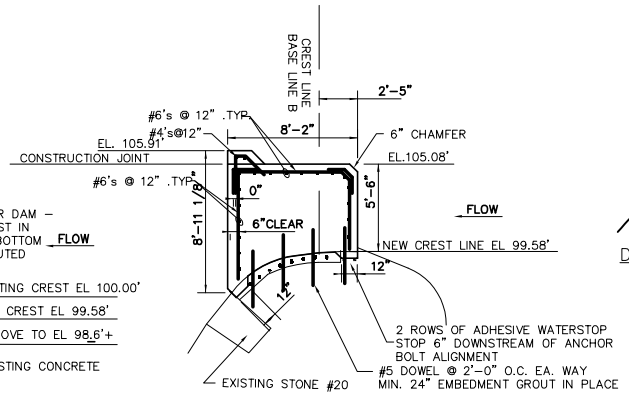
SCALE AS SHOWN

DWG. NO. 43733-40009 SH.3A

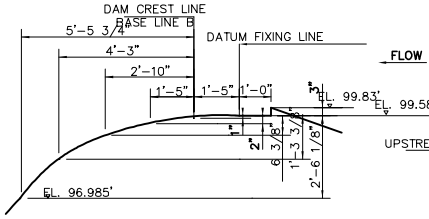
P.A.# 01-004



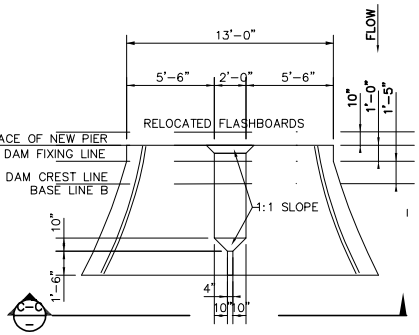
SECTION A–A
(DAM RESURFACING)



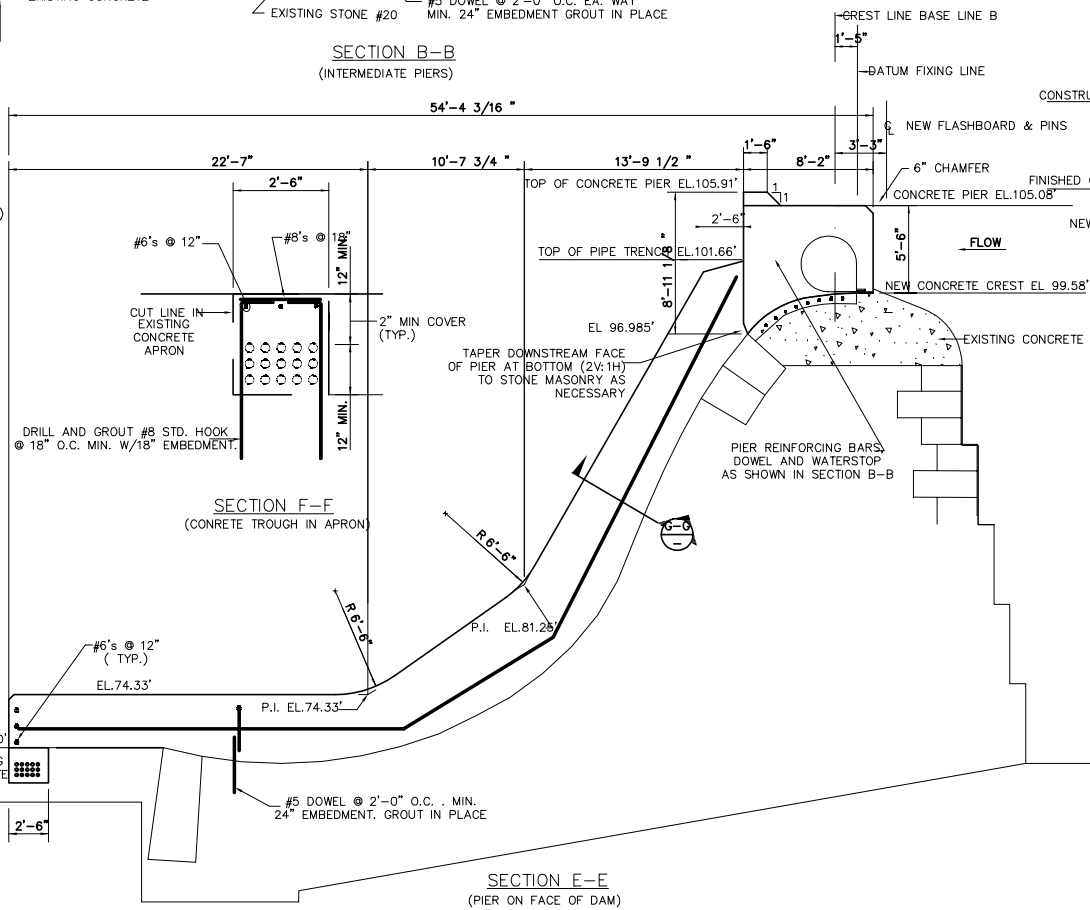
SECTION B–B
(INTERMEDIATE PIERS)



DETAIL OF NEW DAM CREST CO–ORDINATES

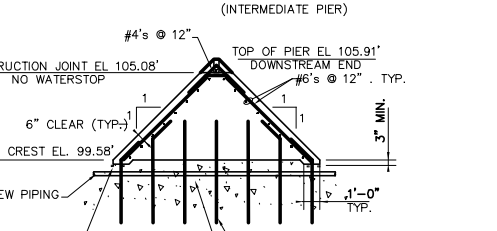


DETAIL A
(INTERMEDIATE PIER)

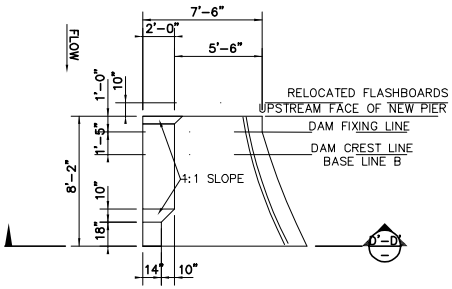


SECTION F–F
(CONRETE TROUGH IN APRON)

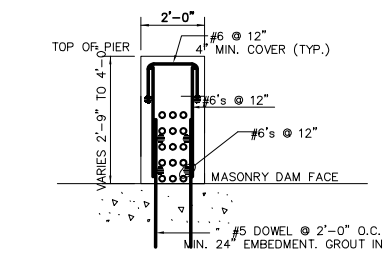
SECTION E–E
(PIER ON FACE OF DAM)



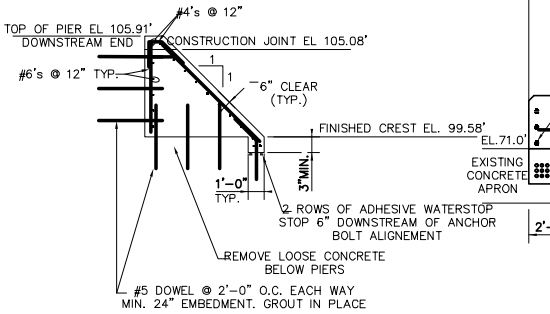
SECTION C–C
(INTERMEDIATE PIERS)



DETAIL B (PIER #6)
(END PIER)



SECTION G–G



SECTION D–D (PIER #6)
(END PIER)

REVISIONS DURING CONSTRUCTION		P.I.N. # 01–004			
A	3–12–01	ISSUED FOR BID	RMG		
B	6–11–01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.
01–004	1	12–3–01	AS–BUILT PER FALCON PROJECT 01–004	RMG	WJB	WJB	

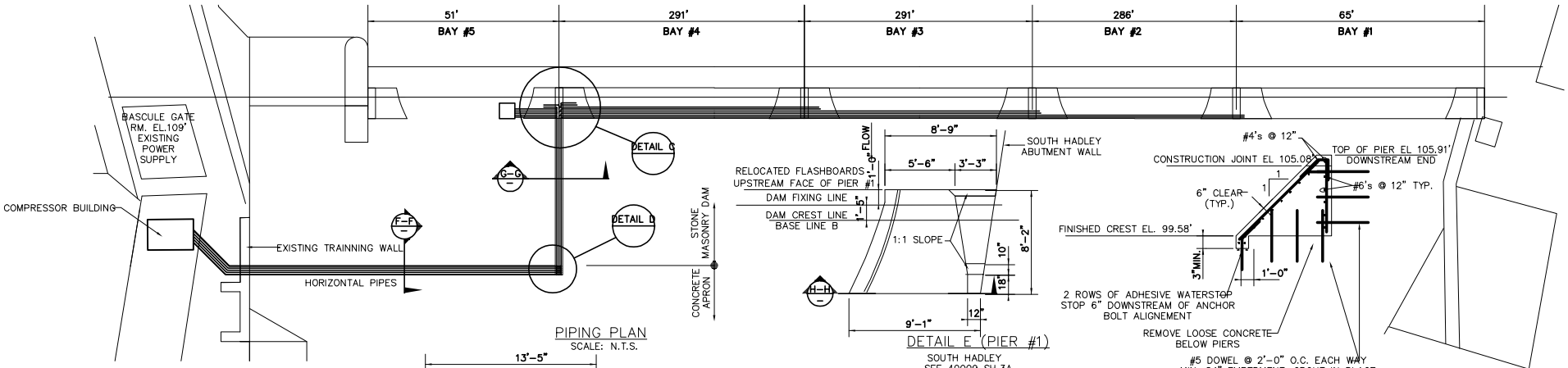
THE HOLYOKE WATER POWER CO.

HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION

CONCRETE SECTIONS AND DETAILS

HOLYOKE, MA.

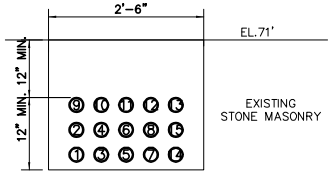
RMG		WJB	WJB
3–12–01		3–12–01	3–12–01
AS SHOWN			
01–004		**43733 – 40009 SH. 3B**	



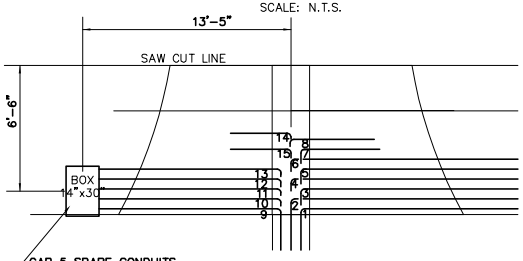
PIPING PLAN
SCALE: N.T.S.

DETAIL E (PIER #1)
SOUTH HADLEY
SEE 40009 SH.3A

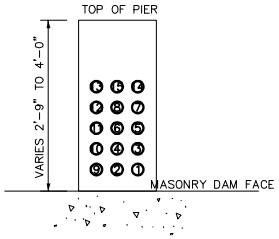
SECTION H-H (PIER #1)
(END PIER)



SECTION F-F
(CONRETE TROUGH IN APRON)

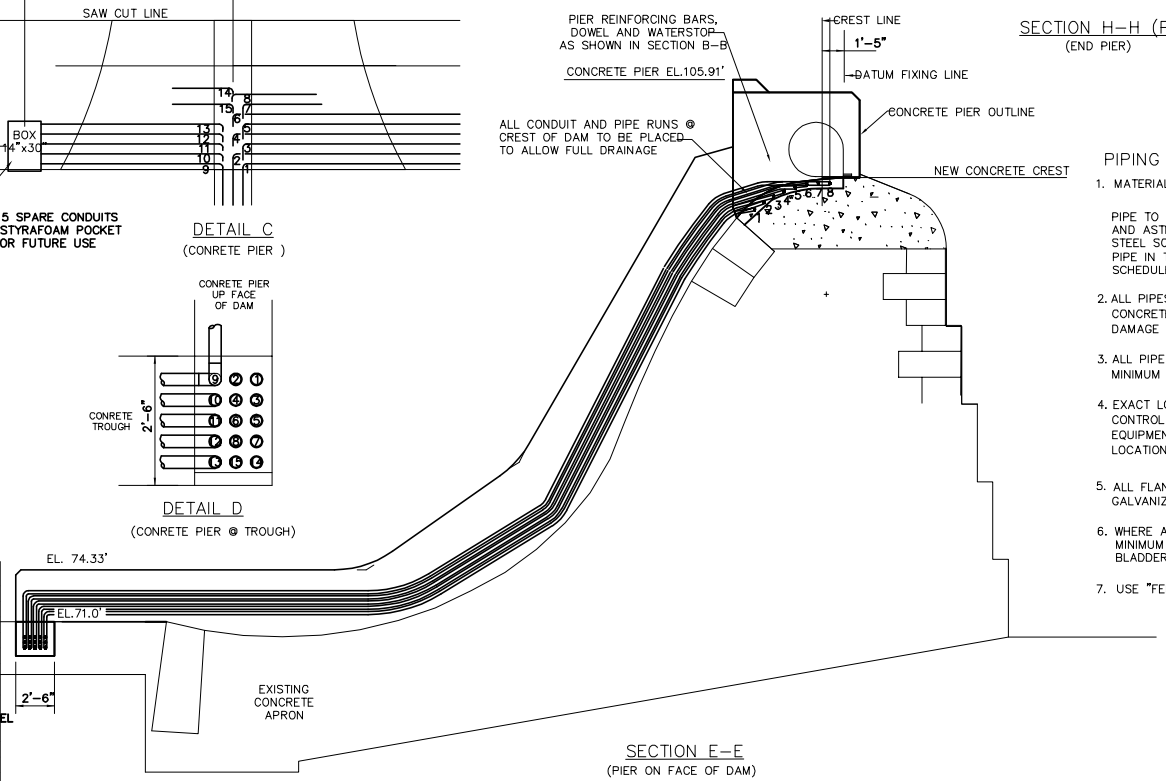


DETAIL C
(CONRETE PIER)



SECTION G-G
(CONRETE PIER UP FACE OF DAM)

DETAIL D
(CONRETE PIER @ TROUGH)



SECTION E-E
(PIER ON FACE OF DAM)

PIPING SCHEDULE

PIPE #	SIZE	QUANITY	DESCRIPTION	MATERIAL
1	2" DIA.		PRESSURE SENSING PIPE FOR BAY 1	HDPE
2	2" DIA.		AIR SUPPLY & EXHAUST LINES FOR BAY 1	
3	2" DIA.		PRESSURE SENSING PIPE FOR BAY 2	
4	3" DIA.		AIR SUPPLY & EXHAUST LINES FOR BAY 2	
5	2" DIA.		PRESSURE SENSING PIPE FOR BAY 3	
6	3" DIA.		AIR SUPPLY & EXHAUST LINES FOR BAY 3	
7	2" DIA.		PRESSURE SENSING PIPE FOR BAY 4	
8	3" DIA.		AIR SUPPLY & EXHAUST LINES FOR BAY 4	
9	2" DIA.		SPARE	STAINLESS STEEL
10	2" DIA.		SPARE	
11	2" DIA.		SPARE	
12	2" DIA.		SPARE	
13	2" DIA.		SPARE	HDPE
14	2" DIA.		PRESSURE SENSING PIPE FOR BAY 5	HDPE
15	2" DIA.		AIR SUPPLY & EXHAUST LINES FOR BAY 5	HDPE

PIPING NOTES:

1. MATERIAL

   PIPE TO BE HIGH DENSITY POLYETHYLENE (HDPE) PIPE PER ASTM 1248 AND ASTM 3350, MINIMUM SDR 17, WITH FUSION JOINING OR A304 STAINLES STEEL SCHEDULE 40 PIPE WITH THREADED FITTINGS.
   PIPE IN THE COMPRESSOR BUILDING MAY BE STEEL PER ASTM A53 GR B, SCHEDULE 40, HOT DIPPED GALVANIZED PER ASTM A-123.

2. ALL PIPES SHALL BE SECURELY SUPPORTED IN THE TROUGH OR CONCRETE FORM TO PREVENT MOVEMENT, SETTLEMENT, AND DAMAGE DURING CONCRETE ENCASEMENT.

3. ALL PIPE SHALL BE ASSEMBLED AND PRESSURE TESTED TO A MINIMUM 20 PSIG BEFORE CONCRETE ENCASEMENT.

4. EXACT LOCATIONS OF EMBEDDED PIPE TERMINATIONS IN CONTROL BUILDING SHALL BE CONFIRMED WITH FINAL EQUIPMENT LAYOUT. REFERENCE BRIDGESTONE DRAWINGS FOR LOCATIONS AND FOR BRIDGESTONE SUPPLIED MATERIAL LIST.

5. ALL FLANGE BOLTS AND OTHER HARDWARE SHALL BE HOT DIPPED GALVANIZED PER ASTM A-153.

6. WHERE A SLOPE IS INDICATED ON THE DRAWINGS IT SHALL BE A MINIMUM 1/8" VERTICAL TO 12" HORIZONTAL. PIPES UNDER THE BLADDERS AND IN THE APRON ARE HORIZONTAL

7. USE "FERNCO" COUPLINGS TO CONNECT HDPE PIPE TO STEEL PIPE.

REVISIONS DURING CONSTRUCTION		P.I.N. # 01-004			
A	3-12-01	ISSUED FOR BID	RMG		
B	6-11-01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

WF	01-004	1	12-3-01	AS-BUILT PER FALCON PROJECT 01-004	RMG	WJB	WJB	
	P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.

THE HOLYOKE WATER POWER CO.

HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION

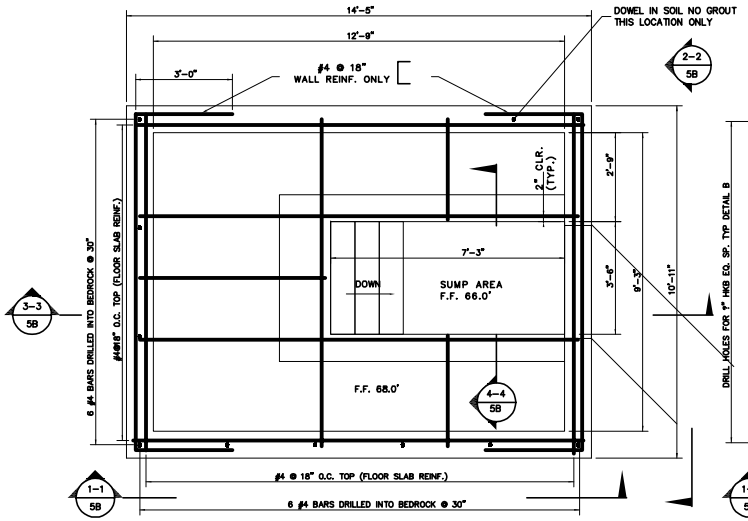
CONDUIT PLAN SECTIONS AND DETAILS

HOLYOKE, MA.

RMG	WJB	WJB
3-12-01	3-12-01	3-12-01

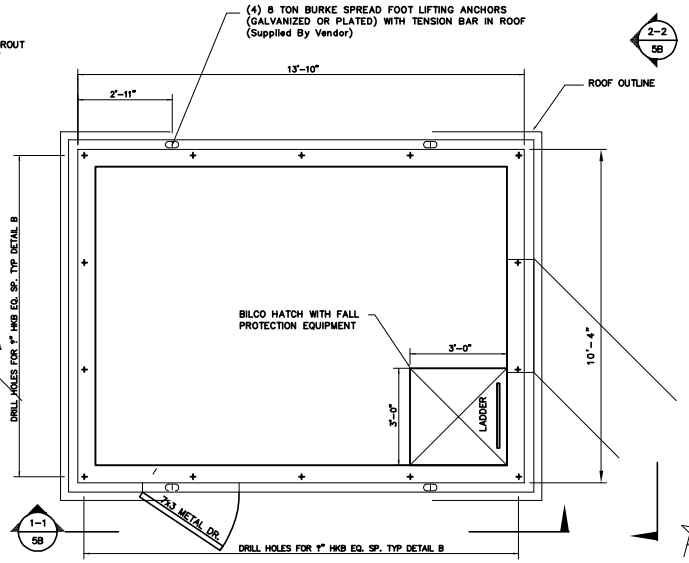
AS SHOWN
01-004

43733 - 40009 SH. 4



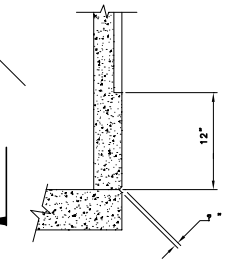
PLAN VIEW FLOOR EL.68'

Scale: 1/2 "=1'-0"



PLAN VIEW EL.80'

Scale: 1/2 "=1'-0"



DETAIL "A"
(Rotondo Detail)

PRECAST CONCRETE BUILDING DESIGN NOTES
(For PB-10-14-8 By Rotondo Supplied By Owner)

CONCRETE MINIMUM STRENGTH - 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT - ASTM A 185 WELDED WIRE AND ASTM 615-GRADE 60 REBAR

COVER TO STEEL -
1" MINIMUM EXCEPT 1½" @ BOTTOM FACE OF FLOOR SLAB AND TOP FACE OF ROOF SLAB

DESIGN LOADS:
FLOOR - LIVE LOAD = 150 PSF
ROOF - LIVE LOAD = 60 PSF
SIDEWALLS - WIND LOAD = 45 PSF (130 MPH)

NOTES:
ALL STEEL REINFORCING CUT BY OPENINGS SHALL BE REPLACED (1/2 ON EACH SIDE OF OPENING)

APPROX. WEIGHT:
COMPLETE HUT - 24 TONS

COATING NOTES:

EXTERIOR WALL SURFACES TO RECEIVE
(1) COAT OF THORO SEAL AND
(1) COAT OF THORO COAT (PARCHMENT #419)
EXTERIOR ROOF AND FLOOR EDGE TO RECEIVE
(1) COAT OF THORO SEAL AND
(1) COAT OF THORO COAT (GOO
D EARTH #430)
INTERIOR SURFACES TO BE LEFT NATURAL

REINFORCING:

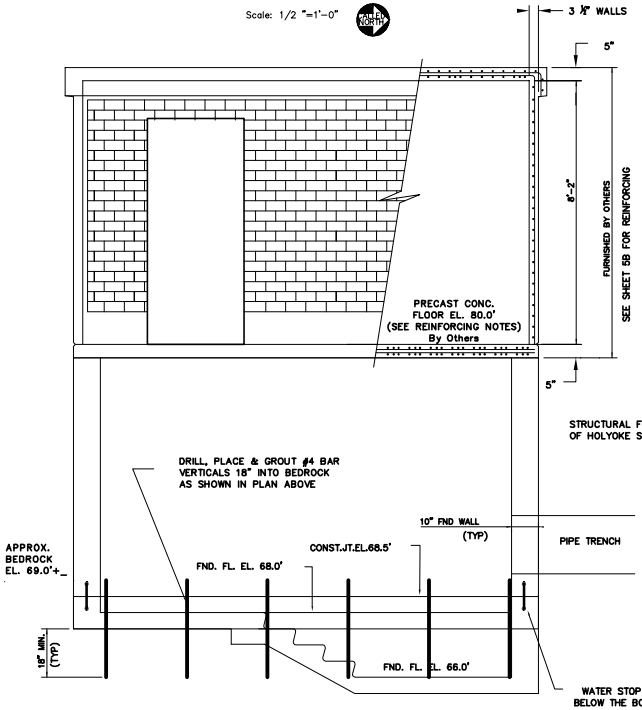
4 X 4 - W4/W4 WELDED WIRE MATS

(2) MATS IN ROOF WITH ADDITIONAL #4 BARS @ 15" INSIDE FACE (SHORT SPAN ONLY)

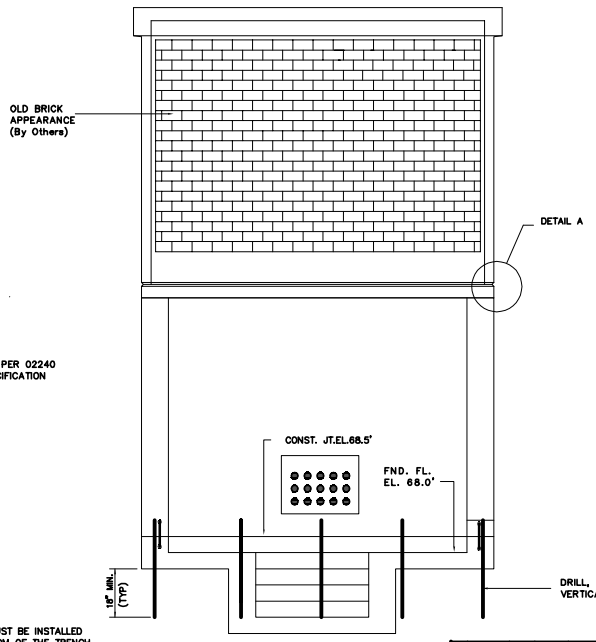
(1) MAT IN WALLS

(2) MATS IN FLOOR WITH ADDITIONAL #4 BARS @ 8" EACH FACE (SHORT SPAN ONLY)

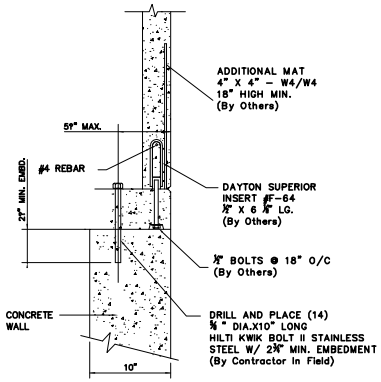
(3) ADDITIONAL #4 BARS EACH FACE, EACH SIDE OF FLOOR, ROOF AND SIDEWALL OPENINGS



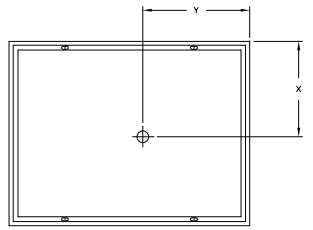
EAST ELEVATION



SOUTH ELEVATION



DETAIL "A"
SHOWING BOLTS & ADD'L REINFORCING



PLAN VIEW SHOWING CENTER OF GRAVITY

BUILDING WITHOUT FLOOR - X=5'-1 ½", Y=7'-5"
BUILDING WITH FLOOR - X=5'-2", Y=7'-3 ½"

REVISIONS DURING CONSTRUCTION		P.I.N. # 01-004			
A	3-23-01	ISSUED FOR BID	RMG		
B	6-11-01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

	01-004	1	12-3-01	AS-BUILT PER FALCON PROJECT 01-004	RMG	WJB	WJB	
WJB	P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.

THE HOLYOKE WATER POWER CO.

HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION

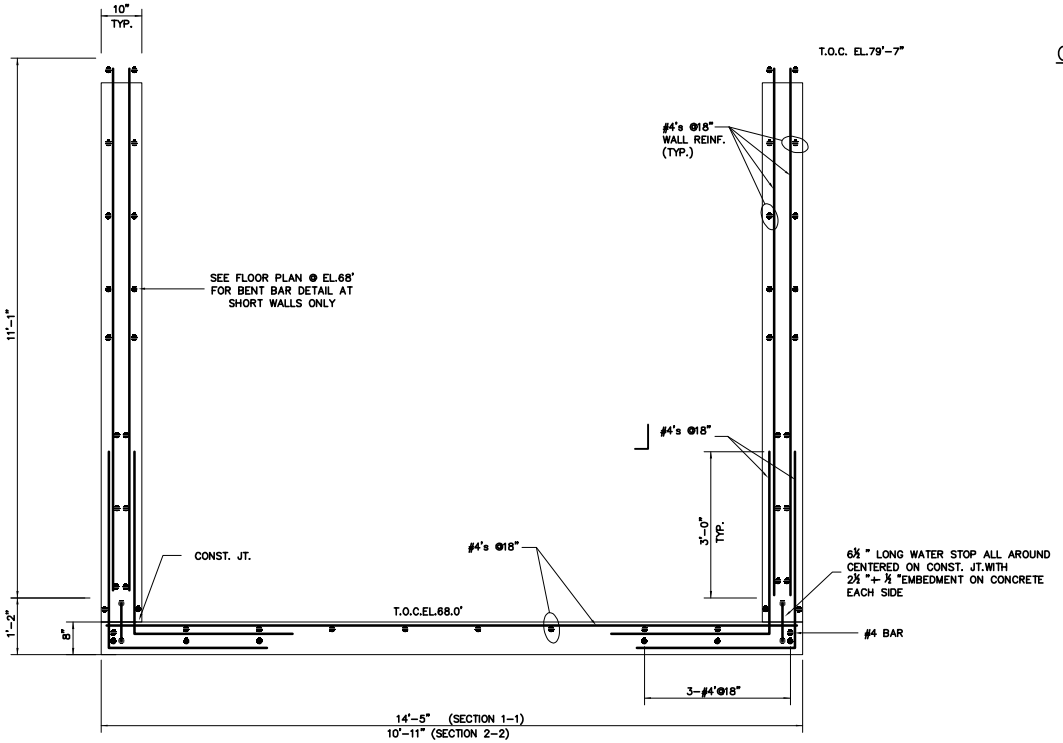
COMPRESSOR BUILDING PLAN, SECTIONS & ELEVATION

HOLYOKE, MA.

RMG	WJB	WJB
3-23-01	3-12-01	3-12-01

AS SHOWN
01-004

43733 - 40009 SH. 5A

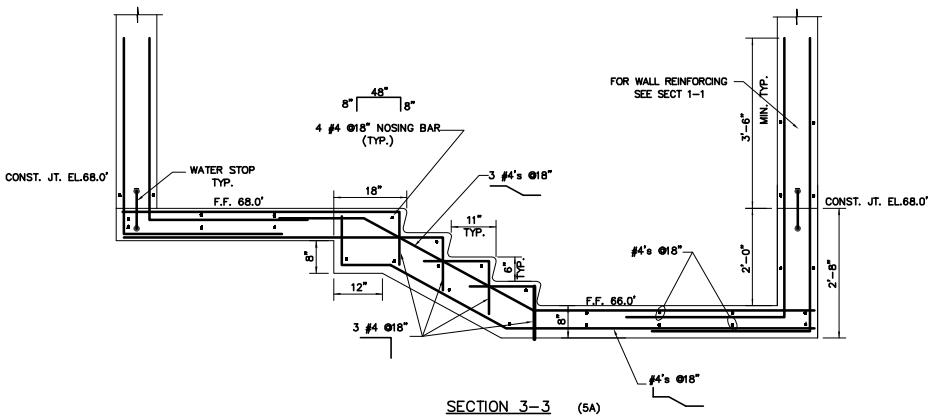


SECTION 1-1 (5A)

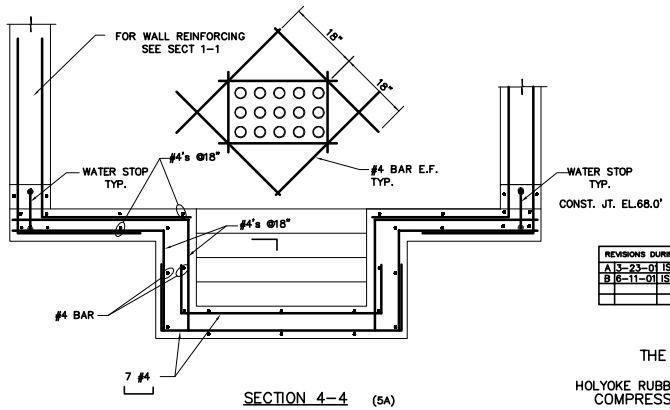
SECTION 2-2 (SIMILAR) (5A)

CONCRETE FOUNDATION NOTES

1. ALL CONCRETE SHALL BE DESIGNED,MIXED,PLACED AND FINISHED IN ACCORDANCE WITH ACI " BUILDING CODE REQUIREMENTS FOR REINFORCEED CONCRETE "ACI 318-LATEST EDITION.
2. CONCRETE SHALL DEVELOP A MINUM COMPRESSIVE STRENGTH OF 4,000 PSI IN 28 DAYS AND SHALL CONTAIN 4% TO 6% AIR ENTRAINMENT BY VOLUME.
3. REINFORCING BARS SHALL BE ASTM A615 GRADE 60, UNLESS SHOWN OR NOTED OTHERSWISE.
4. MINIMUM CLEAR COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:
   - A. SURFACES PERMANENTLY EXPOSED TO EARTH 3IN.
   - C. INTERIOR SURFACES 2IN.
   - B. EXTERIOR SURFACES NOT EXPOSED TO EARTH ¾IN.
5. FORMWORK SHALL REMAIN IN PLACE FOR A PEROID OF 24 HOURS. ANCHOR BOLTS (HOOKED) SHALL BE ASTM A307.
6. ALL FOUNDATIONS SHALL BEAR ON A THOROUGHLY COMPACTED STRUCTURAL GRANULAR FILL.
7. AT CONSTRUCTION JOINTS THE HARDENED CONCRETE INTERFACE SHALL BE ROUGHENED WITH FULL AMPLITUDE OF AT LEAST ¼" BEFORE PLACING THE ADJACENT CONCRETE
8. ALL GROUT SHALL BE 5-STAR SPECIAL GROUT OR APPROVED EQUAL. COMPRESSIVE STRENGTH @ SEVEN DAYS SHALL BE 5,000 PSI
9. ALL #4 BAR ANCHORS SHALL BE DRILLED AND SET IN GROUT A MIN. OF 24 HOURS PRIOR TO THE POURING OF THE SLAB
10. THE LADDER DESIGN AND INSTALLATION SHALL BE IN COMPLIANCE WITH OSHA REQUIREMENTS.



SECTION 3-3 (5A)



SECTION 4-4 (5A)

REVISIONS DURING CONSTRUCTION			P.I.N. # 01-004			
A	3-23-01	ISSUED FOR BID/ADDENDUM #1		RMG		
B	6-11-01	ISSUED FOR CONSTRUCTION		RMG	WJB	WJB

W.O.	P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.
	01-004	1	12-3-01	AS-BUILT PER FALCON PROJECT 01-004	RMG	WJB	WJB	

THE HOLYOKE WATER POWER CO.

HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION
COMPRESSOR BUILDING PLAN, SECTIONS & ELEVATION
HOLYOKE, MA.

RMG	WJB	WJB
3-23-01	3-12-01	3-12-01
AS SHOWN		
01-004		

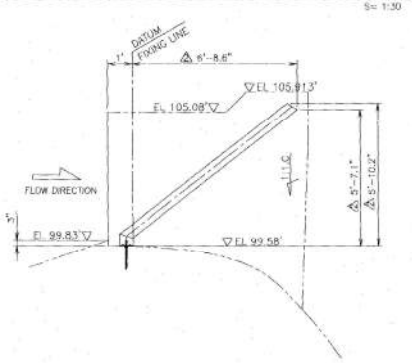
43733 - 40009 SH. 5B

APPENDIX C

2001 BRIDGESTONE CORPORATION CREST GATE SYSTEM DRAWINGS

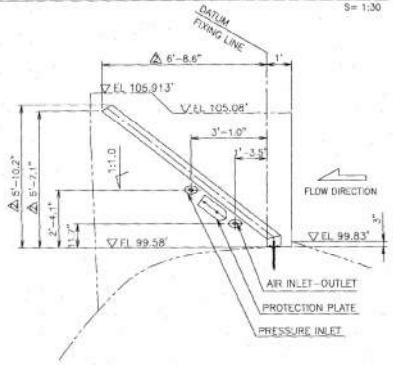
CROSS SECTION VIEW LOOKING RIGHT – SIDE SLOPE

S= 1:30



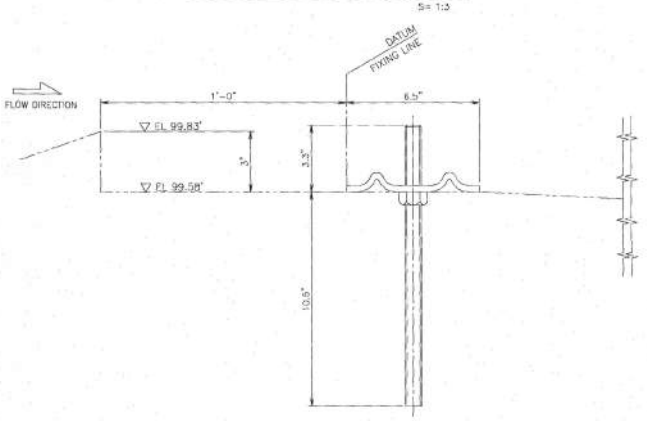
CROSS SECTION VIEW LOOKING RIGHT – SIDE SLOPE

S= 1:30



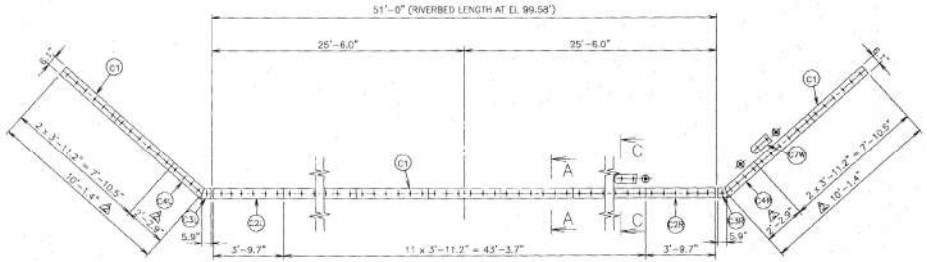
DETAILS OF ANCHOR BOLT POSITION

S= 1:3



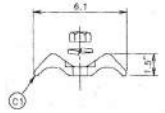
VIEW OF CLAMPING PLATES

S= 1:40



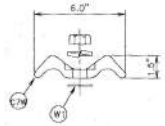
A–A : SECTION

S= 1:4



C–C : SECTION

S= 1:4

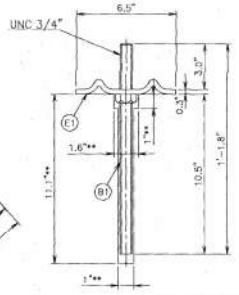


BRIDGESTONE SUPPLIED MATERIALS

No.	NAME	MATERIAL	Q'TY	REMARKS
C1	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	15	L=(1200)
C7L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(1161)
C2R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(1161)
C3L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(150)
C3R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(150)
C4L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(684)
C4R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(684)
C7W	PROTECTION PLATE	ASTM A536 Gr. 80 (GALV.)	2	L=(576)
E1	EMBEDDED PLATE	JIS SS400 (GALV.)	15	L=(1200)
E2L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(1180)
E2R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(1180)
E3L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(168)
E3R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(168)
E4L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(684)
E4R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(684)
E7	PROTECTION PLATE	JIS SS400 (GALV.)	2	L=(300)
P1	RING PACKING	RUBBER	4	27
P2	TEFLON PACKING	FLOURIDE CARBON	4	37
W1	INSERT PLATE	STAINLESS STEEL AISI304	2	296(L)x40Wx3t
B1	ANCHOR BOLT & NUT	ASTM A325(GALV.)	112	UNC 3/4"
B2	ANCHOR BOLT & NUT	ASTM A325(GALV.)	4	UNC 3/4"

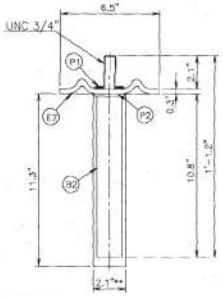
B–B : SECTION

S= 1:4



D–D : SECTION

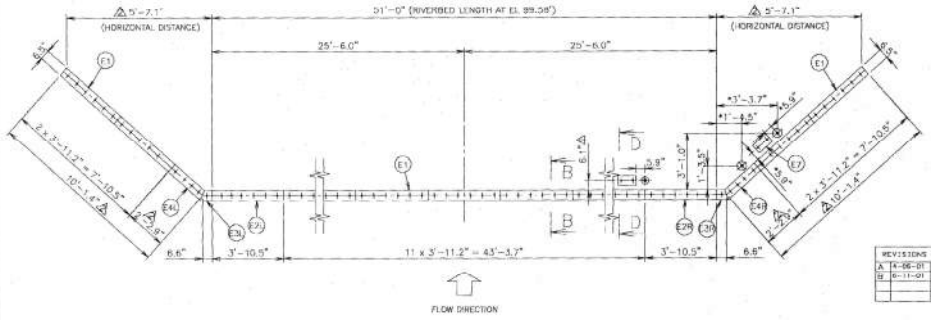
S= 1:4



VIEW OF EMBEDDED PLATES

S= 1:40

THE FIGURE MARKED (*) IS THE ACTUAL MEASUREMENT ON SLOPE



NOTE : ** DIMENSION OF DRILLING

NOTE:
1. ALL DIMENSION IN FT-IN OR (mm).

REVISIONS DURING CONSTRUCTION	P. I. N. # 01-004		
A 4-06-01	ISSUED FOR BID	RMG	WJB
B 6-11-01	ISSUED FOR BID	RMG	WJB

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
APR 4, 2001	2	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
MAR 19, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL	No.				

PLOT SCALE: 0 1/2 1 2 3 4 in.

FOR

HOLYOKE DAM – SPAN No.1

SUBJECT

RUBBER DAM
ANCHORING EQUIPMENT

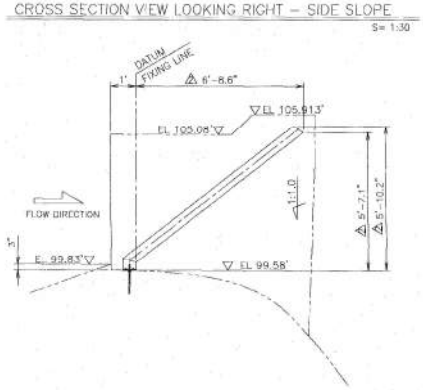
DATE	JAN. 18, 2001	SCALE	AS SHOWN
APPROVED	CHECKED	DESIGNED	
S.C.LEW	W.E.CHAN	C.H.LIM	

DWG No. RD-010-001-3A-R2 CODE No.

BRIDGESTONE CORPORATION

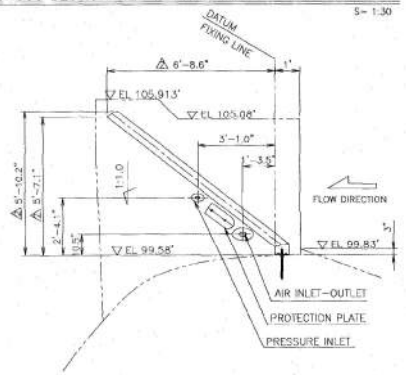
CROSS SECTION VIEW LOOKING RIGHT – SIDE SLOPE

S= 1:30



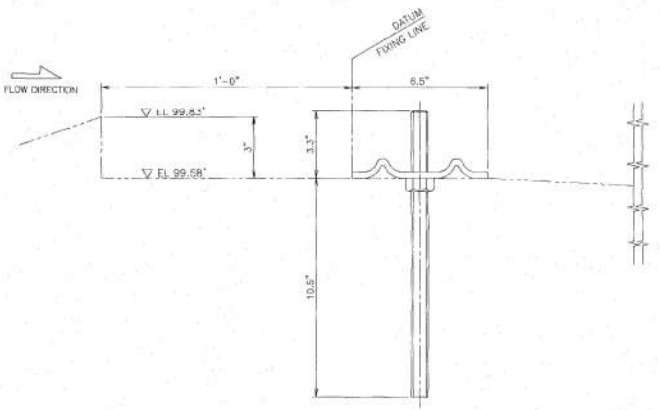
CROSS SECTION VIEW LOOKING RIGHT – SIDE SLOPE

S= 1:30



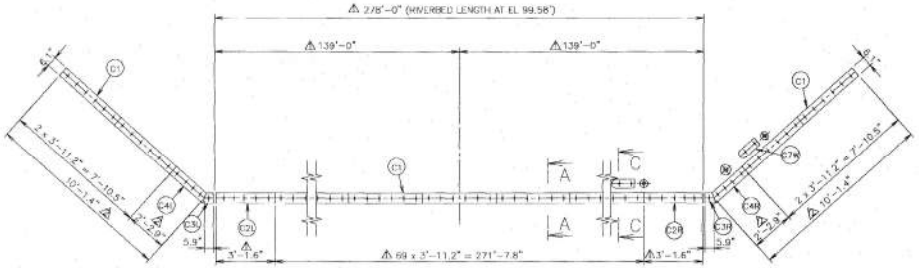
DETAILS OF ANCHOR BOLT POSITION

S= 1:3



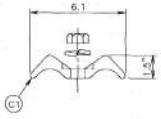
VIEW OF CLAMPING PLATES

S= 1:40



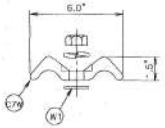
A-A : SECTION

S= 1:4



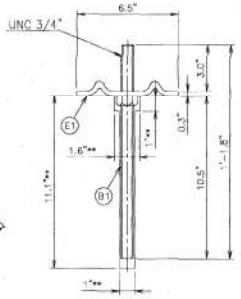
C-C : SECTION

S= 1:4



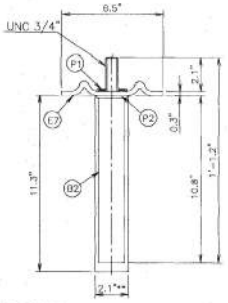
B-B : SECTION

S= 1:4



D-D : SECTION

S= 1:4

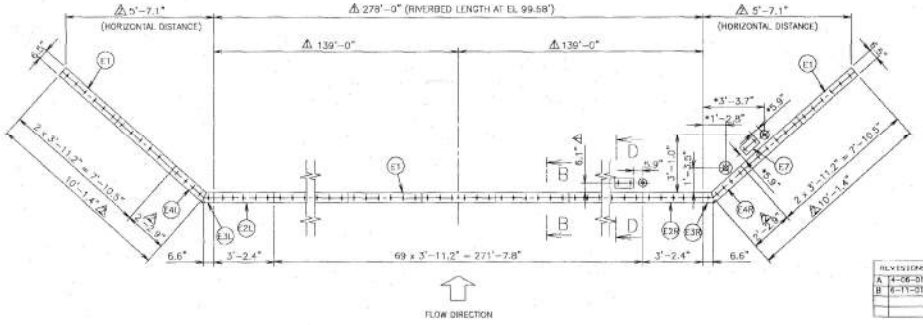


NOTE : ** DIMENSION OF DRILLING

VIEW OF EMBEDDED PLATES

S= 1:40

THE FIGURE MARKED (*) IS THE ACTUAL MEASUREMENT ON SLOPE



BRIDGESTONE SUPPLIED MATERIALS : QTY PER SPAN

No.	NAME	MATERIAL	Q'TY	REMARKS
C1	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	73	L=(1200)
C2L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(956)
C2R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(956)
C3L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(150)
C3R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(150)
C4L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(684) ⚠
C4R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(684) ⚠
C7W	PROTECTION PLATE	ASTM A536 Gr. 80 (GALV.)	2	L=(376)
E1	EMBEDDED PLATE	JIS SS400 (GALV.)	73	L=(1200)
E2L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(975)
E2R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(975)
E3L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(168)
E3R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(168)
E4L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(684) ⚠
E4R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(684) ⚠
E7	PROTECTION PLATE	JIS SS400 (GALV.)	2	L=(300)
P1	RING PACKING	RUBBER	4	2T
P2	TEFLON PACKING	FLOURIDE CARBON	4	3T
W1	INSERT PLATE	STAINLESS STEEL AISI304	2	296Lx40Wx3T
B1	ANCHOR BOLT & NUT	ASTM A325(GALV.)	458	UNC 3/4"
B2	ANCHOR BOLT & NUT	ASTM A325(GALV.)	4	UNC 3/4"

NOTE:
1. ALL DIMENSION IN FT-IN OR (mm).

REVISIONS DURING CONSTRUCTION		P. I. N. # 01-004		
A	4-06-01	ISSUED FOR BID	RWC	WJB
B	6-11-01	ISSUED FOR CONSTRUCTION	RWC	WJB

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
APR 4, 2001	2	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
MAR 19, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL	No.				

FOR
HOLYOKE DAM – SPAN No.2,3&4

SUBJECT
RUBBER DAM
ANCHORING EQUIPMENT

DATE	JAN. 18, 2001	SCALE	AS SHOWN
APPROVED	CHECKED	DESIGNED	
S.C.LEW	W.E.CHAN	C.H.LIM	
S.C.LEW	W.F.CHAN	C.H.LIM	

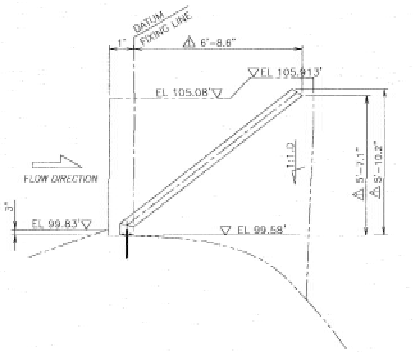
DWG No. RD-01G-001-38-R2 CODE No.

BRIDGESTONE CORPORATION

PLOT SCALE: 0 1/2 1 2 3 4 in

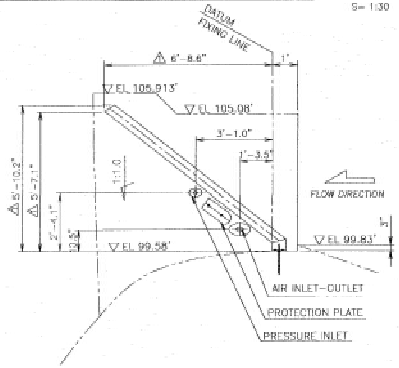
CROSS SECTION VIEW LOOKING RIGHT – SIDE SLOPE

S= 1:30



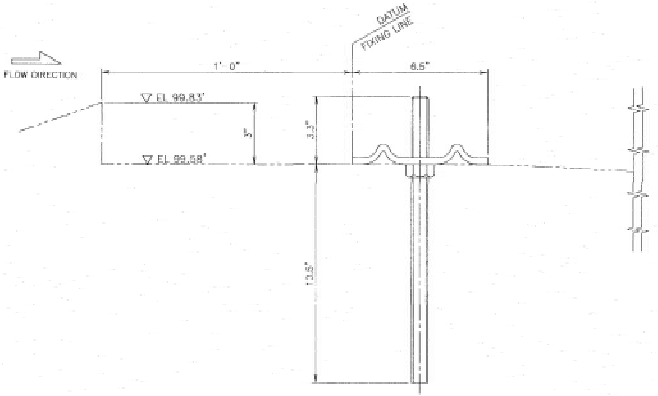
CROSS SECTION VIEW LOOKING RIGHT – SIDE SLOPE

S= 1:30



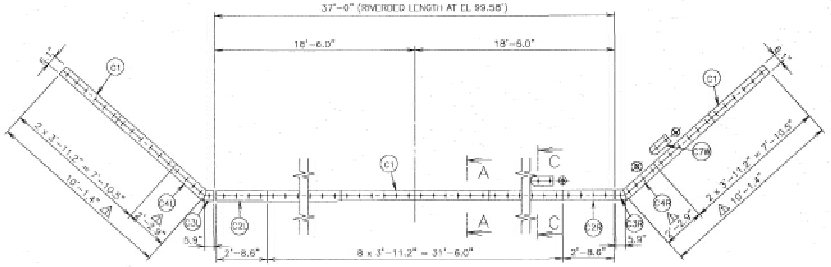
DETAILS OF ANCHOR BOLT POSITION

S= 1:3



VIEW OF CLAMPING PLATES

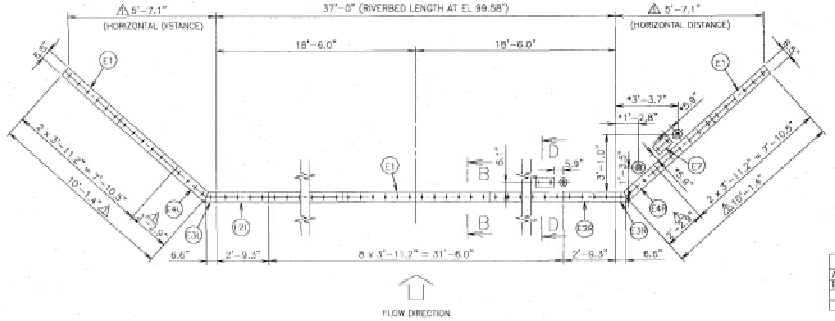
S= 1:40



VIEW OF EMBEDDED PLATES

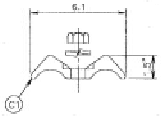
S= 1:40

THE FIGURE MARKED (*) IS THE ACTUAL MEASUREMENT ON SLOPE



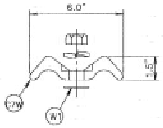
A–A : SECTION

S= 1:4



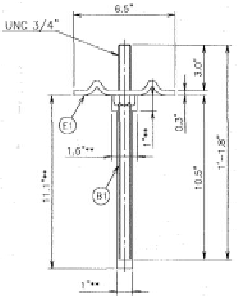
C–C : SECTION

S= 1:4



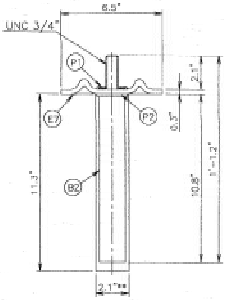
B–B : SECTION

S= 1:4



D–D : SECTION

S= 1:4



NOTE : ** DIMENSION OF DRILLING

BRIDGESTONE SUPPLIED MATERIALS

No.	NAME	MATERIAL	Q'TY	REMARKS
C1	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	12	L=(1200)
C2L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(828)
C2R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(828)
C3L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(150)
C3R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(150)
C4L	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(684) ⚠
C4R	CLAMPING PLATE	ASTM A536 Gr. 80 (GALV.)	1	L=(684) ⚠
C7W	PROTECTION PLATE	ASTM A536 Gr. 80 (GALV.)	2	L=(378)
E1	EMBEDDED PLATE	JIS SS400 (GALV.)	12	L=(1200)
E2L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(847)
E2R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(847)
E3L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(186)
E3R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(186)
E4L	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(684) ⚠
E4R	EMBEDDED PLATE	JIS SS400 (GALV.)	1	L=(684) ⚠
E7	PROTECTION PLATE	JIS SS400 (GALV.)	2	L=(300)
P1	RING PACKING	RUBBER	4	2T
P2	TEFLON PACKING	FLOURIDE CARBON	4	3T
W1	INSERT PLATE	STAINLESS STEEL AISI304	2	296Lx40Wx3T
B1	ANCHOR BOLT & NUT	ASTM A325(GALV.)	90	UNC 3/4"
B2	ANCHOR BOLT & NUT	ASTM A325(GALV.)	4	UNC 3/4"

NOTE:
1. ALL DIMENSION IN FT-IN OR (mm).

REVISIONS DURING CONSTRUCTION	P. I. N. # Q1-004		
A 4-08-01	ISSUED FOR BID	RNG	WJB
B 4-11-01	ISSUED FOR CONSTRUCTION	RNG	WJB

APR 4, 2001	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN	
DATE	REMARKS	APPROVED	CHECKED	REVISED	
ORIGINAL					

FOR
HOLYOKE DAM – SPAN No.5

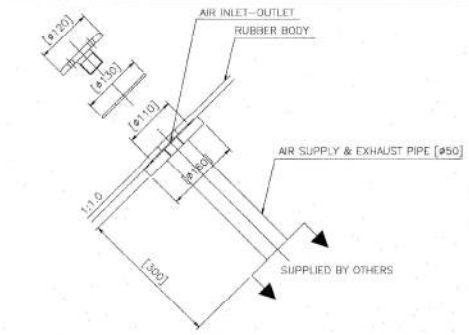
SUBJECT
RUBBER DAM
ANCHORING EQUIPMENT

DATE	MAR 19, 2001	SCALE	AS SHOWN
APPROVED	CHECKED	DESIGNED	
S.C.LEW	SRI	W.E.CHAN	

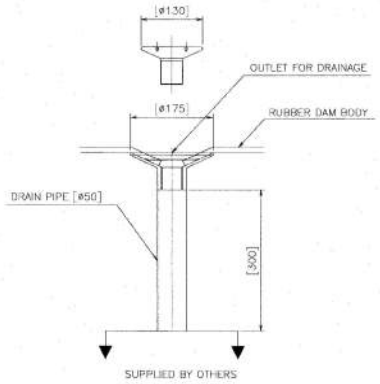
DWG No. R3-010-001-3C-A1 | CODE No.

BRIDGESTONE CORPORATION

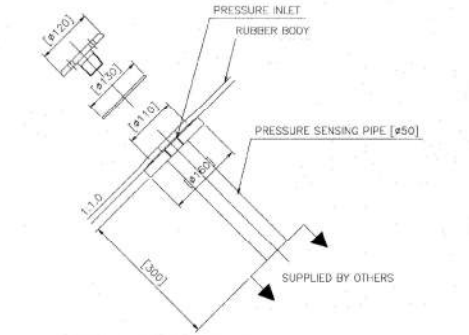
PLOT SCALE: 0 1/2 1 2 3 4 in



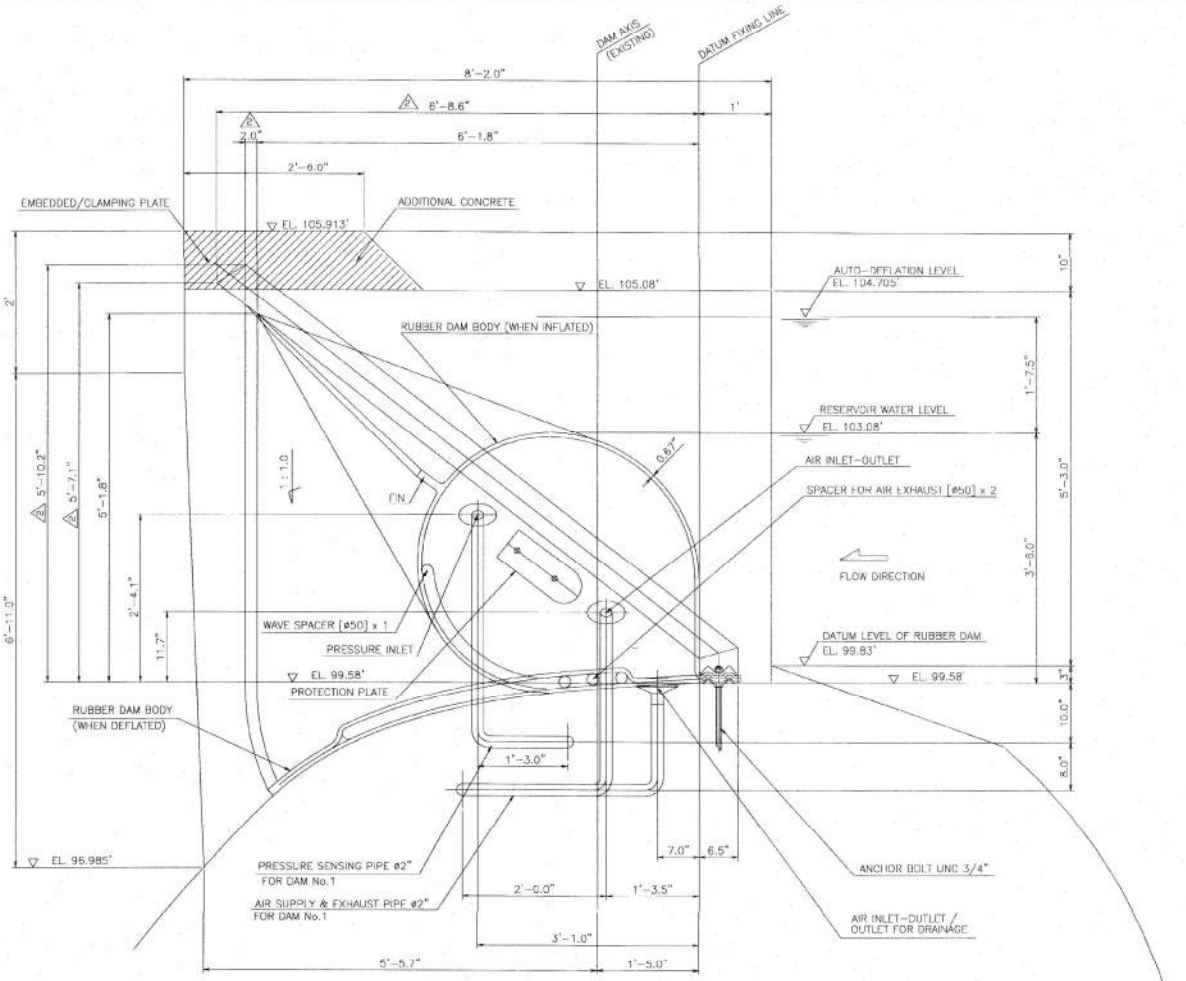
DETAIL OF AIR INLET-OUTLET S=1:5



⚠ DETAIL OF OUTLET FOR DRAINAGE S=1:5



DETAIL OF PRESSURE INLET S=1:5



CROSS SECTION VIEW : B - B S=1:10

(SEE DWG No. RD-01G-001-1-R1)

NOTE : 1. PIPING LAYOUT IS FOR REFERENCE ONLY.
2. ALL UNITS IN FT-INCH OR [mm].

REVISIONS DURING CONSTRUCTION	P. I. N. # 01-004			
A 4-06-01	ISSUED FOR BID	RMG	WJB	
B 6-06-01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
APR 4, 2001	2	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
MAR 19, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL	No.				

PLOT SCALE: 0 1/2 1 2 3 4 in

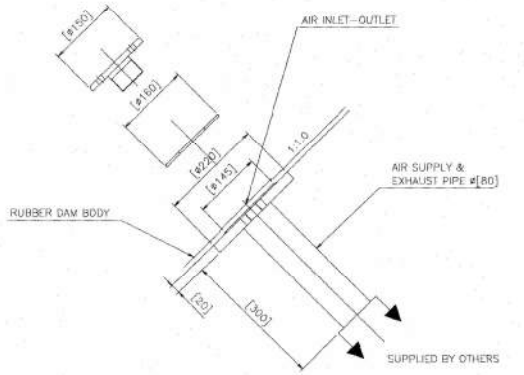
FOR: HOLYOKE DAM - SPAN No.1

SUBJECT: RUBBER DAM CROSS SECTION

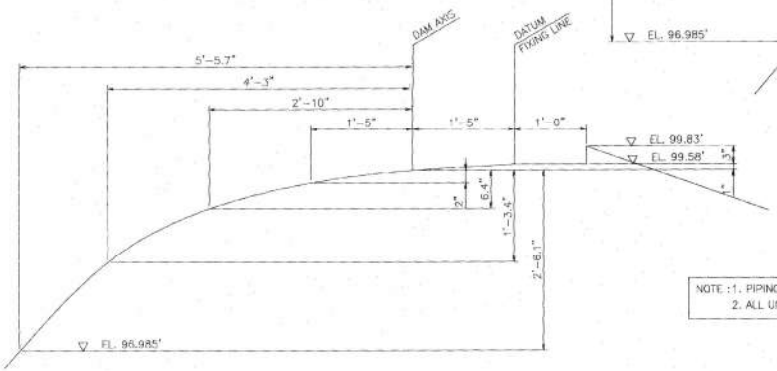
DATE	JAN 14, 2001	SCALE	AS SHOWN
APPROVED	CHECKED	DESIGNED	
S.C.LEW S.C.LEW	W.E.CHAN W.E.CHAN	C.H.LIU C.H.LIU	

DWG No. RD-01G-001-2A-R2 CODE No.

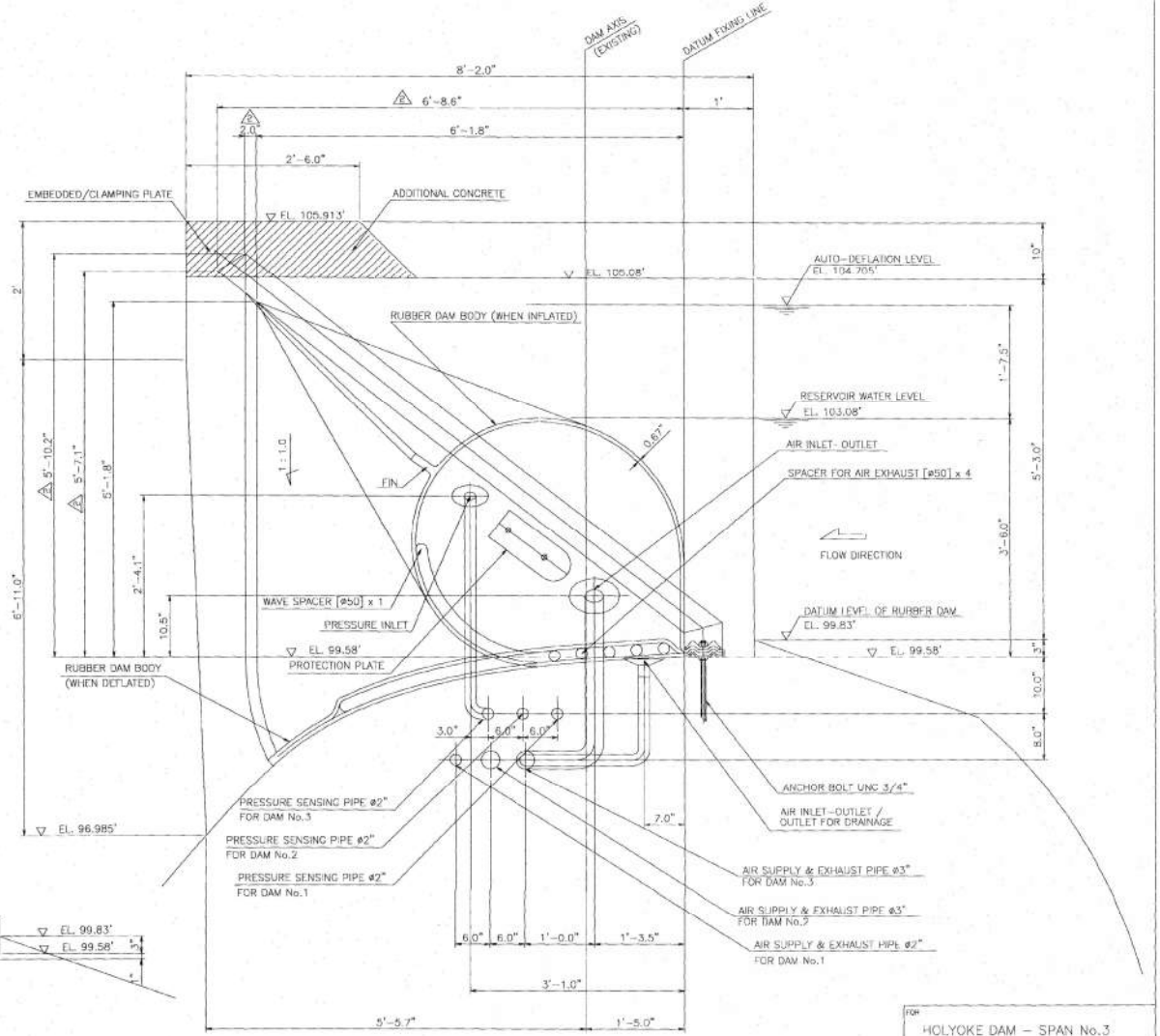
BRIDGESTONE CORPORATION



DETAIL OF AIR INLET-OUTLET S=1:5



DETAIL OF NEW DAM CO-ORDINATES



CROSS SECTION VIEW : C - C S=1:10

(SEE DWG No. RD-01G-001-1-R1)

NOTE : 1. PIPING LAYOUT IS FOR REFERENCE ONLY.
2. ALL UNITS IN FT-INCH OR [mm].

REVISIONS DURING CONSTRUCTION	P. T. N. 4 01-004		
A 4-06-01	ISSUED FOR BID	RMC	WJB
B 4-11-01	ISSUED FOR CONSTRUCTION	RMC	WJB

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
APR 4, 2001	2	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
MAR 19, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL	No.				

PLOT SCALE: 0 1/2 1 2 3 4 in

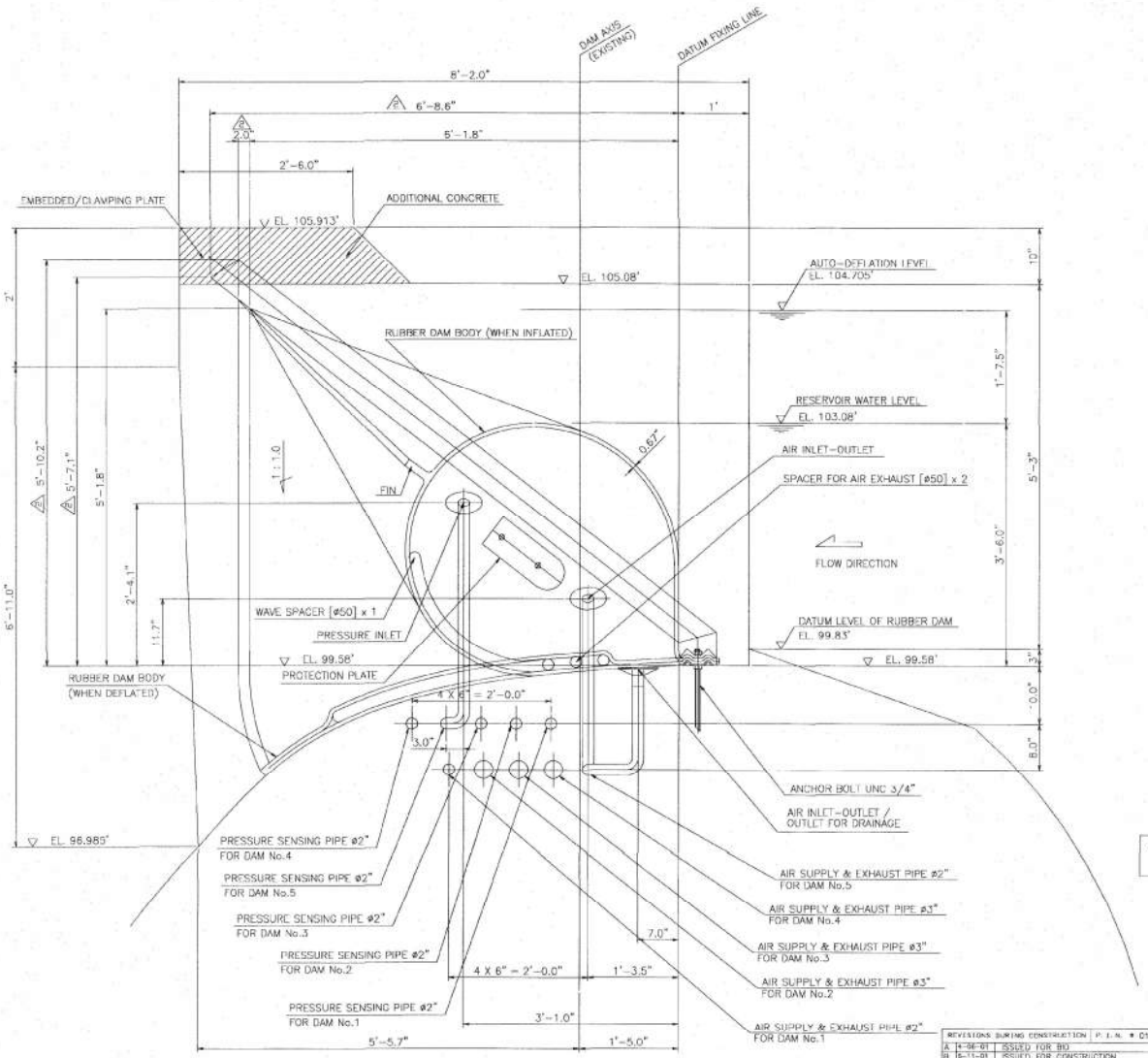
FOR: HOLYOKE DAM - SPAN No.3

SUBJECT: RUBBER DAM CROSS SECTION

DATE	JAN 14, 2001	SCALE	AS SHOWN
APPROVED S.C.LEW	CHECKED W.E.CHAN	DESIGNED C.H.LIM	

DWG No. RD-01G-021-2R-R2 CODE No.

BRIDGESTONE CORPORATION



NOTE : 1. PIPING LAYOUT IS FOR REFFERENCE ONLY.
2. ALL UNITS IN FT-INCH OR [mm].

CROSS SECTION VIEW : D – D S=1:10

(SEE DWG No. RD-01G-001-1-R1)

REVISIONS DURING CONSTRUCTION	P. I. N. # 01-004		
A 4-06-01	ISSUED FOR BID	RMG	WJB
B 5-11-01	ISSUED FOR CONSTRUCTION	RMG	WJB

No.	DATE	REMARKS	APPROVED	CHECKED	REVISED
2	APR 4, 2001	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
1	MAR 19, 2001	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL					

FOR: HOLYOKE DAM – SPAN No.5

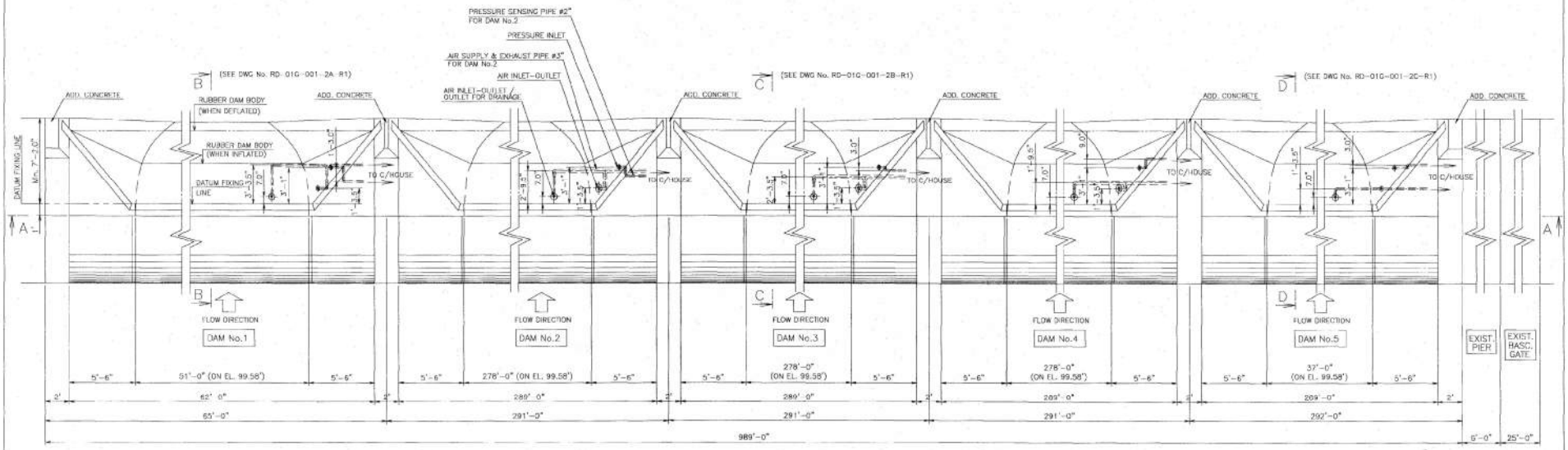
SUBJECT: RUBBER DAM CROSS SECTION

DATE	JAN 14, 2001	SCALE	1:10
APPROVED	CHECKED	DESIGNED	
S.C.LEW	W.E.CHAN	C.H.LIM	

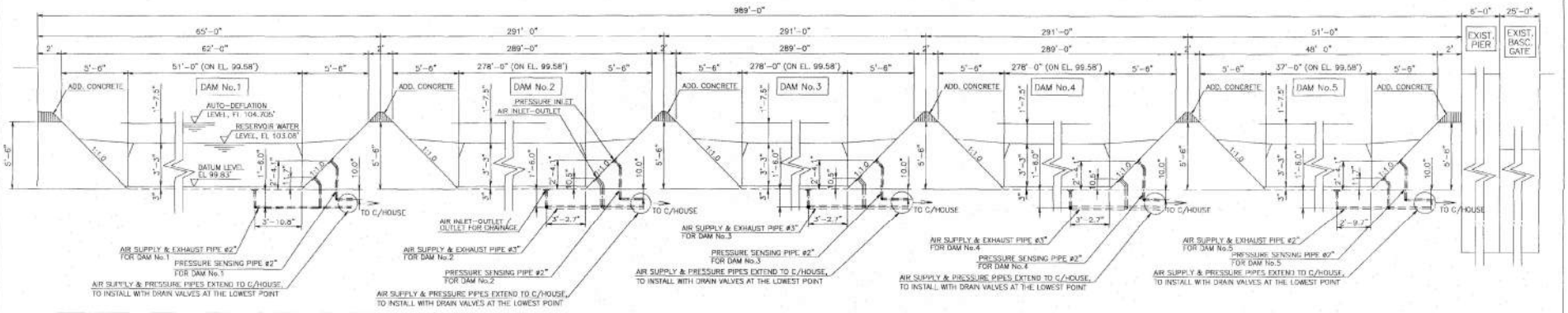
DWG No. RD-01G-001-2C-R2 CODE No.

BRIDGESTONE CORPORATION

PLOT SCALE: 0 1/2 2 3 4 m



⚠ PLAN VIEW 5=1:50



⚠ FRONT ELEVATION VIEW : A – A 5=1:50

NOTE : 1. AIR SUPPLY & PRESSURE SENSING PIPES HAVE TO BE KEPT HORIZONTAL /DOWN-SLOPED TOWARDS CONTROL HOUSE.

2. DO NOT LEAVE ANY LOW POINT IN BETWEEN PIPELINE UP TO CONTROL HOUSE IN ORDER TO PREVENT FROM BLOCKADE BY CONDENSATION. DRAIN VALVE SHALL BE INSTALLED AT LOWEST POINT FOR EACH PIPE.

3. SPECIAL FLANGES SUCH AS AIR INLET/OUTLET, PRESSURE SENSING INLET, DRAIN OUTLET TOGETHER WITH 300mm LONG STUB PIPES ARE SUPPLIED BY BRIDGESTONE.

4. OTHER INTER CONNECTION PIPES BETWEEN BLADDER AND CONTROL HOUSE ARE TO BE SUPPLIED BY OTHERS.

5. PIPING LAYOUT IS FOR REFERENCE ONLY.

6. DAM No.2, 3 AND 4 ARE IDENTICAL.

7. ALL UNITS IN FT-INCH.

REVISIONS DURING CONSTRUCTION	P. I. N. # 01-004			
A	4-06-01	ISSUED FOR BID	RMC	WJB
B	6-11-01	ISSUED FOR CONSTRUCTION	RMC	WJB WJB

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
MAR 19, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SPB	W.E.CHAN
ORIGINAL	No.				

PLOT SCALE: 0 1/2 1 2 3 4 in

FOR: HOLYOKE DAM

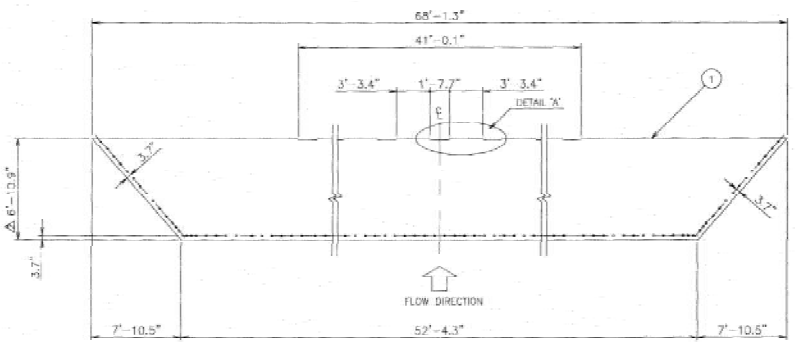
SUBJECT: RUBBER DAM
PLAN VIEW & FRONT ELEVATION

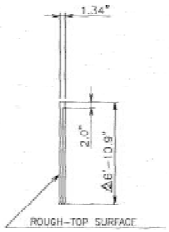
DATE	JAN 17, 2001	SCALE	AS SHOWN
APPROVED	CHECKED	DESIGNED	
S.C.LEW	W.E.CHAN	C.H.LIM	

DWG No. RD-01G-001-1-R1 CODE No.

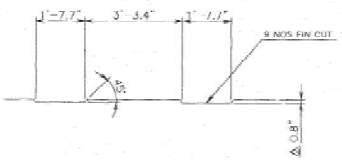
BRIDGESTONE CORPORATION

RUBBER BODY

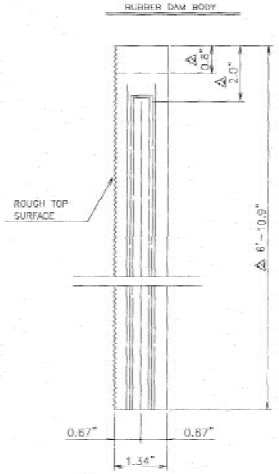




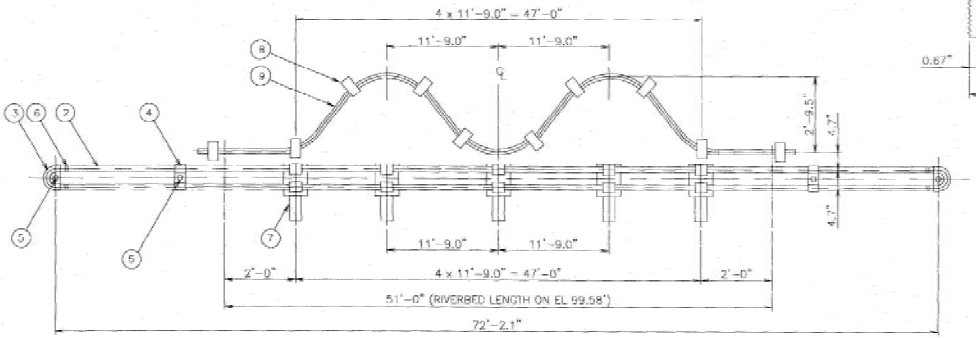
DETAIL A



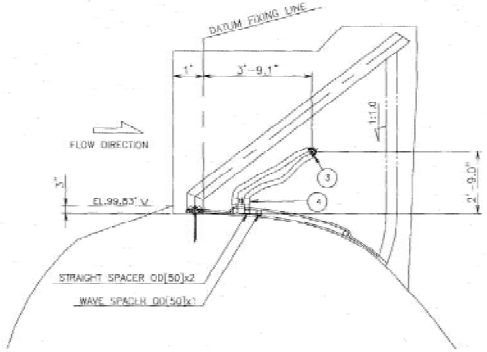
SECTION VIEW OF RUBBER DAM BODY



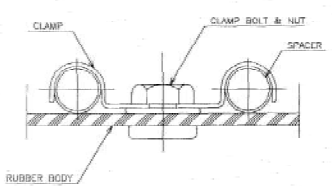
SPACER SET



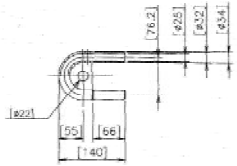
CROSS SECTION VIEW
VIEW LOOKING AT LEFT-SIDE SLOPE



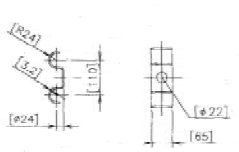
FIXING DETAIL



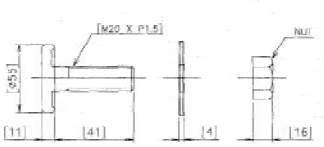
CLAMP-1
[UNIT IN mm]



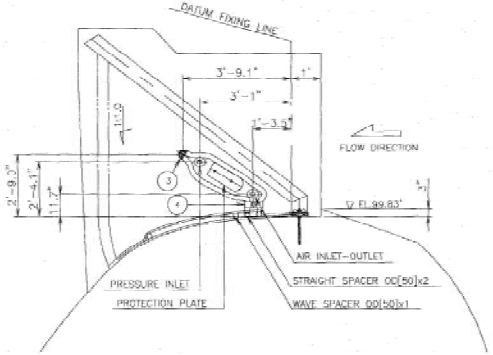
CLAMP-2
[UNIT IN mm]



CLAMP BOLT
[UNIT IN mm]



CROSS SECTION VIEW
VIEW LOOKING AT RIGHT SIDE SLOPE



No.	NAME	MATERIAL	DIMENSION	QTY	REMARK
1	RUBBER DAM BODY	RUBBER	[2105x2076x34.2]	1	TOTAL WEIGHT INCLUDING STEEL TRIM APPROXIMATELY 3.7 TONNE-METRIC
2	SPACER	RUBBER	[50 O.D. x 2200OL]	2	
3	CLAMP-1	SS400	SEE DWG.	2	
4	CLAMP-2	SS400	SEE DWG.	2	
5	CLAMP BOLT SET	SUS304	SEE DWG.	4	
6	JUBILEE CLIP	SUS304	2 (40-55)	4	
7	FABRIC-1	NYLON		5	
8	FABRIC-2	CN FILLER	800mmL x 100mmW	1 ROLL	CN FILLER 10mL x 100mmW
9	WAVE SPACER	RUBBER	[50 O.D. x 2000OL]	1	

No.	DATE	REVISIONS DURING CONSTRUCTION	P. I. N. # 01-004		
A	4-06-01	ISSUED FOR BID	RMC	WJS	
B	5-11-01	ISSUED FOR CONSTRUCTION	RMC	W.J.S	W.J.S

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
APR 4, 2001	2	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
MAR 20, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL	No.				

FOR
HOLYOKE DAM - SPAN No.1

SUBJECT
RUBBER DAM
RUBBER BODY & SPACER PARTS

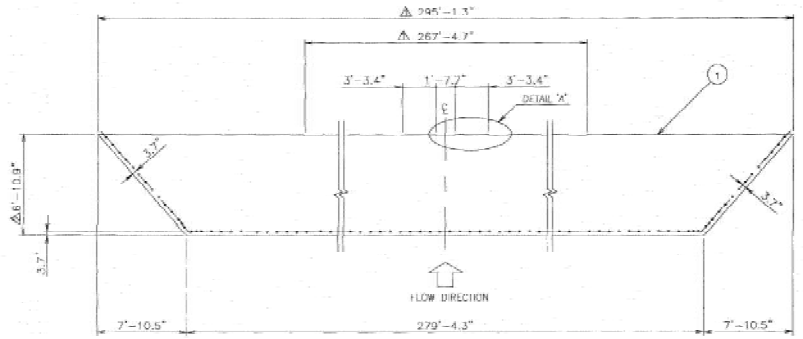
DATE	JAN. 16, 2001	SCALE	NONE
APPROVED		CHECKED	DESIGNED
S.C.LEW		W.E.CHAN	W.E.CHAN

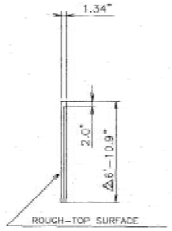
DWG No. RD-01G-001-4A-R2 | CODE No.

BRIDGESTONE CORPORATION

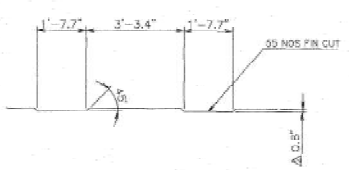
NOTE :
1. ALL UNITS IN FT-INCH OR [mm].

RUBBER BODY

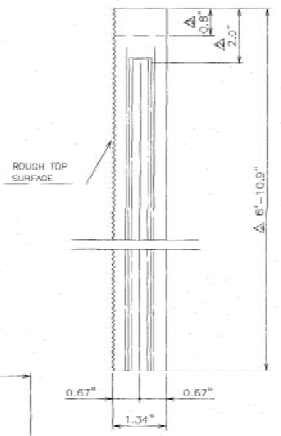




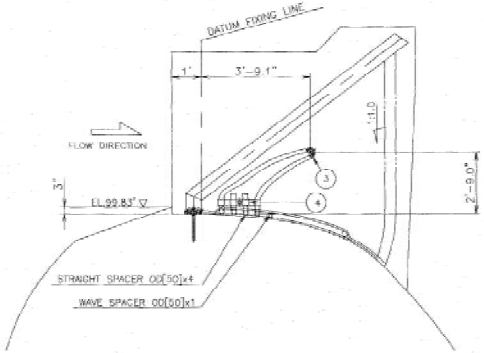
DETAIL A



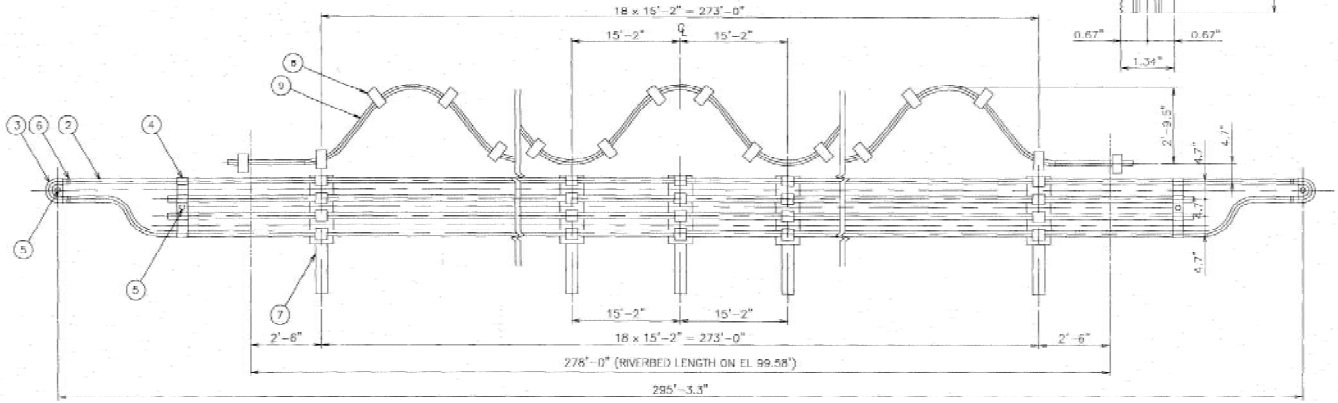
SECTION VIEW OF RUBBER DAM BODY



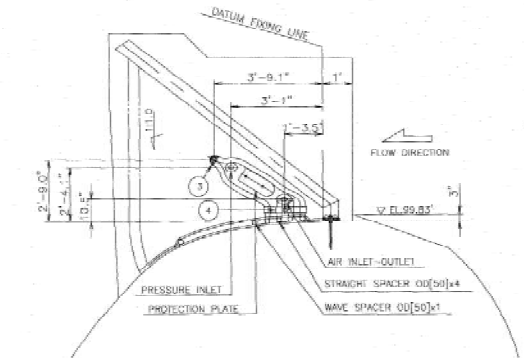
CROSS SECTION VIEW VIEW LOOKING AT LEFT SIDE SLOPE



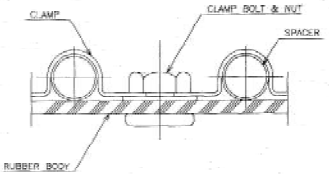
SPACER SET



CROSS SECTION VIEW VIEW LOOKING AT RIGHT SIDE SLOPE

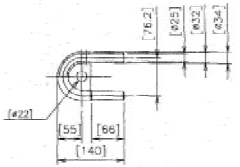


FIXING DETAIL



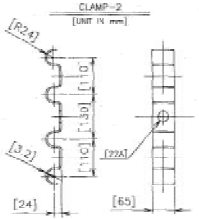
CLAMP-1

[UNIT IN mm]



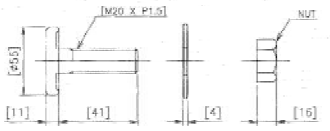
CLAMP-2

[UNIT IN mm]



CLAMP BOLT

[UNIT IN mm]



NOTE :
1. ALL UNITS IN FT-INCH OR [mm].

QTY. PER SPAN

No.	NAME	MATERIAL	DIMENSION	QTY	REMARK
1	RUBBER DAM BODY	RUBBER	[2105xW9950x34.2]	1	TOTAL WEIGHT INCLUDING STEEL. DAUM APPROXIMATELY 5.6 TONNE-METRIC
2	SPACER	RUBBER	[50 O.D. x 9000DL]	4	
3	CLAMP-1	SS400	SEE DWG.	2	
4	CLAMP-2	SS400	SEE DWG.	2	
5	CLAMP BOLT SET	SUSJ304	SEE DWG.	4	
6	JUBILEE CLIP	SUS304	2 (40 55)	4	
7	FABRIC-1	NYLON		19	
8	FABRIC-2	CN FILLER	800mmL x 100mmW	4 ROLL	CN FILLER 10mL x 100mmW
9	WAVE SPACER	RUBBER	[50 O.D. x 9200DL]	1	

REVISIONS DURING CONSTRUCTION	P. S. N. # 01-004		
A 4-05-01	ISSUED FOR BID	RMC	WJB
B 6-11-01	ISSUED FOR CONSTRUCTION	RMC	WJB WCH

DATE	No.	REMARKS	APPROVED	CHECKED	REVISED
APR 4, 2001	2	REV. FIN LENGTH & OTHERS	S.C.LEW	SRI	W.E.CHAN
MAR 20, 2001	1	REV. SPANS & LENGTH, PIPELINE	S.C.LEW	SRI	W.E.CHAN
ORIGINAL	No.				

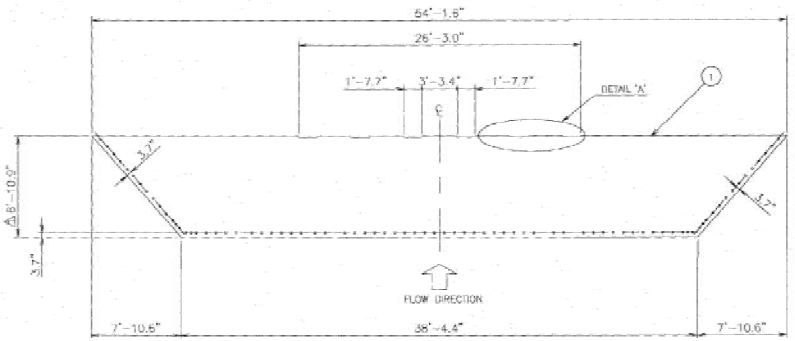
FOR
HOLYOKE DAM – SPAN No. 2,3&4

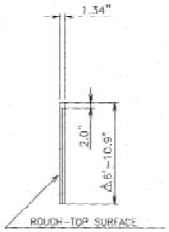
SUBJECT
RUBBER DAM
RUBBER BODY & SPACER PARTS

DATE	JAN. 18, 2001	SCALE	NONE
APPROVED		CHECKED	DESIGNED
S.C.LEW		W.E.CHAN	S.R.SRI
DWG No. RD-010-001-48-R2		CODE No.	

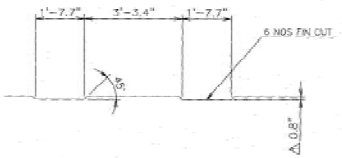
BRIDGESTONE CORPORATION

RUBBER BODY

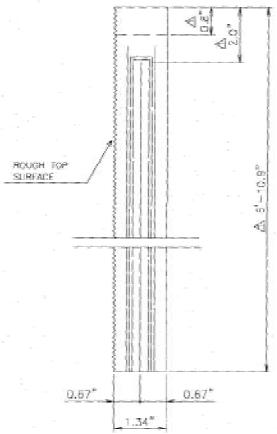




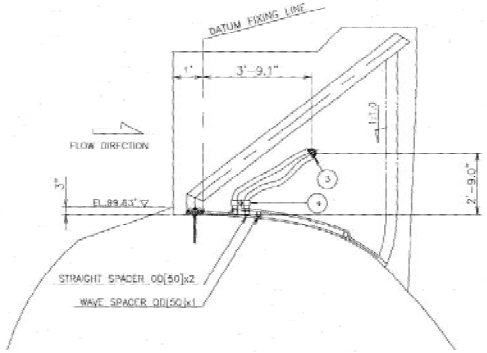
DETAIL A



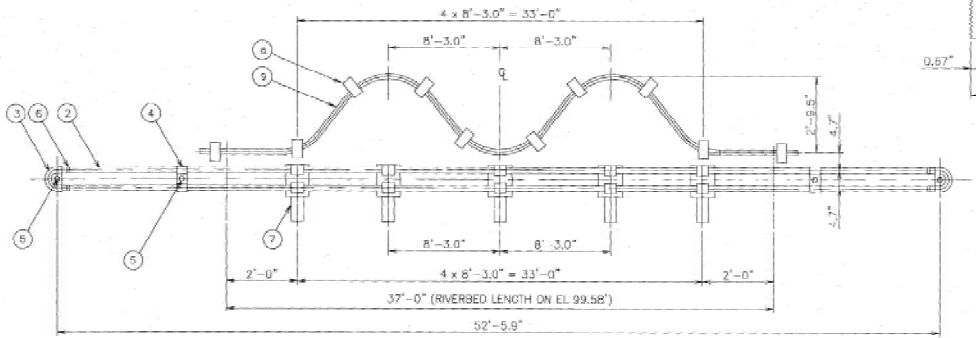
SECTION VIEW OF RUBBER DAM BODY



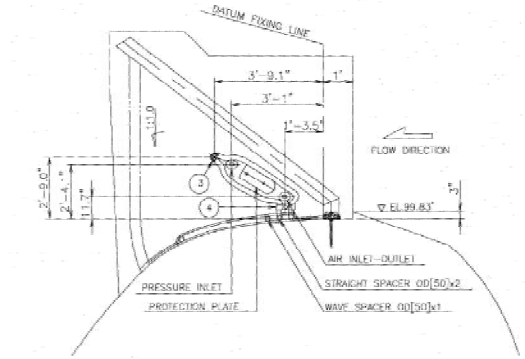
CROSS SECTION VIEW
VIEW LOOKING AT LEFT-SIDE SLOPE



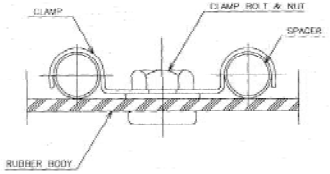
SPACER SET



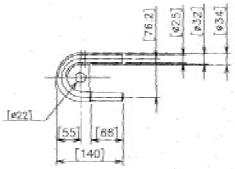
CROSS SECTION VIEW
VIEW LOOKING AT RIGHT-SIDE SLOPE



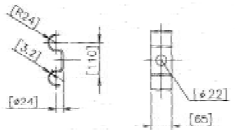
FIXING DETAIL



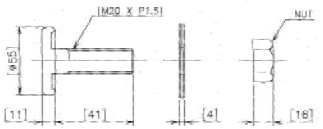
CLAMP-1
[UNIT IN mm]



CLAMP-2
[UNIT IN mm]



CLAMP BOLT
[UNIT IN mm]



NOTE :
1. ALL UNITS IN FT-INCH OR [mm].

No.	NAME	MATERIAL	DIMENSION	QTY	REMARK
1	RUBBER DAM BODY	RUBBER	[2105x16500x34.2]	1	TOTAL WEIGHT INCLUDING STEEL DRUM APPROXIMATELY 2.5 TONNE-METRIC
2	SPACER	RUBBER	[50 O.D. x 16000L]	2	
3	CLAMP-1	SS400	SEE DWG.	2	
4	CLAMP-2	SS400	SEE DWG.	2	
5	CLAMP BOLT SET	SUS304	SEE DWG.	4	
6	JUBILEE CLIP	SUS304	2 (40-55)	4	
7	FABRIC-1	NYLON		5	
8	FABRIC-2	CN FILLER	800mmL x 100mmW	1 ROLL	CN FILLER 10mL x 100mmW
9	WAVE SPACER	RUBBER	[50 O.D. x 14000L]	1	

REVISIONS DURING CONSTRUCTION	P. I. N. # 01-004		
A 4-26-01	ISSUED FOR BID	RMC	WJB
B 6-11-01	ISSUED FOR CONSTRUCTION	RMC	WJB

APR 4, 2001	REV. FIN LENGTH & OTHERS	S.C.LEW	S/d	W.E.CHAN
DATE	No. REMARKS	APPROVED	CHECKED	REVISED
ORIGINAL	No.			

FOR
HOLYOKE DAM – SPAN No.5

SUBJECT
RUBBER DAM
RUBBER BODY & SPACER PARTS

DATE	MAR. 20, 2001	SCALE	NONE
APPROVED	CHECKED	DESIGNED
S.C.LEW	S/d	W.E.CHAN

DWG No. RD-010-001-AC-R1 | CODE No.

BRIDGESTONE CORPORATION

APPENDIX D

TEMPORARY FLASHBOARD SYSTEM DETAILS

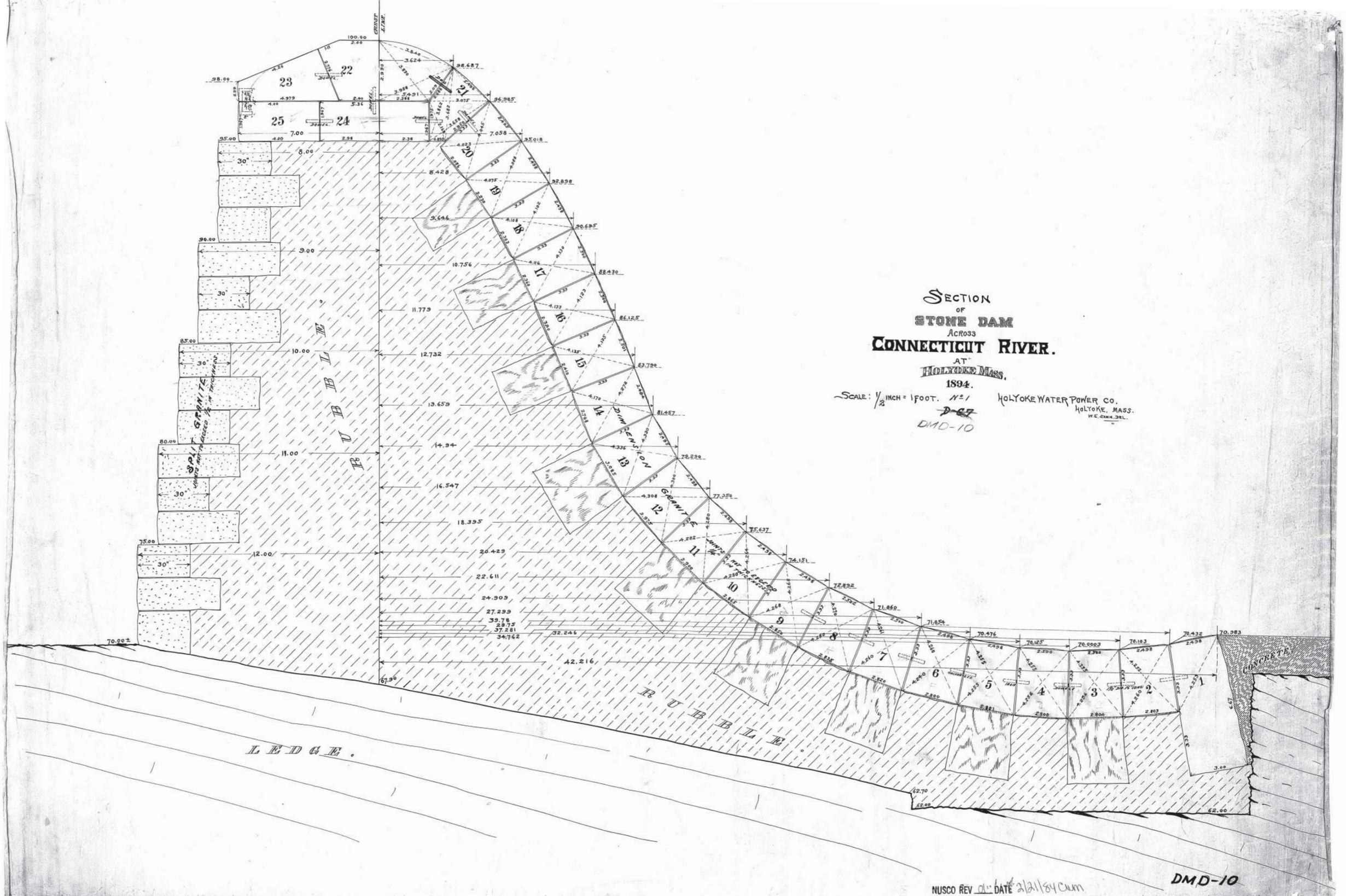
SECTION OF STONE DAM ACROSS CONNECTICUT RIVER. AT HOLYOKE MASS. 1894.

SCALE: 1/20 INCH = 1 FOOT. No 1

HOLYOKE WATER POWER CO. HOLYOKE, MASS. W.E. CORK, DEL.

D-67

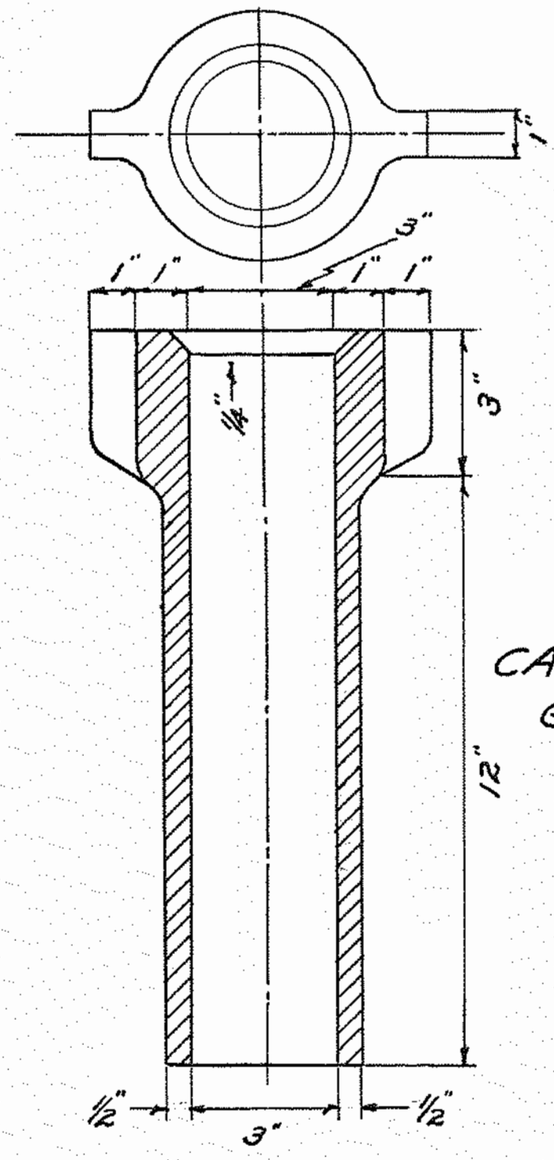
DMD-10



NUSCO REV 01 DATE 2/21/84 Cwm

DMD-10

43742-40044



MAKE 250
CAST STEEL S.A.E.-
GRIND TO 3" I.D.

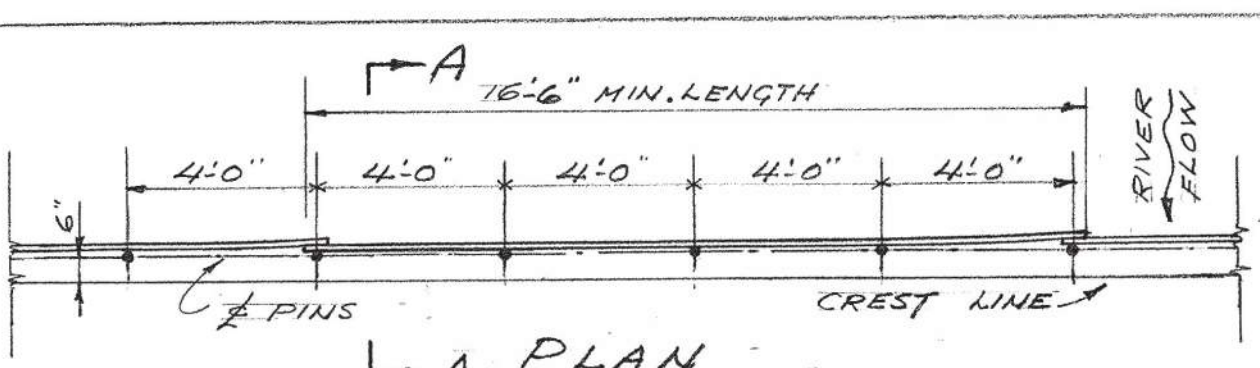
43742-40018

FLASHBOARD SOCKETS
HOLYOKE WATER POWER CO.
SCALE - 3" = 1'-0"

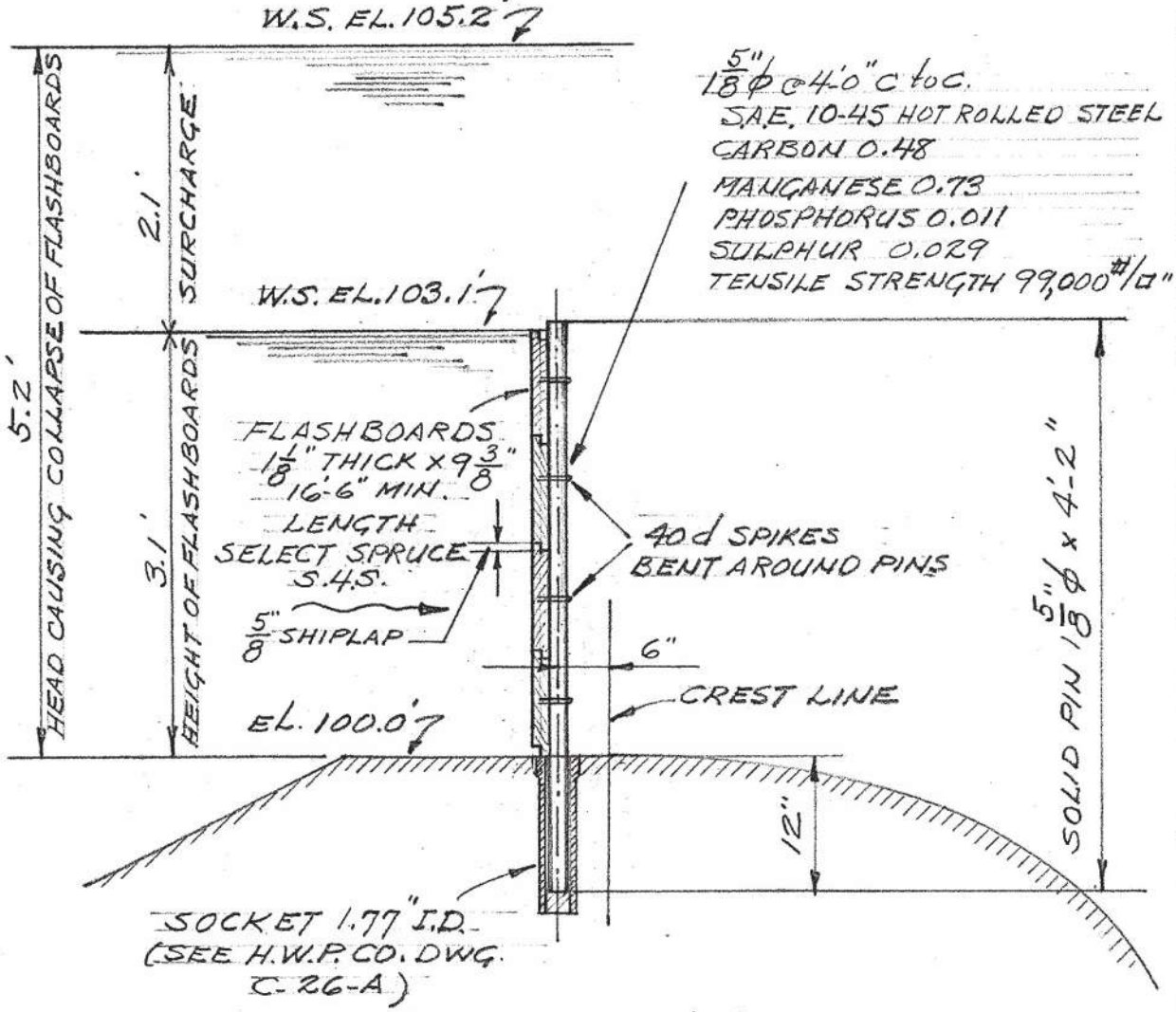
DESIGNED
TRACED - C.S.
APRIL 30, 1936

NUSCO REV 01 DATE 2/21/84 CWM

DMO-22



A PLAN
1/4" = 1'-0"



SECTION AA
3/4" = 1'-0"

:NOTE:
ELEVATIONS REFER TO HOLYOKE DATUM

FLASHBOARDS & PINS AS USED ON THE HOLYOKE DAM

HOLYOKE WATER POWER COMPANY — HOLYOKE, MASS.

SCALE AS NOTED — NOVEMBER 1948

~~DWG. NO. 129 FILE D~~

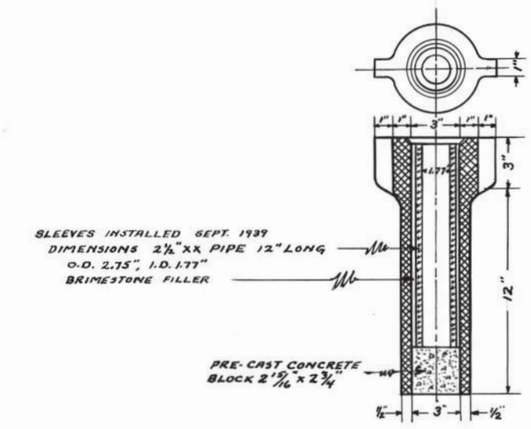
NUSCO REV 01 DATE 2/21/84 RWM

43742-40019

DMD-23

ELEV. 100.0
STEEL STRUT SEE DR'G D-91
FOR DETAIL OF STEEL FRAME - SEE DR'G. D-92
1" ϕ DOWELS - 2'-0" O.C.
ELEV. 95.0
ELEV. 90.0
ELEV. 85.0
ELEV. 80.0
ELEV. 75.0
ELEV. 70.0±
5'-0"
5'-0"
5'-0"
5'-0"
2'-6"
2'-6"
2'-6"
2'-6"
1'
1'
1'
1'
4'-0"
RADIUS 30'-0"
2'-0"
SEE DETAIL
8'-0"
9'-0"
10'-0"
11'-0"
12'-0"
12'-0"
CREST LINE
RUBBLE MASONRY
ELEV. 100.0
ELEV. 98.687
ELEV. 96.985
5%
7.07'
ELEV. 95.0
10.0'
ELEV. 90.0
12.25'
ELEV. 85.0
ELEV. 70.00
ELEV. 70.983
42'-2 9/16"
ELEV. 67.90
Galvanized Iron Dowels 1½" Dia. 12" Long
RUBBLE
APPROX. CONCRETE
LEDGE
LEDGE

NOTE:- ALL STEEL FRAMES & STRUTS SPACED 4 FT. ON CENTERS



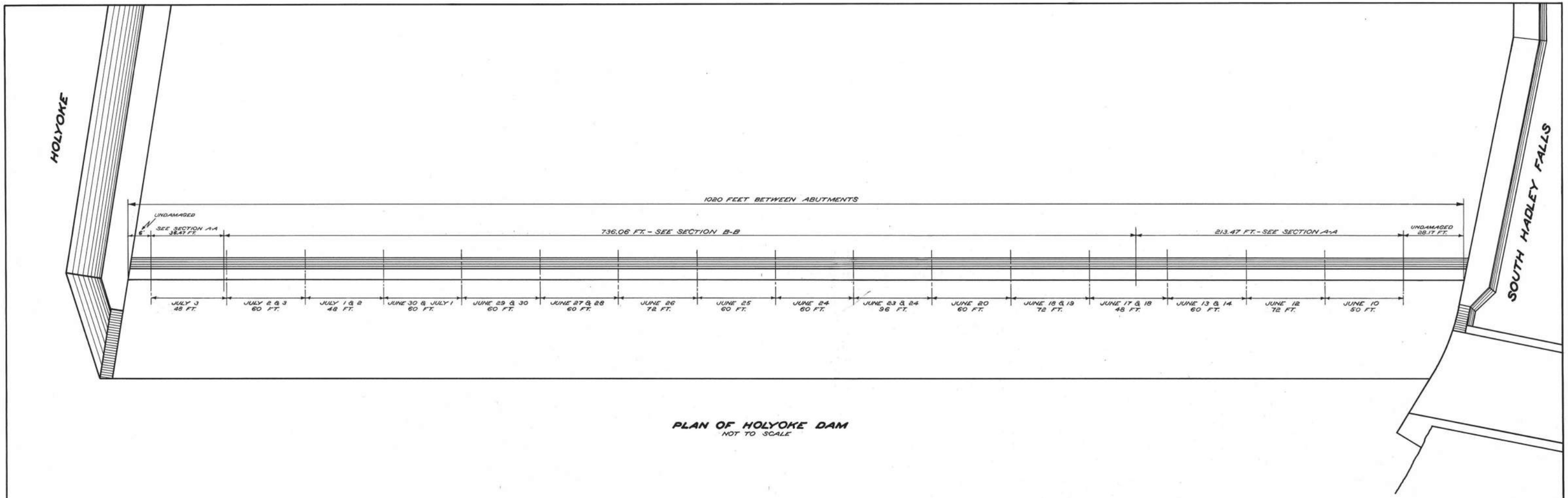
DETAIL
FLASHBOARD SUPPORT SOCKET
scale: 3 in. : 1 Ft.
NOTE:- SOCKETS SPACED 4'-0" O.C. ON DAM & 6" UPSTREAM FROM CREST LINE.
CAST STEEL - S.A.E.

43742-40023
DMD-10
NOTE:- TRACED FROM ORIGINAL 1894 PLATE CONCRETE CAP. - 1936 DRAWINGS

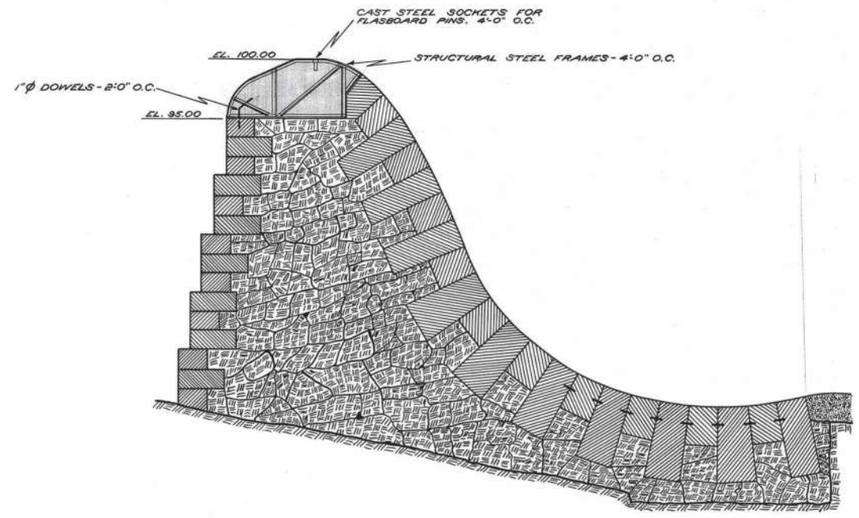
SUPPORTING STRUCTURE	
SECTION - STONE DAM 1894 DESIGN - 1936 REPLACEMENT	
HOLYOKE WATER POWER CO. MAY 1936 - Scale:- ½ IN. : 1 FT.	
DRAWN BY:	FILE NO. C
TRACED BY: A.W.L.	DRAW. NO. 21-A
CHECKED:	
APPROVED:	

NUSCO REV. 01 DATE 2/21/84 swm

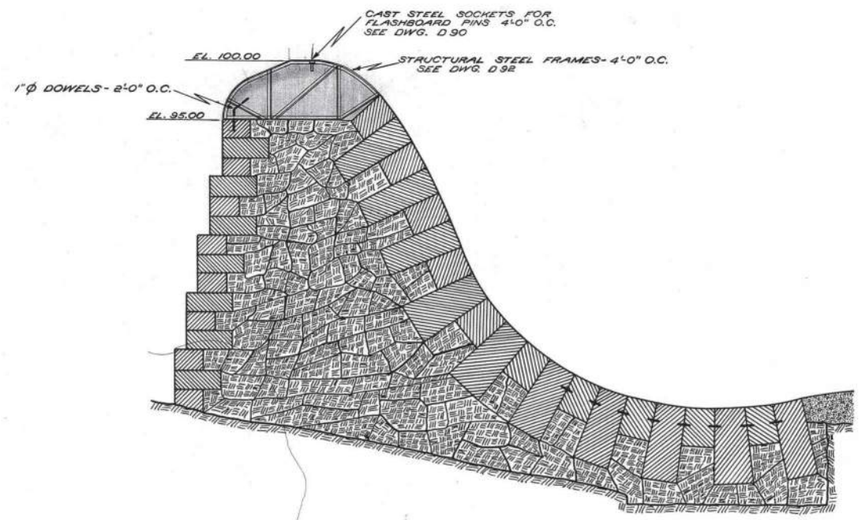
DMD-24



PLAN OF HOLYOKE DAM
NOT TO SCALE



SECTION A-A
SCALE 1 IN = 6 FT.



SECTION B-B
SCALE 1 IN. = 6 FT.

LEGEND:
- ORIGINAL GRANITE MASONRY
- REINFORCED CONCRETE CREST

43742-40030

REPAIRS TO CREST OF MASONRY DAM
HOLYOKE WATER POWER CO.
SCALE AS SHOWN — JUNE, 1936

DRAWN BY R.E.D	DWG NO 84
TRACED BY R.E.D.	FILE D
CHECKED BY	
APPROVED BY	

NUSCO REV 0 DATE 3/21/84 cwm

DMD-31

WATER LEVEL INDICATOR 8"PVC WELL
TOP OF PVC PIPE –123.66'
CORNER OF NORTHEAST ABUTMENT

GENERAL NOTES:

ELEVATIONS SHOWN ARE IN LOCAL SITE DATUM TO THE NEAREST 0.1 FEET. NGVD DATUM = SITE DATUM MINUS 2.53 FEET

NORTH

CONNECTICUT RIVER flow

HOLYOKE / SOUTH HADLEY

INSTRUMENTATION & CONTROL CONDUIT RUN TO GATEHOUSE

BASE LINE A

BENCH MARK #1
STAINLESS STEEL PIN
ON TOP OF PIER #2
EL.105.04

EXISTING END CAPSTONES BELOW CONCRETE PIER TO REMAIN (SEE SPECIFICATION SECTION 03320)

984'–0"

51'–0"	291'–0"	291'–0"	286'–0"	65'–0"
BAY 5	BAY 4	BAY 3	BAY 2	BAY 1

COMPRESSOR BLDG.

RELOCATED FLASHBOARDS DURING RUBBER DAM INSTALLATION

CROSSED HATCHED AREA INDICATES PORTION OF DAM TO BE RESURFACED

CONCRETE END PIER (DETAIL B SH.3B) PIER #6

INTERMEDIATE CONCRETE PIER PIER #5

INTERMEDIATE CONCRETE PIER PIER #4

INTERMEDIATE CONCRETE PIER (DETAIL A SH.3B) PIER #3

INTERMEDIATE CONCRETE PIER PIER #2

CONCRETE END PIER (DETAIL E SH.4) PIER #1

CREST LINE BASE LINE B

CONDUIT TERMINATION BOX (SEE SHEET 4 FOR DETAIL)

FOR PIPING SEE SHEET 4

APRON ACCESS

CONCRETE APRON

APRON OF DAM

EL.70.5'

ORDINARY HIGH WATER ELEVATION 74.5'

TEXON BOILER ROOM (PHASE 1)

EL.102.0'

TEXON BUILDING

HADLEY UNIT#1 AND #2 POWERHOUSE

℄ HADLEY UNIT #2

35'–6"

TOP OF CONCRETE EL.58.0'
EXISTING FISH ENTRANCE EL.47'

PROPOSED EDGE OF LEDGE

EXISTING EDGE OF LEDGE

EXISTING ROCK SURFACE EL.70'+

FLOW

EXISTING TAILRACE

PLAN OF HOLYOKE DAM

SCALE 1"–40'

NOTE: EROSION CONTROL MEASURES – THE CONTRACTOR WILL PROVIDE SANDBAGS ALONG DAM APRON IN THE AREA OF CONCRETE RESURFACING AND DEBRIS REMOVAL. THE CONTRACTOR WILL RELOCATE THE SANDBAGS TO ACCOMMODATE THEIR CONSTRUCTION SEQUENCE. CONCRETE DEBRIS WILL BE REMOVED BY THE CONTRACTOR ON A DAILY BASIS.

0' TO 10'

0' TO 30'

3 (APPROX.)

1

ORDINARY HIGH WATER ELEVATION 72'

12'±

BEDROCK ROAD BASE

ACCESS RAMP SECTION H–H

Scale N.T.S.

CREST LINE – BASE LINE B

℄ EXISTING FLASHBOARD & PINS

6"

DATUM FIXING LINE OF NEW RUBBER DAM

1'–5"

℄ TEMPORARILY RELOCATED FLASHBOARD PINS

3'–3"

FLOW

50' APRON

13' STOPLOGS

65'–0"

43'–3"

FLASHBOARDS TO BE 5/4" THICK LUMBER WITH 20 MIL POLY ON UPSTREAM SIDE

8'–2"

TOP OF NEW CONCRETE PIERS EL.105.9'

NEW CONCRETE PIERS EL.105.1'

TOP NEW RUBBER DAM & RELOCATED FLASHBOARDS AND PINS EL.103.1'

POND ELEVATION DURING CONSTRUCTION EL. 102'+

EXISTING CREST EL 100.00'

NEW CREST EL.99.6'

DAM TO BE RESURFACED TO EL.97'±

20 21 22 23 24 25

DRILL 1 3/4" DIA. HOLES–12" INTO EXISTING DAM AT 3' C–C FOR 1 5/8" DIA. STEEL PINS– USE EXISTING. HOLES WHERE POSSIBLE

ORIGINAL CAPSTONE DESIGNATION SHOWN ON DWG.#43742–40044

43'–0"

NEW COMPRESSOR BLDG. (SEE PLAN FOR LOCATION)

FLOOD WALLS

TOP OF FLOOD WALL EL.83.5'

TOP OF FISHWAY ENTRANCE EL.78.0'

EL.80± EXISTING GRADE

FLOOD WALL

NEW CONCRETE PIER FOR PIPING EL.71.0'

APRON ACCESS

EL.72.3'

EL.69.0'

EXISTING STONE MASONRY DAM SHAPE

LEDGE

CONCRETE APRON

LAST STONE OF DAM

BOT. OF FISHWAY ENTRANCE EL.61.5'

FISHWAY ENTRANCE

CROSS SECTION OF DAM LOOKING SOUTH

SCALE 1"–8'

EXISTING EDGE OF LEDGE

NORMAL HIGHWATER ELEVATION 61'

TOP OF CONCRETE EL. 58'

PROPOSED EDGE OF ROCK

NORMAL TAILRACE ELEVATION 53'

BOT. OF ENTRANCE EL.47'

PROPOSED ROCK SURFACE EL.45'+

7' WIDE

FISH ENTRANCE

VARIES~15'MAX.

EXISTING ROCK SURFACE EL. 70'+

SECTION J–J

Scale 1"=20'

REVISIONS DURING CONSTRUCTION		P.I.N. # 01–004			
A	3–12–01	ISSUED FOR BID	RMG		
B	6–11–01	ISSUED FOR CONSTRUCTION	RMG	WJB	WJB
C	6–25–01	ADD SANDBAG BARRIER– RE ISSUED FOR CONSTRUCTION	RMG	WJB	WJB
D	7–19–01	RELOCATED ACCESS RD TO APRON ISSUED FOR CONSTRUCTION	RMG	WJB	WJB

	01–004	1	12–3–01	AS–BUILT PER FALCON PROJECT 01–004	RMG	WJB	WJB	
MF	P.A.#	NO.	DATE	REVISIONS	BY	CHK.	APP.	APP.

THE HOLYOKE WATER POWER CO.

HOLYOKE RUBBER FLASHBOARD DAM INSTALLATION

SITE PLAN, CROSS SECTION AND DETAILS

HOLYOKE, MA.

RMG	WJB	WJB
3–12–01	3–12–01	3–12–01
AS SHOWN		
01–004	43733 – 40009 SH. 2	

APPENDIX E

PHOTOGRAPHS FROM 2001 BLADDER INSTALLATION

Pull Testing of clamp bar anchors

Rolling out Rubber Blabber #4

Setting Rubber Bladder #2

Setting Rubber Bladder #3

Windblown water over flashboards

Torquing clamp bar Bladder #2

2013 Rubber Dam #3 Repair

2013 Rubber Dam #2 Repair

2019 Rubber Dam # 5 Repair

APPENDIX F

2001 ANCHOR TENSION TESTING RESULTS

SAMPLE
INSPECTION CHECKLIST
CONCRETE PLACEMENT

The following characteristics of concrete placement should be reviewed:

1. Placing equipment is clean and free of loose concrete, mud, and other debris that could jeopardize the quality of the structure.

2. Reinforcing steel and embeds are clean and free of loose rust, grease or other matter that may adversely affect concrete bond.

3. Embedded piping has been tested as specified.

4. Joints and surfaces to receive concrete are free of deleterious materials.

5. Forms are clean and free of foreign material.

6. Provisions for hot or cold weather concrete protection are provided.

7. Concrete is placed in a manner to prevent segregation.

8. Placement of concrete is made in lift thickness as specified and within time restrictions between lifts for high lift placements.

9. Concrete is properly vibrated.

10. Placement is made to avoid excessive drying of fresh concrete before next lift is placed.

11. Concrete is sampled and tested at specified frequency for strength, slump, temperature and unit weight.

12. Concrete is brought to final grade and finished as specified.

PROJECT IDENTIFIER:	HRD-PULLTEST-BAY5	Sheet 1

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
5-02-1	9/26/01	Y	HRD-EPOXY-BAY5-01	11:19-11:24
5-02-2	9/26/01	Y	HRD-EPOXY-BAY5-01	11:40-11:45
5-02-5	9/26/01	Y	HRD-EPOXY-BAY5-01	11:51-11:56
5-02-6	9/26/01	Y	HRD-EPOXY-BAY5-01	12:01-12:06
5-06-2	9/26/01	Y	HRD-EPOXY-BAY5-02	12:09-12:14
5-06-3	9/26/01	Y	HRD-EPOXY-BAY5-02	12:18-12:23
5-06-4	9/26/01	Y	HRD-EPOXY-BAY5-02	12:25-12:30
5-06-6	9/26/01	Y	HRD-EPOXY-BAY5-02	12:34-12:39
5-09-1	9/26/01	Y	HRD-EPOXY-BAY5-03	12:42-12:47
5-09-2	9/26/01	Y	HRD-EPOXY-BAY5-03	12:54-12:59
5-09-4	9/26/01	Y	HRD-EPOXY-BAY5-03	1:03-1:08
5-09-5	9/26/01	Y	HRD-EPOXY-BAY5-03	1:10-1:15
5-12-2	9/26/01	Y	HRD-EPOXY-BAY5-04	1:18-1:23
5-12-3	9/26/01	Y	HRD-EPOXY-BAY5-04	1:26-1:31
5-12-5	9/26/01	Y	HRD-EPOXY-BAY5-04	1:34-1:39
5-12-6	9/26/01	Y	HRD-EPOXY-BAY5-04	1:43-1:48

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Katherine Buerger Katherine Buerger Date: 9/26/2001

Contractor Agent (print & sign) P.H. Pat Houle Date: 9/26/2001

PROJECT IDENTIFIER:	HRD-PULLTEST-BAY4	Page 1 of 4

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
04-02-01	10/02	Y	HRD-EPOXY-BAY4-01	9:01-9:06
04-02-02	10/02	Y	HRD-EPOXY-BAY4-01	9:09-9:14
04-02-04	10/02	Y	HRD-EPOXY-BAY4-01	9:25-9:30
04-02-05	10/02	Y	HRD-EPOXY-BAY4-01	9:36-9:41
04-07-02	10/02	Y	HRD-EPOXY-BAY4-02	9:45-9:50
04-07-03	10/02	Y	HRD-EPOXY-BAY4-02	9:53-9:58
04-07-06	10/02	Y	HRD-EPOXY-BAY4-02	1:58-2:02
04-11-02	10/02	Y	HRD-EPOXY-BAY4-03	2:07-2:12
04-11-04	10/02	Y	HRD-EPOXY-BAY4-03	2:15-2:20
04-11-06	10/02	Y	HRD-EPOXY-BAY4-03	2:25-2:30
04-15-01	10/02	Y	HRD-EPOXY-BAY4-04	2:35-2:40
04-15-03	10/02	Y	HRD-EPOXY-BAY4-04	2:44-2:49
04-15-05	10/02	Y	HRD-EPOXY-BAY4-04	2:52-2:57
04-19-02	10/03	Y	HRD-EPOXY-BAY4-05	3:00-3:05
04-19-03	10/03	Y	HRD-EPOXY-BAY4-05	3:11-3:16
04-19-05	10/02	Y	HRD-EPOXY-BAY4-05	3:20-3:25

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Katherine Buerger *Katherine Buerger* Date: 10/04/2001

Contractor Agent (print & sign) *Pat Hoyle P.H.* Date: *10/4/01*

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
04-24-01	10/02	Y	HRD-EPOXY-BAY4-06	3:30-3:35
04-24-05	10/02	Y	HRD-EPOXY-BAY4-06	3:39-3:44
04-24-06	10/02	Y	HRD-EPOXY-BAY4-06	3:50-3:55
04-26-03	10/02	Y	HRD-EPOXY-BAY4-07	3:58-4:03
04-26-04	10/02	Y	HRD-EPOXY-BAY4-07	4:06-4:10
04-26-06	10/02	Y	HRD-EPOXY-BAY4-07	4:13-4:17
04-32-02	10/02	Y	HRD-EPOXY-BAY4-08	4:22-4:27
04-32-03	10/02	Y	HRD-EPOXY-BAY4-08	4:30-4:35
04-32-05	10/02	Y	HRD-EPOXY-BAY4-08	4:39-4:44
04-36-03	10/03	Y	HRD-EPOXY-BAY4-09	9:55-10:00
04-36-04	10/03	Y	HRD-EPOXY-BAY4-09	10:03-10:08
04-36-06	10/03	Y	HRD-EPOXY-BAY4-09	10:10-10:15
04-40-01	10/03	Y	HRD-EPOXY-BAY4-10	10:18-10:23
04-40-02	10/03	Y	HRD-EPOXY-BAY4-10	10:26-10:31
04-40-05	10/03	Y	HRD-EPOXY-BAY4-10	10:34-10:39
04-44-02	10/03	Y	HRD-EPOXY-BAY4-11	10:42-10:47

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Katherine Buerger Katherine Buerger Date: 10/04/2001

Contractor Agent (print & sign) Pat Houle P.H. Date: 10/4/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: Use notes to document test load or duration different from above.
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
04-44-04	10/03	Y	HRD-EPOXY-BAY4-11	10:50-10:55
04-44-06	10/03	Y	HRD-EPOXY-BAY4-11	10:57-11:02
04-48-02	10/03	Y	HRD-EPOXY-BAY4-12	11:55-12:00
04-48-03	10/03	Y	HRD-EPOXY-BAY4-12	12:02-12:07
04-48-05	10/03	Y	HRD-EPOXY-BAY4-12	12:09-12:14
04-52-03	10/03	Y	HRD-EPOXY-BAY4-13	12:17-12:22
04-52-04	10/03	Y	HRD-EPOXY-BAY4-13	12:24-12:29
04-52-06	10/03	Y	HRD-EPOXY-BAY4-13	12:31-12:36
04-56-01	10/03	Y	HRD-EPOXY-BAY4-14	12:39-12:44
04-56-03	10/03	Y	HRD-EPOXY-BAY4-14	12:46-12:51
04-56-05	10/03	Y	HRD-EPOXY-BAY4-14	12:53-12:58
04-60-02	10/03	Y	HRD-EPOXY-BAY4-15	1:00-1:05
04-60-04	10/03	Y	HRD-EPOXY-BAY4-15	1:09-1:14
04-60-05	10/03	Y	HRD-EPOXY-BAY4-15	1:16-1:21
04-64-03	10/03	Y	HRD-EPOXY-BAY4-16	1:23-1:28
04-64-04	10/03	Y	HRD-EPOXY-BAY4-16	1:30-1:35

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Katherine Buerger Katherine Buerger Date: 10/04/2001

Contractor Agent (print & sign) Pat Houle Date: 10/4/01

PROJECT IDENTIFIER:	HRD-PULLTEST-BAY4	Page 4 of 4

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
04-64-05	10/03	Y	HRD-EPOXY-BAY4-16	1:37-1:42
04-67-01	10/03	Y	HRD-EPOXY-BAY4-17	1:44-1:49
04-67-02	10/03	Y	HRD-EPOXY-BAY4-17	1:51-1:56
04-67-06	10/03	Y	HRD-EPOXY-BAY4-17	1:59-2:04
04-71-02	10/03	Y	HRD-EPOXY-BAY4-18	2:06-2:11
04-71-04	10/03	Y	HRD-EPOXY-BAY4-18	2:13-2:18
04-71-05	10/03	Y	HRD-EPOXY-BAY4-18	2:20-2:25
04-74-01	10/03	Y	HRD-EPOXY-BAY4-19	2:27-2:32
04-74-03	10/03	Y	HRD-EPOXY-BAY4-19	2:33-2:38
04-74-04	10/03	Y	HRD-EPOXY-BAY4-19	2:29-2:44
04-78-03	10/03	Y	HRD-EPOXY-BAY4-20	2:45-2:49
04-78-05	10/03	Y	HRD-EPOXY-BAY4-20	2:51-2:55
04-78-06	10/03	Y	HRD-EPOXY-BAY4-20	2:57-3:02

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Katherine Buerger Katherine Buerger Date: 10/04/2001

Contractor Agent (print & sign) Pat Houle Date: 10/4/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
03-06-03	10/04	Y	HRD-EPOXY-BAY3-03	1:19-1:24
03-06-05	10/04	Y	HRD-EPOXY-BAY3-03	1:25-1:30
03-06-06	10/04	Y	HRD-EPOXY-BAY3-03	1:31-1:36
03-10-02	10/04	Y	HRD-EPOXY-BAY3-04	1:37-1:42
03-10-04	10/04	Y	HRD-EPOXY-BAY3-04	1:44-1:49
03-10-05	10/04	Y	HRD-EPOXY-BAY3-04	1:49-1:54
03-14-01	10/04	Y	HRD-EPOXY-BAY3-05	1:57-2:02
03-14-03	10/04	Y	HRD-EPOXY-BAY3-05	2:03-2:08
03-14-05	10/04	Y	HRD-EPOXY-BAY3-05	2:11-2:16
03-17-02	10/04	Y	HRD-EPOXY-BAY3-06	2:19-2:24
03-17-03	10/04	Y	HRD-EPOXY-BAY3-06	2:26-2:31
03-17-05	10/04	Y	HRD-EPOXY-BAY3-06	2:32-2:37
03-21-03	10/04	Y	HRD-EPOXY-BAY3-07	2:37-2:42
03-21-05	10/04	Y	HRD-EPOXY-BAY3-07	2:43-2:48
03-21-06	10/04	Y	HRD-EPOXY-BAY3-07	2:48-2:53
03-25-01	10/04	Y	HRD-EPOXY-BAY3-08	2:54-2:59

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/4/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.E. Date: 10/9/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: Use notes to document test load or duration different from above.
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
03-25-02	10/04	Y	HRD-EPOXY-BAY3-08	3:00-3:05
03-25-04	10/04	Y	HRD-EPOXY-BAY3-08	3:05-3:10
03-02-02	10/05	Y	HRD-EPOXY-BAY3-02	8:36-8:41
03-02-04	10/05	Y	HRD-EPOXY-BAY3-02	8:41-8:46
03-02-05	10/05	Y	HRD-EPOXY-BAY3-02	8:46-8:51
03-31-01	10/05	Y	HRD-EPOXY-BAY3-09	8:53-8:58
03-31-03	10/05	Y	HRD-EPOXY-BAY3-09	8:58-9:03
03-31-06	10/05	Y	HRD-EPOXY-BAY3-09	9:04-9:09
03-35-01	10/05	Y	HRD-EPOXY-BAY3-10	9:09-9:14
03-35-02	10/05	Y	HRD-EPOXY-BAY3-10	9:14-9:19
03-35-04	10/05	Y	HRD-EPOXY-BAY3-10	9:19-9:24
03-39-03	10/05	Y	HRD-EPOXY-BAY3-11	9:24-9:29
03-39-04	10/05	Y	HRD-EPOXY-BAY3-11	9:29-9:34
03-39-05	10/05	Y	HRD-EPOXY-BAY3-11	9:35-9:40
03-45-02	10/05	Y	HRD-EPOXY-BAY3-12	9:59-10:04
03-45-03	10/05	Y	HRD-EPOXY-BAY3-12	10:04-10:09

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/05/01

Contractor Agent (print & sign) Pat Houle Date:

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
03-45-05	10/05	Y	HRD-EPOXY-BAY3-12	10:09-10:14
03-52-02	10/05	Y	HRD-EPOXY-BAY3-14	10:16-10:21
03-52-04	10/05	Y	HRD-EPOXY-BAY3-14	10:21-10:26
03-52-06	10/05	Y	HRD-EPOXY-BAY3-14	10:26-10:31
03-54-01	10/05	Y	HRD-EPOXY-BAY3-15	10:55-11:00
03-54-03	10/05	Y	HRD-EPOXY-BAY3-15	11:00-11:05
03-54-05	10/05	Y	HRD-EPOXY-BAY3-15	11:05-11:10
03-49-06	10/05	N	HRD-EPOXY-BAY3-13	Redo
	10/08	Y	HRD-EPOXY-BAY3-16	10:14-10:19
03-49-05	10/05	N	HRD-EPOXY-BAY3-13	Redo
	10/08	Y	HRD-EPOXY-BAY3-16	10:06-10:11
03-49-04	10/05	N	HRD-EPOXY-BAY3-13	Redo
	10/08	Y	HRD-EPOXY-BAY3-16	10:01-10:06
03-48-06	10/05	N	HRD-EPOXY-BAY3-13	Redo
	---	---	HRD-EPOXY-BAY3-16	Note 4
03-48-05	10/05	N	HRD-EPOXY-BAY3-13	Redo
	---	---	HRD-EPOXY-BAY3-16	Note 4

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.
4. Batch HRD-EPOXY-BAY3-16 was tested by pulling bolts in plate 49.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/8/01

Contractor Agent (print & sign) Pat Houle Pat Houle PH. Date: 10/8/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: Use notes to document test load or duration different from above.
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
03-48-04	10/05	N	HRD-EPOXY-BAY3-13	Redo
	---	---	HRD-EPOXY-BAY3-16	Note 4
03-48-03	10/05	Y	HRD-EPOXY-BAY3-12	11:53-11:58
03-48-02	10/05	Y	HRD-EPOXY-BAY3-12	12:06-12:11
03-48-01	10/05	Y	HRD-EPOXY-BAY3-12	12:11-12:16
03-49-03	10/08	Y	HRD-EPOXY-BAY3-16	9:55-10:00
03-49-02	10/08	Y	HRD-EPOXY-BAY3-16	9:49-9:54
03-49-01	10/08	Y	HRD-EPOXY-BAY3-16	9:44-9:49
03-54-02	10/08	Y	HRD-EPOXY-BAY3-15	10:20-10:25
03-54-04	10/08	Y	HRD-EPOXY-BAY3-15	10:25-10:30
03-54-05	10/08	Y	HRD-EPOXY-BAY3-15	10:30-10:35
03-58-01	10/08	Y	HRD-EPOXY-BAY3-17	10:36-10:41
03-58-03	10/08	Y	HRD-EPOXY-BAY3-17	10:41-10:46
03-58-06	10/08	Y	HRD-EPOXY-BAY3-17	10:47-10:52
03-62-02	10/08	Y	HRD-EPOXY-BAY3-18	11:37-11:42
03-62-05	10/08	Y	HRD-EPOXY-BAY3-18	11:42-11:47

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.
4. Batch HRD-EPOXY-BAY3-16 was tested by pulling bolts in plate 49.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/08/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.H. Date: 10/8/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
03-62-06	10/08	Y	HRD-EPOXY-BAY3-18	11:48-11:53
03-66-01	10/08	N	HRD-EPOXY-BAY3-19	12:40-12:45
03-66-03	10/08	Y	HRD-EPOXY-BAY3-19	12:45-12:50
03-66-04	10/08	Y	HRD-EPOXY-BAY3-19	12:50-12:55
03-71-02	10/08	Y	HRD-EPOXY-BAY3-20	12:56-1:01
03-71-03	10/08	Y	HRD-EPOXY-BAY3-20	1:01-1:06
03-71-04	10/08	Y	HRD-EPOXY-BAY3-20	1:06-1:11

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/08/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.E. Date: 10/8/01

PROJECT IDENTIFIER:	HRD-PULLTEST-BAY2	Page 1 of 4

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
02-39-05	10/11	Y	HRD-EPOXY-BAY2-01	10:24-10:29
02-39-03	10/11	Y	HRD-EPOXY-BAY2-01	10:30-10:35
02-39-02	10/11	Y	HRD-EPOXY-BAY2-01	10:36-10:41
02-35-06	10/11	Y	HRD-EPOXY-BAY2-02	10:41-10:46
02-35-02	10/11	Y	HRD-EPOXY-BAY2-02	10:46-10:51
02-35-01	10/11	Y	HRD-EPOXY-BAY2-02	10:51-10:56
02-31-04	10/11	Y	HRD-EPOXY-BAY2-03	10:57-11:02
02-31-02	10/11	Y	HRD-EPOXY-BAY2-03	11:02-11:07
02-31-01	10/11	Y	HRD-EPOXY-BAY2-03	11:07-11:12
02-27-06	10/11	Y	HRD-EPOXY-BAY2-02	11:12-11:17
02-27-03	10/11	Y	HRD-EPOXY-BAY2-02	11:18-11:23
02-27-02	10/11	Y	HRD-EPOXY-BAY2-02	11:23-11:28
02-23-05	10/11	Y	HRD-EPOXY-BAY2-07	11:28-11:33
02-23-04	10/11	Y	HRD-EPOXY-BAY2-07	11:33-11:38
02-23-02	10/11	Y	HRD-EPOXY-BAY2-07	11:38-11:43
02-19-05	10/11	Y	HRD-EPOXY-BAY2-08	11:44-11:49

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter L. Briggs Date: 10/11/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.H. Date: 10/11/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
02-19-04	10/11	Y	HRD-EPOXY-BAY2-08	11:50-11:55
02-19-01	10/11	Y	HRD-EPOXY-BAY2-08	11:55-12:00
02-15-03	10/11	Y	HRD-EPOXY-BAY2-05	12:00-12:05
02-15-02	10/11	Y	HRD-EPOXY-BAY2-05	12:05-12:10
02-15-01	10/11	Y	HRD-EPOXY-BAY2-05	12:10-12:15
02-11-06	10/11	Y	HRD-EPOXY-BAY2-06	12:16-12:21
02-11-05	10/11	Y	HRD-EPOXY-BAY2-06	12:21-12:26
02-11-04	10/11	Y	HRD-EPOXY-BAY2-06	12:27-12:33
02-02-05	10/11	Y	HRD-EPOXY-BAY2-10	12:35-12:40
02-02-04	10/11	Y	HRD-EPOXY-BAY2-10	12:41-12:46
02-02-03	10/11	Y	HRD-EPOXY-BAY2-10	12:46-12:51
02-07-01	10/11	Y	HRD-EPOXY-BAY2-09	12:52-12:57
02-07-03	10/11	Y	HRD-EPOXY-BAY2-09	12:57-1:02
02-07-03	10/11	Y	HRD-EPOXY-BAY2-09	1:03-1:08
02-40-01	10/12	Y	HRD-EPOXY-BAY2-11	9:44-9:49
02-40-02	10/12	Y	HRD-EPOXY-BAY2-11	9:49-9:54

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative; Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/11/01

Contractor Agent (print & sign) Pat Houle Pat Houle Pfi Date: 10/11/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
02-40-04	10/12	Y	HRD-EPOXY-BAY2-11	9:54-9:59
02-44-03	10/12	Y	HRD-EPOXY-BAY2-12	10:00-10:05
02-44-05	10/12	Y	HRD-EPOXY-BAY2-12	10:05-10:10
02-44-06	10/12	Y	HRD-EPOXY-BAY2-12	10:10-10:15
02-48-01	10/12	Y	HRD-EPOXY-BAY2-13	10:15-10:20
02-48-03	10/12	Y	HRD-EPOXY-BAY2-13	10:20-10:25
02-48-05	10/12	Y	HRD-EPOXY-BAY2-13	10:25-10:30
02-52-02	10/12	Y	HRD-EPOXY-BAY2-14	10:31-10:36
02-52-03	10/12	Y	HRD-EPOXY-BAY2-14	10:36-10:41
02-52-04	10/12	Y	HRD-EPOXY-BAY2-14	10:41-10:46
02-56-02	10/12	Y	HRD-EPOXY-BAY2-15	10:46-10:51
02-56-04	10/12	Y	HRD-EPOXY-BAY2-15	10:51-10:56
02-56-05	10/12	Y	HRD-EPOXY-BAY2-15	10:56-11:01
02-60-03	10/12	Y	HRD-EPOXY-BAY2-16	11:01-11:06
02-60-04	10/12	Y	HRD-EPOXY-BAY2-16	11:06-11:11
02-60-06	10/12	Y	HRD-EPOXY-BAY2-16	11:11-11:16

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/11/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.E. Date: 10/11/01

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
02-64-03	10/12	Y	HRD-EPOXY-BAY2-17	11:17-11:23
02-64-04	10/12	Y	HRD-EPOXY-BAY2-17	11:23-11:28
02-64-06	10/12	Y	HRD-EPOXY-BAY2-17	11:28-11:33
02-68-04	10/12	Y	HRD-EPOXY-BAY2-18	11:34-11:35
02-68-05	10/12	Y	HRD-EPOXY-BAY2-18	11:39-11:44
02-68-06	10/12	Y	HRD-EPOXY-BAY2-18	11:45-11:50

Notes:
1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. Allied Testing Laboratories, Inc. Representative: Jeremy Burke.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/11/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.H. Date: 10/11/01

PROJECT IDENTIFIER:	HRD-PULLTEST-BAY1	Page 1 of 1

Northeast Generation Services
The Northeast Utilities System

HOLYOKE RUBBER DAM PROJECT
LOWER CLAMPING PLATE BOLT PULL TEST

Test Load: 1000 lbs. **Test Duration:** 5 min.

Procedure: **Use notes to document test load or duration different from above.**
Use notes to document tests in concrete less than 7 days old.

Plate -Bolt #	Test Date	Pass Y/N	Epoxy Mix No.	Notes
01-12-05	10/18/01	Y	HRD-EPOXY-BAY1-02	1:11-1:16
01-12-03	10/18/01	Y	HRD-EPOXY-BAY1-02	1:17-1:22
01-12-02	10/18/01	Y	HRD-EPOXY-BAY1-02	1:22-1:27
01-08-06	10/18/01	Y	HRD-EPOXY-BAY1-01	1:28-1:33
01-08-04	10/18/01	Y	HRD-EPOXY-BAY1-01	1:33-1:38
01-08-01	10/18/01	Y	HRD-EPOXY-BAY1-01	1:38-1:43
01-02-06	10/18/01	Y	HRD-EPOXY-BAY1-04	1:44-1:49
01-02-05	10/18/01	Y	HRD-EPOXY-BAY1-04	1:51-1:56
01-02-01	10/18/01	Y	HRD-EPOXY-BAY1-04	1:56-2:01
01-16-02	10/20/01	Y	HRD-EPOXY-BAY1-05	7:41-7:46 (Note 4)
01-16-04	10/20/01	Y	HRD-EPOXY-BAY1-05	7:48-7:53 (Note 4)
01-16-05	10/20/01	Y	HRD-EPOXY-BAY1-05	7:55-8:00 (Note 4)
01-17-01	10/20/01	Y	HRD-EPOXY-BAY1-06	8:01-8:06 (Note 4)
01-17-02	10/20/01	Y	HRD-EPOXY-BAY1-06	8:07-8:12 (Note 4)
01-17-03	10/20/01	Y	HRD-EPOXY-BAY1-06	8:13-8:18 (Note 4)

Notes:

1. Gauge reads in psi. 400 psi used equates to 1000 lbs.
2. Enerpac Cylinder RCH 121 calibrated on 9/25/2001 by AKO, Inc.
3. All tests by Allied Testing Laboratories, Inc. Representative Jeremy Burke, except as indicated by Note 4.
4. Tests by P. Houle of DOC, witnessed by W. Briggs of NGS. The bolt holes for these bolts were subject to water intrusion. Contractor diverted water flow, then re-grouted and re-drilled the holes. All bolt holes were clean and dry prior to setting these bolts in the epoxy.

Owner Agent (print & sign) Walt Briggs Walter J. Briggs Date: 10/18/01

Contractor Agent (print & sign) Pat Houle Pat Houle P.E. Date: 10/18/01

HARTFORD (860) 246-6551

ENFIELD (860) 749-7441
WINDSOR LOCKS (860) 623-9524

A.K.O.
INC.
SINCE 1923

TEST & INSPECTION REPORT

AKO, INC.

☐ A—OK—TESTING DIVISION
☐ A—OK—BALANCING DIVISION

P.O. BOX 988
HARTFORD, CONNECTICUT 06143-0988
FAX (860) 763-3067

PLANT LOCATION: 110 BROAD BROOK ROAD, ENFIELD, CT 06082

COMPLETE TESTING AND INSPECTION SERVICE

MASS, FORCE, TORQUE, FLOW, HYDROSTATIC & PNEUMATIC PROOF TESTING
MASS SPECTROMETRY LEAK DETECTION, STATIC & DYNAMIC BALANCING
SCALE & DYNAMOMETER CALIBRATION, FLUORESCENT PENETRANT & NDT TESTING

CHARGE TO

Allied testing Laboratory
115 St. George Road
Springfield, MA 01104

SHIP TO

OUR LAB NO.	YOUR REFERENCE NO.	SHIPPED FROM	VIA	SHIPMENT COMP ☐ PART ☐	DATE
82090		Enfield, CT	truck		09 25 01

PARTS CONFORMING 1
PARTS NOT CONFORMING

QUANTITY	PART NO.	DESCRIPTION
1	S/N N/A Cap. 0 - 600 psi Sub Div 10 psi	Pressure Gauge Enerpac Cylinder RCH 121

METHOD USED:

The pressure gauge was calibrated on a 0.1% certified Dead Weight Pressure Tester using Class "F" weights. Results are traceable to the National Institute of Standards and Technology.

RESULTS:

SEE ATTACHED REPORT

EQUIPMENT USED:

Procedure used was AKO-PT-602.
AKO Master H2O Manometer, S/N F18351,
Traceable to National Institute of Standards and Technology
#822/254143-94 Complies with ISO 10012-1.
Temp. 70 F, humidity 40% Cal Date 8/22/01 Due Date 8/22/02.

The above parts have been carefully tested in accordance with above methods. This inspection is limited to defects disclosed from above method only. OUR LIABILITY NOT TO EXCEED COST OF RE-INSPECTION OR RE-TEST.

RESPECTFULLY SUBMITTED,

Certification No. 113311A

William T. Inspector

HARTFORD (203) 246-6551

A.K.O. INC.

SINCE 1923

TEST & INSPECTION REPORT

ENFIELD (203) 749-7441
WINDSOR LOCKS (203) 623-9524
FAX: (203) 763-3067

AKO, INC.

☐ A—OK—TESTING DIVISION
☐ A—OK—BALANCING DIVISION

P.O. BOX 988
HARTFORD, CONNECTICUT 06143-0988

PLANT LOCATION: 110 BROAD BROOK ROAD, ENFIELD, CT 06082

COMPLETE TESTING AND INSPECTION SERVICE

MASS, FORCE, TORQUE, FLOW, HYDROSTATIC & PNEUMATIC PROOF TESTING
MASS SPECTROMETRY LEAK DETECTION, STATIC & DYNAMIC BALANCING
SCALE & DYNAMOMETER CALIBRATION, FLUORESCENT PENETRANT & NDT TESTING

CHARGE TO

Allied Testing Laboratory
115 St. George Road
Springfield, MA 01104

Pressure Gauge S/N N/A

DATE: 09-25-01

LBS FORCE	GAGE READINGS
~~200 Lbs.~~	~~95 psi~~
400 Lbs.	170 psi
600 Lbs.	250 psi
800 Lbs.	325 psi
1000 Lbs.	400 psi
1200 Lbs.	470 psi
1400 Lbs.	550 psi

GAGE READINGS	LBS FORCE
100 psi	215 Lbs.
200 psi	470 Lbs.
300 psi	735 Lbs.
400 psi	1000 Lbs.
500 psi	1265 Lbs.
600 psi	1525 Lbs.

The above parts have been carefully tested in accordance with above methods. This inspection is limited to defects disclosed from above method only. OUR LIABILITY NOT TO EXCEED COST OF RE-INSPECTION OR RE-TEST.

Subscribed and sworn to before me
this .....day of ..... 19 .....

(Seal)

.....
Notary Public

My commission expires .....

RESPECTFULLY SUBMITTED,

Certification No. 113311B

.....
Inspector

51B (51B)