

AS-BID SET NO. _____

TOWN OF WAYLAND, MA

CONTRACT SPECIFICATIONS

FOR

*SNAKE BROOK DAM
REHABILITATION*



Designed By:

Pare Corporation
10 Lincoln Road, Suite 210
Foxborough, MA 02035

September 2025

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SNAKE BROOK DAM REHABILITATION
WAYLAND, MASSACHUSETTS

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Town of Wayland
Snake Brook Dam Rehabilitation

DIVISION 0 - CONTRACT

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**SECTION 00020
INVITATION TO BID**

Snake Brook Dam
Wayland, Massachusetts

SNAKE BROOK DAM REHABILITATION

Sealed bids for the Snake Brook Dam Rehabilitation project will be received at the Town Manager's Office (41 Cochituate Road, Wayland, MA 01778) prior to 1:00PM(EST) on Tuesday, October 21st, 2025. Bid documents will be available beginning at 3:00PM(EST) on Thursday, September 25th, 2025, and can be accessed by contacting lnetlich@parecorp.com.

The proposed work at the Snake Brook Dam Rehabilitation Project includes (but is not limited to) the following:

- I. Mobilization
 1. Contractor mobilization.
 2. Install all the necessary signage.
 3. Install perimeter erosion and sediment control including turbidity barrier and silt fence.
 4. Establish access and staging areas.
- II. Control of Water: Phase I
 1. Install the Phase I water diversion system to implement and maintain the construction drawdown to the specified drawdown elevation; El. 220.0.
 2. Remove material in the area of the spillway control section to establish an emergency overflow section; 10-foot minimum linear feet in length at El. 222.
- III. Tree and Stump Removal
 1. Remove fallen trees and other debris from within the limits of work.
 2. Clear, grub, and strip all trees stumps, shrubs, brush, woody vegetation, and loam with the limits of work.
 3. Fill resulting voids with approved material in compacted lifts.
- IV. Low Level Outlet Work
 1. Remove sediment and debris to the extent needed to complete the work. Complete clean up of the impoundment bottom.
 2. Clean and slipline the existing 18-inch line with a 14-inch I.D. HDPE conduit. Grout the annulus.
 3. Install the upstream gate valve with operator extension rod along upstream slope; Install the secondary gate valve within the gatehouse.
 4. Install Operator chamber along upstream edge of crest.
 5. Install Screen.
 6. Cut and grout the existing 10-inch line.
 7. Excavate to remove the existing stone culvert; Backfill to subgrade for the proposed 10-inch conduit.
 8. Install the 14-inch conduit and cradle.
 9. Install the downstream headwall.
 10. Backfill the excavation with approved material in compacted lifts.
 11. Install the riprap scour apron.
- V. Gatehouse Work

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**SECTION 00020
INVITATION TO BID**

1. Remove the existing piping within the gatehouse.
 2. Fill the bottom of the gatehouse to within 1 foot of the 14-inch line invert.
 3. Install the 2-inch drain line along and within the cradle of the 14-inch LLO outlet pipe.
 4. Install ladder rungs.
 5. Install operator floor.
- VI. Embankment Work
1. Install riprap in areas of missing riprap.
 2. Raise the core wall from El. 225 to El. 226.75.
 3. Establish a dam crest 15 feet wide at El. 227.
 4. Regrade the downstream slope to 2.5 H:1V; Complete preparation of the gatehouse walls prior to placement of fills against gatehouse.
- VII. Control of Water: Phase 2
1. Utilize the new low level outlet system to maintain the construction drawdown and/or maintain the Phase I diversion system.
 2. Install a cofferdam upstream of the spillway work area.
 3. Develop and implement a rain event monitoring and response plan that includes operation of the low level outlet system to limit the rise of the impoundment elevation during that event.
- VIII. Spillway Work
1. Remove debris and other material to subgrade for the proposed components and grades. Complete bedrock preparation where encountered (removal to sound bedrock; cleaning; anchors, etc.).
 2. Install the proposed components inclusive of the control weir, bubbler pipe, training walls, culvert, channel paving, railings, and water level sensor system.
 3. Backfill all components with approved material in compacted lifts.
- IX. Embankment Work Near Spillway:
1. Construct the embankment extension right of the spillway.
 2. Establish the auxiliary spillway controls section left of the spillway.
 3. Install wetland replication area.
- X. Project Completion
1. Placement of loam and seed on the downstream slope, crest, and all areas disturbed by the construction activities.
 2. Notify engineer of substantial project completion.
 3. Demobilize and return disturbed areas of the site to pre-construction conditions.

BID INFORMATION FOR SNAKE BROOK DAM REHABILITATION

Mark Envelope: Bid For Snake Brook Dam Rehabilitation Project

Bid Security: Certified, treasurer's, cashiers or company check or bid bond in the sum of five (5) percent of the Total Bid is required.

A Pre-Bid Conference will be held at the project site (Snake Brook Dam, 68 Rice Road, Wayland, MA) on Thursday, October 2nd, 2025 at 11:00 a.m. to review the project.

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SECTION 00020
INVITATION TO BID

The successful bidder must furnish 100 percent Performance Bond and a Labor and Materials Bond. The estimated value of this contract is \$2,200,000.

No bidder may withdraw their Bid for a period of ninety (90) days excluding Saturdays, Sundays, and legal holidays after the date of the opening of the Bids. The successful bidder must commence within ten (10) days of receiving a written Notice to Proceed with the work completed substantially completed by December 18th, 2026. Due to a time of year restriction per the permits, tree clearing must be completed prior to April 15th, 2026.

Complete instructions for filing Bids are included in Section 00100 Instructions to Bidders.

The Owner reserves the right to waive any informality in or to reject any or all Bids if deemed to be in its best interest. Owner may conduct investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of the Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents. The Owner reserves the right to complete post-bid opening interviews to support their evaluation of the bids.

Town of Wayland
41 Cochituate Road
Wayland, MA 01778

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**SECTION 00100
INSTRUCTIONS TO BIDDERS**

PART 1.00 – GENERAL

1.01. SECURING DOCUMENTS

- A. Electronic copies of the Contract Documents will be available for download on request by emailing lnetlich@parecorp.com beginning at 3:00PM EST on Thursday, September 25th, 2025.
- B. Office copies of the proposed Contract Documents are available for viewing only at the Office of Pare Corporation.

Pare Corporation
10 Lincoln Road, Suite 210
Foxboro, Massachusetts 02035

1.02 BID FORMS

- A. In order to receive consideration, the bidder shall make all bids in strict accordance with the following:
 - a. The bidder shall make all bids upon the forms provided therefore, properly executed and all items filled out. The bidder shall not change the wording of the Bid Form and shall not add words to the wording of the Bid Form. Unauthorized conditions, limitations, or provisions shall be cause for rejection of the proposal. Alterations by erasure or interlineation may be explained or noted in the bid over the signature of the bidder.
 - b. A bidder may correct, modify, or withdraw a bid by written notice received at the Town of Wayland Town Hall up to 1 hour prior to the time and date set for the bid opening. After the bid opening, a bidder may not change the price or any other provision of the bid in a manner prejudicial to the interests of the Owner or fair competition.
 - c. No bids received after the time fixed for receiving them shall be considered. Late bids will be returned to the sender unopened.
 - d. Each bid shall be addressed to the Town of Wayland and shall be delivered to the address given in SECTION 00020 INVITATION TO BID on or before the date and hour set for opening bids. Each bid shall be enclosed in a sealed envelope bearing the title of the specifications, the name of the bidder, and the date and hour of the bid opening. It is the sole responsibility of the bidder to see that the bid is received on time.

1.03 NOTIFICATION OF CORPORATE VOTE

- A. Where the bidder is a corporation, the bidder must include with the bid form a letter indicating the corporate vote authorizing the person who signs the bid to do so.
- B. The successful bidder shall provide a similar letter to the Owner at the time the contract documents are being prepared.

1.04 EVALUATION CRITERIA

- A. In order for a bidder to be considered a responsible and responsive bidder, they must provide with their bid the following information:

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**SECTION 00100
INSTRUCTIONS TO BIDDERS**

- a. Sufficient qualifications as specified herein (1.04 B).
 - b. Cost breakdown which will be used to determine the monetary obligation of the Owner to the Contractor(s) awarded the Contract(s).
 - c. Completion of the anti-collusion and anti-fraudulent certification.
 - d. Notification of corporate vote when the bid submitted is \$20,000 or more. This is to ensure that the person signing the bid is recognized by the Bidder's company to do so.
 - e. Certificate of compliance with tax laws.
 - f. A bid bond in the amount of 5% of the total bid price.
- B. Qualifications: The Contractor shall provide within their bid adequate evidence of their qualifications (and the qualifications of their subcontractors) for completing projects of similar size and scope as this project. Qualifications include, but are not limited to, the following::
- a. Three or more dam projects of similar scope and size completed in the past 10 years.
- C. Bids shall be evaluated and the bid which represents the best value for the Owner shall be selected.

1.05 AWARDING THE BID ITEMS

- A. The Bid Form is comprised of separate bid items to be awarded in accordance to these contract specifications.

1.06 BASIS OF THE BID

- A. Lump Sum

Bidders shall submit a Bid on a lump sum basis as set forth in the Bid form.

- B. Unit Price

Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes.

Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

Unit prices for identical item numbers that are in more than one bid schedule shall be equal. Discrepancies will be resolved in favor of the lowest unit price.

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**SECTION 00100
INSTRUCTIONS TO BIDDERS**

1.07 LENGTH OF CONTRACT

- A. The successful bidder must commence within ten (10) days of receiving a written Notice to Proceed with the work substantially completed by or before June 1, 2026.

1.08 REQUESTS FOR INFORMATION

- A. Requests for information regarding this Bid shall be submitted by email to: Lneitlich@parecorp.com.

Emails shall bear the title, "19167.03 – Snake Brook Dam Rehabilitation – Bid Request for Information".
- B. The deadline for Requests for Information should be five (5) days before the bid due date, with all addenda issued at least three (3) days before the bid due date, including weekends and Holidays.

1.09 INFORMATION NOT GUARANTEED

- A. All information given on the drawings or in the other Contract Documents relating to subsurface and other conditions, natural phenomena, existing utilities and other structures is from the best resources at present available to the Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.
- B. It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated on the drawings or in the other Contract Documents.
- C. It is agreed further and understood that no bidder or contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claims or demand against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing utilities or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

1.10 BIDDERS TO INVESTIGATE

- A. Bidders must satisfy themselves by personal examination of the site of the Work and by such other means as they may wish, as to the actual conditions there existing, the character and requirements of the Work, the difficulties attendant upon its execution, and the accuracy of all estimated quantities stated in the Bid.

1.11 REDUCTION IN THE SCOPE OF WORK

- A. The Owner reserves the right to decrease the scope of the work to be done under this Contract and to omit any work in order to bring the cost within available funds. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any items as set forth in the BID, either prior to executing the Contract or at any time during the progress of the work. The Owner further reserves the right, at any time during the progress of work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

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SECTION 00100
INSTRUCTIONS TO BIDDERS

1.12 MASSACHUSETTS SALES AND USE TAX

- A. Materials and equipment purchased for permanent installation in this project will be exempt from the Massachusetts Sales and Use Tax. The exemption certificate number will be furnished to the Contractor. Each bidder shall take this exemption into account in calculating his bid for the work.

1.13 INSURANCE CERTIFICATES

- A. The Contractor will not be permitted to start any construction work until approved certificates covering all insurances called for under Supplementary Condition 6.00 of Section 00800 have been submitted.

1.14 RETURN OF BID BONDS TO UNSUCCESSFUL BIDDERS

- A. Bid bonds for all unsuccessful bidders will be returned.

PART 2.00 – PRODUCTS

Not Used

PART 3.00 – EXECUTION

Not Used

END OF SECTION

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SECTION 00310
FORM FOR GENERAL BID

TO: Town of Wayland
41 Cochituate Road
Wayland, MA 01778

PROJECT: Snake Brook Dam Rehabilitation
Wayland, MA
Pare Project No. 19167.03

DATE: _____

SUBMITTED BY:

(full name)

(full address)

1. OFFER:

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Pare Corporation, Engineer for the above-mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work, **Snake Brook Dam Rehabilitation**, for the Price of:

A. Total Base Bid Price: \$.....dollars

TOTAL BASE BID PRICE IN WORDS.....dollars,
in lawful money of the United States of America and,

If this Bid is accepted, We, the undersigned, agree to commence WORK under this Contract on or before a date to be specified in the NOTICE to PROCEED and to substantially complete the PROJECT by December 18th, 2026.

We have included herewith, the unit price bid forms, and the required security deposit or Bid Bond as required by the Instruction to Bidders.

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SECTION 00310
FORM FOR GENERAL BID

UNIT PRICES

NOTE: THE TOTAL BID ITEM PRICE FOR EACH ITEM MUST BE WRITTEN IN WORDS AND FIGURES.
IN CASE OF DISCREPANCY, THE AMOUNT SHOWN IN WORDS WILL GOVERN.

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT BID PRICE	TOTAL BID ITEM PRICE
1.	Contract Bonds	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
2.	General Requirements	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
3.	Mobilization and Demobilization	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
4.	Control of Water	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
5.	Clear, Grub, and Strip	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
6.	Erosion and Sediment Controls	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
7.	Pond Bottom Clean Up	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
8.	Downstream Slope Regrading	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					

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SECTION 00310
FORM FOR GENERAL BID

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT BID PRICE	TOTAL BID ITEM PRICE
9.	Core Wall Raising	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
10.	Crest Regrading	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
11.	LLO - Slipline	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
12.	LLO – Upstream Controls	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
13.	LLO – Operator Chamber	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
14.	10-inch Line Abandonment	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
15.	LLO – Downstream Controls	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
16.	LLO – Outlet Conduit Earthwork	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
17.	Over excavation and Replacement for LLO Outlet Conduit	CY	20	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					

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SECTION 00310
FORM FOR GENERAL BID

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT BID PRICE	TOTAL BID ITEM PRICE
18.	LLO – Outlet Conduit Installation	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
19.	LLO – DS Headwall	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
20.	LLO – Discharge Apron	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
21.	Upstream Slope Granite Block Paving – Below Water	SY	15	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
22.	Upstream Slope Granite Block Paving – Above Water	SY	75	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
23.	Gatehouse – Chamber Floor Work	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
24.	Gatehouse – Access Improvements	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
25.	Spillway - Earthwork	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
26.	Spillway – Bedrock Removal	CY	30	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					

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SECTION 00310
FORM FOR GENERAL BID

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT BID PRICE	TOTAL BID ITEM PRICE
27.	Spillway – Bedrock Preparation	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
28.	Spillway – Control Weir	CY	8	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
29.	Spillway – Training Walls	CY	98	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
30.	Spillway – Bubbler Pipe	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
31.	Spillway – Discharge Culvert	CY	24	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
32.	Spillway – Channel Paving	SY	170	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
33.	Spillway – Railing	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
34.	Embankment Work Right of Spillway	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
35.	Access Gate	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					

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SECTION 00310
FORM FOR GENERAL BID

BID ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT BID PRICE	TOTAL BID ITEM PRICE
36.	Establish Grass	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
37.	Imported Engineered Fill	TN	830	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
38.	Imported Gravel Borrow	TN	2190	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
39.	Imported Loam	CY	750	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
40.	Imported Trap Rock	TN	64	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
41.	Imported Granite Block Paving	TN	135	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
43.	Wetland Replication	LS	1	_____	_____
TOTAL BID ITEM PRICE IN WORDS: _____					
TOTAL BASE BID PRICE _____					
TOTAL BASE BID PRICE IN WORDS _____					

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SECTION 00310
FORM FOR GENERAL BID

2.00 SAFETY AND HEALTH REGULATIONS

These construction documents, and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of State and Federal Law(s).

In the event of any inconsistencies between the above laws and regulations and the provisions of these documents, the laws and regulations shall prevail.

3.00 ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for thirty (30) days, excluding Saturdays, Sundays, and legal holidays, from the Bid closing date.

If this Bid is accepted by the Owner within the time period stated above, we will:

Execute the Agreement within three (3) days (excluding Saturdays, Sundays, and legal holidays) of receipt of Notice of Award.

Furnish the required Performance Bond and Labor and Material Payment Bond within three (3) days (excluding Saturdays, Sundays, and legal holidays) of receipt of Notice of Award.

Commence work within ten (10) days (excluding Saturdays, Sundays, and legal holidays) of receiving a written Notice to Proceed.

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which the Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

4.00 CONTRACT TIME

The successful bidder must commence within ten (10) days of receiving a written Notice to Proceed with the work substantially completed by or before December 18th, 2026. If the work is not substantially completed by that date, the contractor shall be assessed \$1,000 per day for liquidated damages until such time that the work is completed. Substantial completion shall be defined as all work having been completed at the site with the exception of complete vegetation establishment; an additional growing season will be allowed for complete vegetation establishment.

One specific interim deadline for the project is to complete the tree clearing work prior to April 15th, 2026, per the time of year restrictions provided within the project permit authorizations relative to a specific endangered species present at this site; long-eared bat.

5.00 CONTRACT DOCUMENTS

The Contract Documents consist of the following:

1. Bid Form Document (included herein)
2. Drawing Set Entitled "Snake Brook Dam Rehabilitation"
3. Contract Specifications
4. Bid Addenda

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**SECTION 00310
FORM FOR GENERAL BID**

6.00 BID BOND

See Specification Section 00410.

7.00 REFERENCES

CONTRACTOR REFERENCES FOR SIMILAR PROJECTS

Contractor Name: _____

	<u>Project Name</u>	<u>Contact Name / Number</u>	<u>Email</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

Use additional pages if necessary.

Attach narrative description of the project scope with sufficient detail that demonstrates relevance to this project, contact with current contact number, and project value for at least three projects of similar scope and size that have been completed in the last 10 years. Include more projects as needed to demonstrate recent past experience relevant to the different components of this project.

SUB-CONTRACTOR REFERENCES FOR SIMILAR PROJECTS

Contractor to provide information herein (with attachments as necessary) to identify any significant components of the project that the Contractor intends to team with a subcontractor to perform; to provide the information and qualifications for each subcontractor identified.

Sub-Contractor Name: _____

Scope of Work: _____

	<u>Project Name</u>	<u>Contact Name / Number</u>	<u>Email</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

Sub-Contractor Name: _____

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**SECTION 00310
FORM FOR GENERAL BID**

Scope of Work: _____

	<u>Project Name</u>	<u>Contact Name / Number</u>	<u>Email</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

Use additional pages if necessary.

Attach narrative description of project scope with sufficient detail that demonstrates relevance to this project, contact with current contact number, and project value for at least three projects of similar scope and size as the component of the work that the subcontractor will be involved with work that have been completed in the last 10 years.

This is to certify that the names of the above mentioned subcontractors are submitted with full knowledge and consent of the respective parties.

The bidder warrants that none of the proposed subcontractors have any conflict of interest as respects the contract.

Bidder _____

(name)

By _____

(signature & title)

SECTION 00310
FORM FOR GENERAL BID

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

Project Name: Snake Brook Dam Rehabilitation

State of _____

County of _____

I state that I am _____

(Title)

of _____ (Name of Firm)

and that I am authorized to make this Affidavit on behalf of the firm and its owners, directors and officers. I am the person responsible in firm for the price(s) and the amount of this Bid.

I state that:

1. The price(s) and amount of this Bid have been arrived at independently and without consultation, communication or agreement with any other contractor, Bidder or potential Bidder.
2. Neither the price nor the amount of this Bid, and neither the approximate price(s) nor approximate amount of this Bid have been disclosed to any other firm or person who is a Bidder or potential Bidder, and they shall not be disclosed before the Bid opening.
3. No attempt has been made or shall be made to induce any firm or person to refrain from bidding on this Contract, to submit a Bid higher than this Bid or to submit any intentionally high or noncompetitive Bid or other form of complementary Bid.
4. The Bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive Bid.
5. (Name of Firm), its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four (4) years been convicted or found liable for any act involving conspiracy or collusion prohibited by state or federal law in any jurisdiction with respect to bidding on any public contract except as follows:

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SECTION 00310
FORM FOR GENERAL BID

I state that _____ (Name of Firm) understands and acknowledges that the above representations are material and important and shall be relied on by the Owner in awarding the Contract(s) for which this Bid is submitted. I understand and my firm understands that any misstatement in this Affidavit is and shall be treated as fraudulent concealment from the Owner of the true facts relating to the submission of the Bids for this Contract.

Name and Company Position

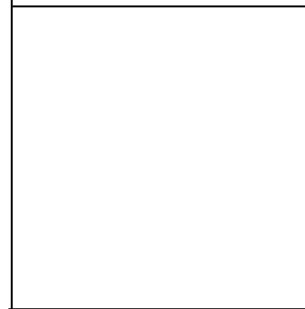
SWORN TO AND SUBSCRIBED BEFORE ME THIS

_____ day of _____, 2025

_____ (Notary Public)

My commission expires: _____

Notary Public Seal:



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SECTION 00310
FORM FOR GENERAL BID

ANTI FRAUDULENT DOCUMENTATION OF PRIME BIDDER

- (1) Attach documentation from the Secretary of the Commonwealth of Massachusetts stating that there are no pending proceedings under the Massachusetts General Laws Chapter 156D section 14.21 for the Bidder's dissolution, no articles of dissolution have been filed by the BIDDER, the BIDDER has filed all annual reports, the BIDDER has paid all fees with respect to such reports, and the BIDDER has legal existence and is in good standing with the Secretary of the Commonwealth of Massachusetts.

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SECTION 00310
FORM FOR GENERAL BID

CERTIFICATE OF COMPLIANCE WITH TAX LAWS

PROJECT: Snake Brook Dam Rehabilitation

PROJECT LOCATION: Wayland, Massachusetts

AWARDING AUTHORITY: Town of Wayland, MA

Pursuant to MGL, c. 62C, § 49A(b), I, _____,

(Name and Title)

authorized

signatory

for

(Contracting Party)

whose principal place of business is

(Street Address, City/Town, State)

do hereby certify under the pains and penalties of perjury that to the best knowledge and belief, have filed all state tax returns and paid all state taxes required under law, and complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

If an Individual:

Social Security Number _____

If a Corporation:

Federal I.D. Number _____

(Authorized Signature)

Subscribed and sworn to before me

This _____ day of _____, 2025

(Title)

My Commission Expires _____

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SECTION 00310
FORM FOR GENERAL BID

**EQUAL EMPLOYMENT OPPORTUNITY/ AFFIRMATIVE ACTION/
NON-DISCRIMINATION**

BIDDER'S CERTIFICATE

The undersigned Bidder hereby certifies that, if awarded the contract, he/she will, in the performance of this contract, comply with all statutes and Executive Orders of the Commonwealth of Massachusetts regarding equal employment opportunity and non-discrimination in the workplace, in particular M.G.L. c.151B.

Bidder certifies that he will comply with Minority/Woman Business Enterprise and/or Affirmative Action requirements as may be set forth under these contract provisions.

Check if Bidder is certified by SOMWBA as either of the following :

___ Minority Business Enterprise.

___ Woman Business Enterprise.

Check if Bidder intends to use MBE/WBE as material supplier. _____

Signature of Individual, or Corporation Name

By: _____
Corporate Office & Title (if applicable)

SECTION 00310
FORM FOR GENERAL BID

CONFLICT OF INTEREST CERTIFICATE

PROJECT: Snake Brook Dam Rehabilitation

PROJECT LOCATION: Wayland, Massachusetts

AUTHORITY: Town of Wayland

I hereby certify that no official or employee of the Town of Wayland has a financial interest in the Bidder's proposal or executed Contract or in the expected profit to arise therefrom, unless that official or employee has been compliance with the provisions of MGL, c. 43, § 27, *Interest in Public Contracts by Public Employees Prohibited; Penalty*, and with the provisions of MGL, c. 268A, § 20, *Municipal Employees; Financial Interest in Contracts; Holding One or More Elected Positions*.

If an Individual:

Social Security Number: _____

If a Corporation:

Federal I.D. Number: _____

(Authorized Signature)

Subscribed and sworn by me this

_____ day of _____, 2025

(Title)

My commission expires _____

SECTION 00310
FORM FOR GENERAL BID

BIDDER'S CERTIFICATION REGARDING PAYMENT OF PREVAILING WAGES

The undersigned Bidder hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable Minimum Wage Rates (hereinafter Prevailing Wage Rates) established for the project by the Massachusetts Department of Labor and Workforce Development, Division of Occupational Safety. The undersigned Bidder agrees to indemnify the awarding authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates, or (2) the failure of the Bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

Dated: _____

Name of Bidder _____

By _____

Printed Name _____

Title _____

END OF SECTION

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SECTION 00410
BID BOND

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

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

BID

Bid Due Date:

Description (*Project Name and Include Location*):

BOND

Bond Number:

Date (Not earlier than Bid due date):

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal) Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

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SECTION 00410
BID BOND

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder who submitted a responsive Bid as determined by Owner for the work required by the Contract Documents, provided that:
 - 1.1 If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the penal sum set forth on the face of this Bond, and
 - 1.2 In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.
 - 1.3 Recovery under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

00410-2

**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE**

THIS AGREEMENT is dated as of the _____ day of _____ in the year ____ by and between the Town of Wayland, acting through its Town Manager, (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work SNAKE BROOK DAM REHABILITATION as specified or indicated in the Contract Documents. The Work is generally described as follows:

SEE SPECIFICATION SECTION 01000 – SUMMARY OF WORK

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

SNAKE BROOK DAM REHABILITATION

Article 2. ENGINEER.

The Project has been designed by Pare Corporation, who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME.

3.1. The Work will be ready for final payment application in accordance with paragraph 14.07 of the General Conditions and in accordance with the contract time outline within subsection "4.0 Contract Time" of specification section "00310 Form For General Bid".

3.2. Substantial completion shall be as defined within subsection "4.0 Contract Time" of specification section "00310 Form For General Bid".

3.3. *Liquidated Damages.* OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER one-thousand (\$1,000.00) for each day that expires after the time specified within subsection "4.0 Contract Time" of specification section "00310 Form For General Bid".

Article 4. CONTRACT PRICE.

4.1. OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract

Documents in current funds as follows:

- 4.1.1 In accordance with the Unit Price Schedule of the Contractor's Bid (SECTION 00310).
- 4.1.2 The total bid price is _____. Final payment will be based on actual quantities.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1. *Progress Payments.* OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, every month as provided below. All progress payments will be on the basis of the progress of the Work based on the number of units completed.

- 5.1.1. Prior to Substantial Completion, progress payments will be made in an amount indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions.

95% of Work completed. (5% retainage)

90% of materials and equipment not incorporated in the Work (10% retainage) (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in paragraph 14.02 of the General Conditions).

- 5.1.2. Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 95% of the Contract Price based on completed units, less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with Article 14 of the General Conditions.

5.2. *Final Payment.* Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall pay the remainder of the Contract Price based on completed units as recommended by ENGINEER as provided in said paragraph 14.07.

Article 6. INTEREST.

All monies not paid when due as provided in Article 14 of the General Conditions shall bear interest at the current rate allowed by law at the place of the Project.

Article 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

7.1. CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2. CONTRACTOR has studied carefully all reports of explorations, tests of subsurface conditions and drawings of physical conditions which are identified in the Contract Documents as provided in

paragraph 4.02 of the General Conditions of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to rely.

7.3. CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.02 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by Contractor for such purposes.

7.4. CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.03 of the General Conditions.

7.5. CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

7.6. CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1. This Agreement.
- 8.2. CONTRACTOR's Bid – Section 00310 to the extent accepted by the Owner
- 8.3. Contract Security
- 8.4. Insurance Certificates
- 8.5. General Conditions
- 8.6. Supplementary General Conditions.
- 8.7. Supplemental Conditions
- 8.8. Specifications.
- 8.9. Drawings with each sheet bearing the following general title: Snake Brook Dam

Rehabilitation

8.10. Addenda numbers ____ to ____ inclusive.

8.11. Documentation submitted by CONTRACTOR prior to Notice of Award to the extent accepted by the Owner.

8.12. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.03 and 3.04 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.03 and 3.04 of the General Conditions.

Article 9 MISCELLANEOUS.

9.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2. No assignment by CONTRACTOR of any rights or interests in the Contract Documents will be binding on OWNER without the prior written consent of OWNER; and specifically but without limitation monies that may become due to CONTRACTOR and monies that are due to CONTRACTOR may not be assigned without such consent (except to the extent the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release CONTRACTOR from any duty or responsibility under the Contract Documents.

OWNER shall have the right to assign the Contract Documents, or specified provisions of, or rights and/or obligations under, the Contract Documents, to any person or private or governmental entity to whom OWNER transfers the Snake Brook Dam and OWNER will be released from any duty and responsibility so assigned.

9.3. CONTRACTOR binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

9.4. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

9.5 The undersigned hereby certifies that it 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 10 hours in duration at the time the employee begins works and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that it will comply fully with all laws and regulations applicable to awards made subject to section 39M of Chapter 30 of the General Laws.

9.6 The CONTRACTOR agrees not to discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during

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SECTION 00500
AGREEMENT

their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

9.7 The CONTRACTOR agrees not to participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

9.8 The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in Section 00700 GENERAL CONDITIONS as amended by the supplementary general conditions, and to make payments on account thereof as provided in Section 00700 GENERAL CONDITIONS.

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SECTION 00500
AGREEMENT

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

TOWN OF WAYLAND

By: _____

By: _____

By: _____

By: _____

[CORPORATE SEAL]

Attest _____

[CORPORATE SEAL]

Address for giving notices:

Attest _____

Address for giving notices:

License No. _____

(where applicable)

Agent for service of process: _____

(If OWNER is a corporation, attach evidence of authority to sign. If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of OWNER-CONTRACTOR Agreement)

(If CONTRACTOR is a corporation or a partnership, attach evidence of authority to sign.)

Designated Representative

Designated Representative:

Name: _____

Name: _____

Title: _____

Title: _____

Address: _____

Address: _____

Phone: _____

Phone: _____

Facsimile: _____

Facsimile: _____

END OF SECTION

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SECTION 00510
NOTICE OF AWARD

To: _____

Date: _____, 2025

Attention: _____

RE: Snake Brook Dam Rehabilitation

<Enter Firm Name Here>:

Please be advised that the Town of Wayland has approved award of the above referenced project to your firm in the amount of \$ _____.

You are requested to submit to the Owner, six (6) copies of the necessary insurance certificates and/or policies and Performance and Payment Bonds required as specified in the Information to Bidders and the Contract Form Section of the Specifications

Also, enclosed are six (6) copies of the Contract Agreement and the Exempt Purchase Certificate. Please review these documents verifying that all information regarding your company is correct and complete.

In all instances, please ensure that signature are witnessed where called for on Bonds and do not predate the contract date.

We request that the Contract Agreement, insurance certificates and bonds be returned to the Owner no later than ten (10) days from the date of this Notice so that they may be reviewed with our Counsel and incorporated into the Contract Documents. Once all forms have been received and accepted by the Town of Wayland, you will be contacted regarding the scheduling of a pre-construction meeting.

Should you have any questions, please feel free to contact the Owner at your earliest convenience.

END OF SECTION

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SECTION 00550
NOTICE TO PROCEED

To: _____

Date: _____, 2025

Project: Snake Brook Dam Rehabilitation

You are hereby notified to commence work on the referenced Project in accordance with the above-referenced Contract dated _____, on or before _____. You are to fully complete the Work in accordance with the dates provided within the contract documents. Before you may start Work, you must satisfy all requirements set forth in Article 2 of the General Conditions.

Town of Wayland

BY: _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by:

(Signature)

(Name)

END OF SECTION

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SECTION 00610
PERFORMANCE BOND

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

CONTRACTOR (*Name and Address*): SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

SECTION 00610
PERFORMANCE BOND

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
 - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

SECTION 00610
PERFORMANCE BOND

5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

- 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
- 5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
- 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

8. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located, and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

- 11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
- 11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

- 11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – *(Name, Address and Telephone)*

Surety Agency or Broker:

Owner's Representative *(Engineer or other party)*:

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SECTION 00615
PAYMENT BOND

1.00 GENERAL

- A. The bonding company shall be licensed to do business in the Commonwealth of Massachusetts.
- B. Payment Bond shall be in the amount of 100% of the contract price, as security for faithful performance of the Contract and executed by a surety company licensed to do business in the Commonwealth of Massachusetts.
- C. Payment Bond to be bound to the Town of Wayland.

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**SECTION 00615
PAYMENT BOND**

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

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

(Seal)
Contractor's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to Owner, this obligation shall be null and void if Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2 Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
6. Reserved.
7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.
8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.
9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated

to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

15.1 Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address, and Telephone*)

Surety Agency or Broker:

Owner's Representative (*Engineer or other*):

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



Issued and Published Jointly by



Endorsed by



These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance

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with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

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23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and

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submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the

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result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:*
1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).
- E. *Furnish, Install, Perform, Provide:*
1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

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2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance:* After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

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1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
2. a preliminary Schedule of Submittals; and
3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other

submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract

Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or

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requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. abnormal weather conditions;
 - 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 - 4. acts of war or terrorism.

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- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

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2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or

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make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

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

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

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D. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

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2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

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- b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
- 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 - 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the

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costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A 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 accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

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- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

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- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
 - 4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
 - 1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 - 2. claims for damages insured by reasonably available personal injury liability coverage.
 - 3. 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 therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
 - 1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 - 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 - 3. Broad form property damage coverage.
 - 4. Severability of interest.
 - 5. Underground, explosion, and collapse coverage.
 - 6. Personal injury coverage.

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7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against 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. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

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3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by 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 for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal;

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demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
 5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

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- C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property

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insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

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- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

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- a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
- b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests

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for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

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- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

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- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

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- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that

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the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

- A. *Shop Drawing and Sample Submittal Requirements:*
 - 1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

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- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.
 1. *Shop Drawings:*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.
 2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

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D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

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3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other

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than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.

- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages

(including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER’S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer’s status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner’s responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner’s Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will

not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will

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not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must

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submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders:* Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a

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Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under

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the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the

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Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the

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cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

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- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
 - 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
- E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a

decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and

employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 - 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
 - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

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2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

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6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.
- D. *Payment Becomes Due:*
 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.
- E. *Reductions in Payment by Owner:*
 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

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- j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 - 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the

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certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 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. 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 and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is

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satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

- C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.
- D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

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4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.

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- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

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3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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PART I - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 1 DEFINITIONS

SC-1.01 A.8

Delete Subparagraph 1.01.A.8 in its entirety and insert the following in its place:

8. Bidding Requirements - The Official Notice, Notice of Public Hearing, Advertisement or Invitation to Bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid form with any supplements.

SC-1.01 A.12

Insert the following language before the word "Agreement" in the first and second sentence of the definition 1.01A.12 entitled "Contract Documents" in the General Conditions:

Invitation to Bid, Instructions to Bidders, and

SC-1.01 A.20

Add the following new paragraph after paragraph 1.01.A.20:

- 20A. Furnish or Supply: To supply and deliver, unload, inspect for damage.

SC-1.01 A.23

Add the following new paragraph immediately after paragraph 1.01.A.23:

23. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and ready for use.

SC-1.01 A.31

Add the following new paragraph immediately after paragraph 1.01.A.31:

33. Products: Means, materials and equipment that Contractor furnishes and provides, other than labor and services.

SC-1.01 A.34

Add the following new paragraph immediately after paragraph 1.01.A.34:

- 34A. Provide: To furnish or supply, plus install.

ARTICLE 2. PRELIMINARY MATTERS

SC-2.01 B

Delete paragraph 2.01B of the General Conditions in its entirety and insert the following in its place:

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- B. Before any work at the site is started, Contractor shall deliver to Owner, with a copy to Engineer, certificates of insurance (and other evidence of insurance requested by Owner) which Contractor is required to purchase and maintain in accordance with the requirements of Article 5.
1. Contractor shall include and identify on the certificate of insurance, indemnification as required by Article 6.20.
 2. Engineer shall furnish to the Contractor, the form for Certificate of Insurance to be completed.

SC-2.05 A.3

Amend the first sentence of Paragraph 2.05 A.3 by inserting the words "Except for Unit Price Work" at the beginning of the sentence.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, AND REUSE

SC-3.01 A

Add a new paragraph immediately after paragraph 3.01 A of the General Conditions which is to read as follows:

1. Each and every provision of law and clause required by law to be inserted in the Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though they were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.
2. Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications.

SC-3.01 C

Add the following new paragraph immediately after paragraph 3.01 C:

- D. Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications.

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

SC-4.04 B.2

Delete the following words from line 5 of paragraph 4.04B.2 of the General Conditions:

"or not shown or indicated with reasonable accuracy"

SC-4.05 A

Add a new paragraph at the end of paragraph 4.05A of the General Conditions which is to read as follows:

- B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate and satisfactory construction and completion of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

SC-4.06

Delete Paragraphs 4.06.A. and 4.06.B. in their entirety and insert the following in their place:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not used.

ARTICLE 5 - BONDS AND INSURANCE

SC-5.01 A

Amend paragraph 5.01.A to require bond values as follows:

- A. Furnish a 100 percent Performance Bond.

Furnish a 100 percent Payment Bond.

SC-5.01 C

Add the following language at the end of Paragraph 5.01.C:

In addition, no further progress payments under the Agreement will be made by Owner until Contractor complies with the provisions of this paragraph.

SC-5.02 A

Add the following language at the end of Paragraph 5.02.A.:

Insurance companies shall have a VI or better rating by Best's Insurance Guide Rating.

SC-5.04

Add the following new paragraphs immediately after Paragraph 5.04.B:

- B. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
 - 1. Worker's Compensation, and related coverage under Paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions:
 - a. State (Statutory): \$500,000
 - b. Applicable Federal (e.g., Longshoreman's): Statutory
 - c. Employer's Liability: \$1,000,000 each accident and/or disease per employee
 - 2. Contractor's General Liability under Paragraphs 5.04.A.3 through 5.04.A.6 of the General Conditions which shall include completed operations and product liability coverage's and eliminate the exclusion with respect to property under the care, custody, and control of Contractor or provide equivalent coverage under Builders Risk:
 - a. General Aggregate: (Except Products-Completed Operations): \$15,000,000
 - b. Products-Completed Operations Aggregate: \$1,000,000
 - c. Personal and Advertising Injury: \$1,000,000

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- d. Each Occurrence (Bodily Injury and Property Damage): \$1,000,000
 - e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.
 - f. Excess or Umbrella Liability
 - (1) General Aggregate: \$5,000,000
 - (2) Each Occurrence: \$1,000,000
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
- a. Bodily Injury:
 - Each Person \$1,000,000
 - Each Accident \$1,000,000
 - b. Property Damage:
 - Each Accident \$1,000,000
 - or
 - Combined Single Limit of \$1,000,000
4. The Contractual Liability coverage required by Paragraph 5.04.B.3 of the General Conditions shall provide coverage for not less than the following amounts:
- a. Bodily Injury:
 - Each Accident \$1,000,000
 - Annual Aggregate \$2,000,000
 - b. Property Damage:
 - Each Accident \$1,000,000
 - Annual Aggregate \$2,000,000
- C. The successful bidder must provide the Owner with an original certificate of insurance (faxes are not acceptable), for general liability, automobile liability and Professional Liability Errors and Omissions, in a minimum amount of \$5 million, naming the Owner as the additional insured and so stated on the certificate with the bid name and bid number. It is the vendor's responsibility to provide the Owner with an updated Certificate of Insurance upon expiration of the original certificate. Also required is a certificate of insurance for Worker's Compensation (Statutory Limits) Emp. Lia.: \$500,000.00. The successful bidder will provide said insurance within ten (10) calendar days after notification of award or the Owner reserves the right to rescind said award. Failure to provide adequate insurance coverage within the specified duration of time as set forth is a material breach of contract and grounds for termination of the contract.

SC-5.05

Delete paragraph 5.05 of the General Conditions in its entirety and insert the following in its place:

- A. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:
- 1. Bodily Injury:
 - Each Occurrence \$1,000,000
 - 2. Property Damage:
 - Each Occurrence \$1,000,000
 - Annual Aggregate \$1,000,000

Delete Paragraph 5.06.B. in its entirety.

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

SC-6.03 C

Add the following new paragraph(s) immediately after Paragraph 6.03.C.

D. Basis of Design

1. Unless otherwise indicated, design of this Project is based upon the material or Supplier's equipment named first in the list of manufacturers in a Specification section. Engineer has performed an evaluation of other listed manufacturers for compliance with the requirements of the Contract Documents.
2. When other manufacturers are listed, Contractor may be required to make modifications or adjustments, at Contractor's expense, to coordinate the installation of the furnished equipment with associated elements of Work, such as piping and electrical connections, or support and mounting provisions.

SC-6.05 A.2.d

Add the following new subparagraphs immediately after Subparagraphs 6.05.A.2d.:

- e. The application for review of a substitute shall be on the Contractor's Application for Consideration of Substitution form provided in the Contract Documents and shall be included with the submittal. The Installation List included with the Application shall include only installations of the proposed substitute in applications of approximately the same size and complexity, and the same design as those proposed to be furnished for this Project. Include in the Installation List, as a minimum, the owner's name, address, and telephone number, Engineer's name, address and telephone number, location and name of project, installation date, startup date, and date of final acceptance by owner; and application of material or equipment.
- f. If the experience indicated by the Installation List does not demonstrate at least five years of successful operation of the proposed substitute item, Owner may require Contractor and Supplier to furnish, at Contractor's expense, a special performance guarantee with surety bond as required by Paragraph 6.05.D of the General Conditions with respect to the substitute. Only the time period between final acceptance of the proposed material or equipment on the referenced project and the Bid date for this Project will count towards the required satisfactory experience of the proposed substitute item. Engineer will be the sole judge of acceptability of experience, time credited, and whether the special performance guarantee will be required for a substitute item. Engineer will notify Contractor which proposed substitute(s) will require a special performance guarantee and surety bond.

SC-6.06 B

Add the following new paragraph immediately after Paragraph 6.06.B:

1. A list of the names of Bidder's proposed Subcontractors and Suppliers whose portion of the Work exceeds \$100,000 , along with the Work to be performed by each.

SC-6.06 F-G

Renumber subparagraph 6.06F to 6.06G and subparagraph 6.06G to 6.06H and add new subparagraph as follows:

- F. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid to Contractor in accordance with Contractor's Applications for Payment on account of the particular Subcontractor's, Suppliers, other person's, or other organization's Work.

Add the following new paragraph immediately after Paragraph 6.06.H.:

- I. Contractor shall maintain at the Site a list of Subcontractors and Suppliers, to the extent practicable, performing Work or furnishing materials on the Project.

SC-6.08 A

Delete the last sentence in Paragraph 6.08.A. in its entirety and replace with the following:

Unless otherwise specified in the General Requirements or Specifications, Contractor shall pay all charges of utility owner for connections for providing permanent service to the Work.

SC-6.10 A

Add a new paragraph immediately after Paragraph 6.10.A:

- B. Owner is exempt from payment of sales and compensating use taxes of the State of Rhode Island and of cities and counties thereof on all materials to be incorporated into the Work.
 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-6.12 A

Delete the last sentence of Paragraph 6.12.A. in its entirety and insert the following in its place:

Upon Substantial Completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

SC-6.16 A

Add the following new paragraph immediately after Paragraph 6.16.A.:

- B. In emergencies affecting the safety or protection of persons or property or maintenance of temporary construction at the Site or adjacent thereto, and Contractor cannot be reached, Owner may act to attempt to prevent threatened damage, injury, or loss. Owner will give Contractor and Engineer prompt written notice of such action and the cost of the correction or remedy shall be charged against Contractor. A Change Order will be issued to document the change in Contract Price.

SC-6.17 E

Add the following new paragraphs immediately after Paragraph 6.17.E.:

- F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
- G. After Engineer has reviewed and approved a Shop Drawing or Sample, Contractor shall provide the material or equipment approved. Engineer will not review subsequent submittals of a different manufacturer or Supplier unless Contractor provides sufficient information to Engineer that the approved material or equipment is unavailable, time of delivery will delay the construction progress but not as a result of Contractor's failure to timely pursue the Work or to coordinate various activities properly, or Owner requests a different manufacturer or Supplier.

ARTICLE 7. OTHER WORK AT THE SITE

SC-7.04

Add the following new paragraph at the end of Article 7 of the General Conditions:

- A. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the Work at the site be made by any separate contractor against Contractor, Owner, Engineer, Engineer's Consultants, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and Engineer's Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, or Engineer's Consultants, to the extent based on a claim arising out of the Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of Work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer or Engineer's Consultants, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or Engineer's Consultants, on such damage or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Engineer's Consultants, for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, or Engineer's Consultant, for activities that are their respective responsibilities.

ARTICLE 8. OWNER'S RESPONSIBILITIES

SC-8.06.

Delete paragraph 8.06 of the General Conditions in its entirety.

ARTICLE 9. ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03

Add the following new paragraph immediately after Paragraph 9.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR'S actions. RPR'S dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR'S dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:
1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.
 2. *Conferences and Meetings:*
 - a. Conduct a preconstruction conference with Owner, Contractor(s), Utilities, and other appropriate parties affected by the Project.
 - b. Attend meetings with Contractor, such as progress meetings, job conferences and other Project related meetings.

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3. *Liaison:*
 - a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
 - d. Direct visiting inspectors representing public or other agencies having jurisdiction over the Project to Owner or Contractor as appropriate.
4. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
5. *Shop Drawings and Samples:*
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR'S recommendations, to Engineer. Transmit to Contractor, in writing decisions as issued by Engineer.
7. *Review of Work and Rejection of Defective Work:*
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
8. *Inspections, Tests, and System Startups:*
 - a. Verify that tests, equipment, and systems startups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and system startups.
9. *Records:*
 - a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
 - b. Maintain records for use in preparing Project documentation.

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10. *Reports:*

- a. Furnish to Engineer periodic reports as required of progress of the Work and Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

11. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. *Completion:*

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of list of items to be completed or corrected.
- b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.
- d. Coordinate efforts required to prepare record drawings showing those changes made during construction, based on the marked-up prints, drawings and other data furnished by Contractor to Engineer and which Engineer considers significant.

C. The RPR shall not:

1. Authorize any deviations from the Contract Documents or substitution of materials or equipment (including "or equal" items).
2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawings or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or part.

SC-9.07 A

Delete the last sentence of Paragraph 9.07.A. in its entirety and insert the following in its place:

“Engineer’s written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor and not subject to appeal.”

SC-9.10 A

Add the following new paragraph immediately after Paragraph 9.10.A.:

- B. In the event Engineer determines that Contractor’s safety plans, programs, and procedures do not provide adequate protection for Engineer, Engineer may direct its employees to leave the Project Site or implement additional safeguards for Engineer’s protection. If taken, these actions will be in furtherance of Engineer’s responsibility to its own employees only, and Engineer will not assume any responsibility for protection of any other persons affected by the Work. In the event Engineer observes situations which appear to have potential for immediate and serious injury to persons, Engineer may warn the persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and Engineer will not, by the issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by the Work.

ARTICLE 10. CHANGES IN THE WORK; CLAIMS

SC-10.01 B

Add the following new subparagraph immediately after Paragraph 10.01.B.:

1. By submission of a Claim Contractor certifies that the claim is made in good faith, that the supporting data are accurate and complete to the best of Contractor’s knowledge and belief, and that the amount or time requested accurately reflects the Contract adjustment for which Contractor believes Owner is liable.

SC-10.03 A.3

Add the following new paragraph immediately after Paragraph 10.03.A.3.:

4. Change Orders will be prepared on the form included in the Project Forms of the Project Manual.

SC-10.05

Amend Paragraph 10.05.B. by deleting the words “30 days” in the first sentence and inserting the words “10 days” in their place, and deleting the words “60 days” in the third sentence and inserting the words “30 days” in their place.

Amend the sixth sentence of Paragraph 10.05.B. by deleting the words “believes it.”

ARTICLE 11. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

SC-11.01

Delete Paragraph 11.01.A.5.c. in its entirety and insert the following in its place:

- c. Construction Equipment and Machinery:

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- 1) Rentals of all construction equipment and machinery, and the parts thereof in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Construction Rental Rate Blue Book. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools.

SC-11.02

Add the following new paragraph immediately after Paragraph 11.02.B.:

- C. *Quantities Allowances*: The allowances include the quantity of material or equipment to be installed or removed from the Site; and
 1. Contractor agrees that:
 - a. Contractor's cost for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowance shall have been included in the Contract Price and not in the allowances.
 - b. Contractor's cost for removing and loading material or equipment on the Site, transporting and fees for disposal on or off Site, overhead, profit, and other expenses contemplated for the Allowance shall have been included in the Contract Price.
 - c. Contractor's cost for furnishing and installing material or equipment to replace the removed material or equipment shall include cost for furnishing and installing the material or equipment, labor, installation costs, overhead, profit and other expenses contemplated for the allowance shall have been included in the Contract Price.
 2. No demand for additional payment on account of any of the foregoing will be valid.

Renumber Paragraphs 11.02.C. and D. to 11.02.D. and E. respectively.

SC-11.03 D

Delete Paragraph 11.03.D. in its entirety and insert the following in its place:

- D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
 1. If the Bid price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement.
 2. If there is no corresponding adjustment with respect to any other item of Work.
 3. If Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 10 if the

parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01

Delete Paragraph 12.01.B.2. in its entirety and insert the following in its place:

2. When the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which includes an allowance for overhead and profit in accordance with Paragraph 12.01.C.2); or

SC-12.01

Delete the semicolon at the end of Paragraph 12.01.C.2.c., and add the following language:

“, provided, however, that on any subcontracted work the total maximum fee to be paid by Owner under this subparagraph shall be no greater than 27 percent of the cost incurred by the Subcontractor who actually performed the work”;

SC-12.02

Add the following new paragraph immediately after Paragraph 12.02.B.:

- C. Time extensions provided under Paragraph 12.03 of the General Conditions will only be allowed for controlling items of Work (critical path).

SC-12.03

Delete Paragraph 12.03.B. in its entirety and insert the following in its place:

- B. If Owner, Engineer, or other contractors or utility owners performing other work for the Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work with the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.02.B.

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02 A.1

Amend the first sentence of Paragraph 14.02.A.1. by striking out the words “20 days” and inserting the words “30 days” in their place.

SC-14.02

Add new paragraphs immediately after paragraph 14.02A.3 of the General Conditions to read as follows:

4. Only the following items of equipment will be accepted for delivery at the site or at a local bonded warehouse and included in progress estimates in advance of actual requirement, subject to all conditions stated below.
5. Materials and equipment listed above will not be included in progress estimates until the following requirements have been fulfilled.

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- a. The Contractor must present an invoice to the Engineer for each item of equipment he is requesting payment for. The invoice must be broken down to show the costs for the actual equipment, and reasonable costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and any other services required by Contract.
 - b. Sufficient monies have been allocated in the payment requisition line items to cover all of the costs listed in "a" above, plus the costs of physically installing the equipment.
 - c. The equipment has been submitted and accepted for use in this Project.
 - d. The equipment is acceptably stored and protected. Storage in a bonded warehouse will require proof of bonding, and insurance coverage specifically for the item being stored.
 - e. The manufacturer's short and/or long term storage requirements have been received by the Engineer, prior to payment.
 - f. The Contractor has established a program to implement the manufacturer's required storage procedures. Said program to consist of at the very least a written schedule of daily, weekly, monthly, etc., routine maintenance requirements for each piece of equipment. A copy of this schedule to be presented to the Engineer prior to each requisition submittal, signed by the Contractor, stating that the required maintenance has been performed.
 - g. Signed, notarized Title Transfers, format to be furnished by the Engineer, must be furnished for each item of equipment.
6. When the above have been complied with to the satisfaction of the Engineer, payment will be authorized for the full invoice values of the item of equipment, less normal retainage and less all costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and installation.

Amend Paragraph 14.02.C.1. by striking out the words "Ten days" and inserting the words "Twenty days" in their place.

SC-14.04 A

Add the following new paragraphs immediately after Paragraph 14.04.A.:

1. Contractor's request for issuance of a Certificate of Substantial Completion shall include schedules, guarantees, maintenance and operations instructions, Bonds, certificates or other evidence of insurance required by Paragraph 5.04.B.6, certificates of inspection, affidavit of wage rate compliance, marked-up record documents (as provided in Paragraph GC 6.12) and other documents. Engineer will not prepare a tentative certificate of Substantial Completion until all operation and maintenance data has been submitted and approved in accordance with Specification Section 01300 and 01730 of the General Requirements.
2. The Work will be considered substantially complete when the remaining work items are limited to landscaping work to establish a healthy stand of grass over the site.

SC-14.07 A.1

Amend the first sentence of Paragraph 14.07.A.1. by striking out the words "and has delivered in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked up record documents (as provided in Paragraph 6.12), and other documents,"

Amend Paragraph 14.07.A.2.a. by striking out the words "including but not limited to evidence of insurance required by Paragraph 5.04.B.6."

Add the following new paragraph after paragraph 14.07A.3 of the General Conditions.

4. The amount of retainage with respect to final payment will be as stipulated in the Agreement.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.04 A

Amend Paragraph 15.04.A. by striking out the words “30 days” in two places and inserting the words “60 days” in their places, and by striking out the words “seven days” and inserting the words “10 days” in their place.

Amend Paragraph 15.04.B. by striking out the words “30 days” in two places and inserting the words “60 days” in their places, and by striking out the words “seven days and inserting the words “10 days” in their place.

ARTICLE 16. DISPUTE RESOLUTION

SC-16.01 A

Add a new sentence at the end of paragraph 16.01A of the General Conditions which is to read as follows:

Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings unless otherwise agreed in writing by Owner and Contractor.

ARTICLE 17. MISCELLANEOUS

SC-17.06

Delete paragraph 17.06 in its entirety and replace with the following:

17.06 Headings:

- A. The headings or titles of any article, paragraph, subparagraph, section, subsection, or part of the Contract Documents shall not be deemed to limit or restrict the article, paragraph, section, or part.

SC-17.07

Add new paragraph immediately after paragraph 17.06 of the General Conditions as follows:

- A. Contractor’s business address and his office at or near the site of the Work are both hereby designated as places to which communications shall be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor’s business address in a post office box regularly maintained by the Post Office Department or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon Contractor, and the date of such service shall be the date of receipt. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor and delivered to Engineer. Service of any notice, letter, or other communication upon the Contractor personally shall likewise be deemed sufficient service.

SC-17.08

Add a new paragraph immediately after paragraph 17.07 of the General Conditions which is to read as follows:

- A. The Contractor shall be responsible and liable for all engineering and inspection costs and expenses incurred by the Owner caused by, or related in any way to, the failure of the Contractor to perform its services in the time and manner set forth in the Agreement, the General Conditions and the Supplemental Conditions. The Owner may charge to the Contractor, and may deduct from the periodical payments and the final payment for the Contractor’s work, the full amount of such engineering and inspection costs and expenses including Owner’s and Engineer’s costs.
 - 1. The Engineer's charges will be based on the Engineer’s actual labor and expenses at the same rate the Owner is charged.

19167.03
09/25

SECTION 00800
SUPPLEMENTAL CONDITIONS

- B. For any engineering costs and expenses beyond the regular eight-hour day and for any time work on Saturday, Sunday, or holidays, the charges for such personnel will be one and one-half times the rate established above.

END OF SECTION

19167.03
09/25

SECTION 00850
WAGE RATES

PART 1 – GENERAL

1.01 WAGE RATES

- A. Minimum wage rates shall be in accordance with the Commonwealth of Massachusetts Department of Labor Standards (MGL C. 149 §§ 26-27: C. 5, §1; c.71, §7A and c.121B, §29).
- B. The prevailing wage rates to be applied are those that are effective as of the date of the awarding of the contract to the general contractor.
- C. Contractors must also adjust employees' hourly wage rates (if applicable) every year on the anniversary of the date of contract authorization.
- D. It is the responsibility of all bidders to check and confirm that their rates meet current guidelines. Incorrect rates will result in disqualification of bid.
- E. Every contractor/subcontractor awarded a contract for public works shall submit completed Certified Weekly Payroll forms listing all employees working on the job-site to the awarding authority on a monthly basis for all work completed in the preceding month. Substituting this form with company payroll forms, or other state or federal forms is not acceptable.
- F. The Town of Wayland may withhold the next scheduled payment to any contractor or subcontractor who fails to comply with the above provisions, as well as any further payments until they comply.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION



**THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS
Prevailing Wage Rates**

MAURA HEALY
Governor

KIM DRISCOLL
Lt. Governor

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: Town of Wayland **City/Town:** WAYLAND
Contract Number:
Description of Work: Improvements to Snake Brook Dam to bring the structure into compliance with state regulatory requirements.
Job Location: Off of 68 Rice Road - Wayland, MA 01778

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 from 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 within 90 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.

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT	6/1/2025	\$40.95	\$15.57	\$20.17	\$0.00	\$0.00	\$76.69
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$0.00	\$78.30
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$0.00	\$78.90
	6/1/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$0.00	\$79.90
	12/1/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$0.00	\$81.64
	1/1/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT	6/1/2025	\$41.02	\$15.57	\$20.17	\$0.00	\$0.00	\$76.76
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$0.00	\$78.37
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$0.00	\$78.97
	6/1/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$0.00	\$79.97
	12/1/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$0.00	\$81.71
	1/1/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT	6/1/2025	\$41.14	\$15.57	\$20.17	\$0.00	\$0.00	\$76.88
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$0.00	\$78.49
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$0.00	\$79.09
	6/1/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$0.00	\$80.09
	12/1/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$0.00	\$81.83
	1/1/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT	1/1/2024	\$117.16	\$10.08	\$11.62	\$12.67	\$0.00	\$151.53
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
For apprentice rates see "Apprentice- PILE DRIVER"							
AIR TRACK OPERATOR	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.11	\$0.00	\$69.35
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.11	\$0.00	\$70.73
LABORERS - ZONE 2	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.11	\$0.00	\$72.17
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.80	\$9.90	\$9.25	\$9.11	\$0.00	\$75.06
	12/1/2027	\$48.25	\$9.90	\$9.25	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.75	\$9.90	\$9.25	\$9.11	\$0.00	\$78.01
	12/1/2028	\$51.25	\$9.90	\$9.25	\$9.11	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
AIR TRACK OPERATOR (HEAVY & HIGHWAY)	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.21	\$0.00	\$69.45
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.21	\$0.00	\$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.21	\$0.00	\$72.27
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASBESTOS REMOVER - PIPE / MECH. EQUIPT.	6/1/2025	\$43.80	\$14.50	\$4.30	\$6.75	\$0.00	\$69.35
HEAT & FROST INSULATORS LOCAL 6	12/1/2025	\$44.80	\$14.50	\$4.30	\$6.75	\$0.00	\$70.35
HEAT & FROST INSULATORS LOCAL 6 (BOSTON)							
ASPHALT RAKER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
ASPHALT RAKER (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.11	\$0.00	\$69.35
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.11	\$0.00	\$70.73
LABORERS - ZONE 2	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.11	\$0.00	\$72.17
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.80	\$9.90	\$9.25	\$9.11	\$0.00	\$75.06
	12/1/2027	\$48.25	\$9.90	\$9.25	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.75	\$9.90	\$9.25	\$9.11	\$0.00	\$78.01
	12/1/2028	\$51.25	\$9.90	\$9.25	\$9.11	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.21	\$0.00	\$69.45
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.21	\$0.00	\$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.21	\$0.00	\$72.27
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BOILER MAKER	1/1/2024	\$48.12	\$7.07	\$14.60	\$6.00	\$0.00	\$75.79
BOILERMAKERS LOCAL 29							
BOILERMAKERS LOCAL 29							

Apprentice: BOILER MAKER							
Effective Date: 1/1/2024							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	\$31.28	\$7.07	\$9.32	\$3.90	\$0.00	\$51.57
2	65.00	\$31.28	\$7.07	\$9.32	\$3.90	\$0.00	\$51.57
3	70.00	\$33.68	\$7.07	\$10.03	\$4.20	\$0.00	\$54.98
4	75.00	\$36.09	\$7.07	\$10.74	\$4.50	\$0.00	\$58.40
5	80.00	\$38.50	\$7.07	\$11.45	\$4.80	\$0.00	\$61.82
6	85.00	\$40.90	\$7.07	\$12.18	\$5.10	\$0.00	\$65.25
7	90.00	\$43.31	\$7.07	\$12.88	\$5.40	\$0.00	\$68.66
8	95.00	\$45.71	\$7.07	\$13.62	\$5.70	\$0.00	\$72.10

Apprentice to Journeyworker Ratio: 1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	8/1/2025	\$67.95	\$11.49	\$15.57	\$8.02	\$0.00	\$103.03
BRICKLAYERS LOCAL 3	2/1/2026	\$69.30	\$11.49	\$15.57	\$8.02	\$0.00	\$104.38
BRICKLAYERS LOCAL 3 (WALTHAM)	8/1/2026	\$71.50	\$11.49	\$15.57	\$8.02	\$0.00	\$106.58
	2/1/2027	\$72.90	\$11.49	\$15.57	\$8.02	\$0.00	\$107.98

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)							
Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$33.98	\$11.49	\$15.57	\$8.02	\$0.00	\$69.06
2	60.00	\$40.77	\$11.49	\$15.57	\$8.02	\$0.00	\$75.85
3	70.00	\$47.57	\$11.49	\$15.57	\$8.02	\$0.00	\$82.65
4	80.00	\$54.36	\$11.49	\$15.57	\$8.02	\$0.00	\$89.44
5	90.00	\$61.16	\$11.49	\$15.57	\$8.02	\$0.00	\$96.24

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)							
Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$34.65	\$11.49	\$15.57	\$8.02	\$0.00	\$69.73
2	60.00	\$41.58	\$11.49	\$15.57	\$8.02	\$0.00	\$76.66
3	70.00	\$48.51	\$11.49	\$15.57	\$8.02	\$0.00	\$83.59
4	80.00	\$55.44	\$11.49	\$15.57	\$8.02	\$0.00	\$90.52
5	90.00	\$62.37	\$11.49	\$15.57	\$8.02	\$0.00	\$97.45

Apprentice to Journeyworker Ratio: 1:5

BULLDOZER/GRADER/SCRAPER	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	\$48.85	\$9.90	\$9.25	\$9.80	\$0.00	\$77.80
	12/1/2025	\$50.35	\$9.90	\$9.25	\$9.80	\$0.00	\$79.30
	6/1/2026	\$51.90	\$9.90	\$9.25	\$9.80	\$0.00	\$80.85
	12/1/2026	\$53.40	\$9.90	\$9.25	\$9.80	\$0.00	\$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	\$47.70	\$9.90	\$9.25	\$9.80	\$0.00	\$76.65
	12/1/2025	\$49.20	\$9.90	\$9.25	\$9.80	\$0.00	\$78.15
	6/1/2026	\$50.75	\$9.90	\$9.25	\$9.80	\$0.00	\$79.70
	12/1/2026	\$52.25	\$9.90	\$9.25	\$9.80	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	\$48.03	\$9.90	\$9.25	\$9.80	\$0.00	\$76.98
	12/1/2025	\$49.53	\$9.90	\$9.25	\$9.80	\$0.00	\$78.48
	6/1/2026	\$51.08	\$9.90	\$9.25	\$9.80	\$0.00	\$80.03
	12/1/2026	\$52.58	\$9.90	\$9.25	\$9.80	\$0.00	\$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
CARPENTER CARPENTERS CARPENTERS -ZONE 2 (Eastern Massachusetts)	9/1/2025	\$50.87	\$9.83	\$11.47	\$8.50	\$0.00	\$80.67
	3/1/2026	\$52.12	\$9.83	\$11.47	\$8.50	\$0.00	\$81.92
	9/1/2026	\$53.37	\$9.83	\$11.47	\$8.50	\$0.00	\$83.17
	3/1/2027	\$54.62	\$9.83	\$11.47	\$8.50	\$0.00	\$84.42

Apprentice: CARPENTER**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$22.89	\$9.83	\$0.00	\$1.73	\$0.00	\$34.45
2	45.00	\$22.89	\$9.83	\$0.00	\$1.73	\$0.00	\$34.45
3	55.00	\$27.98	\$9.83	\$0.00	\$3.40	\$0.00	\$41.21
4	55.00	\$27.98	\$9.83	\$0.00	\$3.40	\$0.00	\$41.21
5	70.00	\$35.61	\$9.83	\$11.41	\$5.10	\$0.00	\$61.95
6	70.00	\$35.61	\$9.83	\$11.41	\$5.10	\$0.00	\$61.95
7	80.00	\$40.70	\$9.83	\$11.44	\$6.80	\$0.00	\$68.77
8	80.00	\$40.70	\$9.83	\$11.44	\$6.80	\$0.00	\$68.77

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: CARPENTER							
Effective Date: 3/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$23.45	\$9.83	\$0.00	\$1.73	\$0.00	\$35.01
2	45.00	\$23.45	\$9.83	\$0.00	\$1.73	\$0.00	\$35.01
3	55.00	\$28.67	\$9.83	\$0.00	\$3.40	\$0.00	\$41.90
4	55.00	\$28.67	\$9.83	\$0.00	\$3.40	\$0.00	\$41.90
5	70.00	\$36.48	\$9.83	\$11.41	\$5.10	\$0.00	\$62.82
6	70.00	\$36.48	\$9.83	\$11.41	\$5.10	\$0.00	\$62.82
7	80.00	\$41.70	\$9.83	\$11.44	\$6.80	\$0.00	\$69.77
8	80.00	\$41.70	\$9.83	\$11.44	\$6.80	\$0.00	\$69.77
Apprentice to Journeyworker Ratio: 1:5							
CARPENTER WOOD FRAME	10/1/2024	\$26.65	\$7.02	\$3.80	\$1.00	\$0.00	\$38.47
CARPENTERS	10/1/2025	\$27.75	\$7.02	\$3.80	\$1.00	\$0.00	\$39.57
CARPENTERS-ZONE 3 (Wood Frame)	10/1/2026	\$28.85	\$7.02	\$3.80	\$1.00	\$0.00	\$40.67
All Aspects of New Wood Frame Work							

Apprentice: CARPENTER WOOD FRAME							
Effective Date: 10/1/2024							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$15.99	\$7.02	\$0.00	\$0.00	\$0.00	\$23.01
2	60.00	\$15.99	\$7.02	\$0.00	\$0.00	\$0.00	\$23.01
3	65.00	\$17.32	\$7.02	\$0.00	\$1.00	\$0.00	\$25.34
4	70.00	\$18.66	\$7.02	\$0.00	\$1.00	\$0.00	\$26.68
5	75.00	\$19.99	\$7.02	\$3.80	\$1.00	\$0.00	\$31.81
6	80.00	\$21.32	\$7.02	\$3.80	\$1.00	\$0.00	\$33.14
7	85.00	\$22.65	\$7.02	\$3.80	\$1.00	\$0.00	\$34.47
8	90.00	\$23.99	\$7.02	\$3.80	\$1.00	\$0.00	\$35.81

Apprentice: CARPENTER WOOD FRAME							
Effective Date: 10/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$16.65	\$7.02	\$0.00	\$0.00	\$0.00	\$23.67
2	60.00	\$16.65	\$7.02	\$0.00	\$0.00	\$0.00	\$23.67
3	65.00	\$18.04	\$7.02	\$0.00	\$1.00	\$0.00	\$26.06
4	70.00	\$19.43	\$7.02	\$0.00	\$1.00	\$0.00	\$27.45
5	75.00	\$20.81	\$7.02	\$3.80	\$1.00	\$0.00	\$32.63
6	80.00	\$22.20	\$7.02	\$3.80	\$1.00	\$0.00	\$34.02
7	85.00	\$23.59	\$7.02	\$3.80	\$1.00	\$0.00	\$35.41
8	90.00	\$24.98	\$7.02	\$3.80	\$1.00	\$0.00	\$36.80

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																																																																
Apprentice to Journeyworker Ratio: 1:5																																																																							
CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (WALTHAM)	7/1/2024	\$49.19	\$13.35	\$16.43	\$7.78	\$1.80	\$88.55																																																																
Apprentice: CEMENT MASONRY/PLASTERING Effective Date: 7/1/2024 <table><tr><th>Step</th><th>Percent</th><th>Apprentice Base Wage</th><th>Health</th><th>Pension</th><th>Annuity</th><th>Supplemental Unemployment</th><th>Total Rate</th></tr><tr><td>1</td><td>50.00</td><td>\$24.60</td><td>\$13.35</td><td>\$16.43</td><td>\$0.00</td><td>\$0.00</td><td>\$54.38</td></tr><tr><td>2</td><td>60.00</td><td>\$29.51</td><td>\$13.35</td><td>\$16.43</td><td>\$2.78</td><td>\$1.80</td><td>\$63.87</td></tr><tr><td>3</td><td>65.00</td><td>\$31.97</td><td>\$13.35</td><td>\$16.43</td><td>\$3.78</td><td>\$1.80</td><td>\$67.33</td></tr><tr><td>4</td><td>70.00</td><td>\$34.43</td><td>\$13.35</td><td>\$16.43</td><td>\$4.78</td><td>\$1.80</td><td>\$70.79</td></tr><tr><td>5</td><td>75.00</td><td>\$36.89</td><td>\$13.35</td><td>\$16.43</td><td>\$5.78</td><td>\$1.80</td><td>\$74.25</td></tr><tr><td>6</td><td>80.00</td><td>\$39.35</td><td>\$13.35</td><td>\$16.43</td><td>\$6.78</td><td>\$1.80</td><td>\$77.71</td></tr><tr><td>7</td><td>90.00</td><td>\$44.27</td><td>\$13.35</td><td>\$16.43</td><td>\$7.78</td><td>\$1.80</td><td>\$83.63</td></tr></table>								Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate	1	50.00	\$24.60	\$13.35	\$16.43	\$0.00	\$0.00	\$54.38	2	60.00	\$29.51	\$13.35	\$16.43	\$2.78	\$1.80	\$63.87	3	65.00	\$31.97	\$13.35	\$16.43	\$3.78	\$1.80	\$67.33	4	70.00	\$34.43	\$13.35	\$16.43	\$4.78	\$1.80	\$70.79	5	75.00	\$36.89	\$13.35	\$16.43	\$5.78	\$1.80	\$74.25	6	80.00	\$39.35	\$13.35	\$16.43	\$6.78	\$1.80	\$77.71	7	90.00	\$44.27	\$13.35	\$16.43	\$7.78	\$1.80	\$83.63
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																																																																
1	50.00	\$24.60	\$13.35	\$16.43	\$0.00	\$0.00	\$54.38																																																																
2	60.00	\$29.51	\$13.35	\$16.43	\$2.78	\$1.80	\$63.87																																																																
3	65.00	\$31.97	\$13.35	\$16.43	\$3.78	\$1.80	\$67.33																																																																
4	70.00	\$34.43	\$13.35	\$16.43	\$4.78	\$1.80	\$70.79																																																																
5	75.00	\$36.89	\$13.35	\$16.43	\$5.78	\$1.80	\$74.25																																																																
6	80.00	\$39.35	\$13.35	\$16.43	\$6.78	\$1.80	\$77.71																																																																
7	90.00	\$44.27	\$13.35	\$16.43	\$7.78	\$1.80	\$83.63																																																																
Apprentice to Journeyworker Ratio: 1:3																																																																							
CHAIN SAW OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85																																																																
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23																																																																
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67																																																																
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11																																																																
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56																																																																
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01																																																																
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51																																																																
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01																																																																
For apprentice rates see "Apprentice- LABORER"																																																																							
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	6/1/2025	\$59.51	\$15.55	\$13.25	\$3.25	\$0.00	\$91.56																																																																
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$60.98	\$15.55	\$13.25	\$3.25	\$0.00	\$93.03																																																																
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$62.31	\$15.55	\$13.25	\$3.25	\$0.00	\$94.36																																																																
	12/1/2026	\$63.79	\$15.55	\$13.25	\$3.25	\$0.00	\$95.84																																																																
For apprentice rates see "Apprentice- OPERATING ENGINEERS"																																																																							
COMPRESSOR OPERATOR	6/1/2025	\$37.52	\$15.55	\$13.25	\$3.25	\$0.00	\$69.57																																																																
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$38.47	\$15.55	\$13.25	\$3.25	\$0.00	\$70.52																																																																
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$39.33	\$15.55	\$13.25	\$3.25	\$0.00	\$71.38																																																																
	12/1/2026	\$40.28	\$15.55	\$13.25	\$3.25	\$0.00	\$72.33																																																																
For apprentice rates see "Apprentice- OPERATING ENGINEERS"																																																																							
DELEADER (BRIDGE)	7/1/2025	\$58.51	\$10.30	\$11.95	\$12.50	\$0.00	\$93.26																																																																
PAINTERS LOCAL 35	1/1/2026	\$59.56	\$10.35	\$12.00	\$12.60	\$0.00	\$94.51																																																																
PAINTERS LOCAL 35 - ZONE 2																																																																							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: DELEADER (BRIDGE)							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.26	\$10.30	\$0.00	\$0.00	\$0.00	\$39.56
2	55.00	\$32.18	\$10.30	\$0.00	\$6.88	\$0.00	\$49.36
3	60.00	\$35.11	\$10.30	\$0.00	\$7.50	\$0.00	\$52.91
4	65.00	\$38.03	\$10.30	\$0.00	\$8.13	\$0.00	\$56.46
5	70.00	\$40.96	\$10.30	\$11.95	\$8.75	\$0.00	\$71.96
6	75.00	\$43.88	\$10.30	\$11.95	\$9.38	\$0.00	\$75.51
7	80.00	\$46.81	\$10.30	\$11.95	\$10.00	\$0.00	\$79.06
8	90.00	\$52.66	\$10.30	\$11.95	\$11.25	\$0.00	\$86.16

Apprentice: DELEADER (BRIDGE)							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.78	\$10.35	\$0.00	\$0.00	\$0.00	\$40.13
2	55.00	\$32.76	\$10.35	\$0.00	\$6.93	\$0.00	\$50.04
3	60.00	\$35.74	\$10.35	\$0.00	\$7.56	\$0.00	\$53.65
4	65.00	\$38.71	\$10.35	\$0.00	\$8.19	\$0.00	\$57.25
5	70.00	\$41.69	\$10.35	\$12.00	\$8.82	\$0.00	\$72.86
6	75.00	\$44.67	\$10.35	\$12.00	\$9.45	\$0.00	\$76.47
7	80.00	\$47.65	\$10.35	\$12.00	\$10.08	\$0.00	\$80.08
8	90.00	\$53.60	\$10.35	\$12.00	\$11.34	\$0.00	\$87.29

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN	6/2/2025	\$47.75	\$9.90	\$9.25	\$9.65	\$0.00	\$76.55
LABORERS	12/1/2025	\$49.25	\$9.90	\$9.25	\$9.65	\$0.00	\$78.05
LABORERS - ZONE 2	6/1/2026	\$50.80	\$9.90	\$9.25	\$9.65	\$0.00	\$79.60
	12/7/2026	\$52.30	\$9.90	\$9.25	\$9.65	\$0.00	\$81.10
	6/7/2027	\$53.90	\$9.90	\$9.25	\$9.65	\$0.00	\$82.70
	12/6/2027	\$55.50	\$9.90	\$9.25	\$9.65	\$0.00	\$84.30
	6/5/2028	\$57.18	\$9.90	\$9.25	\$9.65	\$0.00	\$85.98
	12/4/2028	\$58.85	\$9.90	\$9.25	\$9.65	\$0.00	\$87.65

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR	6/2/2025	\$48.75	\$9.90	\$9.25	\$9.65	\$0.00	\$77.55
LABORERS	12/1/2025	\$50.25	\$9.90	\$9.25	\$9.65	\$0.00	\$79.05
LABORERS - ZONE 2	6/1/2026	\$51.80	\$9.90	\$9.25	\$9.65	\$0.00	\$80.60
	12/7/2026	\$53.30	\$9.90	\$9.25	\$9.65	\$0.00	\$82.10
	6/7/2027	\$54.90	\$9.90	\$9.25	\$9.65	\$0.00	\$83.70
	12/6/2027	\$56.50	\$9.90	\$9.25	\$9.65	\$0.00	\$85.30
	6/5/2028	\$58.18	\$9.90	\$9.25	\$9.65	\$0.00	\$86.98
	12/4/2028	\$59.85	\$9.90	\$9.25	\$9.65	\$0.00	\$88.65

For apprentice rates see "Apprentice- LABORER"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DEMO: BURNERS	6/2/2025	\$48.50	\$9.90	\$9.25	\$9.65	\$0.00	\$77.30
LABORERS	12/1/2025	\$50.00	\$9.90	\$9.25	\$9.65	\$0.00	\$78.80
LABORERS - ZONE 2	6/1/2026	\$51.55	\$9.90	\$9.25	\$9.65	\$0.00	\$80.35
	12/7/2026	\$53.05	\$9.90	\$9.25	\$9.65	\$0.00	\$81.85
	6/7/2027	\$54.65	\$9.90	\$9.25	\$9.65	\$0.00	\$83.45
	12/6/2027	\$56.25	\$9.90	\$9.25	\$9.65	\$0.00	\$85.05
	6/5/2028	\$57.93	\$9.90	\$9.25	\$9.65	\$0.00	\$86.73
	12/4/2028	\$59.60	\$9.90	\$9.25	\$9.65	\$0.00	\$88.40

For apprentice rates see "Apprentice- LABORER"

DEMO: CONCRETE CUTTER/SAWYER	6/2/2025	\$48.75	\$9.90	\$9.25	\$9.65	\$0.00	\$77.55
LABORERS	12/1/2025	\$50.25	\$9.90	\$9.25	\$9.65	\$0.00	\$79.05
LABORERS - ZONE 2	6/1/2026	\$51.80	\$9.90	\$9.25	\$9.65	\$0.00	\$80.60
	12/7/2026	\$53.30	\$9.90	\$9.25	\$9.65	\$0.00	\$82.10
	6/7/2027	\$54.90	\$9.90	\$9.25	\$9.65	\$0.00	\$83.70
	12/6/2027	\$56.50	\$9.90	\$9.25	\$9.65	\$0.00	\$85.30
	6/5/2028	\$58.18	\$9.90	\$9.25	\$9.65	\$0.00	\$86.98
	12/4/2028	\$59.85	\$9.90	\$9.25	\$9.65	\$0.00	\$88.65

For apprentice rates see "Apprentice- LABORER"

DEMO: JACKHAMMER OPERATOR	6/2/2025	\$48.50	\$9.90	\$9.25	\$9.65	\$0.00	\$77.30
LABORERS	12/1/2025	\$50.00	\$9.90	\$9.25	\$9.65	\$0.00	\$78.80
LABORERS - ZONE 2	6/1/2026	\$51.55	\$9.90	\$9.25	\$9.65	\$0.00	\$80.35
	12/7/2026	\$53.05	\$9.90	\$9.25	\$9.65	\$0.00	\$81.85
	6/7/2027	\$54.65	\$9.90	\$9.25	\$9.65	\$0.00	\$83.45
	12/6/2027	\$56.25	\$9.90	\$9.25	\$9.65	\$0.00	\$85.05
	6/5/2028	\$57.93	\$9.90	\$9.25	\$9.65	\$0.00	\$86.73
	12/4/2028	\$59.60	\$9.90	\$9.25	\$9.65	\$0.00	\$88.40

For apprentice rates see "Apprentice- LABORER"

DEMO: WRECKING LABORER	6/2/2025	\$47.75	\$9.90	\$9.25	\$9.65	\$0.00	\$76.55
LABORERS	12/1/2025	\$49.25	\$9.90	\$9.25	\$9.65	\$0.00	\$78.05
LABORERS - ZONE 2	6/1/2026	\$50.80	\$9.90	\$9.25	\$9.65	\$0.00	\$79.60
	12/7/2026	\$52.30	\$9.90	\$9.25	\$9.65	\$0.00	\$81.10
	6/7/2027	\$53.90	\$9.90	\$9.25	\$9.65	\$0.00	\$82.70
	12/6/2027	\$55.50	\$9.90	\$9.25	\$9.65	\$0.00	\$84.30
	6/5/2028	\$57.18	\$9.90	\$9.25	\$9.65	\$0.00	\$85.98
	12/4/2028	\$58.85	\$9.90	\$9.25	\$9.65	\$0.00	\$87.65

For apprentice rates see "Apprentice- LABORER"

DIRECTIONAL DRILL MACHINE OPERATOR	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DIVER	8/1/2024	\$78.11	\$10.08	\$11.62	\$10.04	\$0.00	\$109.85
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							

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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$55.79	\$10.08	\$11.62	\$12.67	\$0.00	\$90.16

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 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$83.69	\$10.08	\$11.62	\$12.67	\$0.00	\$118.06

For apprentice rates see "Apprentice- PILE DRIVER"

DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	\$117.16	\$10.08	\$11.62	\$12.67	\$0.00	\$151.53

For apprentice rates see "Apprentice- PILE DRIVER"

DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	\$26.77	\$6.67	\$3.93	\$0.00	\$0.16	\$37.53

ELECTRICIAN	9/1/2025	\$66.17	\$13.00	\$14.37	\$8.72	\$0.00	\$102.26
ELECTRICIANS LOCAL 103	3/1/2026	\$66.86	\$13.00	\$14.64	\$9.00	\$0.00	\$103.50
ELECTRICIANS LOCAL 103	9/1/2026	\$68.78	\$13.00	\$14.69	\$9.00	\$0.00	\$105.47
	3/1/2027	\$69.97	\$13.00	\$14.73	\$9.00	\$0.00	\$106.70
	9/1/2027	\$71.88	\$13.00	\$14.79	\$9.00	\$0.00	\$108.67
	3/1/2028	\$73.08	\$13.00	\$14.82	\$9.00	\$0.00	\$109.90

Apprentice: ELECTRICIAN**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$26.47	\$13.00	\$0.79	\$0.00	\$0.00	\$40.26
2	40.00	\$26.47	\$13.00	\$0.79	\$0.00	\$0.00	\$40.26
3	45.00	\$29.78	\$13.00	\$13.27	\$3.92	\$0.00	\$59.97
4	45.00	\$29.78	\$13.00	\$13.27	\$3.92	\$0.00	\$59.97
5	50.00	\$33.09	\$13.00	\$13.37	\$4.36	\$0.00	\$63.82
6	55.00	\$36.39	\$13.00	\$13.47	\$4.80	\$0.00	\$67.66
7	60.00	\$39.70	\$13.00	\$13.57	\$5.23	\$0.00	\$71.50
8	65.00	\$43.01	\$13.00	\$13.67	\$5.67	\$0.00	\$75.35
9	70.00	\$46.32	\$13.00	\$13.77	\$6.10	\$0.00	\$79.19
10	75.00	\$49.63	\$13.00	\$13.87	\$6.54	\$0.00	\$83.04

Apprentice: ELECTRICIAN**Effective Date: 3/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$26.74	\$13.00	\$0.80	\$0.00	\$0.00	\$40.54
2	40.00	\$26.74	\$13.00	\$0.80	\$0.00	\$0.00	\$40.54
3	45.00	\$30.09	\$13.00	\$13.53	\$3.92	\$0.00	\$60.54
4	45.00	\$30.09	\$13.00	\$13.53	\$4.05	\$0.00	\$60.67

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																																																																																																
Apprentice: ELECTRICIAN Effective Date: 3/1/2026 <table> <tr> <th>Step</th><th>Percent</th><th>Apprentice Base Wage</th><th>Health</th><th>Pension</th><th>Annuity</th><th>Supplemental Unemployment</th><th>Total Rate</th></tr> <tr> <td>5</td><td>50.00</td><td>\$33.43</td><td>\$13.00</td><td>\$13.63</td><td>\$4.50</td><td>\$0.00</td><td>\$64.56</td></tr> <tr> <td>6</td><td>55.00</td><td>\$36.77</td><td>\$13.00</td><td>\$13.73</td><td>\$4.95</td><td>\$0.00</td><td>\$68.45</td></tr> <tr> <td>7</td><td>60.00</td><td>\$40.12</td><td>\$13.00</td><td>\$13.83</td><td>\$5.40</td><td>\$0.00</td><td>\$72.35</td></tr> <tr> <td>8</td><td>65.00</td><td>\$43.46</td><td>\$13.00</td><td>\$13.93</td><td>\$5.85</td><td>\$0.00</td><td>\$76.24</td></tr> <tr> <td>9</td><td>70.00</td><td>\$46.80</td><td>\$13.00</td><td>\$14.03</td><td>\$6.30</td><td>\$0.00</td><td>\$80.13</td></tr> <tr> <td>10</td><td>75.00</td><td>\$50.15</td><td>\$13.00</td><td>\$14.13</td><td>\$6.75</td><td>\$0.00</td><td>\$84.03</td></tr> </table> Apprentice Notes : Apprentice to Journeyworker Ratio: 2:3								Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate	5	50.00	\$33.43	\$13.00	\$13.63	\$4.50	\$0.00	\$64.56	6	55.00	\$36.77	\$13.00	\$13.73	\$4.95	\$0.00	\$68.45	7	60.00	\$40.12	\$13.00	\$13.83	\$5.40	\$0.00	\$72.35	8	65.00	\$43.46	\$13.00	\$13.93	\$5.85	\$0.00	\$76.24	9	70.00	\$46.80	\$13.00	\$14.03	\$6.30	\$0.00	\$80.13	10	75.00	\$50.15	\$13.00	\$14.13	\$6.75	\$0.00	\$84.03																																								
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																																																																																																
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10	75.00	\$50.15	\$13.00	\$14.13	\$6.75	\$0.00	\$84.03																																																																																																
ELEVATOR CONSTRUCTOR	1/1/2025	\$74.17	\$16.28	\$10.96	\$10.40	\$0.00	\$111.81																																																																																																
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	\$77.26	\$16.38	\$11.06	\$10.70	\$0.00	\$115.40																																																																																																
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	\$80.55	\$16.48	\$11.16	\$11.00	\$0.00	\$119.19																																																																																																
Apprentice: ELEVATOR CONSTRUCTOR Effective Date: 1/1/2025 <table> <tr> <th>Step</th><th>Percent</th><th>Apprentice Base Wage</th><th>Health</th><th>Pension</th><th>Annuity</th><th>Supplemental Unemployment</th><th>Total Rate</th></tr> <tr> <td>1</td><td>50.00</td><td>\$37.09</td><td>\$0.00</td><td>\$0.00</td><td>\$0.00</td><td>\$0.00</td><td>\$37.09</td></tr> <tr> <td>2</td><td>55.00</td><td>\$40.79</td><td>\$16.28</td><td>\$10.96</td><td>\$10.40</td><td>\$0.00</td><td>\$78.43</td></tr> <tr> <td>3</td><td>65.00</td><td>\$48.21</td><td>\$16.28</td><td>\$10.96</td><td>\$10.40</td><td>\$0.00</td><td>\$85.85</td></tr> <tr> <td>4</td><td>70.00</td><td>\$51.92</td><td>\$16.28</td><td>\$10.96</td><td>\$10.40</td><td>\$0.00</td><td>\$89.56</td></tr> <tr> <td>5</td><td>80.00</td><td>\$59.34</td><td>\$16.28</td><td>\$10.96</td><td>\$10.40</td><td>\$0.00</td><td>\$96.98</td></tr> </table> Apprentice: ELEVATOR CONSTRUCTOR Effective Date: 1/1/2026 <table> <tr> <th>Step</th><th>Percent</th><th>Apprentice Base Wage</th><th>Health</th><th>Pension</th><th>Annuity</th><th>Supplemental Unemployment</th><th>Total Rate</th></tr> <tr> <td>1</td><td>50.00</td><td>\$38.63</td><td>\$0.00</td><td>\$0.00</td><td>\$0.00</td><td>\$0.00</td><td>\$38.63</td></tr> <tr> <td>2</td><td>55.00</td><td>\$42.49</td><td>\$16.38</td><td>\$11.06</td><td>\$10.70</td><td>\$0.00</td><td>\$80.63</td></tr> <tr> <td>3</td><td>65.00</td><td>\$50.22</td><td>\$16.38</td><td>\$11.06</td><td>\$10.70</td><td>\$0.00</td><td>\$88.36</td></tr> <tr> <td>4</td><td>70.00</td><td>\$54.08</td><td>\$16.38</td><td>\$11.06</td><td>\$10.70</td><td>\$0.00</td><td>\$92.22</td></tr> <tr> <td>5</td><td>80.00</td><td>\$61.81</td><td>\$16.38</td><td>\$11.06</td><td>\$10.70</td><td>\$0.00</td><td>\$99.95</td></tr> </table> Apprentice to Journeyworker Ratio: 1:1								Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate	1	50.00	\$37.09	\$0.00	\$0.00	\$0.00	\$0.00	\$37.09	2	55.00	\$40.79	\$16.28	\$10.96	\$10.40	\$0.00	\$78.43	3	65.00	\$48.21	\$16.28	\$10.96	\$10.40	\$0.00	\$85.85	4	70.00	\$51.92	\$16.28	\$10.96	\$10.40	\$0.00	\$89.56	5	80.00	\$59.34	\$16.28	\$10.96	\$10.40	\$0.00	\$96.98	Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate	1	50.00	\$38.63	\$0.00	\$0.00	\$0.00	\$0.00	\$38.63	2	55.00	\$42.49	\$16.38	\$11.06	\$10.70	\$0.00	\$80.63	3	65.00	\$50.22	\$16.38	\$11.06	\$10.70	\$0.00	\$88.36	4	70.00	\$54.08	\$16.38	\$11.06	\$10.70	\$0.00	\$92.22	5	80.00	\$61.81	\$16.38	\$11.06	\$10.70	\$0.00	\$99.95
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																																																																																																
1	50.00	\$37.09	\$0.00	\$0.00	\$0.00	\$0.00	\$37.09																																																																																																
2	55.00	\$40.79	\$16.28	\$10.96	\$10.40	\$0.00	\$78.43																																																																																																
3	65.00	\$48.21	\$16.28	\$10.96	\$10.40	\$0.00	\$85.85																																																																																																
4	70.00	\$51.92	\$16.28	\$10.96	\$10.40	\$0.00	\$89.56																																																																																																
5	80.00	\$59.34	\$16.28	\$10.96	\$10.40	\$0.00	\$96.98																																																																																																
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate																																																																																																
1	50.00	\$38.63	\$0.00	\$0.00	\$0.00	\$0.00	\$38.63																																																																																																
2	55.00	\$42.49	\$16.38	\$11.06	\$10.70	\$0.00	\$80.63																																																																																																
3	65.00	\$50.22	\$16.38	\$11.06	\$10.70	\$0.00	\$88.36																																																																																																
4	70.00	\$54.08	\$16.38	\$11.06	\$10.70	\$0.00	\$92.22																																																																																																
5	80.00	\$61.81	\$16.38	\$11.06	\$10.70	\$0.00	\$99.95																																																																																																
ELEVATOR CONSTRUCTOR HELPER	1/1/2025	\$51.92	\$16.28	\$10.96	\$10.40	\$0.00	\$89.56																																																																																																
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	\$54.08	\$16.38	\$11.06	\$10.07	\$0.00	\$91.59																																																																																																
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	\$56.39	\$16.48	\$11.16	\$11.00	\$0.00	\$95.03																																																																																																
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"																																																																																																							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY	5/1/2025	\$53.22	\$15.30	\$13.15	\$3.25	\$0.00	\$84.92
OPERATING ENGINEERS LOCAL 4	11/1/2025	\$54.51	\$15.30	\$13.15	\$3.25	\$0.00	\$86.21
OPERATING ENGINEERS LOCAL 4	5/1/2026	\$55.95	\$15.30	\$13.15	\$3.25	\$0.00	\$87.65
	11/1/2026	\$57.24	\$15.30	\$13.15	\$3.25	\$0.00	\$88.94
	5/1/2027	\$58.67	\$15.30	\$13.15	\$3.25	\$0.00	\$90.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY	5/1/2025	\$54.82	\$15.30	\$13.15	\$3.25	\$0.00	\$86.52
OPERATING ENGINEERS LOCAL 4	11/1/2025	\$56.12	\$15.30	\$13.15	\$3.25	\$0.00	\$87.82
OPERATING ENGINEERS LOCAL 4	5/1/2026	\$57.57	\$15.30	\$13.15	\$3.25	\$0.00	\$89.27
	11/1/2026	\$58.87	\$15.30	\$13.15	\$3.25	\$0.00	\$90.57
	5/1/2027	\$60.32	\$15.30	\$13.15	\$3.25	\$0.00	\$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	5/1/2025	\$26.22	\$15.30	\$13.15	\$3.25	\$0.00	\$57.92
OPERATING ENGINEERS LOCAL 4	11/1/2025	\$26.98	\$15.30	\$13.15	\$3.25	\$0.00	\$58.68
OPERATING ENGINEERS LOCAL 4	5/1/2026	\$27.83	\$15.30	\$13.15	\$3.25	\$0.00	\$59.53
	11/1/2026	\$28.59	\$15.30	\$13.15	\$3.25	\$0.00	\$60.29
	5/1/2027	\$29.44	\$15.30	\$13.15	\$3.25	\$0.00	\$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	9/1/2025	\$66.17	\$13.00	\$14.37	\$9.00	\$0.00	\$102.54
ELECTRICIANS LOCAL 103	3/1/2026	\$66.86	\$13.00	\$14.64	\$9.00	\$0.00	\$103.50
ELECTRICIANS LOCAL 103	9/1/2026	\$68.78	\$13.00	\$14.69	\$9.00	\$0.00	\$105.47
	3/1/2027	\$69.97	\$13.00	\$14.73	\$9.00	\$0.00	\$106.70
	9/1/2027	\$71.88	\$13.00	\$14.79	\$9.00	\$0.00	\$108.67
	3/1/2028	\$73.08	\$13.00	\$14.82	\$9.00	\$0.00	\$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2025	\$52.94	\$13.00	\$13.97	\$6.98	\$0.00	\$86.89
/ COMMISSIONING	3/1/2026	\$53.49	\$13.00	\$14.23	\$7.20	\$0.00	\$87.92
ELECTRICIANS LOCAL 103	9/1/2026	\$55.02	\$13.00	\$14.28	\$7.20	\$0.00	\$89.50
ELECTRICIANS LOCAL 103	3/1/2027	\$55.98	\$13.00	\$14.31	\$7.20	\$0.00	\$90.49
	9/1/2027	\$57.50	\$13.00	\$14.36	\$7.20	\$0.00	\$92.06
	3/1/2028	\$58.46	\$13.00	\$14.38	\$7.20	\$0.00	\$93.04
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN (ASST. ENGINEER)	6/1/2025	\$47.02	\$15.55	\$13.25	\$3.25	\$0.00	\$79.07
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$48.19	\$15.55	\$13.25	\$3.25	\$0.00	\$80.24
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$49.25	\$15.55	\$13.25	\$3.25	\$0.00	\$81.30
	12/1/2026	\$50.43	\$15.55	\$13.25	\$3.25	\$0.00	\$82.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	6/1/2025	\$28.09	\$9.90	\$9.25	\$9.21	\$0.00	\$56.45

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS	12/1/2025	\$28.09	\$9.90	\$9.25	\$9.21	\$0.00	\$56.45
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$29.21	\$9.90	\$9.25	\$9.21	\$0.00	\$57.57
	12/1/2026	\$29.21	\$9.90	\$9.25	\$9.21	\$0.00	\$57.57

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

FLOORCOVERER	9/1/2025	\$59.23	\$8.83	\$11.47	\$8.80	\$0.00	\$88.33
FLOORCOVERERS LOCAL 2168	3/1/2026	\$60.73	\$8.83	\$11.47	\$8.80	\$0.00	\$89.83
FLOORCOVERERS LOCAL 2168 ZONE I	9/1/2026	\$62.23	\$8.83	\$11.47	\$8.80	\$0.00	\$91.33
	3/1/2027	\$63.73	\$8.83	\$11.47	\$8.80	\$0.00	\$92.83

Apprentice: FLOORCOVERER**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$26.65	\$8.83	\$0.00	\$1.76	\$0.00	\$37.24
2	45.00	\$26.65	\$8.83	\$0.00	\$1.76	\$0.00	\$37.24
3	55.00	\$32.58	\$8.83	\$0.00	\$3.52	\$0.00	\$44.93
4	55.00	\$32.58	\$8.83	\$0.00	\$3.52	\$0.00	\$44.93
5	70.00	\$41.46	\$8.83	\$11.47	\$5.28	\$0.00	\$67.04
6	70.00	\$41.46	\$8.83	\$11.47	\$5.28	\$0.00	\$67.04
7	80.00	\$47.38	\$8.83	\$11.47	\$7.04	\$0.00	\$74.72
8	80.00	\$47.38	\$8.83	\$11.47	\$7.04	\$0.00	\$74.72

Apprentice: FLOORCOVERER**Effective Date: 3/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$27.33	\$8.83	\$0.00	\$1.76	\$0.00	\$37.92
2	45.00	\$27.33	\$8.83	\$0.00	\$1.76	\$0.00	\$37.92
3	55.00	\$33.40	\$8.83	\$0.00	\$3.52	\$0.00	\$45.75
4	55.00	\$33.40	\$8.83	\$0.00	\$3.52	\$0.00	\$45.75
5	70.00	\$42.51	\$8.83	\$11.47	\$5.28	\$0.00	\$68.09
6	70.00	\$42.51	\$8.83	\$11.47	\$5.28	\$0.00	\$68.09
7	80.00	\$48.58	\$8.83	\$11.47	\$7.04	\$0.00	\$75.92
8	80.00	\$48.58	\$8.83	\$11.47	\$7.04	\$0.00	\$75.92

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT/CHERRY PICKER	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS	6/1/2025	\$37.52	\$15.55	\$13.25	\$3.25	\$0.00	\$69.57

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$38.47	\$15.55	\$13.25	\$3.25	\$0.00	\$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$39.33	\$15.55	\$13.25	\$3.25	\$0.00	\$71.38
	12/1/2026	\$40.28	\$15.55	\$13.25	\$3.25	\$0.00	\$72.33

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	7/1/2025	\$48.01	\$10.30	\$11.95	\$12.50	\$0.00	\$82.76
GLAZIERS LOCAL 35	1/1/2026	\$49.06	\$10.35	\$12.00	\$12.60	\$0.00	\$84.01
GLAZIERS LOCAL 35 (ZONE 2)							

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)**Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.01	\$10.30	\$0.00	\$0.00	\$0.00	\$34.31
2	55.00	\$26.41	\$10.30	\$0.00	\$6.88	\$0.00	\$43.59
3	60.00	\$28.81	\$10.30	\$0.00	\$7.50	\$0.00	\$46.61
4	65.00	\$31.21	\$10.30	\$0.00	\$8.13	\$0.00	\$49.64
5	70.00	\$33.61	\$10.30	\$11.95	\$8.75	\$0.00	\$64.61
6	75.00	\$36.01	\$10.30	\$11.95	\$9.38	\$0.00	\$67.64
7	80.00	\$38.41	\$10.30	\$11.95	\$10.00	\$0.00	\$70.66
8	90.00	\$43.21	\$10.30	\$11.95	\$11.25	\$0.00	\$76.71

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)**Effective Date: 1/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.53	\$10.30	\$0.00	\$0.00	\$0.00	\$34.83
2	55.00	\$26.98	\$10.30	\$0.00	\$6.88	\$0.00	\$44.16
3	60.00	\$29.44	\$10.30	\$0.00	\$7.50	\$0.00	\$47.24
4	65.00	\$31.89	\$10.30	\$0.00	\$8.13	\$0.00	\$50.32
5	70.00	\$34.34	\$10.30	\$11.95	\$8.75	\$0.00	\$65.34
6	75.00	\$36.80	\$10.30	\$11.95	\$9.38	\$0.00	\$68.43
7	80.00	\$39.25	\$10.30	\$11.95	\$10.00	\$0.00	\$71.50
8	90.00	\$44.15	\$10.30	\$11.95	\$11.25	\$0.00	\$77.65

Apprentice to Journeyworker Ratio: 1:1

HOISTING ENGINEER/CRANES/GRADALLS	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS**Effective Date: 6/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$32.08	\$0.00	\$0.00	\$0.00	\$0.00	\$32.08

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: HOISTING ENGINEER/CRANES/GRADALLS							
Effective Date: 6/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	60.00	\$35.00	\$15.55	\$13.25	\$3.25	\$0.00	\$67.05
3	65.00	\$37.91	\$15.55	\$13.25	\$3.25	\$0.00	\$69.96
4	70.00	\$40.83	\$15.55	\$13.25	\$3.25	\$0.00	\$72.88
5	75.00	\$43.75	\$15.55	\$13.25	\$3.25	\$0.00	\$75.80
6	80.00	\$46.66	\$15.55	\$13.25	\$3.25	\$0.00	\$78.71
7	85.00	\$49.58	\$15.55	\$13.25	\$3.25	\$0.00	\$81.63
8	90.00	\$52.50	\$15.55	\$13.25	\$3.25	\$0.00	\$84.55
Apprentice: HOISTING ENGINEER/CRANES/GRADALLS							
Effective Date: 12/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$32.88	\$0.00	\$0.00	\$0.00	\$0.00	\$32.88
2	60.00	\$35.87	\$15.55	\$13.25	\$3.25	\$0.00	\$67.92
3	65.00	\$38.86	\$15.55	\$13.25	\$3.25	\$0.00	\$70.91
4	70.00	\$41.85	\$15.55	\$13.25	\$3.25	\$0.00	\$73.90
5	75.00	\$44.84	\$15.55	\$13.25	\$3.25	\$0.00	\$76.89
6	80.00	\$47.82	\$15.55	\$13.25	\$3.25	\$0.00	\$79.87
7	85.00	\$50.81	\$15.55	\$13.25	\$3.25	\$0.00	\$82.86
8	90.00	\$53.80	\$15.55	\$13.25	\$3.25	\$0.00	\$85.85
Apprentice to Journeyworker Ratio: 1:6							
HVAC (DUCTWORK)	8/1/2025	\$60.98	\$14.91	\$18.74	\$9.53	\$2.98	\$107.14
SHEETMETAL WORKERS LOCAL 17	2/1/2026	\$62.93	\$14.91	\$18.74	\$9.53	\$2.98	\$109.09
SHEETMETAL WORKERS LOCAL 17 - A							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS)	9/1/2025	\$66.17	\$13.00	\$14.37	\$8.72	\$0.00	\$102.26
ELECTRICIANS LOCAL 103	3/1/2026	\$66.86	\$13.00	\$14.64	\$9.00	\$0.00	\$103.50
ELECTRICIANS LOCAL 103	9/1/2026	\$68.78	\$13.00	\$14.69	\$9.00	\$0.00	\$105.47
	3/1/2027	\$69.97	\$13.00	\$14.73	\$9.00	\$0.00	\$106.70
	9/1/2027	\$71.88	\$13.00	\$14.79	\$9.00	\$0.00	\$108.67
	3/1/2028	\$73.08	\$13.00	\$14.82	\$9.00	\$0.00	\$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR)	8/1/2025	\$60.98	\$14.91	\$18.74	\$9.53	\$2.98	\$107.14
SHEETMETAL WORKERS LOCAL 17	2/1/2026	\$62.93	\$14.91	\$18.74	\$9.53	\$2.98	\$109.09
SHEETMETAL WORKERS LOCAL 17 - A							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	3/1/2025	\$68.88	\$12.70	\$13.05	\$8.75	\$0.00	\$103.38
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HVAC MECHANIC PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	3/1/2025	\$68.88	\$12.70	\$13.05	\$8.75	\$0.00	\$103.38

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

HYDRAULIC DRILLS LABORERS LABORERS - ZONE 2	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.11	\$0.00	\$69.35
	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.11	\$0.00	\$70.73
	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.11	\$0.00	\$72.17
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.80	\$9.90	\$9.25	\$9.11	\$0.00	\$75.06
	12/1/2027	\$48.25	\$9.90	\$9.25	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.75	\$9.90	\$9.25	\$9.11	\$0.00	\$78.01
	12/1/2028	\$51.25	\$9.90	\$9.25	\$9.11	\$0.00	\$79.51

For apprentice rates see "Apprentice- LABORER"

HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.21	\$0.00	\$69.45
	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.21	\$0.00	\$70.83
	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.21	\$0.00	\$72.27
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.21	\$0.00	\$73.71

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	9/1/2025	\$60.34	\$14.75	\$9.52	\$10.09	\$0.00	\$94.70
	9/1/2026	\$63.76	\$14.75	\$9.52	\$10.09	\$0.00	\$98.12

Apprentice: INSULATOR (PIPES & TANKS)**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$30.17	\$14.75	\$9.27	\$5.05	\$0.00	\$59.24
2	60.00	\$36.20	\$14.75	\$9.32	\$6.05	\$0.00	\$66.32
3	70.00	\$42.24	\$14.75	\$9.37	\$7.06	\$0.00	\$73.42
4	80.00	\$48.27	\$14.75	\$9.42	\$8.07	\$0.00	\$80.51

Apprentice: INSULATOR (PIPES & TANKS)**Effective Date: 9/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$31.88	\$14.75	\$9.27	\$5.05	\$0.00	\$60.95
2	60.00	\$38.26	\$14.75	\$9.32	\$6.05	\$0.00	\$68.38
3	70.00	\$44.63	\$14.75	\$9.37	\$7.06	\$0.00	\$75.81
4	80.00	\$51.01	\$14.75	\$9.42	\$8.07	\$0.00	\$83.25

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 IRONWORKERS LOCAL 7 (BOSTON AREA)	9/16/2025	\$57.87	\$9.05	\$12.75	\$14.50	\$0.00	\$94.17

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: IRONWORKER/WELDER							
Effective Date: 9/16/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$34.72	\$9.05	\$12.75	\$4.50	\$0.00	\$61.02
2	75.00	\$43.40	\$9.05	\$12.75	\$4.50	\$0.00	\$69.70
3	85.00	\$49.19	\$9.05	\$12.75	\$4.50	\$0.00	\$75.49
4	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Apprentice to Journeyworker Ratio: 1:4							
JACKHAMMER & PAVING BREAKER OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
Apprentice: LABORER							
Effective Date: 6/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$24.20	\$9.90	\$9.25	\$9.11	\$0.00	\$52.46
2	70.00	\$28.24	\$9.90	\$9.25	\$9.11	\$0.00	\$56.50
3	80.00	\$32.27	\$9.90	\$9.25	\$9.11	\$0.00	\$60.53
4	90.00	\$36.31	\$9.90	\$9.25	\$9.11	\$0.00	\$64.57
Apprentice: LABORER							
Effective Date: 12/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$25.03	\$9.90	\$9.25	\$9.11	\$0.00	\$53.29

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: LABORER Effective Date: 12/1/2025							
		Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	70.00	\$29.20	\$9.90	\$9.25	\$9.11	\$0.00	\$57.46
3	80.00	\$33.38	\$9.90	\$9.25	\$9.11	\$0.00	\$61.64
4	90.00	\$37.55	\$9.90	\$9.25	\$9.11	\$0.00	\$65.81
Apprentice to Journeyworker Ratio: 1:5							
LABORER (HEAVY & HIGHWAY)	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.21	\$0.00	\$68.70
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.21	\$0.00	\$70.08
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.21	\$0.00	\$71.52
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.21	\$0.00	\$72.96
Apprentice: LABORER (HEAVY & HIGHWAY) Effective Date: 6/1/2025							
		Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$24.20	\$9.90	\$9.25	\$9.21	\$0.00	\$52.56
2	70.00	\$28.24	\$9.90	\$9.25	\$9.21	\$0.00	\$56.60
3	80.00	\$32.27	\$9.90	\$9.25	\$9.21	\$0.00	\$60.63
4	90.00	\$36.31	\$9.90	\$9.25	\$9.21	\$0.00	\$64.67
Apprentice: LABORER (HEAVY & HIGHWAY) Effective Date: 12/1/2025							
		Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$25.03	\$9.90	\$9.25	\$9.21	\$0.00	\$53.39
2	70.00	\$29.20	\$9.90	\$9.25	\$9.21	\$0.00	\$57.56
3	80.00	\$33.38	\$9.90	\$9.25	\$9.21	\$0.00	\$61.74
4	90.00	\$37.55	\$9.90	\$9.25	\$9.21	\$0.00	\$65.91
Apprentice to Journeyworker Ratio: 1:5							
LABORER: CARPENTER TENDER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 2	6/2/2025	\$40.43	\$9.90	\$9.25	\$9.17	\$0.00	\$68.75
	12/1/2025	\$41.81	\$9.90	\$9.25	\$9.17	\$0.00	\$70.13
	6/1/2026	\$43.25	\$9.90	\$9.25	\$9.17	\$0.00	\$71.57
	12/7/2026	\$44.69	\$9.90	\$9.25	\$9.17	\$0.00	\$73.01
	6/7/2027	\$46.14	\$9.90	\$9.25	\$9.17	\$0.00	\$74.46
	12/6/2027	\$47.59	\$9.90	\$9.25	\$9.17	\$0.00	\$75.91
	6/5/2028	\$49.09	\$9.90	\$9.25	\$9.17	\$0.00	\$77.41
	12/4/2028	\$50.59	\$9.90	\$9.25	\$9.17	\$0.00	\$78.91
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 2	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 2	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER LABORERS LABORERS - ZONE 2	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76

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"

LASER BEAM OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01

For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

MARBLE & TILE FINISHERS	8/1/2025	\$52.08	\$11.49	\$15.57	\$6.05	\$0.00	\$85.19
BRICKLAYERS LOCAL 3	2/1/2026	\$53.16	\$11.49	\$15.57	\$6.05	\$0.00	\$86.27
BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	\$54.92	\$11.49	\$15.57	\$6.05	\$0.00	\$88.03
	2/1/2027	\$56.04	\$11.49	\$15.57	\$6.05	\$0.00	\$89.15

Apprentice: MARBLE & TILE FINISHERS**Effective Date: 8/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$26.04	\$11.49	\$15.57	\$6.05	\$0.00	\$59.15
2	60.00	\$31.25	\$11.49	\$15.57	\$6.05	\$0.00	\$64.36
3	70.00	\$36.46	\$11.49	\$15.57	\$6.05	\$0.00	\$69.57
4	80.00	\$41.66	\$11.49	\$15.57	\$6.05	\$0.00	\$74.77
5	90.00	\$46.87	\$11.49	\$15.57	\$6.05	\$0.00	\$79.98

Apprentice: MARBLE & TILE FINISHERS**Effective Date: 2/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$26.58	\$11.49	\$15.57	\$6.05	\$0.00	\$59.69
2	60.00	\$31.90	\$11.49	\$15.57	\$6.05	\$0.00	\$65.01
3	70.00	\$37.21	\$11.49	\$15.57	\$6.05	\$0.00	\$70.32
4	80.00	\$42.53	\$11.49	\$15.57	\$6.05	\$0.00	\$75.64
5	90.00	\$47.84	\$11.49	\$15.57	\$6.05	\$0.00	\$80.95

Apprentice to Journeyworker Ratio: 1:5

MARBLE MASONS,TILELAYERS & TERRAZZO MECH	8/1/2025	\$67.97	\$11.49	\$15.57	\$7.99	\$0.00	\$103.02

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BRICKLAYERS LOCAL 3	2/1/2026	\$69.32	\$11.49	\$15.57	\$7.99	\$0.00	\$104.37
BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	\$71.52	\$11.49	\$15.57	\$7.99	\$0.00	\$106.57
	2/1/2027	\$72.92	\$11.49	\$15.57	\$7.99	\$0.00	\$107.97

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH**Effective Date: 8/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$33.99	\$11.49	\$15.57	\$7.99	\$0.00	\$69.04
2	60.00	\$40.78	\$11.49	\$15.57	\$7.99	\$0.00	\$75.83
3	70.00	\$47.58	\$11.49	\$15.57	\$7.99	\$0.00	\$82.63
4	80.00	\$54.38	\$11.49	\$15.57	\$7.99	\$0.00	\$89.43
5	90.00	\$61.17	\$11.49	\$15.57	\$7.99	\$0.00	\$96.22

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH**Effective Date: 2/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$34.66	\$11.49	\$15.57	\$7.99	\$0.00	\$69.71
2	60.00	\$41.59	\$11.49	\$15.57	\$7.99	\$0.00	\$76.64
3	70.00	\$48.52	\$11.49	\$15.57	\$7.99	\$0.00	\$83.57
4	80.00	\$55.46	\$11.49	\$15.57	\$7.99	\$0.00	\$90.51
5	90.00	\$62.39	\$11.49	\$15.57	\$7.99	\$0.00	\$97.44

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES)	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2)	1/6/2025	\$45.09	\$10.08	\$11.47	\$10.00	\$0.00	\$76.64
MILLWRIGHTS LOCAL 1121	1/5/2026	\$47.42	\$10.08	\$11.47	\$10.00	\$0.00	\$78.97
MILLWRIGHTS LOCAL 1121 - Zone 2							

Apprentice: MILLWRIGHT (Zone 2)**Effective Date: 1/6/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$24.80	\$10.08	\$0.00	\$5.50	\$0.00	\$40.38

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: MILLWRIGHT (Zone 2) Effective Date: 1/6/2025							
		Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	65.00	\$29.31	\$10.08	\$0.00	\$6.50	\$0.00	\$45.89
3	75.00	\$33.82	\$10.08	\$11.47	\$7.50	\$0.00	\$62.87
4	85.00	\$38.33	\$10.08	\$11.47	\$8.50	\$0.00	\$68.38
Apprentice: MILLWRIGHT (Zone 2) Effective Date: 1/5/2026							
		Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$26.08	\$10.08	\$0.00	\$5.50	\$0.00	\$41.66
2	65.00	\$30.82	\$10.08	\$0.00	\$6.50	\$0.00	\$47.40
3	75.00	\$35.57	\$10.08	\$11.47	\$7.50	\$0.00	\$64.62
4	85.00	\$40.31	\$10.08	\$11.47	\$8.50	\$0.00	\$70.36
Apprentice Notes Step 1&2 Appr. indentured after 1/6/2020 receive no pension,							
Apprentice to Journeyworker Ratio: 1:4							
MORTAR MIXER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	6/1/2025	\$25.97	\$15.30	\$13.15	\$3.25	\$0.00	\$57.67
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$26.63	\$15.30	\$13.15	\$3.25	\$0.00	\$58.33
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$27.22	\$15.30	\$13.15	\$3.25	\$0.00	\$58.92
	12/1/2026	\$27.89	\$15.30	\$13.15	\$3.25	\$0.00	\$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OILER (TRUCK CRANES, GRADALLS)	6/1/2025	\$31.80	\$15.30	\$13.15	\$3.25	\$0.00	\$63.50
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$32.60	\$15.30	\$13.15	\$3.25	\$0.00	\$64.30
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$33.32	\$15.30	\$13.15	\$3.25	\$0.00	\$65.02
	12/1/2026	\$34.12	\$15.30	\$13.15	\$3.25	\$0.00	\$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OTHER POWER DRIVEN EQUIPMENT - CLASS II	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS)	7/1/2025	\$58.51	\$10.30	\$11.95	\$12.50	\$0.00	\$93.26
PAINTERS LOCAL 35	1/1/2026	\$59.56	\$10.35	\$12.00	\$12.50	\$0.00	\$94.41
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (BRIDGES/TANKS)**Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.26	\$10.30	\$0.00	\$0.00	\$0.00	\$39.56
2	55.00	\$32.18	\$10.30	\$0.00	\$6.88	\$0.00	\$49.36
3	60.00	\$35.11	\$10.30	\$0.00	\$7.50	\$0.00	\$52.91
4	65.00	\$38.03	\$10.30	\$0.00	\$8.13	\$0.00	\$56.46
5	70.00	\$40.96	\$10.30	\$11.95	\$8.75	\$0.00	\$71.96
6	75.00	\$43.88	\$10.30	\$11.95	\$9.38	\$0.00	\$75.51
7	80.00	\$46.81	\$10.30	\$11.95	\$10.00	\$0.00	\$79.06
8	90.00	\$52.66	\$10.30	\$11.95	\$11.25	\$0.00	\$86.16

Apprentice: PAINTER (BRIDGES/TANKS)**Effective Date: 1/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.78	\$10.35	\$0.00	\$0.00	\$0.00	\$40.13
2	55.00	\$32.76	\$10.35	\$0.00	\$6.93	\$0.00	\$50.04
3	60.00	\$35.74	\$10.35	\$0.00	\$7.56	\$0.00	\$53.65
4	65.00	\$38.71	\$10.35	\$0.00	\$8.19	\$0.00	\$57.25
5	70.00	\$41.69	\$10.35	\$12.00	\$8.82	\$0.00	\$72.86
6	75.00	\$44.67	\$10.35	\$12.00	\$9.45	\$0.00	\$76.47
7	80.00	\$47.65	\$10.35	\$12.00	\$10.08	\$0.00	\$80.08
8	90.00	\$53.60	\$10.35	\$12.00	\$11.34	\$0.00	\$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	7/1/2025	\$49.41	\$10.30	\$11.95	\$12.50	\$0.00	\$84.16
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	\$50.46	\$10.35	\$12.00	\$12.60	\$0.00	\$85.41
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) ***Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.71	\$10.30	\$0.00	\$0.00	\$0.00	\$35.01
2	55.00	\$27.18	\$10.30	\$0.00	\$6.88	\$0.00	\$44.36
3	60.00	\$29.65	\$10.30	\$0.00	\$7.50	\$0.00	\$47.45

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	65.00	\$32.12	\$10.30	\$0.00	\$8.13	\$0.00	\$50.55
5	70.00	\$34.59	\$10.30	\$11.95	\$8.75	\$0.00	\$65.59
6	75.00	\$37.06	\$10.30	\$11.95	\$9.38	\$0.00	\$68.69
7	80.00	\$39.53	\$10.30	\$11.95	\$10.00	\$0.00	\$71.78
8	90.00	\$44.47	\$10.30	\$11.95	\$11.25	\$0.00	\$77.97
Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$25.23	\$10.35	\$0.00	\$0.00	\$0.00	\$35.58
2	55.00	\$27.75	\$10.35	\$0.00	\$6.93	\$0.00	\$45.03
3	60.00	\$30.28	\$10.35	\$0.00	\$7.56	\$0.00	\$48.19
4	65.00	\$32.80	\$10.35	\$0.00	\$8.19	\$0.00	\$51.34
5	70.00	\$35.32	\$10.35	\$12.00	\$8.82	\$0.00	\$66.49
6	75.00	\$37.85	\$10.35	\$12.00	\$9.45	\$0.00	\$69.65
7	80.00	\$40.37	\$10.35	\$12.00	\$10.08	\$0.00	\$72.80
8	90.00	\$45.41	\$10.35	\$12.00	\$11.34	\$0.00	\$79.10
Apprentice to Journeyworker Ratio: 1:1							
PAINTER (SPRAY OR SANDBLAST, REPAINT)	7/1/2025	\$47.47	\$10.30	\$11.95	\$12.50	\$0.00	\$82.22
PAINTERS LOCAL 35	1/1/2026	\$48.52	\$10.35	\$12.00	\$12.60	\$0.00	\$83.47
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.74	\$10.30	\$0.00	\$0.00	\$0.00	\$34.04
2	55.00	\$26.11	\$10.30	\$0.00	\$6.88	\$0.00	\$43.29
3	60.00	\$28.48	\$10.30	\$0.00	\$7.50	\$0.00	\$46.28
4	65.00	\$30.86	\$10.30	\$0.00	\$8.13	\$0.00	\$49.29
5	70.00	\$33.23	\$10.30	\$11.95	\$8.75	\$0.00	\$64.23
6	75.00	\$35.60	\$10.30	\$11.95	\$9.38	\$0.00	\$67.23
7	80.00	\$37.98	\$10.30	\$11.95	\$10.00	\$0.00	\$70.23
8	90.00	\$42.72	\$10.30	\$11.95	\$11.25	\$0.00	\$76.22

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.26	\$10.35	\$0.00	\$0.00	\$0.00	\$34.61
2	55.00	\$26.69	\$10.35	\$0.00	\$6.93	\$0.00	\$43.97
3	60.00	\$29.11	\$10.35	\$0.00	\$7.56	\$0.00	\$47.02
4	65.00	\$31.54	\$10.35	\$0.00	\$8.19	\$0.00	\$50.08
5	70.00	\$33.96	\$10.35	\$12.00	\$8.82	\$0.00	\$65.13
6	75.00	\$36.39	\$10.35	\$12.00	\$9.45	\$0.00	\$68.19
7	80.00	\$38.82	\$10.35	\$12.00	\$10.08	\$0.00	\$71.25
8	90.00	\$43.67	\$10.35	\$12.00	\$11.34	\$0.00	\$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	7/1/2025	\$48.01	\$10.30	\$11.95	\$12.50	\$0.00	\$82.76
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	\$49.06	\$10.35	\$12.00	\$12.60	\$0.00	\$84.01
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, NEW) *							
Effective Date: 7/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.01	\$10.30	\$0.00	\$0.00	\$0.00	\$34.31
2	55.00	\$26.41	\$10.30	\$0.00	\$6.88	\$0.00	\$43.59
3	60.00	\$28.81	\$10.30	\$0.00	\$7.50	\$0.00	\$46.61
4	65.00	\$31.21	\$10.30	\$0.00	\$8.13	\$0.00	\$49.64
5	70.00	\$33.61	\$10.30	\$11.95	\$8.75	\$0.00	\$64.61
6	75.00	\$36.01	\$10.30	\$11.95	\$9.38	\$0.00	\$67.64
7	80.00	\$38.41	\$10.30	\$11.95	\$10.00	\$0.00	\$70.66
8	90.00	\$43.21	\$10.30	\$11.95	\$11.25	\$0.00	\$76.71

Apprentice: PAINTER / TAPER (BRUSH, NEW) *							
Effective Date: 1/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$24.53	\$10.35	\$0.00	\$0.00	\$0.00	\$34.88
2	55.00	\$26.98	\$10.35	\$0.00	\$6.93	\$0.00	\$44.26
3	60.00	\$29.44	\$10.35	\$0.00	\$7.56	\$0.00	\$47.35
4	65.00	\$31.89	\$10.35	\$0.00	\$8.19	\$0.00	\$50.43
5	70.00	\$34.34	\$10.35	\$12.00	\$8.82	\$0.00	\$65.51
6	75.00	\$36.80	\$10.35	\$12.00	\$9.45	\$0.00	\$68.60
7	80.00	\$39.25	\$10.35	\$12.00	\$10.08	\$0.00	\$71.68
8	90.00	\$44.15	\$10.35	\$12.00	\$11.34	\$0.00	\$77.84

Apprentice to Journeyworker Ratio: 1:1

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PAINTER / TAPER (BRUSH, REPAINT)	7/1/2025	\$46.07	\$10.30	\$11.95	\$12.50	\$0.00	\$80.82
PAINTERS LOCAL 35	1/1/2026	\$47.12	\$10.35	\$12.00	\$12.60	\$0.00	\$82.07
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)**Effective Date: 7/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.04	\$10.30	\$0.00	\$0.00	\$0.00	\$33.34
2	55.00	\$25.34	\$10.30	\$0.00	\$6.88	\$0.00	\$42.52
3	60.00	\$27.64	\$10.30	\$0.00	\$7.50	\$0.00	\$45.44
4	65.00	\$29.95	\$10.30	\$0.00	\$8.13	\$0.00	\$48.38
5	70.00	\$32.25	\$10.30	\$11.95	\$8.75	\$0.00	\$63.25
6	75.00	\$34.55	\$10.30	\$11.95	\$9.38	\$0.00	\$66.18
7	80.00	\$36.86	\$10.30	\$11.95	\$10.00	\$0.00	\$69.11
8	90.00	\$41.46	\$10.30	\$11.95	\$11.25	\$0.00	\$74.96

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)**Effective Date: 1/1/2026**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.56	\$10.35	\$0.00	\$0.00	\$0.00	\$33.91
2	55.00	\$25.92	\$10.35	\$0.00	\$6.93	\$0.00	\$43.20
3	60.00	\$28.27	\$10.35	\$0.00	\$7.56	\$0.00	\$46.18
4	65.00	\$30.63	\$10.35	\$0.00	\$8.19	\$0.00	\$49.17
5	70.00	\$32.98	\$10.35	\$12.00	\$8.82	\$0.00	\$64.15
6	75.00	\$35.34	\$10.35	\$12.00	\$9.45	\$0.00	\$67.14
7	80.00	\$37.70	\$10.35	\$12.00	\$10.08	\$0.00	\$70.13
8	90.00	\$42.41	\$10.35	\$12.00	\$11.34	\$0.00	\$76.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.21	\$0.00	\$68.70
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.21	\$0.00	\$70.08
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.21	\$0.00	\$71.52
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.21	\$0.00	\$72.96

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PANEL & PICKUP TRUCKS DRIVER	6/1/2025	\$40.78	\$15.57	\$20.17	\$0.00	\$0.00	\$76.52
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$40.78	\$15.57	\$21.78	\$0.00	\$0.00	\$78.13
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$40.78	\$16.17	\$21.78	\$0.00	\$0.00	\$78.73
	6/1/2026	\$41.78	\$16.17	\$21.78	\$0.00	\$0.00	\$79.73
	12/1/2026	\$41.78	\$16.17	\$23.52	\$0.00	\$0.00	\$81.47
	1/1/2027	\$41.78	\$16.77	\$23.52	\$0.00	\$0.00	\$82.07

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	8/1/2024	\$55.79	\$10.08	\$11.62	\$12.67	\$0.00	\$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER	8/1/2024	\$55.79	\$10.08	\$11.62	\$12.67	\$0.00	\$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							

Apprentice: PILE DRIVER							
Effective Date: 8/1/2024							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$25.11	\$10.08	\$0.00	\$2.53	\$0.00	\$37.72
2	55.00	\$30.68	\$10.08	\$0.00	\$5.07	\$0.00	\$45.83
3	70.00	\$39.05	\$10.08	\$11.62	\$7.60	\$0.00	\$68.35
4	80.00	\$44.63	\$10.08	\$11.62	\$10.14	\$0.00	\$76.47

Apprentice to Journeyworker Ratio: 1:5

PIPEFITTER & STEAMFITTER	3/1/2025	\$68.88	\$12.70	\$13.05	\$8.75	\$0.00	\$103.38
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							

Apprentice: PIPEFITTER & STEAMFITTER							
Effective Date: 3/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$27.55	\$12.70	\$0.30	\$8.75	\$0.00	\$49.30
2	45.00	\$31.00	\$12.70	\$13.05	\$8.75	\$0.00	\$65.50
3	60.00	\$41.33	\$12.70	\$13.05	\$8.75	\$0.00	\$75.83
4	70.00	\$48.22	\$12.70	\$13.05	\$8.75	\$0.00	\$82.72
5	80.00	\$55.10	\$12.70	\$13.05	\$8.75	\$0.00	\$89.60

Apprentice to Journeyworker Ratio: 1:3

PIPELAYER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

PLUMBERS & GASFITTERS	3/2/2025	\$69.84	\$14.32	\$12.31	\$8.00	\$0.00	\$104.47

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PLUMBERS & GASFITTERS LOCAL 12							
PLUMBERS & GASFITTERS LOCAL 12							

Apprentice: PLUMBERS & GASFITTERS**Effective Date: 3/2/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	\$24.44	\$14.32	\$4.61	\$2.80	\$0.00	\$46.17
2	40.00	\$27.94	\$14.32	\$5.22	\$3.20	\$0.00	\$50.68
3	55.00	\$38.41	\$14.32	\$7.07	\$4.40	\$0.00	\$64.20
4	65.00	\$45.40	\$14.32	\$8.30	\$5.20	\$0.00	\$73.22
5	75.00	\$52.38	\$14.32	\$9.53	\$6.00	\$0.00	\$82.23

Apprentice to Journeyworker Ratio: 1:2

PNEUMATIC CONTROLS (TEMP.)	3/1/2025	\$68.88	\$12.70	\$13.05	\$8.75	\$0.00	\$103.38
PIPEFITTERS LOCAL 537							
PIPEFITTERS LOCAL 537							

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR	6/1/2025	\$41.09	\$9.90	\$9.25	\$8.29	\$0.00	\$68.53
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$8.29	\$0.00	\$69.91
LABORERS - ZONE 2	6/1/2026	\$43.91	\$9.90	\$9.25	\$8.29	\$0.00	\$71.35
	12/1/2026	\$45.35	\$9.90	\$9.25	\$8.29	\$0.00	\$72.79
	6/1/2027	\$46.80	\$9.90	\$9.25	\$8.29	\$0.00	\$74.24
	12/1/2027	\$48.25	\$9.90	\$9.25	\$8.29	\$0.00	\$75.69
	6/1/2028	\$49.75	\$9.90	\$9.25	\$8.29	\$0.00	\$77.19
	12/1/2028	\$51.25	\$9.90	\$9.25	\$8.29	\$0.00	\$78.69

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

POWDERMAN & BLASTER	6/1/2025	\$41.34	\$9.90	\$9.25	\$9.11	\$0.00	\$69.60
LABORERS	12/1/2025	\$42.72	\$9.90	\$9.25	\$9.11	\$0.00	\$70.98
LABORERS - ZONE 2	6/1/2026	\$44.16	\$9.90	\$9.25	\$9.11	\$0.00	\$72.42
	12/1/2026	\$45.60	\$9.90	\$9.25	\$9.11	\$0.00	\$73.86
	6/1/2027	\$47.05	\$9.90	\$9.25	\$9.11	\$0.00	\$75.31
	12/1/2027	\$48.50	\$9.90	\$9.25	\$9.11	\$0.00	\$76.76
	6/1/2028	\$50.00	\$9.90	\$9.25	\$9.11	\$0.00	\$78.26
	12/1/2028	\$51.50	\$9.90	\$9.25	\$9.11	\$0.00	\$79.76

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER (HEAVY & HIGHWAY)	6/1/2025	\$41.34	\$9.65	\$9.25	\$9.21	\$0.00	\$69.45
LABORERS	12/1/2025	\$42.72	\$9.65	\$9.25	\$9.21	\$0.00	\$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$44.16	\$9.65	\$9.25	\$9.21	\$0.00	\$72.27
	12/1/2026	\$45.60	\$9.65	\$9.25	\$9.21	\$0.00	\$73.71

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
POWER SHOVEL/DERRICK/TRENCHING MACHINE	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (CONCRETE)	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	6/1/2025	\$37.52	\$15.55	\$13.25	\$3.25	\$0.00	\$69.57
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$38.47	\$15.55	\$13.25	\$3.25	\$0.00	\$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$39.33	\$15.55	\$13.25	\$3.25	\$0.00	\$71.38
	12/1/2026	\$40.28	\$15.55	\$13.25	\$3.25	\$0.00	\$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY MIX CONCRETE DRIVERS after 4/30/12 (Drivers Hired After 4/30/2012)	8/1/2022	\$30.40	\$11.91	\$15.25	\$0.00	\$0.00	\$57.56
TEAMSTERS 25 (Suburban) - Aggregate							
TEAMSTERS 25 (Suburban) - Aggregate							
READY-MIX CONCRETE DRIVER	8/1/2022	\$30.50	\$11.91	\$15.25	\$0.00	\$0.00	\$57.66
TEAMSTERS 25 (Suburban) - Aggregate							
TEAMSTERS 25 (Suburban) - Aggregate							
RECLAIMERS	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
ROLLER/SPREADER/MULCHING MACHINE	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ROOFER (Inc.Roofer Waterproofing &Roofer Dampproofg)	8/1/2025	\$53.53	\$13.28	\$12.67	\$9.03	\$0.00	\$88.51
ROOFERS LOCAL 33	2/1/2026	\$54.78	\$13.28	\$12.67	\$9.03	\$0.00	\$89.76
ROOFERS LOCAL 33							

Apprentice: ROOFER (Inc.Roofer Waterproofing &Roofer Dampproofg)

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$26.77	\$13.28	\$6.52	\$9.03	\$0.00	\$55.60
2	60.00	\$32.12	\$13.28	\$12.67	\$9.03	\$0.00	\$67.10
3	65.00	\$34.79	\$13.28	\$12.67	\$9.03	\$0.00	\$69.77
4	75.00	\$40.15	\$13.28	\$12.67	\$9.03	\$0.00	\$75.13
5	85.00	\$45.50	\$13.28	\$12.67	\$9.03	\$0.00	\$80.48

Apprentice: ROOFER (Inc.Roofer Waterproofing &Roofer Dampproofg)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$27.39	\$13.28	\$6.52	\$9.03	\$0.00	\$56.22
2	60.00	\$32.87	\$13.28	\$12.67	\$9.03	\$0.00	\$67.85
3	65.00	\$35.61	\$13.28	\$12.67	\$9.03	\$0.00	\$70.59
4	75.00	\$41.09	\$13.28	\$12.67	\$9.03	\$0.00	\$76.07
5	85.00	\$46.56	\$13.28	\$12.67	\$9.03	\$0.00	\$81.54

Apprentice Notes

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

Apprentice to Journeyworker Ratio: 1:5

ROOFER SLATE / TILE / PRECAST CONCRETE	8/1/2025	\$53.78	\$13.28	\$12.67	\$9.03	\$0.00	\$88.76
ROOFERS LOCAL 33	2/1/2026	\$55.03	\$13.28	\$12.67	\$9.03	\$0.00	\$90.01
ROOFERS LOCAL 33							

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER	8/1/2025	\$60.98	\$14.91	\$18.74	\$9.53	\$2.98	\$107.14
SHEETMETAL WORKERS LOCAL 17	2/1/2026	\$62.93	\$14.91	\$18.74	\$9.53	\$2.98	\$109.09
SHEETMETAL WORKERS LOCAL 17 - A							

Apprentice: SHEETMETAL WORKER

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	\$25.61	\$14.91	\$6.13	\$0.00	\$0.00	\$46.65
2	42.00	\$25.61	\$14.91	\$6.13	\$0.00	\$0.00	\$46.65
3	47.00	\$28.66	\$14.91	\$11.01	\$1.25	\$1.62	\$57.45
4	47.00	\$28.66	\$14.91	\$11.01	\$1.25	\$1.62	\$57.45
5	52.00	\$31.71	\$14.91	\$11.74	\$1.50	\$1.74	\$61.60

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SHEETMETAL WORKER Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
6	52.00	\$31.71	\$14.91	\$11.74	\$1.75	\$1.75	\$61.86
7	60.00	\$36.59	\$14.91	\$12.90	\$2.00	\$1.93	\$68.33
8	65.00	\$39.64	\$14.91	\$13.63	\$2.25	\$2.04	\$72.47
9	75.00	\$45.74	\$14.91	\$15.09	\$2.75	\$2.28	\$80.77
10	85.00	\$51.83	\$14.91	\$16.55	\$2.75	\$2.49	\$88.53
Apprentice: SHEETMETAL WORKER Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	\$26.43	\$14.91	\$6.19	\$0.00	\$0.00	\$47.53
2	42.00	\$26.43	\$14.91	\$6.19	\$0.00	\$0.00	\$47.53
3	47.00	\$29.58	\$14.91	\$10.93	\$1.25	\$1.62	\$58.29
4	47.00	\$29.58	\$14.91	\$10.93	\$1.25	\$1.62	\$58.29
5	52.00	\$32.72	\$14.91	\$11.66	\$1.50	\$1.74	\$62.53
6	52.00	\$32.72	\$14.91	\$11.66	\$1.75	\$1.75	\$62.79
7	60.00	\$37.76	\$14.91	\$12.84	\$2.00	\$1.93	\$69.44
8	65.00	\$40.90	\$14.91	\$13.58	\$2.25	\$2.04	\$73.68
9	75.00	\$47.20	\$14.91	\$15.06	\$2.75	\$2.28	\$82.20
10	85.00	\$53.49	\$14.91	\$16.53	\$2.75	\$2.49	\$90.17
Apprentice to Journeyworker Ratio: 1:4							
SPECIALIZED EARTH MOVING EQUIP < 35 TONS	6/1/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$0.00	\$76.98
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$0.00	\$78.59
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$0.00	\$79.19
	6/1/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$0.00	\$80.19
	12/1/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$0.00	\$81.93
	1/1/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$0.00	\$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS	6/1/2025	\$41.53	\$15.57	\$20.17	\$0.00	\$0.00	\$77.27
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$0.00	\$78.88
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$0.00	\$79.48
	6/1/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$0.00	\$80.48
	12/1/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$0.00	\$82.22
	1/1/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$0.00	\$82.82
SPRINKLER FITTER	3/1/2025	\$72.14	\$11.51	\$7.30	\$16.50	\$0.00	\$107.45
SPRINKLER FITTERS LOCAL 550							
SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SPRINKLER FITTER							
Effective Date: 3/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	\$25.25	\$11.51	\$13.07	\$0.00	\$0.00	\$49.83
2	40.00	\$28.86	\$11.51	\$13.90	\$0.00	\$0.00	\$54.27
3	45.00	\$32.46	\$11.51	\$14.73	\$0.00	\$0.00	\$58.70
4	50.00	\$36.07	\$11.51	\$15.55	\$0.00	\$0.00	\$63.13
5	55.00	\$39.68	\$11.51	\$16.37	\$0.00	\$0.00	\$67.56
6	60.00	\$43.28	\$11.51	\$17.20	\$0.00	\$0.00	\$71.99
7	65.00	\$46.89	\$11.51	\$18.03	\$0.00	\$0.00	\$76.43
8	70.00	\$50.50	\$11.51	\$18.85	\$0.00	\$0.00	\$80.86
9	75.00	\$54.11	\$11.51	\$19.67	\$0.00	\$0.00	\$85.29
10	80.00	\$57.71	\$11.51	\$20.50	\$0.00	\$0.00	\$89.72

Apprentice Notes

Apprentice entered prior 9/30/10:

Apprentice to Journeyworker Ratio: 1:3

STEAM BOILER OPERATOR	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TELECOMMUNICATION TECHNICIAN	9/1/2025	\$52.94	\$13.00	\$13.97	\$6.98	\$0.00	\$86.89
ELECTRICIANS LOCAL 103	3/1/2026	\$53.49	\$13.00	\$14.23	\$7.20	\$0.00	\$87.92
ELECTRICIANS LOCAL 103	9/1/2026	\$55.02	\$13.00	\$14.28	\$7.20	\$0.00	\$89.50
	3/1/2027	\$55.98	\$13.00	\$14.31	\$7.20	\$0.00	\$90.49
	9/1/2027	\$57.50	\$13.00	\$14.36	\$7.20	\$0.00	\$92.06
	3/1/2028	\$58.46	\$13.00	\$14.38	\$7.20	\$0.00	\$93.04

Apprentice: TELECOMMUNICATION TECHNICIAN**Effective Date: 9/1/2025**

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$23.82	\$13.00	\$0.71	\$0.00	\$0.00	\$37.53
2	45.00	\$23.82	\$13.00	\$0.71	\$0.00	\$0.00	\$37.53
3	50.00	\$26.47	\$13.00	\$13.17	\$3.49	\$0.00	\$56.13

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: TELECOMMUNICATION TECHNICIAN Effective Date: 9/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	50.00	\$26.47	\$13.00	\$13.17	\$3.49	\$0.00	\$56.13
5	55.00	\$29.12	\$13.00	\$13.25	\$3.84	\$0.00	\$59.21
6	60.00	\$31.76	\$13.00	\$13.33	\$4.19	\$0.00	\$62.28
7	65.00	\$34.41	\$13.00	\$13.41	\$4.54	\$0.00	\$65.36
8	70.00	\$37.06	\$13.00	\$13.49	\$4.89	\$0.00	\$68.44
9	75.00	\$39.71	\$13.00	\$13.57	\$5.24	\$0.00	\$71.52
10	80.00	\$42.35	\$13.00	\$13.65	\$5.58	\$0.00	\$74.58
Apprentice: TELECOMMUNICATION TECHNICIAN Effective Date: 3/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$24.07	\$13.00	\$0.72	\$0.00	\$0.00	\$37.79
2	45.00	\$24.07	\$13.00	\$0.72	\$0.00	\$0.00	\$37.79
3	50.00	\$26.75	\$13.00	\$13.43	\$3.60	\$0.00	\$56.78
4	50.00	\$26.75	\$13.00	\$13.43	\$3.60	\$0.00	\$56.78
5	55.00	\$29.42	\$13.00	\$13.51	\$3.96	\$0.00	\$59.89
6	60.00	\$32.09	\$13.00	\$13.59	\$4.32	\$0.00	\$63.00
7	65.00	\$34.77	\$13.00	\$13.67	\$4.68	\$0.00	\$66.12
8	70.00	\$37.44	\$13.00	\$13.75	\$5.04	\$0.00	\$69.23
9	75.00	\$40.12	\$13.00	\$13.83	\$5.40	\$0.00	\$72.35
10	80.00	\$42.79	\$13.00	\$13.91	\$5.76	\$0.00	\$75.46
Apprentice to Journeyworker Ratio: 1:1							
TERRAZZO FINISHERS	8/1/2025	\$66.89	\$11.49	\$15.57	\$8.02	\$0.00	\$101.97
BRICKLAYERS LOCAL 3	2/1/2026	\$68.24	\$11.49	\$15.57	\$8.02	\$0.00	\$103.32
BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	\$70.44	\$11.49	\$15.57	\$8.02	\$0.00	\$105.52
	2/1/2027	\$71.84	\$11.49	\$15.57	\$8.02	\$0.00	\$106.92
Apprentice: TERRAZZO FINISHERS Effective Date: 8/1/2025							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$33.45	\$11.49	\$15.57	\$8.02	\$0.00	\$68.53
2	60.00	\$40.13	\$11.49	\$15.57	\$8.02	\$0.00	\$75.21
3	70.00	\$46.82	\$11.49	\$15.57	\$8.02	\$0.00	\$81.90
4	80.00	\$53.51	\$11.49	\$15.57	\$8.02	\$0.00	\$88.59
5	90.00	\$60.20	\$11.49	\$15.57	\$8.02	\$0.00	\$95.28

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: TERRAZZO FINISHERS							
Effective Date: 2/1/2026							
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$34.12	\$11.49	\$15.57	\$8.02	\$0.00	\$69.20
2	60.00	\$40.94	\$11.49	\$15.57	\$8.02	\$0.00	\$76.02
3	70.00	\$47.77	\$11.49	\$15.57	\$8.02	\$0.00	\$82.85
4	80.00	\$54.59	\$11.49	\$15.57	\$8.02	\$0.00	\$89.67
5	90.00	\$61.42	\$11.49	\$15.57	\$8.02	\$0.00	\$96.50
Apprentice to Journeyworker Ratio: 1:5							
TEST BORING DRILLER	6/1/2025	\$51.70	\$9.90	\$9.25	\$9.80	\$0.00	\$80.65
LABORERS	12/1/2025	\$53.20	\$9.90	\$9.25	\$9.80	\$0.00	\$82.15
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$54.75	\$9.90	\$9.25	\$9.80	\$0.00	\$83.70
	12/1/2026	\$56.25	\$9.90	\$9.25	\$9.80	\$0.00	\$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER	6/1/2025	\$47.82	\$9.90	\$9.25	\$9.80	\$0.00	\$76.77
LABORERS	12/1/2025	\$49.32	\$9.90	\$9.25	\$9.80	\$0.00	\$78.27
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$50.87	\$9.90	\$9.25	\$9.80	\$0.00	\$79.82
	12/1/2026	\$52.37	\$9.90	\$9.25	\$9.80	\$0.00	\$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER	6/1/2025	\$47.70	\$9.90	\$9.25	\$9.80	\$0.00	\$76.65
LABORERS	12/1/2025	\$49.20	\$9.90	\$9.25	\$9.80	\$0.00	\$78.15
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$50.75	\$9.90	\$9.25	\$9.80	\$0.00	\$79.70
	12/1/2026	\$52.25	\$9.90	\$9.25	\$9.80	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"							
TRACTORS/PORTABLE STEAM GENERATORS	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT	6/1/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$0.00	\$77.56
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$0.00	\$79.17
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$0.00	\$79.77
	6/1/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$0.00	\$80.77
	12/1/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$0.00	\$82.51
	1/1/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$0.00	\$83.11
TUNNEL WORK - COMPRESSED AIR	6/1/2025	\$59.93	\$9.90	\$9.25	\$10.25	\$0.00	\$89.33
LABORERS	12/1/2025	\$61.43	\$9.90	\$9.25	\$10.25	\$0.00	\$90.83
LABORERS (COMPRESSED AIR)	6/1/2026	\$62.98	\$9.90	\$9.25	\$10.25	\$0.00	\$92.38
	12/1/2026	\$64.48	\$9.90	\$9.25	\$10.25	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) LABORERS	6/1/2025	\$61.93	\$9.90	\$9.25	\$10.25	\$0.00	\$91.33
LABORERS (COMPRESSED AIR)	12/1/2025	\$63.43	\$9.90	\$9.25	\$10.25	\$0.00	\$92.83
	6/1/2026	\$64.98	\$9.90	\$9.25	\$10.25	\$0.00	\$94.38
	12/1/2026	\$66.48	\$9.90	\$9.25	\$10.25	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR LABORERS	6/1/2025	\$52.00	\$9.90	\$9.25	\$10.25	\$0.00	\$81.40
LABORERS (FREE AIR TUNNEL)	12/1/2025	\$53.50	\$9.90	\$9.25	\$10.25	\$0.00	\$82.90
	6/1/2026	\$55.05	\$9.90	\$9.25	\$10.25	\$0.00	\$84.45
	12/1/2026	\$56.55	\$9.90	\$9.25	\$10.25	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE) LABORERS	6/1/2025	\$54.00	\$9.90	\$9.25	\$10.25	\$0.00	\$83.40
LABORERS (FREE AIR TUNNEL)	12/1/2025	\$55.50	\$9.90	\$9.25	\$10.25	\$0.00	\$84.90
	6/1/2026	\$57.05	\$9.90	\$9.25	\$10.25	\$0.00	\$86.45
	12/1/2026	\$58.55	\$9.90	\$9.25	\$10.25	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	6/1/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$0.00	\$76.98
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$0.00	\$78.59
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$0.00	\$79.19
	6/1/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$0.00	\$80.19
	12/1/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$0.00	\$81.93
	1/1/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$0.00	\$82.53
WAGON DRILL OPERATOR LABORERS	6/1/2025	\$42.00	\$9.65	\$9.00	\$8.70	\$0.00	\$69.35
LABORERS - ZONE 2	12/1/2025	\$43.38	\$9.65	\$9.00	\$8.70	\$0.00	\$70.73
	6/1/2026	\$44.82	\$9.65	\$9.00	\$8.70	\$0.00	\$72.17
	12/1/2026	\$46.26	\$9.65	\$9.00	\$8.70	\$0.00	\$73.61
	6/1/2027	\$47.71	\$9.65	\$9.00	\$8.70	\$0.00	\$75.06
	12/1/2027	\$49.16	\$9.65	\$9.00	\$8.70	\$0.00	\$76.51
	6/1/2028	\$50.66	\$9.65	\$9.00	\$8.70	\$0.00	\$78.01
	12/1/2028	\$52.16	\$9.65	\$9.00	\$8.70	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) LABORERS	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WASTE WATER PUMP OPERATOR	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
WATER METER INSTALLER	3/2/2025	\$69.84	\$14.32	\$12.31	\$8.00	\$0.00	\$104.47
PLUMBERS & GASFITTERS LOCAL 12							
PLUMBERS & GASFITTERS LOCAL 12							
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.

SECTION 00950
DRAWING INDEX

PART 1.00 DRAWINGS DEVELOPED SPECIFICALLY FOR THIS CONTRACT

- A. The Following Drawings accompany the Specifications and are a part thereof and are referred to throughout the Contract Documents as "the Drawings". These drawings are the property of the Owner and shall not be used for any purpose other than that contemplated by this Contract.

<u>Sheet</u>	<u>Title</u>
0.0	Cover Sheet
1.0	General Notes and Legend
2.0	Full Impoundment Plan
2.1	Existing Conditions Plan
2.2	Existing Conditions Sections and Details
3.0	Proposed Site Plan
3.1	Proposed Sections
3.2	Spillway Sections and Details
3.3	Low Level Outlet Sections and Details
3.4	Gatehouse Sections and Details
3.5	Wetland Replication Plan
4.0	Miscellaneous Details

PART 2.00 DRAWINGS AND SPECIFICATIONS

- A. The Contractor shall keep on the job site, a copy of the Drawings and Specifications and shall, at all times, give the Owner and Owner's Representatives access thereto. Anything mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both.
- B. In cases of conflict between the Drawings and Specifications as to the type of material to be used, the Specifications shall govern. In case of discrepancy either in the figures in the Drawings or in the Specifications, the matter shall be promptly submitted to the Owner who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at the Contractor's own risk and expense. The Owner may furnish from time-to-time such detailed Drawings and other information as he may consider necessary unless otherwise provided.
- C. In case of conflict between the Drawings and Specifications as to the extent or location of materials, the following order of precedence shall be used: Large scale drawings; Small scale drawings; Finish schedules; Specifications.

END OF SECTION

Town of Wayland
Snake Brook Dam Rehabilitation

DIVISION 1 - GENERAL

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**SECTION 01000
SUMMARY OF WORK**

PART 1.00 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings, General Provisions of the Contract, and all Technical Specification Sections apply to the work of this Section.

1.02 PROJECT IDENTIFICATION:

- A. General: Project name is "Snake Brook Dam Reconstruction".
- B. Engineer's Contract Number: Matthew Dunn
Managing Engineer
mdunn@parecorp.com
508.543.1755, ext. 5219
508.948.3579 (direct)
401.575.1219 (mobile)
- C. Contract Documents: The work to be performed under this Contract is shown in the Contract Documents prepared by Pare Corporation of Foxboro, Massachusetts.

1.03 SUMMARY OF WORK:

- A. The work required by these specifications shall include furnishing all labor, skill, supervision, tools, construction plant, equipment and materials, and performing all operations to properly complete contract work as shown on the Drawings, as mentioned in these specifications, and as evidently required, to the complete satisfaction of the Owner and the Engineer.
- B. The Contractor is responsible for updating and/or filing any Local, State, and/or Federal permits to complete construction);
- C. The work on the Snake Brook Dam Rehabilitation project includes, but is not limited to:

The proposed work at the Snake Brook Dam Rehabilitation Project includes (but is not limited to) the following:

- I. Mobilization
 - 1. Contractor mobilization.
 - 2. Install all the necessary signage.
 - 3. Install perimeter erosion and sediment control including turbidity barrier and silt fence.
 - 4. Establish access and staging areas.
- II. Control of Water: Phase I
 - 1. Install the Phase I water diversion system to implement and maintain the construction drawdown to the specified drawdown elevation; El. 220.0.
 - 2. Remove material in the area of the spillway control section to establish an emergency overflow section; 10-foot minimum linear feet in length at El. 222.
- III. Tree and Stump Removal
 - 1. Remove fallen trees and other debris from within the limits of work.

SECTION 01000
SUMMARY OF WORK

2. Clear, grub, and strip all trees stumps, shrubs, brush, woody vegetation, and loam with the limits of work.
 3. Fill resulting voids with approved material in compacted lifts.
- IV. Low Level Outlet Work
1. Remove sediment and debris to the extent needed to complete the work. Complete clean up of the impoundment bottom.
 2. Clean and slipline the existing 18-inch line with a 14-inch I.D. HDPE conduit. Grout the annulus.
 3. Install the upstream gate valve with operator extension rod along upstream slope; Install the secondary gate valve within the gatehouse.
 4. Install Operator chamber along upstream edge of crest.
 5. Install Screen.
 6. Cut and grout the existing 10-inch line.
 7. Excavate to remove the existing stone culvert; Backfill to subgrade for the proposed 10-inch conduit.
 8. Install the 14-inch conduit and cradle.
 9. Install the downstream headwall.
 10. Backfill the excavation with approved material in compacted lifts.
 11. Install the riprap scour apron.
- V. Gatehouse Work
1. Remove the existing piping within the gatehouse.
 2. Fill the bottom of the gatehouse to within 1 foot of the 14-inch line invert.
 3. Install the 2-inch drain line along and within the cradle of the 14-inch LLO outlet pipe.
 4. Install ladder rungs.
 5. Install operator floor.
- VI. Embankment Work
1. Install riprap in areas of missing riprap.
 2. Raise the core wall from El. 225 to El. 226.75.
 3. Establish a dam crest 15 feet wide at El. 227.
 4. Regrade the downstream slope to 2.5 H:1V; Complete preparation of the gatehouse walls prior to placement of fills against gatehouse.
- VII. Control of Water: Phase 2
1. Utilize the new low level outlet system to maintain the construction drawdown and/or maintain the Phase I diversion system.
 2. Install a cofferdam upstream of the spillway work area.
 3. Develop and implement a rain event monitoring and response plan that includes operation of the low level outlet system to limit the rise of the impoundment elevation during that event.
- VIII. Spillway Work
1. Remove debris and other material to subgrade for the proposed components and grades. Complete bedrock preparation where encountered (removal to sound bedrock; cleaning; anchors, etc.).
 2. Install the proposed components inclusive of the control weir, bubbler pipe, training walls, culvert, channel paving, railings, and water level sensor system.
 3. Backfill all components with approved material in compacted lifts.

SECTION 01000
SUMMARY OF WORK

- IX. Embankment Work Near Spillway:
 - 1. Construct the embankment extension right of the spillway.
 - 2. Establish the auxiliary spillway controls section left of the spillway.
 - 3. Install wetland replication area.
- X. Project Completion
 - 1. Placement of loam and seed on the downstream slope, crest, and all areas disturbed by the construction activities.
 - 2. Notify engineer of substantial project completion.
 - 3. Demobilize and return disturbed areas of the site to pre-construction conditions.
- C. The work is located at Snake Brook Dam, Wayland, Massachusetts, which can be accessed via Rice Road. Prior to construction, the Contractor shall identify all bridges with load restrictions on any and all haul routes proposed to be used for this project and assure that throughout construction these load restrictions are not exceeded by any project related hauling activities.
- D. During the construction, monitoring will be on-going and the Contractor shall accommodate the Owner's representatives.
- E. Coordinate all work with the Owner and the Engineer and maintain the site in a clean, orderly condition during and upon completion of work.
- F. The Contractor shall not lower the crest of the dam during construction. Excavation into the dam embankment shall be backfilled prior to the end of each working day.
- G. In cases where the Specifications and Drawings include the provision for particular work, equipment or systems as part of the Contract, but do not completely specify all work incidental to such a provision, or do not provide complete detailed designs for all parts of the provision, then the Contractor will provide or perform such incidental work or design services using generally accepted standards of engineering, material, and construction. All Contractor designs shall be approved in writing by the Engineer prior to proceeding with the work.

1.04 HOURS OF CONSTRUCTION

- A. The Contractor shall furnish sufficient work force staffing and equipment to be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which shall insure the completion of the Work within the Contract Time. If, at any time, such work force staffing appears to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the efficiency, change the character or increase the work force staffing and equipment, and the Contractor shall conform to such order and no additional compensation shall be due the Contractor. Failure of the Engineer to give such order shall in no way relieve the Contractor of its obligations to secure the quality of the work and rate of progress required.
- B. Normal construction activity within the Owner's property shall take place only between the hours of 7:00 a.m. to 5:00 p.m., excluding Saturdays, Sundays and legal holidays.
- C. The Contractor shall plan the Work so as to avoid working beyond these hours. However, if despite the Contractor's diligent efforts, the Contractor believes that overtime work is necessary

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**SECTION 01000
SUMMARY OF WORK**

in order for the Contractor to complete the Work, the Contractor may apply to the Engineer and to the Owner for approval to perform overtime Work, which approval may be withheld in their sole discretion. No additional compensation or time extension shall be due to the Contractor whether approval is granted or denied.

- D. If the Contractor believes that overtime work is necessary, it shall obtain prior approval from the Engineer and the Owner. The Contractor shall file a request for such approval in writing and shall include the specific reasons therefor and when the work is expected to be concluded. Overtime work shall normally be limited to evening hours (5:00 p.m. to 8:00 p.m.) Monday through Friday and daytime hours (7:00 a.m. to 5:00 p.m.) on Saturdays except in special circumstances approved by the Engineer and the Owner.

1.05 PERMITS

- A. Work shall be performed in accordance with the following permits:
1. MADCR Office of Dam Safety Chapter 253 Permit
 2. Town of Wayland Conservation Commission Order of Conditions
 3. Massachusetts Environmental Policy Act
 4. Wetland Protection Act
 5. MassDEP Combined Water Quality Certification and Waterways Permit
 6. U.S. Army Corps of Engineers
- B. The Contractor will be required to obtain all applicable building permits from the Town of Wayland.

END OF SECTION

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CONTRACT CONSIDERATIONS

PART 1.00 - GENERAL

1.01 RELATED SECTIONS

- A. Owner-Contractor Agreement: Contract sum/price including allowances. Bonds and Insurance Requirements.
- B. Section 01700 - Contract Close Out.

1.02 INSPECTION AND TESTING

- A. The Contractor shall be responsible for engaging an inspection or testing firm(s), execution of inspection or tests, and reporting results as per Section 01400.
- B. The Contractor will cooperate with the Owner and provide the Owner's agents with the facilities necessary to sample and inspect during each phase of construction at no cost to the Owner. The Contractor shall be responsible for all costs associated with retesting areas that have previously failed.

1.03 SUBSTITUTES OR "EQUAL ITEMS"

- A. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a certain brand, make, Supplier or definite specification, the naming or specification of the item is intended to denote the standard desired. Any such naming or specification is intended to establish and convey the general style, type, character and quality required and is not intended to restrict competition. Unless the name is followed by words indicating that it is a proprietary item, products from other suppliers may be accepted by the Engineer if sufficient information is submitted by the Contractor to allow the Engineer to determine that the material or equipment proposed is equivalent or equal to that named. Requests for review of substitute items of material and equipment shall not be accepted by the Engineer from anyone other than the Contractor. If the Contractor wishes to furnish or use a substitute item of material or equipment, the Contractor shall make written application to the Engineer, certifying that the proposed substitute shall perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified and shall be provided at no additional cost to the Owner.
- B. The application shall state that the evaluation and acceptance by the Engineer of the proposed substitute shall not prejudice completion of the Work within the limit of the Contract Time requirements (including the Contractor's achievement of Substantial Completion on time), whether or not acceptance of the substitute for use in the Work shall require a change in any of the Work (or in the work performed) by the Owner or others having a contract with the Owner to adapt the Contract Documents to the proposed substitute, and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application (including, but not limited to, principles of operation, materials or construction finish, thickness or gauge of material, dimensions, weight, tolerances, deleted and added features) and available maintenance, repair and replacement service shall be indicated. The application shall also contain an itemized estimate of all increases or decreases in:

SECTION 01019
CONTRACT CONSIDERATIONS

1. The cost of or the time required to perform any part of the Work, and the corresponding required adjustments in Contract Price and Contract Time, resulting directly or indirectly from evaluation and acceptance of the proposed substitute, including, but not as a way of limitation, costs and delays associated with redesign or claims of other contractors affected by the resulting substitute, and
 2. Operating, maintenance, repair, replacement or spare part costs; all of which shall be considered by the Engineer in evaluating the proposed substitute
- C. The Owner may require the Contractor to furnish, at the Contractor's expense, a special performance guarantee or other surety with respect to any substitute or additional data about the proposed substitute. The Contractor assumes sole responsibility for verifying that the proposed substitute items are in accordance with the requirements of the Contract Documents and that the dimensions, arrangement, design and construction details and all other features of substitute items are suitable for their intended purpose and shall into require any extension of Contract Time.
- D. An item may be considered equal to the item so named or described if:
1. It is at least equal in quality, durability, appearance, strength and design,
 2. It performs at least equally well the function imposed by the general design for the Work,
 3. There is no increased cost to the Owner,
 4. It conforms substantially, even with deviations, to the detailed requirements for the item in the Specifications, and
 5. All cost savings are credited to the Owner.
- E. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure, if the Contractor submits sufficient information, as required in this Section, to allow the Engineer to determine that the substitute proposed is equivalent to that indicated in or required by the Contract Documents and is at not additional cost to the Owner.
- F. The Owner and the Engineer shall be allowed a reasonable time to reach a decision about each proposed substitute. A substitute item of material or equipment shall be accepted as equal to the time so named or described if considered to be equivalent by the Owner. No substitute shall be ordered, installed or utilized without prior written acceptance, which shall be evidenced by either a change order or an approved shop drawing.
- G. Should proposed substitute materials or equipment or proposed substitute means, methods, techniques, sequences or procedures of construction are accepted and are less costly than those originally specified, then 100-percent of the net difference (unless a different deductive percent amount is stipulated in the Binding Requirements) shall benefit the Owner, and an appropriate deductive Change Order shall be issued to reflect the difference in cost. If the Engineer estimates that the deduction proposed by the Contractor does not, in the Engineer's opinion, reflect the net difference in cost, then this shall be adequate justification to reject the proposed substitute.
- H. Should a substitute item differ materially from the specified material or equipment, that difference was not expressly identified in the Contractor's request for the substitution or the incorporation of

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the substitute item into the Work results in changes to the Work or in the function or general design of the Work, the Engineer shall have authority to require the removal and replacement of the substitute.

1.04 WORK TO CONFORM

- A. During its progress and on its completion, the Work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Contract Drawings, Specifications and other Contract Documents and the directions given from time to time by the Engineer.
- B. All Work done without instructions having been given therefore by the Engineer, without proper lines or levels, or performed during the absence of the Engineer, will not be estimated, or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

1.05 APPLICATIONS FOR PAYMENT

- A. Submit four (4) copies of each application on EJCDC C-620 - Application for Payment Form or AIA Form G.703.
- B. For each item, provide a column for listing: Item Number; Description of Work; Scheduled Value, Previous Applications; Work in Place and Stored Materials under this Application; Authorized Change Orders; Total Completed and Stored to Date of Applications; Percentage of Completion; Balance to Finish; and Retainage.
- C. Present required information in typewritten form.
- D. Execute certification by signature of authorized officer.
- E. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- F. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- G. Prepare Application for Final Payment as specified in Section 01700 - Contract Closeout.

1.06 CHANGE PROCEDURES

- A. The Engineer/Owner will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by the Engineer/Owner, by issuing written supplemental instructions.
- B. The Engineer/Owner may issue a Notice of Change which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within 7 days.

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CONTRACT CONSIDERATIONS**

- C. The Contractor may propose a change by submitting a request for change to the Engineer/Owner, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01340. No change will be allowed except under written approval and Notice of Change from the Engineer/Owner, verbal orders are not binding.
- D. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's estimated price quotation.
- E. Unit Price Change Order: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Work Directive Change. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
- F. Work Directive Change: The Engineer/Owner may issue a directive, on EJCDC C-940 Work Directive Change signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. The Engineer/Owner will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- I. Change Order Forms: EJCDC C-941 Change Order.
- J. Execution of Change Orders: The Engineer/Owner will issue Change Orders for signature of parties as provided in the Conditions of the Contract.

1.07 SUBSTANTIAL COMPLETION

- A. For the purposes of this project, substantial completion shall be considered after a point when all site work is completed and the contractor is prepared to demobilize from the site. Further, per section 39G of General Laws Chapter 30, substantial completion shall require that the Work of the contract has been completed except for work having a contract price of less than one per cent of the then adjusted total contract price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the contract. Work to be completed subsequent to substantial completion shall be limited to achieving satisfactory stands of grass in seeded areas, monitoring and replacing plantings which do not survive, invasive species monitoring requirements, and project closeout requirements.

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CONTRACT CONSIDERATIONS

PART 2.00 - PRODUCTS

Not Used

PART 3.00 – EXECUTION

Not Used

END OF SECTION

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**SECTION 01025
MEASUREMENT AND PAYMENT**

PART 1.00 - GENERAL

1.01 ADMINISTRATIVE SUBMITTALS

- A. Application for Payment: In accordance with the General Conditions and as specified herein.
- B. Final Application for Payment: As specified herein.

1.02 APPLICATION FOR PAYMENT

- A. Reference the General Conditions.
- B. Use separate, detailed Application for Payment Form suitable to Owner for each pay application.
- C. Preparation:
 - 1. List each Change Order and Written Amendment executed prior to date of submission as separate line item.
 - 2. Submit three (3) copies of Application for Payment Form, and such supporting data as may be requested by Owner.

1.03 MEASUREMENT - GENERAL

- A. Reference the General Conditions for additional requirements on Unit Price Work.
- B. All unit prices which are specified for measurement by the linear foot (LF) shall be measured from the beginning to the termination point of the unit being measured.
- C. Measurement and payment for all bid items shall include furnishing all equipment, material, plant, labor, and personnel required for completion the work in accordance with the contract documents unless otherwise noted.
- D. Units of measure shown on the Bid Form shall be as follows unless specified otherwise.

<u>Item</u>	<u>Method of Measurement</u>
CY	Cubic Yard – Field Measure by Engineer using the Average-End -Area Method to Calculate Volume
EA	Each-Field Count by Owner/Owner’s Representative
TON	Ton-Certified Truck Scale
LF	Linear Foot-Field Measure by Engineer to nearest 0.5 foot
LS	Lump Sum-Unit is one; no measurement will be made.
SF	Square Foot-Field Measured by Engineer
SY	Square Yard-Field Measured by Engineer

1.04 PAYMENT

- A. General: Progress payment requests shall be submitted monthly as specified in the General Conditions.

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MEASUREMENT AND PAYMENT**

- B. Payment for Lump Sum Work covers all personnel, labor, equipment, materials, and incidentals required to furnish, install and/or complete the Work as specified, indicated, and directed as indicated in the Construction Documents for the following items.
- C. Payment for unit price items covers all personnel, labor, equipment, materials, and incidentals required to furnish, install and/or complete the Work as specified, indicated, and directed as indicated in the Construction Documents for the following items

BID ITEM NO.	UNIT	DESCRIPTION
Bid Item		Title/Description
1	LS	Contract Bonds: Obtain the necessary bonds including bid, performance, and payment bonds. <i>Measurement and Payment for this item shall be lump sum.</i>
2	LS	General Requirements: Complete the miscellaneous work items necessary to complete construction including, but limited to work plan development, submittals, material testing, and other general coordination work items. Included within this bid item is the cost to purchase a water meter, temporarily install it for the purposes of monitoring extreme rain events during construction, and permanently install it as indicated within the Drawings <i>Measurement and Payment for this item shall be lump sum.</i>
3	LS	Mobilization and Demobilization: Move in personnel, equipment and materials, install necessary signs, and prepare the work site for construction. Develop and implement traffic control measures along Rice Road as required to safely access the site while limiting the impact to the free-flow of traffic along Rice Road to the extent possible as well as maintaining access/egress to 68 Rice Road at all times. Improve the existing driveway for access to the dam site. Establish, and maintain staging areas, as required. Complete snow removal if needed. Move out personnel, equipment and unused material, restore and clean the site, access roads, and staging areas, remove and dispose of signs, and remove all debris and rubbish. Restore driveway to preconstruction condition. <i>Measurement and Payment for this item shall be lump sum.</i>
4	LS	Control of Water: Design and develop a control of water plan as well as an emergency response in accordance with the contract documents. Implement the various components and phases of the control of plan to allow the work to be completed. <i>Measurement and Payment for this item shall be lump sum.</i>
5	LS	Clearing, Grubbing and Stripping: Clear all vegetation within the limits indicated on the Drawings. Grub root systems, strip loam, organic matter, or other deleterious material from areas within the limits of the dam footprint, as shown on the Drawings. Backfill resulting holes with engineered fill. Stockpile and protect suitable loam for reuse. Remove and dispose all cleared and grubbed materials. <i>Measurement and Payment for this item shall be lump sum.</i>
6	LS	Erosion and Sediment Controls: Install and maintain erosion controls as shown on the Drawings and as needed for erosion and sediment control. Complete routine inspection and maintenance of controls. Remove erosion and sediment controls in their entirety at completion. <i>Measurement and Payment for this item shall be lump sum.</i>
7	LS	Pond Bottom Clean Up: Remove tree limbs and other debris from the impoundment within the limits of work. <i>Measurement and Payment for this item shall be lump sum.</i>
8	LS	Downstream Slope Regrading: Complete the downstream slope regrading inclusive of placement and compaction of the specified fill material in horizontal lifts keyed into the existing downstream slope to the lines and grades shown on the Drawings. Improvements/modifications to the gatehouse exterior as required to accommodate the fill are

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MEASUREMENT AND PAYMENT**

BID ITEM NO.	UNIT	DESCRIPTION
		included in this bid item. <i>Measurement and Payment for this item shall be lump sum.</i>
9	LS	Core Wall Raising: Complete the core wall raising inclusive of excavation to expose the top of the wall, preparation of the wall surface, installation of the cast-in-place concrete raise, placement and compaction of the specific fill material in horizontal lifts keyed into the excavation side slopes. <i>Measurement and Payment for this item shall be lump sum.</i>
10	LS	Crest Regrading: Complete the crest regrading inclusive of placement and compaction of the specific fill material in horizontal lifts to the lines and grades shown on the Drawings. <i>Measurement and Payment for this item shall be lump sum.</i>
11	LS	LLO - Slipline: Complete the work necessary to complete the sliplining of the new LLO conduit within the existing 18-inch diameter conduit as shown on and detailed within the Drawings. <i>Measurement and Payment for this item shall be lump sum.</i>
12	LS	LLO – Upstream Controls: Complete the proposed work at the upstream end of the low level outlet conduit, inclusive of but not limited to, careful removal of certain section of the host pipe as required, installation of the 45-degree bend, installation of the concrete plug, installation of the knife gate valve, design and installation of the operator stem, installation of the sleeve of the operator stem, installation of the concrete support blocks for the operator stem sleeve, securing the sleeve to the concrete blocks, design and installation of the debris screen upstream of the knife gate valve, leak and performance testing of the valve, as well as other work as needed to establish the control system at the upstream end of the LLO. <i>Measurement and Payment for this item shall be lump sum.</i>
13	LS	LLO – Operator Chamber: Complete the work necessary to install the operator chamber for the upstream valve of the LLO system, inclusive of excavation to subgrade for the chamber, installation of the cast-in-place chamber including incorporating the penetration of the operator stem sleeve through the upstream wall, backfilling of the chamber with horizontal lifts of the specific fill material, design and installation of the secured (lockable) access hatch, as well as other work as necessary for the installation of the operator chamber. <i>Measurement and Payment for this item shall be lump sum.</i>
14	LS	10-inch Line Abandonment: Complete the work necessary to grout and abandon the existing 10-inch line as shown on the Drawings. <i>Measurement and Payment for this item shall be lump sum.</i>
15	LS	LLO – Downstream Control: Complete the work necessary to install the knife gate valve for the LLO conduit within the gatehouse chamber, inclusive of design and installation of the support system for the valve and conduit connections, installation of the knife gate valve, design and installation of the operator stem, stem guide, leak and performance testing of the valve, as well as other work as needed to establish the downstream control system for the LLO within the gatehouse. <i>Measurement and Payment for this item shall be lump sum.</i>
16	LS	LLO – Outlet Conduit Earthwork: Complete earthwork necessary for the excavation and removal of the existing stone outlet conduit, backfilling to subgrade for the proposed outlet conduit, and backfilling of the proposed outlet conduit. <i>Measurement and Payment for this item shall be lump sum.</i>
17	CY	Overexcavation and Replacement: Should unsuitable bearing material be encountered at the base of the excavation for the removal of the existing stone outlet conduit, over-excavate to a suitable bearing material and replace the unsuitable material with material deemed most appropriate for the conditions present (i.e. engineered fill, gravel borrow, or mass concrete) <i>Measurement for this item shall be per cubic yard of over excavation and replacement completed.</i>
18	LS	LLO – Outlet Conduit Installation: Complete the work necessary to install the proposed outlet conduit of the LLO system inclusive of conduit installation, chamber drain conduit

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**SECTION 01025
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BID ITEM NO.	UNIT	DESCRIPTION
		installation, conduit penetration through the downstream wall of the gatehouse, installation of the concrete cradle for the conduit, as well as other work as needed to install the outlet conduit of the LLO system. <i>Measurement and Payment for this item shall be lump sum.</i>
19	LS	LLO – Downstream Headwall: Complete all necessary work to remove and rebuild the existing stone masonry headwall at the downstream end of the the low level outlet conduit. <i>Measurement and Payment for this item shall be lump sum.</i>
20	LS	LLO – Discharge Apron: Complete all necessary work to install the discharge apron within the downstream channel at the outlet end of the low level outlet system. <i>Measurement and Payment for this item shall be lump sum.</i>
21	SY	Upstream Slope – Below Water Channel Paving: Complete all necessary work to install the channel paving along the upstream slope within the isolated section of missing riprap along the upstream slope as identified in the Drawings. <i>Measurement for this item shall be per square yard of channel surface treatment installed.</i>
22	SY	Upstream Slope – Above Water Channel Paving: Complete all necessary work to install the channel paving along the top of the upstream slope as identified in the Drawings. <i>Measurement for this item shall be per square yard of channel surface treatment installed.</i>
23	LS	Gatehouse – Chamber Floor Work: Complete the proposed work along the base of the gatehouse chamber as shown on the drawings, including, but not limited to, dewatering, removal of existing piping and debris, cleaning of the chamber bottom surface, and installation of flowable fill to within 1 foot of the proposed low level outlet conduit and components. Salvage the existing piping components to the extent possible for potential use as a historical monumentation (to be completed by the Town). <i>Measurement and Payment for this item shall be lump sum.</i>
24	LS	Gatehouse – Access Improvements: Complete the proposed gatehouse access improvement work inclusive of installation of the chamber floor, access hatch, and access ladder. <i>Measurement and Payment for this item shall be lump sum.</i>
25	LS	Spillway Earthwork: Complete the excavation and removal of existing material to subgrade of the various components of the spillway system (weir wall, training walls, bubble pipe, discharge culvert, channel paving, as well as other work associated with the spillway system). Salvage the stone slab(s) that create the roof of the existing stone culvert; install slab(s) over top of the proposed discharge culvert (for historical monumentation purposes). Complete backfilling of the various components with the specified material compacted in horizontal lifts to the lines and grades shown on the Drawings. <i>Measurement and Payment for this item shall be lump sum.</i>
26	CY	Spillway – Bedrock Removal: If sound bedrock is encountered above the proposed subgrades for the various spillway components at elevations that require it's removal, complete all necessary work to remove bedrock to the required elevations. Removal of the bedrock shall be completed in close coordination with the Engineer to limit removal to only that which is necessary. <i>Measurement for this item shall be per cubic yard of bedrock removal.</i>
27	LS	Spillway – Bedrock Preparation: Complete all necessary rock preparation for the bedrock tie in procures for the sections of the spillway components that are founded on bedrock. <i>Measurement and Payment for this item shall be lump sum.</i>
28	CY	Spillway – Control Weir: Complete all necessary work to install the cast-in-place concrete control weir, inclusive of formliner finish. <i>Measurement for this item shall be per cubic yard of concrete imported and utilized.</i>
29	CY	Spillway – Training Walls: Complete all necessary work to install the cast-in-place concrete training walls, inclusive of formliner finish. <i>Measurement for this item shall be per cubic</i>

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MEASUREMENT AND PAYMENT**

BID ITEM NO.	UNIT	DESCRIPTION
		<i>yard of concrete imported and utilized.</i>
30	LS	Spillway – Bubbler Pipe: Complete all necessary work to install the bubbler pipe system inclusive of the conduit, inlet screen, wall anchoring, and other work associated with the bubbler pipe. <i>Measurement and Payment for this item shall be lump sum.</i>
31	CY	Spillway – Discharge Culvert: Complete all necessary work to install the cast-in-place concrete discharge culvert, inclusive of formliner finish. <i>Measurement for this item shall be per cubic yard of concrete imported and utilized.</i>
32	SY	Spillway – Channel Paving: Complete all necessary work to install the channel paving. <i>Measurement for this item shall be per square yard of material imported and utilized.</i>
33	LS	Spillway – Railing: Complete all necessary work to install the railing along the top of the spillway training walls and discharge culvert. <i>Measurement and Payment for this item shall be lump sum.</i>
34	LS	Embankment Work Right of Spillway: Complete all necessary work to complete the embankment work right of the spillway inclusive of excavation to subgrade and placement and compaction of the specified material in horizontal lifts to the lines and grades shown on the Drawings <i>Measurement and Payment for this item shall be lump sum.</i>
35	LS	Access Gate: Design and install the access gate at the location indicated on the drawings. <i>Measurement and Payment for this item shall be lump sum.</i>
36	LS	Establish Grass: Establish grass at all loamed areas. Install seed, fertilizer, mulch, and any other soil amendments required. Water and maintain grass until a healthy stand of grass has been developed in all areas. Address all areas of poorly developed grass until a healthy stand of grass is developed. <i>Measurement and Payment for this item shall be lump sum.</i>
37	TN	Imported Engineered Fill: Import and stockpile Engineered Fill as required to complete the work. Manage/cover stockpiles and coordinate with the material supplier to ensure that moisture content of engineered fill is within a range that will allow for the specified compaction requirements to be achieved. <i>Measurement for this item shall be per ton delivered and utilized.</i>
38	TN	Imported Gravel Borrow: Import and stockpile Gravel Borrow as required to complete the work. Manage/cover stockpiles and coordinate with the material supplier to ensure that moisture content of gravel borrow is within a range that will allow for the specified compaction requirements to be achieved. <i>Measurement for this item shall be per ton delivered and utilized.</i>
39	TN	Imported Loam: Import and stockpile imported Loam Borrow as required to supplement on-site Loam Borrow. <i>Measurement for this item shall be per cubic yard of loam imported and utilized.</i>
40	TN	Imported Trap Rock: Imported and stockpile Trap Rock as required to complete the work. <i>Measurement for this item shall be per ton of stone imported and utilized.</i>
41	TN	Import Granite Block Paving: Imported and stockpile Granite Block as required to complete the work. <i>Measurement for this item shall be per ton of granite block imported and utilized.</i>
42	LS	Wetland Replication: Imported wetland, trees, shrubs, and other material as need to replicate wetland as indicated within the contract plan. <i>Measurement and Payment for this item shall be lump sum.</i>

D. Payment for equipment, materials and labor for items not included on the Bid or described in Article PAYMENT, herein, shall be considered incidental and no separate payment will be made.

1.05 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

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MEASUREMENT AND PAYMENT

- A. Payment will not be made for following:
1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called for under the Contract Documents.
 3. Rejected loads of material, including material rejected after it has been placed by Contractor.
 4. Material not unloaded from transporting vehicle.
 5. Defective Work not accepted by the Engineer.
 6. Material remaining on hand after completion of Work.

1.06 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Final Payment: Will be made only for materials incorporated into the Work in the Contract; no partial payments shall be made for equipment or materials delivered to the site but not used.

1.07 FINAL APPLICATION FOR PAYMENT

- A. Reference the General Conditions, and as may otherwise be required in the Contract Documents.
- B. Prior to submitting final application, make acceptable delivery of required documents.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 – EXECUTION

Not Used

END OF SECTION

SECTION 01070
ABBREVIATIONS, SYMBOLS, AND DEFINITIONS

PART 1.00 - GENERAL

1.01 STANDARD SPECIFICATIONS:

- A. Wherever a reference is made to any standard specifications, it shall mean the most recent specification, code, standard or tentative specification of the organization referred to, and these standard specifications shall be considered a part of these Contract Documents to the extent indicated. Abbreviations which may be used refer to the following organizations:

1.	AA	Aluminum Association
2.	AAMA	Architectural Aluminum Manufacturers Association
3.	AASHTO	American Association of State Highway and Transportation Officials
4.	ACI	American Concrete Institute
5.	AISC	American Institute of Steel Construction
6.	AISI	American Iron and Steel Institute
7.	ANSI	American National Standards Institute
8.	ASTM	American Society for Testing and Materials
9.	AWS	American Welding Society
10.	MADCR	Massachusetts Department of Conservation and Recreation
11.	ODS	Office of Dam Safety
12.	NFPA	National Fire Protection Association
13.	OSHA	Occupational Safety and Health Administration
14.	PTI	Post-tensioning Institute
15.	UL	Underwriter's Laboratory

1.02 DEFINITIONS

- A. General: A substantial amount of specification language consists of definitions of terms found in other Contract Documents, including the Drawings. Certain terms used in Contract Documents are defined in this article. Definitions and explanations contained in this section are not necessarily either complete or exclusive, but are general for the Work to the extent that they are not stated more explicitly in another element of the Contract Documents.
1. Construction Documents: Refers to the contract documents inclusive of the Contractors Bid, the Contract, General Conditions, Supplementary Conditions, Technical Specifications, Permits, and Construction Drawings
- B. Owner of the Dam: The Town of Wayland (Town) is the current owner of the property and is referred to as Owner in the Contract Documents.
- C. Engineer: Refers to the engineer of record, Pare Corporation (Pare) of Foxboro, Massachusetts and its representatives.
- D. Regulatory Agencies: Refers to the following agencies having jurisdiction over all or part of the work:
- | | |
|----|--|
| 1. | Massachusetts Department of Conservation and Recreation Office of Dam Safety – MADCR ODS |
| 2. | Army Corps of Engineers - ACOE |
| 3. | Massachusetts Department of Environmental Protection - MADEP |

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SECTION 01070
ABBREVIATIONS, SYMBOLS, AND DEFINITIONS

- 4. Town of Wayland Conservation Commission
- 5. Town of Wayland Department of Public Works

- E. Work: Refers to all construction activities associated with the Snake Brook Dam Rehabilitation project as specified in the Contract Documents and specified herein.

- F. Overburden Soils: Refers to unclassified soils, fills, and debris located between the existing surface grades and the underlying bedrock.

- G. Orientation to Site:
 - 1. Downstream: Generally, refers to the area to the south of the spillway and dam embankment.
 - 2. Upstream: Generally, refers to the area north of the spillway and dam embankment.
 - 3. Left: In general, this is the area to the left (east) when facing downstream.
 - 4. Right: In general, this is the area located to the right (west) when facing downstream.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 – EXECUTION

Not Used

END OF SECTION

**SECTION 01200
PROJECT MEETINGS**

PART 1.00 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Owner or Owner's Representative shall schedule and administer the preconstruction conference. The Owner or Owner's Representative shall:
 - 1. Prepare the agenda for the meeting.
 - 2. Notify all parties required to attend meeting.
 - 3. Make physical arrangements for meeting.
 - 4. Preside at meeting.
 - 5. Record the minutes, including significant proceedings and decisions.
 - 6. Reproduce and distribute copies of minutes within three (3) calendar days after the meeting to participants in the meeting and other parties affected by decisions made at the meeting.
- B. The Owner or Owner's Representative shall schedule and administer periodic progress meetings, and specially called meetings throughout the progress of the Work. The Owner or Owner's Representative shall:
 - 1. Prepare agenda for meetings.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Record the minutes, including significant proceedings and decisions.
 - 5. Reproduce and distribute copies of minutes within three (3) calendar days after each meeting to participants in the meeting and other parties affected by decisions made at the meeting.
- C. Representatives of Contractors, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. Attendance:
 - 1. Owner and/or Representative.
 - 2. Resident project Representative.
 - 3. Contractor's superintendent.
 - 4. Major Subcontractors.
 - 5. Major suppliers.
 - 6. Others as appropriate.
- B. Suggested Agenda:
 - 1. Distribution and discussion of
 - a. List of major Subcontractors and suppliers.
 - b. Projected construction schedules.
 - 2. Critical work sequencing.
 - 3. Major equipment deliveries and priorities.
 - 4. Project coordination.
 - a. Designation of responsible personnel.

SECTION 01200
PROJECT MEETINGS

5. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change orders.
 - e. Applications for payment.
6. Adequacy of distribution of Contract Documents.
7. Procedures for maintaining record documents.
8. Use of premises:
 - a. Office, work and storage areas.
 - b. Owner's requirements.
9. Construction facilities, controls, and construction aids.
10. Traffic Maintenance Plan.
11. Temporary utilities.
12. Safety and first-aid procedures.
13. Security procedures.
14. Housekeeping procedures.
15. Place, date, and time for regular progress meetings.

1.03 PROGRESS MEETINGS

- A. Conduct scheduled weekly progress meetings, while work is occurring, at a place and time agreed upon at Pre-Construction Conference.
- B. Conduct additional meetings as progress of the Work dictates.
- C. Attendance:
 1. Engineer and professional consultants as needed.
 2. Owner or Representative, when required.
 3. Contractor's superintendent.
 4. Subcontractors as appropriate to the agenda.
 5. Suppliers as appropriate to the agenda.
 6. Others.
- D. Suggested Agenda:
 1. Review approval of minutes of previous meeting.
 2. Review of work progress since previous meeting.
 3. Field observations, problems, and conflicts.
 4. Problems which impede construction schedule.
 5. Review of off-site fabrication, delivery schedules.
 6. Corrective measures and procedures to regain projected schedule.
 7. Revisions to construction schedule.
 8. Progress schedule during succeeding work period.
 9. Maintenance of quality standards.
 10. Pending changes and substitutions.
 11. Coordination of schedules.
 12. Review submittal schedules; expedite as required.
 13. Review proposed changes for:
 - a. Effect on construction schedule and on completion date.

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SECTION 01200
PROJECT MEETINGS

- b. Effect on subcontracts of the project.
- 14. Other business.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 - EXECUTION

Not Used

END OF SECTION

SECTION 01310
CONSTRUCTION SCHEDULES

PART 1.00 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. At least three (3) calendar days before the scheduled Pre-Construction Conference, prepare and submit to Owner or Owner's Representative the initial construction schedule for the Work, with sub schedules, if required, of related activities that are essential to its progress.
- B. Submit revised progress schedules with the submission of each payment request.

1.02 FORM OF SCHEDULES

- A. Prepare schedules using Microsoft Project (V.4.0 or later) in the form of a horizontal bar chart.
- B. Provide a separate horizontal bar for each item of work that matches verbatim the breakdown of the contract price toward which partial payments will be made to the Contractor.
- C. Horizontal Time Scale: Identify the first workday of each week.
- D. Scale and Spacing: To allow space for notations and future revisions.
- E. Minimum Sheet Size: 8-1/2" by 11".

1.03 CONTENT OF SCHEDULES

- A. Construction Progress Schedule: Include the following:
 - 1. The name of the project and name and address of the Contractor.
 - 2. The name and address of the Owner.
 - 3. Date indicating the end of the construction period being reported.
 - 4. Legend showing a solid line representing estimated construction and a dotted line representing actual construction.
 - 5. Columns showing the percentage of the total contract of each item, the percentage of completion to date of each item and the weighted percentage of completion of each item to the project as a whole.
 - 6. Starting and completion dates of the contract.
 - 7. Projected percentage of completion for each item, as of the first day of each month.
- B. Submittals Schedule for Shop Drawings, Product Data and Samples: Show the following:
 - 1. The dates for Contractor's submittals.
 - 2. The dates reviewed submittals will be required from the Engineer/Owner.

1.04 MONTHLY PROGRESS REPORTS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
 - 1. Major changes in scope.
 - 2. Activities modified since previous submission.

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SECTION 01310
CONSTRUCTION SCHEDULES

3. Revised projections of progress and completion.
4. Other identifiable changes.

C. Provide a narrative report as needed to define:

1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective action recommended, and its effect.
3. The effect of changes on schedules of other prime Contractors.

1.05 SUBMISSIONS

A. Submit initial schedule at least three (3) calendar days before the scheduled Pre-Construction Conference.

1. Owner will review schedule prior to the scheduled Pre-Construction Conference.
2. If required, resubmit within three (3) calendar days after return of review copy.

B. Submit revised progress schedules:

1. With each application for payment.
2. Each time there is a change and/or delay to the projects critical path.

C. Submit initial schedule and schedule updates in accordance with Section 01340 Submittals.

1.06 DISTRIBUTION

A. Distribute copies of the reviewed schedules to:

1. Job site file.
2. Subcontractors.
3. Other concerned parties.

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 - EXECUTION

Not Used

END OF SECTION

PART 1.00 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, General Provisions of Contract, and Division-1 Specification Sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

- A. General: This section specifies procedural requirements for non-administrative submittals including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.
 - 1. Refer to other Division-1 sections and other Contract Documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:
 - a. Permits.
 - b. Written consents.
 - c. Manifests
 - d. Payment applications.
 - e. Performance and payment bonds.
 - f. Insurance certificates.
 - g. Inspection and test reports.
 - h. Progress reports.
 - i. Listing of Subcontractors.
 - j. Construction schedules.
- B. Shop drawings are technical drawings and data that have been specially prepared for this project, including but not limited to the following items:
 - 1. Fabrication and installation drawings.
 - 2. Coordination drawings (for use on-site).
 - 3. Schedules.
 - 4. Design mix formulas.
- C. Product data includes standard printed information on manufactured products that has not been specially-prepared for this project, including but not limited to the following items:
 - 1. Manufacturer's product specifications and installation instructions.
 - 2. Catalog cuts.
 - 3. Roughing-in diagram and templates.
 - 4. Standard wiring diagrams.
 - 5. Printed performance curves.
 - 6. Operational range diagrams.
- D. Samples are physical examples of work, including but not limited to the following items:
 - 1. Partial sections of manufactured or fabricated work.
 - 2. Small cuts or containers of materials.
 - 3. Complete units of repetitively-used materials.

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SUBMITTALS

- E. Miscellaneous submittals are work-related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:
1. Specially-prepared and standard printed warranties.
 2. Project photographs.
 3. Testing and certification reports.
 4. Record drawings.
 5. Field measurement data.
 6. Keys and other security protection devices.

1.03 SUBMITTAL PROCEDURES

- A. General: Refer to the General Conditions for basic procedures for submittal handling.
- B. Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.
1. Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Engineer/Owner/Owner's Representative need to review a related submittal. The Engineer/Owner/Owner's Representative reserves the right to withhold action on any submittal requiring coordination with other submittals until related submittals are forthcoming.
- C. Scheduling: In each appropriate administrative submittal, such as the progress schedule, show the principal work-related submittals and time requirements for coordination of submittal activity with related work.
- D. Coordination of Submittal Times: Prepare and transmit each submittal to the Engineer/Owner sufficiently in advance of the scheduled performance of related work and other applicable activities. Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Engineer/Owner's need to review submittals concurrently for coordination.
- E. Review Time: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for resubmittal, if necessary. Advise the Engineer/Owner on each submittal, as to whether processing time is critical to the progress of the work, and if the work would be expedited if processing time could be shortened.
1. Allow seven (7) calendar days for the Engineer/Owner's initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Engineer/Owner will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination.
 2. Allow five (5) calendar days for reprocessing each submittal.
 3. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Engineer/Owner sufficiently in advance of the work.
- F. Submittal Preparation: Mark each submittal with a permanent label for identification. Provide the following information on the label for proper processing and recording of action taken.
1. Project name.

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SUBMITTALS

2. Date.
 3. Name and address of Owner.
 4. Name and address of Contractor.
 5. Name and address of supplier.
 6. Name of manufacturer.
 7. Number and title of appropriate specification section.
 8. Drawing number and detail references, as appropriate.
 9. Similar definitive information as necessary.
 10. Provide a space on the label for the Contractor's review and approval markings, and a space for the Engineer/Owner's "Action" marking.
 11. Submittals shall be titled "19167.03_Snake Brook Dam Rehabilitation_Submittal No. XX-xxxxxxxxxxxxx".
 - a. Where "XX" is the designated sequential submittal Number.
 - b. Where "xxxxxxxxxxxxx" is a short description of the submittal content.
 - c. If the submittal is a revision include -Rev_X after the submittal number, where "X" is the revision number.
- G. Electronic Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit one (1) copy, including a transmittal form to the Contractor's Folder on the Pare File Transfer Protocol site. Emailed submittals shall be sent to the Engineer in the same format. Prepare a separate transmittal form for each division of work and identify each submittal by specification section number on the transmittal form.
2. Record relevant information and requests for data on the transmittal form. On the transmittal form, or on a separate sheet attached to the form, record deviations from the requirements of the Contract Documents, if any, including minor variations and limitations.
 3. Include the Contractor's signed certification stating that information submitted complies with requirements of the Contract Documents.
 4. Sequentially number the transmittal forms; resubmittals to have original number with an alphabetic suffix.
 5. Where appropriate, submittals shall be in Adobe PDF format. Where appropriate, File formats shall be compatible with Microsoft Office 2025.
 6. In the event of a discrepancy between the electronically transmitted submittal and the hardcopy, the hardcopy shall prevail.
 7. Contractor shall be responsible for notifying Engineer in writing when new submittals are posted to the FTP site.
 8. Emailed submittals shall be limited to one submittal per email.
 9. Emailed submittals shall be titled "19167.03_Snake Brook Dam Rehabilitation_Submittal No. XX-xxxxxxxxxxxxx".
 - a. Where "XX" is the designated submittal Number.
 - b. Where "xxxxxxxxxxxxx" is a short description of the submittal content.
 10. Emailed submittals must be confirmed as received by the Engineer through either but not limited to a read receipt or confirmatory email.
- H. Contractor Review: Stamp of approval indicates to Owner and Engineer/Owner that all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data have been determined and verified, and that each submittal has been reviewed and coordinated with requirements of work and Contract Documents.
- I. No portion of Work requiring shop drawings shall be started or any materials be fabricated, delivered to site, or installed prior to approval of such items. Fabrication performed, materials

**SECTION 01340
SUBMITTALS**

purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at Contractor's risk. Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

- J. Project work, materials, fabrications, and installation shall conform to approved shop drawings.

1.04 SPECIFIC SUBMITTAL REQUIREMENTS

A. Miscellaneous Submittals:

1. Inspection and Test Reports: Classify each inspection and test report as being either "shop drawings" or "product data" depending on whether the report is specially prepared for the project, or a standard publication of workmanship control testing at the point of production. Process inspection and test reports accordingly.
2. Survey Data: Provide copies of all survey data collected for property surveys, field measurements, quantitative records of actual work, damage surveys and similar data required by the individual sections of these specifications. None of the specified copies will be returned.
3. Standards: Where submittal of a copy of standards is indicated, and except where copies of standards are specified as an integral part of a "Product Data" submittal, submit a single copy of standards for the Engineer/Owner's use. Where workmanship, whether at the project site or elsewhere, is governed by a standard, furnish additional copies of the standard to installers, Owner's field representative, and others involved in the performance of the work.
4. Closeout Submittals: Refer to section "Project Closeout" and to individual sections of these specifications for specific submittal requirements of project closeout information, materials, tools, and similar items.
 - a. Record Documents: Furnish set of original documents as maintained on the project site.
5. General Distribution: Provide additional distribution of submittals to Subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for the proper performance of the work. Include such additional copies of submittals in the transmittal to the Engineer/Owner where the submittals are required to receive "Action" marking before final distribution. Record distributions on transmittal forms.

- B. Engineer's Stamp: Submittals that require design by the Contractor or Sub-Contractor shall bear the stamp of an Engineer registered in the Commonwealth of Massachusetts.

1.05 ENGINEER/OWNER'S ACTION

- A. General: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Engineer/Owner will review each submittal, mark with appropriate "Action", and where possible return within seven (7) calendar days of receipt. Where the submittal must be held for coordination the Engineer/Owner will so advise the Contractor without delay.
- B. Action Stamp: The Engineer/Owner will stamp, sign and date each submittal copy to be returned to Contractor and indicate disposition of each submittal in accordance with the following grading requirements:

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SUBMITTALS

1. "No Exceptions Taken" indicates that Engineer/Owner notes no exception to the intent of the Contract Documents. Fabrication of item may commence.
2. "Furnish as Corrected" indicates that with minor corrections or additions, Engineer/Owner notes no exception to the intent of the Contract Documents. Item may be fabricated on basis of corrections noted. No further checking will be required.
3. "Revise and Resubmit". No fabrication may commence.
4. "Rejected" indicates nonconformance with the contract requirements, or that too many corrections would be necessary. The Engineer/Owner will state the reasons for rejections.
5. "Submit Specified Item" indicates missing portions of the submissions. Fabrication may commence upon submission and approval of specified item.
6. "Reviewed" indicates that the Engineer/Owner has received and processed the submittal. No determination of conformance was completed/necessary.

C. Engineer/Owner Review:

1. Engineer/Owner's review of submitted drawings and data will cover only general conformity to drawings and specification, external connections, and dimensions which affect layout.
2. Engineer/Owner's review does not indicate thorough review of all dimensions.
3. Engineer/Owner's review of submittals does not relieve Contractor's responsibility for errors, omissions, or deviations, nor responsibility for compliance with Contract Documents.

1.06 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by the Engineer/Owner and resubmit until they are denoted "No Exceptions Taken" or "Furnish as Corrected" by the Engineer/Owner. Resubmission requirements specified in individual specification sections, which differ from these requirements, will take precedence over these requirements.

B. Shop Drawings and Product Data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
2. Indicate any changes which have been made other than those requested by the Engineer/Owner.

- C. Samples: Submit new samples as required for initial submittal.

1.07 DISTRIBUTION

- A. Distribute reproductions of shop drawings and copies of product data which carry the Engineer's stamp denoting "No Exceptions Taken" or "Furnish as Corrected" to:

1. Job site file.
2. Record documents file.
3. Subcontractors.
4. Supplier or fabricator.

- B. Distribute samples which carry the Engineer/Owner's stamp denoting "No Exceptions Taken" or "Furnish as Corrected" as directed by the Engineer/Owner.

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SUBMITTALS

PART 2.00 - PRODUCTS

Not Used

PART 3.00 - EXECUTION

Not Used

END OF SECTION

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SECTION 01400
QUALITY CONTROL/QUALITY ASSURANCE

PART 1.00 - GENERAL

1.01 SECTION INCLUDES

- A. Quality Control that the Contractor will perform during the performance of this work.
- B. Quality Assurance that the Owner will perform during the performance of this work.

1.02 SUBMITTALS

- A. Submit Quality Control Plan to the Owner/Owner's Representative at least three (3) calendar days before starting work which includes the following information:
 - 1. Statement and description of Contractor's overall Quality Control (QC) program as described below. Each Sub-contractor shall submit a separate QC program applicable to their scope of work to the Contractor.
 - 2. Procedures to be used in obtaining field samples of materials except where required for submittal under other sections.
 - 3. Name, qualifications, and prior experience of inspection and testing laboratories that Contractor proposes for Owner/Owner's Representative's consideration.

1.03 QUALITY CONTROL (QC) PROGRAM

- A. Formulation, Submission, Details and Acceptance of Plan:
 - 1. Contractor shall develop a QC program appropriate to the scale of the project.
 - 2. The plan shall identify personnel, and establish procedures, instructions, records, and forms to be used.
 - 3. The Contractor's QC Plan shall include as a minimum, the following:
 - a. A description of the Contractor's QC organization, including a chart showing lines of authority, and acknowledgement that the Contractor's QC staff shall conduct inspections for all aspects of the work specified.
 - b. The name, qualifications, responsibilities, and authority of each person assigned to the Contractor's QC function.
 - c. Procedures for scheduling and managing submittals, including those of Subcontractor, fabricators, suppliers, and purchasing agents.
 - d. Control procedures to be promulgated.
 - e. Control testing procedures for each specific test, including field sampling.
 - f. Reporting procedures including proposed reporting formats.
 - 3. Acceptance of Plan: Acceptance of the Contractor's plan by the Owner/Owner's Representative is required prior to the start of construction. Acceptance is conditional, and its continuation will depend on satisfactory performance by the Contractor during construction. The Owner/Owner's Representative reserves the right to require the Contractor to make changes in the Contractor's QC Plan and operations as necessary to obtain the quality specified at no additional cost to the Owner.
 - 4. Notification of Changes: After acceptance of the Contractor's QC Plan, the Contractor shall notify the Owner/Owner's Representative in writing of any proposed change. The proposed changes will be subject to acceptance by the Owner/Owner's Representative.

SECTION 01400
QUALITY CONTROL/QUALITY ASSURANCE

B. Implementation of QC Plan:

1. General:
 - a. Comply with the highest industry standards except when specified requirements indicate more rigid standards, or more precise workmanship is required.
 - b. Provide personnel to produce work of specified quality.
 - c. Secure, protect, and maintain products and Work completed or in progress from damage during the progress of remaining Work.
2. Preparatory Inspection: This shall be performed prior to beginning any segment of Work. It shall include a review of Contract requirements; a check to assure that all materials and or equipment are on hand, and have been tested, samples submitted and approved; a check to assure that provisions have been made to do required control testing; examination of the work that has been completed; and a physical examination of materials, equipment and sample work to assure that they conform to approved shop drawings or submittal data. Contractor shall instruct each Subcontractor contributing work as to the acceptable level of workmanship required in the Contractor's QC Plan in order to meet Specifications.
3. Initial Inspection: This shall be performed as soon as a representative portion of a particular segment of Work has been accomplished, and shall include examination of the quality of workmanship and materials, a review of control testing for compliance with Contract requirements, and inspection for omissions and dimensional requirements.
4. Follow-up Inspections: These shall be performed regularly to assure continuing compliance with Contract requirements, including control testing, until Completion. Final follow-up inspections shall be conducted and deficiencies corrected prior to final acceptance of segments of Work.
5. Tests: A list of QC tests, and the frequency of their performance, which the Contractor understands he is to perform, and on which he is to submit reports shall satisfy the requirements described under 3.03(B) of this section.
6. Prompt turn-around is required for all analyses, so as not to jeopardize the project schedule. Verbal turn-around time on soil samples is not to exceed 48 hours and written turn-around time is not to exceed 72 hours.
7. The Contractor shall submit the list of tests, and the frequency of their performance, as a part of the Contractor's QC Plan, to the Owner/Owner's Representative. The list shall give the test name, Specification Paragraph containing the test requirements, and the personnel and laboratory responsible for each type of test. The Contractor shall perform the following activities:
 - a. Verify that testing procedures comply with Contract requirements.
 - b. Verify that facilities and testing equipment are available and comply with testing standards.
 - c. Check test instrument calibration data against certified standards.
 - d. Verify that recording forms, including all of the test documentation requirements, have been prepared.
8. Testing for Laboratory Capability:
 - a. Capability Check: Owner/Owner's Representative shall have the right to check laboratory equipment in proposed laboratories for compliance with testing procedures.
 - b. Capability Rechecks: If the selected laboratory(ies) fails the capability check the Contractor shall be assessed actual costs to reimburse the Owner/Owner's Representative for each succeeding recheck of the laboratory or the checking of a subsequently-selected laboratory.
9. Documentation:

SECTION 01400
QUALITY CONTROL/QUALITY ASSURANCE

- a. The Contractor shall maintain records of QC operations, activities and tests performed including the work of suppliers and Subcontractors. These records shall be on an acceptable form and shall include a description of the trades working on the project, the number of personnel working, weather conditions encountered, and delays encountered, and acknowledgement of deficiencies noted along with corrective actions taken on current or previous deficiencies. Additionally these records shall include evidence that required activities or tests have been performed, including but not limited to the following:
 - i. Type and number of control activities and tests performed.
 - ii. Results of control activities or tests, including nature of any defects, causes for rejection, and other information related to deficient features.
 - iii. Proposed remedies and accomplished corrections.
- b. These records shall cover both conforming and defective features, and shall include a statement that supplies and materials incorporated in the Work comply with the Contract requirements. Legible copies of these records shall be submitted to the Owner/Owner's Representative within 3 days of test completion or observance.
- c. Notification of Noncompliance: Owner/Owner's Representative will notify the Contractor or his designated representative of any observed noncompliance with requirements of this Section. If the Contractor fails or refuses to comply promptly, the Owner/Owner's Representative may issue an order stopping all or part of the Work until satisfactory corrective action has been taken.

1.04 QUALITY ASSURANCE (QA) PROGRAM

- A. The Contractor shall provide for all costs associated with implementing a QA testing program within the bid price for General Requirements.
- B. In general, QA testing will be performed at a frequency equal to about 10 percent of the QC testing frequency or as directed by the Owner/Owner's Representative.

1.05 WEIGHTS AND MEASURES

- A. The Contractor shall weigh and measure its own materials.
- B. Give one copy of each delivery's weight or measurement to Owner/Owner's Representative prior to stockpiling or storage.

1.06 REFERENCE STANDARDS

- A. Where reference to an industry standard does not include a date of issue, conform to issue current as of date of Contract Documents.
- B. Where reference to an industry standard includes a date of issue, conform to issue current as of the date specified.

1.07 INSPECTION AND TESTING LABORATORIES

- A. Independent testing laboratories shall perform inspections, tests, and other services specified in individual specification sections, the Contractor's Quality Control Plan, and as required for QA by the Owner/Owner's Representative.

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QUALITY CONTROL/QUALITY ASSURANCE

- B. Reports and test results shall be submitted by the independent testing laboratory directly to the Owner, indicating observations and results of tests and indicating compliance or noncompliance with the requirements of the specifications.
- C. Contractor shall provide access to the work and fully cooperate with laboratory firms. Notify Owner and testing agency at least 48 hours prior to expected time when work is ready for inspection, sampling, or testing, if not otherwise specified for the particular work to be tested.
- D. Retesting required due to nonconformance to specified requirements shall be performed by the same independent testing laboratories on instructions from the Owner/Owner's Representative. Retesting costs shall be borne by the Contractor and will not be applied to any unit price items.

PART 2.00 – PRODUCTS

2.01 MATERIALS

- A. See applicable Specification Sections for types of material and equipment used on this project.

PART 3.00 – EXECUTION

3.01 PRECONSTRUCTION TESTING

- A. Prior to construction, identify sources for soil, rock, and bituminous materials and test samples of each material from each source to determine whether they meet the required material specifications.
- B. Document all tests. Soil, rock, and bituminous materials shall be accepted or rejected according to the test results. Some or all of the following tests shall be performed in the evaluation of the material properties for construction purposes:
 - 1. ASTM D422 – Particle Size Analysis
 - 2. ASTM D1557 – Moisture/Density Relationship
 - 3. ASTM D2216 – Moisture Content
 - 4. ASTM D2488 – Unified Soils Classification
 - 5. ASTM D854 – Specific Gravity
- C. All material evaluation tests shall be performed by the independent testing laboratory retained by the Contractor and approved for use by the Owner/Owner's Representative.

3.02 CONSTRUCTION TESTING

- A. Document all tests. Some or all of the following tests shall be performed in the evaluation of the in place properties of soil and rock materials.
 - 1. ASTM C31 – Making and Curing Test Specimens in the Field
 - 2. ASTM C39 – Compressive Strength of Cylindrical Concrete Specimens
 - 3. ASTM C143 – Concrete Slump Test
 - 4. ASTM D422 – Particle Size Analysis
 - 5. ASTM D1557 – Moisture/Density Relationship

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6. ASTM D2216 – Moisture Content
7. ASTM D1556 – Density of Soil in Place by Sand-Cone Method
8. ASTM D2216 – Laboratory Determination of Water Content
9. ASTM D2922 – Density of Soil in Place by Nuclear Methods
10. ASTM D3017 – Water Content of Soil in Place by Nuclear Methods

- B. Further material testing may be necessary if alternative sources of material are required during construction or, if based on visual inspection during delivery to the site, it appears that a material change (color, grain size, plasticity) has occurred. Additional source testing due to change of material shall be borne by the Contractor and will not be applied to any unit price items.
- C. Questions concerning the accuracy of any single test shall be addressed by retesting.

3.03 QC TESTING FREQUENCY

- A. All QC testing shall be conducted in accordance with the Contractor's QC Plan. Documentation and reporting of test results shall be the responsibility of the Contractor.
- B. Testing frequencies for material/product evaluation and construction quality evaluation are presented in the following table.

Material/Product	Responsible Party	Situation	Test	Minimum Frequency
Gravel Borrow/Regrading Fill	Contractor	Source Investigation	Grain Size through 0.002 mm Moisture Density Relationship	1 per source 1 per source
	Contractor	During Placement	Grain Size through 0.002 mm Moisture Density Relationship	1 per 100 tons 1 per 100 tons
	Contractor	As-Placed	Dry Density and As-Placed Moisture	2 per lift per location and no less than 1 every 500 sf
On-site Soils	Contractor	Post-Excavation / Reuse Screening	Grain Size through 0.002 mm Moisture Density Relationship	1 per 100 tons 1 per 100 tons
Loam Borrow	Contractor	During Placement	PH, Nitrogen, Phosphorous, Potassium, and USDA Classification	2 per Acre
Riprap	Contractor	Source Investigation	Source Material Certification Specific Gravity	1 per source per type 1 per source per type
	Contractor	During Placement	Source Material Certification Specific Gravity	1 per 500 tons 1 per 500 tons
Concrete	Contractor	As-Placed	Strength, Slump, Air Entrainment, Temperature	See Section 03300
Gate Leak Test	Contractor	Post-Installation	AWWA C561	1 per gate
Gate Operability	Contractor	Post-Installation	Open/Close full range	5 times per gate

- C. Sampling locations shall be approved by the Owner/Owner's Representative.
- D. A special testing frequency shall be used at the discretion of the Owner/Owner's Representative when visual observations of construction performance indicate a potential problem. Additional testing for suspected areas shall be considered when:
1. Materials appear substantially different from those specified
 2. Directed by the Owner/Owner's Representative
- E. During construction, the frequency of testing may also be increased in the following situations:
1. Adverse weather conditions
 2. Breakdown of equipment

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QUALITY CONTROL/QUALITY ASSURANCE

3. Material fails to meet specification

3.04 QA TESTING FREQUENCY

- A. In general, QA testing may be performed at a frequency equal to about 10 percent of the QC testing frequency or as directed by the Owner/Owner's Representative.

3.05 DEFICIENCIES

- A. If a defect is discovered, the Contractor shall immediately determine the extent and nature of the defect.
1. If the defect is indicated by unsatisfactory test results, the Contractor shall determine the extent of the deficient area by additional tests, observations, a review of records, or other means that the Contractor deems appropriate. Costs for additional testing shall be borne by the Contractor and not applied to any unit price items.
 2. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, the Contractor shall define the limits and nature of the defect.
- B. After determining the extent and nature of a defect, the Contractor shall notify the Owner/Owner's Representative and schedule for defect repair and retesting.
- C. The Contractor shall correct the deficiency to the satisfaction of the Owner/Owner's Representative. If the project specification criteria cannot be met, or if unusual weather conditions hinder work, then the Contractor shall develop and present to the Owner/Owner's Representative suggested solutions for his approval.
- D. All retests by the Contractor must verify that the defect has been corrected before any additional work is performed by the Contractor in the area of the deficiency. The Contractor shall also verify that all installation requirements are met and that all required submittals are provided.

END OF SECTION

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**SECTION 01500
TEMPORARY CONSTRUCTION FACILITIES**

PART 1.00 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, General Provisions of Contract, and Division-1 Specification Sections, apply to work of this section.

1.02 REQUIREMENTS INCLUDED

- A. Furnish, install and maintain temporary construction facilities required for construction, **as required by the Contractor's means and methods**, and remove at completion of work. This specification does not require that such facilities be provided unless specifically noted; however, any facilities installed shall meet the minimum requirements specified herein.
- B. Section includes but is not limited to requirements for:
 - 1. Field offices
 - 2. Miscellaneous construction facilities
 - 3. Temporary utility connections

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code.
- B. Comply with Federal, State and Local Codes, Laws, Ordinances, and Regulations and with utility company requirements.

1.04 SUBMITTALS

- A. Submit drawings within seven (7) calendar days of starting work to Engineer for approval, showing layout, furnishings, and facilities of field office trailer and information concerning how Contractor proposes to furnish utilities.
 - 1. Layout to include a minimum of 2 parking spaces for exclusive use of Owner and Engineer.

1.05 JOB CONDITIONS

- A. Scheduled Uses: Provide temporary construction facilities at time first needed at the site; and maintain, expand and modify facilities as needed throughout construction period.
- B. Conditions of Use: Operate, maintain, control and protect support facilities in a manner which will prevent fire, hazardous exposures, health problems, unsanitary conditions, pollution, contamination, discomfort to users, flooding, freeze-up, interference with construction work, public nuisances and similar deleterious effects.
- C. The Owner is not responsible for damage to any or all facilities due to severe natural occurrences, vandalism, or negligence on the part of the Contractor. The Contractor shall take all necessary precautions to protect and deter potential theft and vandalism within the construction site.

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TEMPORARY CONSTRUCTION FACILITIES**

1.06 COSTS

- A. Include all costs associated with furnishing, installing and removing Engineer's and Contractor's field offices, and providing all utilities, equipment, furnishings, services, maintenance, and removal.
- B. Include all costs for providing continuous electric, water, sewer, heating/air conditioning, and telephone services to offices throughout construction period.

PART 2.00 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.
- B. Coordinate interruptions of permanent utilities with utility companies and affected users.
- C. Contractor's Office:
 - 1. The Contractor shall provide its own field offices and such other temporary housing as it may need for storage or fabrication purposes and completely remove such facilities at the completion of the work.
 - 2. Provide storage space for all shop drawing submittals, project samples, field laboratory test data and analyses, and other project related information.
 - 3. Store all documents in fire-proof, lockable cabinets.
 - 4. The Contractor and Subcontractors shall arrange for and have installed a telephone or provide phone(s), internet services, electrical service, and water service for the use of their own field offices and personnel.
 - 5. The Contractor shall allow the Owner and Owner's representatives to use the field offices for project specific tasks.

2.02 MISCELLANEOUS CONSTRUCTION FACILITIES

- A. Storage Sheds:
 - 1. General: Install individual storage sheds as required by the contractor to accommodate the work; sized, furnished and equipped properly. Sheds are defined to include both open shelters and fully enclosed spaces.
 - 2. Chain link fence be installed around all construction facilities and staging areas as required to prevent damage and loss of construction equipment and materials due to vandalism and trespassing.
- B. Sign Materials: Except as otherwise indicated, provide exterior type plywood of sizes and thickness indicated. Provide exterior-grade acrylic-latex-base enamel for painting sign panels and applying required graphics.
- C. Temporary Fencing: Install temporary fencing to protect the contractor's property from vandalism. Temporary fencing and other controls shall also be installed to secure the site and prevent public access to work areas.

SECTION 01500
TEMPORARY CONSTRUCTION FACILITIES

D. Temporary Site Access

1. Access shall be via Rice Road.
2. Staging areas shall be downstream of the gatehouse area near the left abutment.
3. Contractor shall implement temporary improvements and use construction access roadways as shown within the contract documents and as necessary to maintain the stability of the access roadways throughout construction.
4. Equipment traveling through wetlands or dewatered portions of the impoundment shall be atop access mats or timber mats.

E. Sign Materials:

1. Except as otherwise indicated, provide exterior type plywood of sizes and thickness indicated. Provide exterior-grade acrylic-latex-base enamel for painting sign panels and applying required graphics.
2. Provide necessary signage in accordance with all applicable standards and regulations. Signage shall include but is not limited to:
 - a. DEP Permit File number sign
 - b. Pedestrian warning / traffic control signs

PART 3.00 - EXECUTION

3.01 INSTALLATION OF SUPPORT FACILITIES

- A. General: Use qualified tradesmen for installation of support facilities. Locate facilities where they will serve the total project construction work adequately and result in minimum interference with performance of the work. Relocate, modify and extend facilities as required during course of the work, to properly accommodate entire work of project. Locate field offices for easy access to construction work and positioned so that windows give best possible view of construction activities. Provide a reasonably neat and uniform appearance in support facilities, acceptable to Engineer, and to Owner.
- B. Maintain and operate temporary utility systems to assure continuous service.
- C. Modify and extend temporary utility systems as work progress requires.

3.02 INSTALLATION

A. Contractor's Office:

1. Install office at or near site of work. Office to be headquarters of authorized representative to receive drawings, instruction or other communication or articles.
 2. Contractor to keep copies of drawings, specifications and other Contract Documents at office at site of work and make readily available for Owner or Owner's representative's use at all times.
- B. Connect field offices to temporary utilities as required. Include backfill to connect telephone, data, electric, water and sewer utility lines; if applicable, insulate and heat the water and sewer lines to the extent necessary to prevent freezing. All sewer, water, electric, data, and telephone services shall be continuously connected and in proper working order.

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TEMPORARY CONSTRUCTION FACILITIES**

C. Project Identification and Temporary Signs:

1. General: Install project identification sign in size and with graphics content indicated at a location approved by the Owner or Owner's Representative. Support sign on suitable posts and framing of treated wood or steel, unless otherwise indicated. Maintain sign throughout construction period in a manner which will properly inform both the public and persons seeking entrance to project. Do not allow installation of other unauthorized signs which are made visible to persons outside project area.
2. Engage an experienced sign painter to apply required graphics, in a neat professional manner.

3.03 MAINTENANCE

- A. Field offices to be maintained in a clean condition.
- B. Maintain adequate supply of paper towels, paper cups, toilet paper, soap and other supplies as required by the Engineer.
- C. Janitorial Services:
 1. Toilet facilities to be cleaned and disinfected daily.
 2. Keep at least two (2) full drinking water bottles on hand at all times.
 3. Replenish all supplies as required by Engineer.

3.04 REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Upon completion of work of all trades and before final acceptance of entire project, each trade shall remove, at its own expense, all wiring, appurtenances and accessories used in performance of its respective work.
- C. Temporary sheds, utilities, barricades, signs, and other appurtenances related to prosecution of the work and not incorporated in the permanent construction shall be completely removed from the site prior to acceptance of work by Owner.

END OF SECTION

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SECTION 01510
TEMPORARY UTILITIES

PART 1.00 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, General Provisions of Contract, and Division 1 Specification Sections, apply to work of this section.

1.02 REQUIREMENTS INCLUDED

- A. Furnishing, installing, and maintaining temporary utilities to support construction **as required by the Contractor's means and methods**, and remove at completion of work. This specification does not require that such facilities be provided; however, any facilities installed shall meet the minimum requirements specified herein.

- 1. Electric and Lighting
- 2. Heating and Ventilation
- 3. Water

- B. Furnishing, installing, and maintaining sanitary facilities to support construction.

1.03 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with utility company to provide all power for heating, lighting, operation of equipment, or for any other required use.

- 1. Pay costs for service and for power used.

- B. Install circuit and branch wiring, with area distribution boxes located so that power and lighting is available throughout construction by use of construction-type power cords.

- C. Provide artificial lighting for areas of work when natural light is not adequate for work, and for areas accessible to public.

- D. Furnish all extension cords, sockets, lamps, motors and accessories for work. Ground all outlets.

- E. All temporary wiring, service equipment and accessories thereto installed shall be removed at expense of Contractor after serving its purpose.

1.04 TEMPORARY HEATING AND VENTILATION

- A. Provide temporary heating when temperature falls below 50 deg. F and as otherwise required to:

- 1. Maintain working conditions acceptable to Engineer.
- 2. Protect all work, materials, and equipment against damage from dampness or cold.
- 3. Dry out structures.
- 4. Maintain proper conditions for installation and curing of materials.

- B. Heating equipment and fuels shall be compatible for their particular purpose and shall include safety devices in accordance with industry standards.

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TEMPORARY UTILITIES**

- C. Do not use combustion type heaters without proper venting nor in areas where such equipment might introduce a hazard.
- D. Ensure that all enclosed areas are ventilated (using forced-draft equipment when necessary) as required to maintain proper conditions for personnel and work, and to avoid any accumulation of hazardous dust or fumes.
- E. Pay costs associated with furnishing, installing, maintaining, operating, and removing of heating and ventilation equipment.

1.05 TEMPORARY WATER

- A. Furnish all water required for and in connection with work to be done under this Contract.
- B. Water shall not be pumped directly from the Old Wayland Reservoir without the express written consent of the Owner.
- C. Pay costs associated with furnishing, cleaning, installing, maintaining, operating, and removing of water-related equipment.
- D. The Contractor shall make arrangements with the Wayland Facilities Department to use available water supplies for construction purposes. They can be reached at:

Wayland Facilities Department
41 Cochituate Road, 2nd Floor
Wayland, MA 01778
508.358.3696

- E. The express approval of the Wayland Facilities Department shall be obtained before water is used. Waste of water by the Contractor shall be sufficient cause for withdrawing the privilege of unrestricted use. Hydrants shall only be operated under supervision of the Wayland Facilities Department personnel.

1.06 TEMPORARY SANITARY FACILITIES

- A. Furnish temporary sanitary facilities at site for needs of all construction workers and others performing work or furnishing services on project.
- B. Ensure that sanitary facilities are:
 - 1. Of a capacity acceptable to Engineer.
 - 2. Maintained throughout construction period.
 - 3. Obscured from public view to greatest extent possible and secured to prevent vandalism.
 - 4. Located such that leakage from the sanitary facility can in no way enter the Snake Brook Pond (Old Wayland Reservoir) or Snake Brook water bodies
- C. Furnish at least one toilet for each 10 workers if toilets of chemically treated type are used.
- D. Service, clean, and maintain facilities and enclosures.
- E. Enforce use of such sanitary facilities by all personnel at site.

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TEMPORARY UTILITIES

- F. Pay costs associated with furnishing, installing, maintaining, operating and removing sanitary facilities.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01560
TEMPORARY CONTROLS**

PART 1.00 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, General Provisions of contract, and Division 1 Specification Sections, apply to work of this section.

1.02 REQUIREMENTS INCLUDED

- A. Controlling and protecting the Contractor's operations and work.
- B. Furnishing, installing and operating temporary controls during construction for:
 - 1. Dewatering
 - 2. Noise
 - 3. Dust
 - 4. Surface Water
 - 5. Pollution
 - 6. Debris and Clean Up
 - 7. Air Pollution
 - 8. Public Safety

1.03 PRIVATE LAND

- A. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property owner. Furnish Owner copies of all agreements the Contractor has with property owners to enter or occupy private lands.

1.04 CARE AND PROTECTION OF PROPERTY

- A. The Contractor shall install temporary security fencing to prevent access to the site by unauthorized personnel during periods of construction.
- B. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.
- C. Along the location of this work, all fences, pathways, bushes, trees, shrubbery and other physical features shall be protected and restored in a thoroughly workmanlike manner. All grass areas beyond the limits of construction which have been damaged by the Contractor shall be regraded and seeded as necessary, subject to the approval of the Engineer.
- D. Trees close to the work and not marked for removal shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are likely to be damaged because of his operations, but in no case shall any tree be cut or removed without prior notification of the Engineer. All injuries to bark, trunk, limbs, and roots of trees shall be repaired by dressing,

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TEMPORARY CONTROLS**

cutting and painting according to approved methods, using only approved tools and materials, subject to the approval of the Owner.

- E. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the proposal.

1.05 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities below grade, utilities on overhead lines, gas pipes, water pipes, hydrants, sewers, drains, electric and telephone cables, and cesspools adjacent to trench excavations, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by the Contractor at their expense, to the damaged items original condition.
- B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water, gas, electric and telephone services, drain lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.
- C. Protection and temporary removal and replacement of existing utilities and structures as described in this section shall be a part of the work under the contract and all costs in connection therewith shall be included in the unit prices established in the proposal.
- D. Contractor shall note and protect buried utilities and pipes with the limits of work and anticipated staging areas.

1.06 PROTECTION OF WORK

- A. The Contractor shall at all times protect excavations, trenches, new construction, old construction, all job materials, apparatus and fixtures from rain, wind, snow, ice, dust, dirt, mud, groundwater, back-up or leakage of sewers, drains, or other piping, and from water of any other origin, and shall remove promptly any accumulation of the above. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end at no additional cost to Owner.
- B. Thoroughly protect all completed work and all stored materials.
- C. Provide boards, cloths, planks, waterproof paper, canvas or other approved protection and use as necessary to prevent any damage.
- D. Provide protective measures to prevent damage to lawns, trees and shrubs to remain after project is complete.
- E. Protect, at end of each day's work, such work that may be liable to damage by the elements.
- F. Replace or rectify work or materials damaged by workmen, by the elements or by any other cause, to the satisfaction of the Engineer and at no additional expense to the Owner.

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TEMPORARY CONTROLS**

- G. Repair streets, curbs, sidewalks, poles, grass, shrubs, trees, or other existing site features, if disturbed by construction operations, in a manner satisfactory to the Owner/Engineer at no additional cost to the Owner. Structures disturbed as part of construction activity shall be restored, at a minimum, to their preconstruction condition.
- H. Do not allow workmen, including those of any Subcontractor or supplier, to mark finish surfaces with marking pens or other such devices which are not readily erasable.
- I. Contractor shall be responsible for any and all damage to the Owner provided materials once delivered to the site. All materials shall be handled, stored, and installed in accordance with the manufacturers recommendations.

1.07 SECURITY AND TEMPORARY FENCING

- A. The Contractor shall take all precautions necessary to prevent loss or damage caused by vandalism, theft, burglary, pilferage, or unexplained disappearance of property of the Owner or Contractor, whether or not forming part of the work, located within the limits of work. The Contractor shall have full responsibility for the security of such property located in such areas and shall reimburse the Owner for any such loss, damage, or injury, except such as may be directly caused by agents or employees of the Owner.
- B. The Contractor shall erect temporary construction fencing at entrance locations marked on the plans. Each entrance shall have a sign posted stating "Public Access Prohibited During Dam Reconstruction".
- C. Fencing shall be closed and secured while the Contractor is not onsite.

PART 2.00 – MATERIALS

Not Used

PART 3.00 - EXECUTION

3.01 INTERFERENCE WITH EXISTING STRUCTURES

- A. Whenever it may be necessary to cross or interfere with existing culverts, drains, water pipes, water fixtures, guardrails, fences, sewers, or other structures needing special care, due notice shall be given to the Owner and to the various public and private agencies or individuals responsible for the utility or structure that is interfered with. Whenever required, all objects shall be strengthened to meet any additional stress that the work herein specified may impose upon it, and any damage caused shall be thoroughly repaired. The entire work shall be the responsibility of the Contractor and the work shall be performed at no additional expense to the Owner. All damaged items of work or items required to be removed and replaced due to construction shall be replaced or repaired by the Contractor to the complete satisfaction of the property Owners and/or the Engineer at no additional expense to the Owner.

3.02 REMOVAL OF WATER AND PROTECTION FROM FLOODING

- A. The Contractor shall construct and maintain, at no additional expense to the Owner, all pumps, drains, well points or any other facility for the control and collection of groundwater and/or

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surface water and provide all pumps and piping for the removal of water from the trenches and excavations so that all trenches and excavations may be kept at all times free from water and so that all construction work may be performed in the dry.

- B. Any damage resulting from the failure of the dewatering operations of the Contractor and any damage resulting from the failure of the Contractor to maintain the areas of all work in a suitable dry condition shall be repaired by the Contractor as directed by the Engineer or Owner at no additional expense to the Owner.
- C. The Contractor's pumping and dewatering operations shall be carried out in accordance with MADEP regulations and in such a manner as to prevent damage to existing structures, utilities, and the contract work; and so that no loss of ground will result from these operations.
- D. Precautions shall be taken to protect new and existing work from flooding during storms or from other causes. Pumping shall be continuous where directed by the Engineer to protect the work and/or to maintain satisfactory progress.
- E. All pipelines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.
- F. Water from the trenches, excavations and drainage operations shall be pumped to a dewatering basin in such a manner as will neither cause public nuisance, nor cause injury to public health nor to public or private property nor to the work completed nor to the work in progress.
- G. No extra payment will be made for the removal of water, protection from flooding, drainage work, diversion of existing water courses and such other work. Compensation therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the bid.
- H. The Contractor shall have in place a Construction Flood Contingency Plan detailing the Contractor's means and methods for stabilizing the work area and emergency notification procedures if the work area becomes subject to flooding as a result of a storm event or cofferdam failure.

3.03 NOISE CONTROL

- A. The Contractor shall employ all reasonable measures to avoid unnecessary noise and ensure that noise is appropriate for normal ambient sound levels in the work area during working hours. Where required by agencies having jurisdiction, certain noise - producing work may have to be performed during specified periods only. Noise control measures during normal work hours shall include but not be limited to:
 - 1. Operate machinery in a manner to cause least noise consistent with efficient performance of work.
 - 2. Equip all construction machinery and vehicles with sound-muffling devices.
 - 3. During construction adjacent to occupied buildings, erect screens or barriers to reduce noise in building to limits in accordance with applicable codes. Conduct operations in such a manner as to avoid unnecessary noise which might interfere with activities of building occupants.
- B. When the Contractor's work extends beyond normal working hours the Contractor shall incorporate to the complete satisfaction of the Owner and Engineer, adequate noise prevention measures to insure minimum noise impact on the surrounding areas. Noise prevention measures shall include, but not be limited to:
 - 1. Insulated enclosures.
 - 2. Hospital grade silencers or mufflers.
 - 3. Equipment modification.
 - 4. Special equipment, as necessary to meet Town noise guidelines.

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- 5. Any other noise prevention measures.
- C. Should at any time the Owner and/or Engineer determine that noise prevention measures are inadequate, the Contractor shall suspend all such work in question until acceptable measures are incorporated. Suspension of work due to inadequate noise prevention shall not be a cause for additional cost to the Owner.
- D. Prior to the start of any work outside normal work hours, the Contractor shall submit a Noise Control plan to the Owner and Engineer for review. Noise Control plans shall be submitted for:
 - 1. Night work, 6PM-7AM
 - 2. All Pumping operations and work which extend beyond normal work day.
 - 3. Any other work as determined by the Engineer which warrants special noise prevention measures.
- E. All costs associated with noise control measures shall be considered part of the bid price for appropriate work being completed.

3.04 DUST CONTROL

- A. At no additional cost to the Owner take measures to prevent unnecessary dust.
 - 1. Keep earth surfaces subject to dusting moist with water only.
 - 2. Cover dusty materials in piles or in transit to prevent blowing.
- B. Protect buildings or operating facilities which may be affected adversely by dust.
- C. Protect existing or new machinery, motors, instrument panels, or similar equipment with dust screens.
 - 1. Include proper ventilation with dust screens.
- D. The Contractor shall act quickly to address any concerns or complaints from abutters or the Owner as a result of work within the project area.

3.05 SURFACE WATER CONTROL

- A. Provide for drainage of storm water and such water as may be applied or discharged on site in performance of work.
- B. Ensure that drainage facilities are adequate to prevent damage to work, site, and adjacent property.
 - 1. Clean, enlarge, or supplement existing drainage channels to carry all increased runoff attributable to operation.
 - 2. Construct dikes to:
 - a. Divert increased runoff from entering Steans Millpond or Hop Brook (except from waters that fall and contact natural channels).
 - b. Protect the work.
 - c. Direct water to drainage channels or conduits downstream of the dam.

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3.06 POLLUTION CONTROL

- A. Any equipment entering the Snake Brook Dam or the downstream channel shall have been thoroughly cleaned with chlorine bleach before arriving to the site. Prior to entering the water, surfaces of the equipment that will be in contact with the water shall be power washed within defined staging areas.
- B. Prevent pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities.
 - 1. In order to protect the Snake Brook Dam and Town of Wayland resource areas from hazardous materials releases by the construction equipment involved in this project, fueling shall take place outside of wetland areas and outside of easement areas; equipment must be in good condition and inspected for leaks; spill control and cleanup equipment shall be stored on site; and the Contractor shall be responsible for all cleanup and remediation of hazardous materials releases.
 - 2. All refueling activities shall be completed with the presence of a spill cleanup kit on-site.
 - 3. Do not allow sanitary wastes to enter any drain or watercourse other than sanitary sewers.
 - 4. Do not allow sediment, debris, or other substance to enter sanitary sewers and take measures to prevent such materials from entering any drain or watercourse.
 - 5. All concrete repair work requiring cleaning and removal of debris is to be contained so as not to contaminate the surrounding environment.
 - 6. Spills shall be reported immediately to the Owner and Engineer and shall be remedied immediately to the satisfaction of the Owner.

3.07 SPILL PREVENTION / CLEANUP

- A. In the event of a spill of hydraulic oil, fuel, slurry, or other construction chemical into Old Wayland Reservoir or pervious area outside of containment areas elsewhere on-site, all work shall immediately be brought to a safe stoppage, and all efforts shall be diverted to preventing further release of the substance into the impoundment or ground.
- B. The Contractor will be responsible for all time, materials, and costs associated with clean-up, environmental testing, and remedial action required from a release or spill of chemical into the impoundment or pervious ground.
- C. Any and all spills regardless of size shall be immediately reported to the Town of Wayland Department of Public Works, Town of Wayland Conservation Commission, and the Engineer.

3.08 DEBRIS AND CLEANUP

- A. Keep all premises free at all times from accumulation of waste materials and rubbish.
 - 1. Immediately after unpacking, remove and dispose of all packing materials, case lumber, excelsior, wrapping, or other rubbish from site.
- B. Provide trash receptacles about site, and empty containers daily.
- C. Neatly stack construction materials, such as concrete forms and scaffolding, when not in use.

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- D. Promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solution from surfaces to prevent marring or other damage to satisfaction of Engineer and/or Owner.
- E. Ensure that wastes are not buried or burned on site or disposed into storm drains, sanitary sewers, streams, or waterways.
 - 1. Remove all wastes from site and dispose in a manner complying with local ordinances and antipollution laws.
 - 2. Store volatile wastes in covered metal containers and remove daily.
- F. Cleanup as determined by Engineer and Owner will be a condition for recommendation of progress payment application.
 - 1. Contractor shall have full responsibility for cleaning up during and immediately upon completion of work. Remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in execution of work, leaving site clean, free of debris and in condition acceptable to Owner.
 - 2. Equipment or material shall not be left within any work area after acceptance of Contract without written permission of Owner. Do not abandon any material at or near site regardless of its value.

3.09 PUBLIC SAFETY

- A. This site is a popular pedestrian access way. The Contractor shall secure all materials and equipment to restrict public access
- B. Prior to the start of the Work, Owner will notify Town of Wayland personnel.
- C. The Contractor shall post signs notifying the public of construction areas for the duration of the project.
- D. At all times until final acceptance of Work by Owner, the Contractor shall protect Work and shall take all precautions of preventing injuries to persons or damage to property on or about site.
- E. Contractor shall comply with all applicable laws, ordinances, rules, and regulations regarding safety of persons or property or with regard to protecting them from damage, injury, or loss and shall not load or permit any part of work to be placed so as to endanger safety of work.
- F. If Contractor constructs temporary bridges or provides temporary crossing of streams, Contractor's responsibility for accidents shall include roadway and sidewalk approaches as well as structure of such crossings.
- G. Conduct work such that abutters shall have reasonable access to their property. Contractor shall be responsible for providing such reasonable safe means of access to public way as Engineer deems essential. When it is necessary to leave materials and equipment upon highway or city or town way, place them so as to cause least possible obstruction to drainage, pedestrian, and other travel.

3.10 REMOVAL OF TEMPORARY CONTROLS

- A. Completely remove temporary materials and equipment when their use is no longer required.

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SECTION 01560
TEMPORARY CONTROLS

- B. Upon completion of work of all trades and before final acceptance of entire project, each trade shall remove, at its own expense, all wiring, appurtenances and accessories used in performance of its respective work
- C. Temporary sheds, utilities, barricades, signs, and other appurtenances related to prosecution of the work and not incorporated in the permanent construction shall be completely removed from the site prior to acceptance of work by Owner.

END OF SECTION

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SECTION 01600
MATERIAL AND EQUIPMENT

PART 1.00 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Material and Equipment Incorporated into the Work:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, type and quality specified, or as specifically reviewed by the Engineer.
- B. Manufactured and Fabricated Products:
 - 1. Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - 2. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
 - 3. Two or more items of the same kind shall be identical, by the same manufacturer.
 - 4. Products shall be suitable for service conditions.
- C. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically reviewed by Engineer.
- D. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 MANUFACTURER'S INSTRUCTIONS

- A. When the Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, as specified in Section 01340, SUBMITTALS.
- B. Maintain one set of complete instructions at the job site during installation and until completion.
- C. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
- D. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
- E. Do not proceed with work without clear instructions.
- F. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents.

1.03 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site and also when two or more trades, Contractors, or suppliers are involved.

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SECTION 01600
MATERIAL AND EQUIPMENT

- B. Transport all materials and equipment on legally approved conveyances as required or recommended by the respective manufacturer or supplier.
- C. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
- D. Receive and handle all materials and equipment, at the project site, by conveyances or methods as recommended by the respective manufacturer or supplier to prevent damage to products.
- E. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and reviewed submittals, and that products are properly protected and undamaged.
- F. Remove from the site any material or item of equipment damaged during the transportation or handling process, and immediately replace at no additional cost to the Owner.

1.04 STORAGE AND PROTECTION

- A. Store products in accordance with the manufacturer's instructions, with seals and labels intact and legible.
- B. Store products subject to damage by the elements in weather tight enclosures.
- C. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- D. Maintain all storage areas in a clean and orderly condition at all times.
- E. Store calibrated products in such a manner as to not alter the calibrated settings.

1.05 EXTERIOR STORAGE

- A. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products, which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
- B. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- D. Replace any material or item of equipment damaged, due to inadequate storage protection, and immediately replace at no additional cost to the Owner.

1.06 PROTECTION AFTER INSTALLATION

- A. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

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SECTION 01600
MATERIAL AND EQUIPMENT

1.07 CERTIFICATES OF CONFORMANCE AND MANUFACTURE

- A. In addition to other requirements specified herein, the Contractor shall furnish to the Engineer, as specified in Section 01340, SUBMITTALS, notarized certificates of conformance and manufacture that all materials and/or equipment to be furnished under this contract meet the specification requirements. When directed, each shipment of material shall be accompanied by the manufacturer's notarized certificates of conformance and manufacture. Unless otherwise specifically specified, all testing of materials shall be provided by the Contractor at no additional expense to the Owner.
- B. Each manufacturer's certificate shall be endorsed or accompanied by the Contractor's certificate that the material certified by the manufacturer will be the material incorporated in the work.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 - EXECUTION

Not Used

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1.00 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in conditions of the contract and in specifications for administrative procedure in closing out the work.

1.02 SUBSTANTIAL COMPLETION

- A. When Contractor considers the work is substantially complete, he shall submit to Owner.
 - 1. A written notice that the work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, Owner will review the work to determine the status of completion.
- C. Should Owner determine that the work is not substantially complete:
 - 1. Owner will promptly notify the Contractor in writing, giving the reasons, therefore.
 - 2. Contractor shall remedy the deficiencies in the work and send out another written notice of substantial completion to the Owner.
 - 3. Owner will again review the work.
- D. When Owner concurs that the work is substantially complete, he will:
 - 1. Prepare a certificate of substantial completion, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Owner.
 - 2. Submit the certificate to Contractor and manufacturer for their written acceptance of the responsibilities assigned to them in the certificate.

1.03 FINAL REVIEW

- A. When Contractor considers the work is complete, he shall submit written certification that:
 - 1. Contract documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 5. Work is completed and ready for final review.
- B. Owner will make final review to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Owner consider that the work is incomplete or defective:
 - 1. Owner will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies and send out another written certification to Owner that the Work is complete.

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SECTION 01700
CONTRACT CLOSEOUT

3. Owner will again review the Work.

D. When the Owner finds that the Work is acceptable under the Contract Documents and that all punch list items have been accomplished to his satisfaction, he shall request the Contractor to make closeout submittals.

1.04 FEES FOR ADDITIONAL REVIEWS

A. Should Owner or Owner's Representative perform additional reviews due to failure of the Work to comply with the claims of status of completion made by the Contractor:

1. Owner or Owner's Representative will be compensated for such additional services.
2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO OWNER

A. Operating and Maintenance Data:

1. Instruct the Owner's personnel with regard to equipment, systems and operating specialties which are installed as part of this project.
2. Submit brochures indicating operating instructions and maintenance schedules for all equipment, systems, operating devices and specialties, as specified in Section 01340, SUBMITTALS.
3. Submit detailed maintenance methods and schedules for all materials and equipment provided in this project, as specified in Section 01340, SUBMITTALS.

B. Warranties, Guarantees, and Bonds:

1. In addition to the Warranty and Guarantee Requirements of the General Conditions, provide all other guarantees, bonds, affidavits and certifications required throughout the specifications.

C. Spare parts and maintenance materials for Owner.

D. Contractor's affidavit of payment of debts and claims.

E. Contractor's affidavit of release of liens.

F. Consent of surety to final payment.

G. Certificate of insurance for products and completed operations.

H. Project Record Drawings

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to Owner.

B. Statement shall reflect all adjustments to the contract sum:

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SECTION 01700
CONTRACT CLOSEOUT

1. The original contract sum.
 2. Additions and deductions resulting from:
 - a. Previous change orders.
 - b. Allowances.
 - c. Unit prices.
 - d. Deductions for uncorrected work.
 - e. Deductions for liquidated damages.
 - f. Deductions for re-inspection payments.
 - g. Other adjustments.
 3. Total contract sum, as adjusted.
 4. Previous payments.
 5. Sum remaining due.
- C. Owner will prepare a final change order reflecting approved adjustments to the contract sum which were not previously made by change orders.

1.07 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the General Conditions.

PART 2.00 - PRODUCTS

Not Used

PART 3.00 - EXECUTION

Not Used

END OF SECTION

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**SECTION 01720
PROJECT RECORD DOCUMENTS**

PART 1.00 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Maintain at the site for the Owner one record copy of
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change orders and other modifications to the contract
 - 5. Engineer field orders or written instructions
 - 6. Reviewed shop drawings, product data and samples
 - 7. Field test records
- B. The Contractor will be required to furnish, at no additional expense to the Owner, the services of a surveyor and/or Engineer registered in the state where the project is located and under whose direction shall be obtained and recorded all surveys, measurements and such other data required for the determination of the as-built records of the construction of all site work.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
- B. Provide locked file cabinet for storage of documents.
- C. Provide locked cabinet space for storage of samples.
- D. File documents and samples in accordance with CSI/CSC format.
- E. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- F. Make documents and samples available at all times for inspection by Engineer and Owner.

1.03 MARKING DEVICES

- A. Provide felt tip marking pens for recording information in the color code designated by Engineer.

1.04 RECORDING

- A. Label each document "Project Record" in neat large printed letters.
- B. Record information concurrently with construction progress.
- C. Do not conceal any work until required information is recorded.
- D. Drawings: Principal dimensions, elevations and other data, as required, shall be recorded for all work, such as:
 - 1. Deviations of any nature made during construction.
 - 2. Location of underground utilities.

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**SECTION 01720
PROJECT RECORD DOCUMENTS**

3. Field changes of dimension and detail.
 4. Changes made by field order or by change order.
 5. Details not on original contract drawings.
- E. The marked-up prints shall be inspected weekly by the Engineer and shall be corrected immediately if found either inaccurate or incomplete.
- F. Specifications and Addenda: Legibly mark each section to record:
1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 2. Changes made by field order or by change order shall reference the appropriate order on the drawings.

1.05 FINAL MEASUREMENTS

- A. The Contractor shall provide qualified personnel and equipment for taking final measurements for quantities and record documents.

1.06 RECORD DRAWINGS

- A. At the completion of the project, the record prints shall be submitted to the Engineer for final review and comment. Record prints shall include marked up:
1. Contract Drawings;
 2. Specifications;
 3. Addenda;
 4. Written interpretations and Clarifications;
 5. Field orders; and
 6. Field test reports.
- B. The Contractor shall correct, amplify and do all other work as may be required by the Engineer to complete the drawings in a manner satisfactory to the Engineer and at no additional cost to the Owner.
- C. Upon approval, the Contractor shall provide two (2) full size copies of the final record drawing set and one (1) in PDF or electronic format to the Engineer. The final record set shall be submitted to the Owner by the Engineer.

1.07 SUBMITTAL

- A. Close out submittal shall consist of the following:
1. A cover sheet indicating:
 - a. Project Title
 - b. Owner's name and address
 - c. Contractor's name and address
 - d. Date of substantial completion
 - e. Date of final completion
 - f. Contents of submittal package
 2. Final project submittals (submittals marked "rejected" or "revise and resubmit" need not be included)

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SECTION 01720
PROJECT RECORD DOCUMENTS

3. Project RFI's
 4. Project record documents (redlined drawings)
 5. Electronic copy of close-out survey data
- B. At contract close-out, deliver record documents to Engineer for the Owner.
- C. Accompany submittal with transmittal letter in duplicate, containing:
1. Date
 2. Project title and number
 3. Contractor's name and address
 4. Title and number of each record document
 5. Signature of Contractor or his authorized representative

PART 2.00 – PRODUCTS
Not Used

PART 3.00 – EXECUTION
Not Used

END OF SECTION

**Town of Wayland
Snake Brook Dam Rehabilitation**

DIVISION 2 – SITE WORK

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**SECTION 02005
MOBILIZATION/DEMobilIZATION**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the work necessary to move in personnel and equipment, set up Contractor's temporary offices, buildings, facilities, utilities, establish access and staging areas, prepare the site for construction, maintain the site during construction, restore the site after construction is complete, and demobilize.

1.02 GENERAL

- A. The limits of the site and areas designated for Contractor staging are shown on the Drawings.
- B. The extent of the limits of work are shown on the drawings. Any activities by the Contractor beyond the limits of work shall be the responsibility of the Contractor to coordinate as necessary with the property owner.
- C. The extents of the existing easements, if any, obtained by the Owner are designated on the Drawings. Copies of access agreements will be provided prior to the start of construction.
- D. In the event additional space is required for the Contractor's operations, the Contractor shall make its own arrangements and pay for such additional space at no additional expense to the Owner.

PART 2.00 PRODUCTS

2.01 TEMPORARY FACILITIES

- A. The Contractor shall obtain necessary permits, coordinate, and provide all temporary facilities as required for performing the work, including any facilities specified for the Owner's or the Engineer's use.
- B. The Contractor shall design, furnish, and install all temporary foundations, utility connections, and access points as necessary to meet the contractor's means and methods for completing the work. All temporary structures and utility connections shall be installed in accordance with environmental and municipal permits and be removed in their entirety and restored to their pre-construction conditions at the completion of the work.

2.02 TEMPORARY UTILITIES

- A. The Contractor shall coordinate for and obtain the necessary permits for connection to these services.

2.03 SECURITY FENCE

- A. Construct temporary security fence for the protection of the Contractor's materials, tools, and equipment and to prevent access to work area, stockpile, and staging areas within the site by non-construction personnel. Maintain fence during construction and remove at the end of construction.

**SECTION 02005
MOBILIZATION/DEMOBILIZATION**

2.04 PARKING FACILITIES

- A. Provide parking facilities for the Contractor, Owner, and Engineer personnel working on the project, as specified in Section 01500, TEMPORARY CONSTRUCTION FACILITIES.

2.05 TRAFFIC CONTROL

- A. Rice Road is a moderately traveled road with one narrow lane in each direction. Access to the site through the driveway of 68 Rice Road is a partially obstructed view for traffic travelling from the southbound lane.
- B. Access/egress the home of 68 Rice Road shall be maintained at all times through construction, both to the residents themselves as well as those attempting to access the home (i.e. deliveries, emergency vehicles, etc.).
- C. The Contractor is responsible for implementing traffic control measures as required to access the site to the safety of both those accessing the site as well as the traffic along Rice Road. Such traffic control measures should not significantly impact the free flow of traffic along Rice Road, particularly during times of heavier traffic (typical commute hours).
- D. Closure of Rice Road is not permitted without prior approval of the Town of Wayland. The Contractor is responsible for designing and implementing the road closure and detour plan for any road closures (if required). Road/lane closures shall be limited to the extent possible.

PART 3.00 EXECUTION

3.01 LAYOUT

- A. Set up construction facilities in a neat and orderly manner within the Contractor's staging area and at a location acceptable to the Owner. Accomplish all required work in accordance with applicable portions of these Specifications. Confine operations within the general work limits shown.

3.02 DEMOBILIZATION

- A. At the completion of the work and immediately prior to final inspection, clean the entire project area removing all debris, soil, and rubbish.
 - 1. Should the Contractor not remove rubbish, debris, or not clean the facilities and site as specified above, the Owner reserves the right to have final cleaning done by others at the sole expense of the Contractor.
- B. The Contractor shall:
 - 1. Employ experienced workers or professional cleaners for final cleaning.
 - 2. Conduct final inspection of concealed spaces in preparation for Contract completion.
 - 3. Remove from the property temporary structures and materials, equipment, and appurtenances not required as part of, or appurtenant to, the completed work.
 - 4. Leave watercourse, gutters, and ditches open and in condition satisfactory to Owner and/or Engineer.

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SECTION 02005
MOBILIZATION/DEMOBILIZATION

- C. At the completion of the work, the Contractor shall:
1. Restore all fencing, driveways, signs, roadway shoulders, walkways, trails, trees, curbing, catch basins, and manhole covers that have been removed, disturbed or damaged.
 2. Restore all roadways, access roads, parking areas, and disturbed areas to preconstruction conditions.
 3. Clean all roadways, access roads, and parking areas of accumulated sediment.
 4. Place loam and seed on the Downstream Slope, Crest, and all areas disturbed by the construction activities.

END OF SECTION

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**SECTION 02050
DEMOLITION AND REMOVAL**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the work associated with but not limited to:
 - 1. The removal and offsite disposal of stumps and vegetations within the project limits and/or located within areas of clearing and grubbing.
 - 2. The demolition, removal, and offsite disposal of existing site features that are specified for removal and/or are encountered during the construction of the proposed project components.
 - 3. The removal and offsite disposal of all material encountered during excavation operations.
 - 4. The removal and salvaging of certain existing materials as specified within the Contract Documents.
- B. The work shall be executed to the lines and grades shown on the Contract Documents and described in the specifications.
- C. The Contractor is responsible for all testing required by disposal facilities for determining acceptance of disposal material.

1.02 SUBMITTALS

- A. The Contractor shall submit to the Owner and Engineer a schedule of removal and disposal.
- B. Contractor shall submit the disposal site location and certification(s) of acceptance from each disposal facility.
- C. Contractor shall submit a map showing all haul roads scheduled for use to the disposal facilities.

PART 2.00 - PRODUCTS

2.01 GENERAL

- A. The Contractor shall provide all materials and equipment in suitable and adequate quantity to accomplish the Work shown and specified.

PART 3.00 - EXECUTION

3.01 REMOVE AND DISPOSE MATERIALS

- A. Remove and dispose of off-site all existing materials encountered during the progression of the work unless otherwise designated for salvaging or deemed appropriate to be reused on site. Off-site disposal of existing material shall be in accordance with all Federal, State, and local codes, regulations, and ordinances

3.02 SALVAGING MATERIALS

- A. Carefully remove and salvage all materials indicated on the Plans for re-use. This includes, but is

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**SECTION 02050
DEMOLITION AND REMOVAL**

not limited to, the existing stone slab(s) of the spillway discharge culvert as well as the existing piping within the gatehouse.

- B. All materials designated for salvaging shall be handled with care to prevent damage during removal, handling, and storage. Any materials damaged during the process shall be repaired or replaced at the Contractor's expense to the satisfaction of the Owner.
- C. Salvaged materials shall be cleaned, protected, and stored in a secure location as indicated in the Plans or as directed by the Owner. The storage location shall protect materials from weather, vandalism, or accidental damage.

3.03 PROTECTION OF EXISTING FEATURES

- A. Protect existing site features (utilities, structures, other features) from damage during construction.
- B. Any damage to existing site features that is caused directly or indirectly by the Contractor shall be restored to their original condition (or better), as deemed acceptable by the Owner of said feature, at the Contractor's expense with no cost transferred to the Owner.
- C. Any losses to the property or any other utility company resulting from the interruption of service from construction, both directly or indirectly, shall be the responsibility of the Contractor, and shall result in no additional cost to the Owner.

END OF SECTION

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**SECTION 02110
CLEARING, GRUBBING, AND STRIPPING**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the work necessary to cut and clear and clear and grub the work area and other areas as specified; to the limits indicated on the drawings; and strip the topsoil and/or organic material from all areas to be filled or graded as shown on the Drawings, or otherwise designated in the Specifications.
- B. This work shall also include the preservation from injury or defacement of all vegetation, and existing objects designated to remain, as shown, specified herein, or beyond the limits of work indicated.
- C. The Contractor shall stake the limits of clearing, grubbing, and stripping. The Engineer shall review the location, limits, and methods to be used prior to commencing the work under this section.

PART 2.00 - PRODUCTS

2.01 GENERAL

- A. The Contractor shall provide all materials and equipment in suitable and adequate quantity as required to accomplish the work shown, specified herein, and as required to complete the project.

PART 3.00 - EXECUTION

3.01 CLEARING

- A. Definition: Clearing shall consist of cutting, removing, and disposing of trees, snags, stumps, shrubs, brush, limbs, and other vegetative growth, and shall be performed in such a manner as to remove all evidence of their presence from the surface and shall be inclusive of sticks and branches greater than 0.5 inches in diameter or thickness. Clearing shall also include the removal and disposal of trash piles, rubbish, and fencing; and the preservation of trees, shrubs, and vegetative growth, which are designated to remain.
- B. Cutting Timber: In the cutting of timber growth, cuts shall be made such that all trees are felled into the area to be cleared. Exercise care when clearing near the clearing limits so as not to damage existing trees, vegetation, structures, or utilities which are outside of the clearing limits. Flush cut all stumps not designated for grubbing by cutting to within 3 inches of the ground surface.

3.02 PRESERVATION OF TREES, SHRUBS, AND OTHER VEGETATION

- A. Protect trees, shrubbery, and other vegetation not designated for removal from damage resulting from the Work. Cut and remove tree branches only where such cutting is necessary to allow for construction operation as approved by the Engineer and/or Owner. Remove branches other than those required to complete the Work to provide a balanced appearance of any tree, as approved prior to removal. All pruning performed shall be in accordance with the latest version of the International Society of Arboriculture standards.

3.03 GRUBBING

- A. Definition: Grubbing shall consist of the removal and disposal of wood or root matter below the ground

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**SECTION 02110
CLEARING, GRUBBING, AND STRIPPING**

surface remaining after clearing and shall include stumps, trunks, roots, or root systems greater than 1/2 inch in diameter or thickness.

- B. Areas requiring clearing and grubbing are shown on the Drawings and specified herein.

3.04 CUTTING

- A. Definition: Cutting shall consist of the removal and disposal of wood or herbaceous plant matter in excess of 3 inches tall, to within 3 inches of the ground surface, and shall include stumps, trunks, roots, or root systems greater than 1/2 inch in diameter or thickness.

- B. Areas requiring clearing and cutting are shown on the Drawings and specified herein.

3.05 CLEARING AND GRUBBING FOR TRENCHING

- A. Complete clearing and grubbing prior to the start of trenching. Get Engineer's approval before beginning trenching. Do not permit excavated trench materials to cover brush or trees prior to their removal and disposal.

3.06 DISPOSAL OF CLEARING, CUTTING AND GRUBBING DEBRIS

- A. Material shall be promptly removed from the site and disposed of in accordance with all local laws, codes, and ordinances. The Contractor shall bear full responsibility for lawful and safe disposal of all cleared and grubbed material.

3.07 CLEARING, CUTTING, GRUBBING, AND DISPOSAL OF INVASIVE SPECIES

- A. Invasive species shall be removed prior to going to seed.
- B. Invasive species shall be disposed of in accordance with Local, State, and Federal Laws.

3.08 STRIPPING

- A. Definition: Stripping shall include the removal of all organic sod, loam borrow, grass and grass roots, remaining after clearing and grubbing.
- B. Disposal of Stripping: Loam borrow from stripping operations which meets the requirements specified in Section 02200, EARTHWORK and Section 02900 LANDSCAPING, shall be stockpiled and protected for later use. All other material will be disposed of offsite at the Contractor's expense.
- C. Stockpiled loam shall be approved by the Engineer and/or Owner prior to reuse, including an agreed upon quantity for reuse.

END OF SECTION

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. This section covers the work necessary for earthwork complete.
- B. All excavation is unclassified.

1.02 DEFINITIONS

- A. Boulder: A stone particle with a minimum dimension of 36 inches.
- B. Clean fill: Imported granular material free of trash, refuse, rubbish or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, plastic, cardboard, pipe, tires, ashes, refrigerators, motor vehicles or parts or fragments of any of the foregoing.
- C. Completed Course: A course or layer that is ready for the next layer or next phase of the work.
- C. Excavation: Removal of material encountered above elevations and to lines and dimensions indicated on the drawings.
 - 1. Additional Excavation: Excavation below subgrade elevations or beyond the indicated lines and dimensions as directed by the Engineer or Owner.
 - 2. Bulk Excavation: Excavation more than 6 feet in width and more than 10 feet in length.
 - 3. Trench Excavation: Excavation 6 feet in width or less for the installation of utilities and footings.
 - 4. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be without additional compensation.
 - 5. Unclassified Excavation: The nature of materials to be encountered has not been identified or described herein.
- D. Fill: Soil materials used to raise existing grades.
- E. Frost Zone: The area within 4 feet of finished grade.
- F. Influence Area: The area within planes sloped downward and outward at an angle of 60 degrees from the horizontal from (a) 1 foot outside the outermost edge at the base of foundations or slabs; or (b) 1 foot outside the outermost edge at the surface of roadways or shoulder; or (c) 0.5 foot outside the exterior edge at the spring line of pipes and culverts.
- G. Imported Material: Material obtained by the Contractor from sources off the site.
- H. "In-the-dry": In-situ soil moisture content of no more than two percentage points above the optimum moisture content for that soil.
- I. Optimum Moisture Content: Determined by the ASTM standard specified to determine the maximum dry density for relative compaction.
- J. Prepared Ground Surface: The ground surface after clearing, grubbing, stripping, excavation, and scarification and/or compaction.
- K. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory

maximum dry density as determined by ASTM D1557 (i.e. the Modified Proctor Test). Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.

- L. Relative Density: As defined by ASTM D4253 or D4254.
- M. Rock: Material in beds, ledges, unstratified masses, conglomerate deposits that cannot be removed, in the opinion of the Engineer, without systematic drilling, ram hammering, blasting, or ripping. Rock also includes boulders of rock material that exceed 2 cu. yd. for bulk excavation or 1 cu. yd. for trench excavation.
- N. Soils Representative: The Geotechnical Engineer or a delegate of the Geotechnical Engineer that observes and records the construction of the subgrade, backfill, slabs, footings, utilities, pavements, and related items within the Contract Documents.
- O. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- P. Subbase Course: Course placed between the subgrade and base course for asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or asphalt walk.
- Q. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- R. Suitable Soil: Soil that has been approved by the Engineer for use in a designated area.
- S. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, boulders, soil materials, and obstructions.
- T. Unsuitable Soils: Existing soils that, in the opinion of the Engineer and Owner's Representative, are unsuitable to remain in their existing location that are deposited outside the excavation limits such as mulch, peat, organic silt, topsoil, sod, ash, deleterious material, roots greater than 1/4-inch in diameter, and/or particles greater than four inches in diameter, that are not satisfactory for use as determined by the Engineer or Owner.
- U. Utilities: On-site underground pipes, conduits, ducts, and cables or overhead wires, as well as underground services within buildings.
- V. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes. Well-graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters. Well-graded is used to define a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

1.03 SITE INFORMATION

- A. Test borings and other explorations may be made by the Contractor at no cost to the Owner. Damage to the site as a result of additional test borings shall be repaired at the Contractor's sole expense.
 - 1. Test borings shall be backfilled with grout for their entire length.

2. Backfilling of test pits or any other excavation performed within the influence area of the dam shall be backfilled in 1-foot thick lifts compacted to 98% of the maximum dry density of the placed material.
3. Backfilling of test borings shall be completed in the presence of the Owner's Representative. The Contractor shall be responsible for monetary compensation to the Owner's Representative for observation of the backfill of test borings.

1.04 EXISTING UTILITIES

- A. Call Dig Safe **1-888-DIG-SAFE (1-888-344-7233)** 72 hours before commencing with any excavation, in order that all pertinent utility companies become informed of such work.
- B. If active utilities existing on the site are encountered they shall be carefully protected from damage. When an active utility line is exposed during construction, its location and elevation shall be documented and both the Engineer and the utility Owner notified in writing.
- C. Active utility lines damaged in the course of construction operations shall be repaired or replaced as determined by the Engineer, without additional cost to the Owner.

1.05 USE OF EXPLOSIVES

- A. Use of explosives is prohibited.

1.06 SUBMITTALS

- A. Provide the following submittals:
 1. Contractor shall submit for review a plan detailing the nature and scope of any additional subsurface investigations.
 2. Certification, test results, source, and samples for all imported earth materials as outlined in Section 01400. Submit bag samples (40lbs minimum) of each type of fill material to be used for backfilling to the Engineer at least 10 working days in advance of its required use. Representative samples of excavated fill material which will be used for backfill shall also be submitted for testing.
 3. Support of excavation submittals
 - i. Details identifying the design, layout, and method of construction of any required support of excavation system, stamped by a Professional Engineer licensed by the Commonwealth of Massachusetts.
 - ii. Design calculations identifying each support of excavation system's ability to withstand all loads during all stages of the excavation and backfilling process.
 - iii. Documentation certifying that each excavation support system that is constructed in the field remains, throughout its use, to be in compliance with the design of that specific system.
 4. Catalog and manufacturer's data sheets for compaction equipment.
 5. Copies of permits obtained for excavation that are required by state and local governing authorities.
 6. Manufacturer's certificate of compliance attesting that geotextiles meet the requirements of these specifications. Provide mill certificates stating the length and width of fabric contained on each roll.

1.07 IMPORTED MATERIAL ACCEPTANCE

A. All imported earth materials specified in this section are subject to the following requirements:

1. All tests necessary for the Contractor to locate acceptable sources of imported material shall be made by the Contractor. Certification that the material conforms to the Specification requirements along with copies of the test results from a qualified commercial testing laboratory shall be submitted to the Engineer for approval at least 21 calendar days before the material is required for use. All material samples shall be a minimum of 40 pounds and furnished by the Contractor at the Contractor's sole expense. Samples shall be representative and be clearly marked to show the source of the material and the intended use on the project. Sampling of the material source shall be done by the Contractor in accordance with ASTM D75. Tentative acceptance of the material shall be based on an inspection of the source by the Engineer and/or the certified test results submitted by the Contractor to the Engineer at the Engineer's discretion. No imported materials shall be delivered to the site until the proposed source and materials tests have been tentatively accepted in writing by the Engineer. Final acceptance will be based on Quality Control and Quality Assurance tests made on samples of material taken from the completed and compacted course.
2. Gradation tests by the Contractor shall be made on samples taken at the place of production prior to shipment. Samples of the finished product for gradation testing shall be taken as specified in Section 01400, QUALITY CONTROL, or more often as directed by the Engineer if variation in gradation is occurring, or if the material appears to depart from the Specifications. Test results shall be forwarded to the Engineer within 48 hours of testing.
3. If tests conducted by the Contractor or the Engineer indicate that the material does not meet Specification requirements, material placement will be terminated until corrective measures are taken. Material that does not conform to the Specification requirements and is placed in the work shall be removed and replaced at the Contractor's sole expense. Retesting of material that does not meet specification requirements shall be performed at the Contractor's sole expense.
4. Imported fills shall be clean fill material.

1.08 SHORING, SHEETING, BRACING, AND SLOPING

- A. The Contractor shall design, furnish, install, and maintain shoring, sheeting, bracing, and sloping necessary to support the sides of excavations, maintain a stable excavation bottom, control groundwater, and to keep and to prevent any movement which may damage adjacent pavements, utilities, or structures, damage or delay the work, or endanger life and health. Furnish, install, and maintain shoring, sheeting, bracing, and sloping as required by OSHA and other applicable governmental regulations and agencies. See Section 02250 for additional information about these systems.

1.09 EXCAVATION SAFETY

- A. The Contractor shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to attain a stable base, retain excavation sideslopes and prevent earth slides to ensure that persons working in or near the excavation are protected.

1.10 CODES, ORDINANCES, AND STATUS

- A. The Contractor shall familiarize itself with, and comply with, all applicable codes, ordinances, statutes, and bear sole responsibility for the penalties imposed for noncompliance.

1.11 TOLERANCES

- A. All material limits shall be constructed within a vertical tolerance of 0.1 foot and a horizontal tolerance of 1 foot except where dimensions or grades are shown or specified as minimum. All grading shall be performed to maintain slopes and drainage as shown. No reverse slopes will be permitted.

PART 2.00 - PRODUCTS

2.01 MATERIALS

- A. Fill materials shall be clean fill and shall consist of hard, durable, sand and gravel and shall be free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. On-site materials may not be used as fill.
1. Engineered Fill shall be imported or reused material conforming to Item M1.03.0 of the MassDOT Standard Specifications having the following gradation. Engineered Fill shall be utilized to complete the backfilling work in areas where the lower permeable properties of engineered fill is desired/required; such as the dam crest, upstream portion of the spillway system, and other areas as deemed necessary by the Engineer.

Engineered Fill Material	
Sieve Size	Percent Passing
3 inch	100
2 inch	90-95
3/4 inch	65-90
No. 4	50-75
No. 40	25-40
No. 60	20-35
No. 200	15-20

2. Gravel Borrow material shall be imported or reused material conforming to Item M1.03.0 Type B of the MassDOT Standard Specifications. Gravel Borrow shall be utilized to complete the backfilling work where the free draining properties of the gravel borrow is desired/required; such as the earthwork along the downstream slope and side of the dam and spillway system. Note, substitution on engineered fill for gravel borrow in certain areas may be requested by the Engineer based upon the conditions observed during construction.
3. Common Borrow shall be excavated onsite material conforming to Item M1.03.0 Type A or B of the MHD Standard Specifications. The Owner/Owner's Representative reserves the right to require additional testing of common borrows prior to determination of suitability for reuse. Common Borrow shall be utilized as specified.
4. Drainage Stone shall be imported or reused material conforming to Item M2.01.4 of the MHD Standard Specifications and shall be utilized as specified.
- B. Water for compaction shall be furnished by the Contractor. Water for compaction from sources other than potable sources shall be as approved by the Engineer.
- C. Geotextile fabric shall be nonwoven, needle punched pervious sheets of polyester, polyethylene, nylon, or polypropylene filaments formed into a uniform pattern. The geotextile shall have the following minimum properties when measured in accordance with the referenced standards.

Test	Method	Value
Grab Tensile Strength (lbs)	ASTM D4632	250
Elongation at Required Strength (%)	ASTM D4642	50
Trapezoidal Tear Strength (lbs)	ASTM D4533	90
CBR Puncture Strength (lbs)	ASTM D6241	600
UV Resistance (after 500hrs)	ASTM D4355	70%
Apparent Opening Size (US Standard Sieve)	ASTM D4751	70
Permittivity (sec-1)	ASTM D4491	0.7
Flow Rate (2) (gal/min/sf)	ASTM D4491 ⁽²⁾	65

PART 3.00 EXECUTION

3.01 GENERAL

- A. All Loam Borrow and unsuitable or excess materials shall be stripped from areas of new construction or regrading. Materials suitable for reuse shall be stored in approved locations that will not interfere with construction operations. Loam Borrow shall be stripped and stored before any underlying excavating is begun. Stripped Loam Borrow to be reused shall be free from clay, large stones and debris. All excess and unsuitable materials shall be legally disposed of off-site by the Contractor.
- B. Earth excavation is unclassified and shall include the excavation, removal and satisfactory disposal or reuse of all materials of whatever nature encountered from within the limits indicated or specified (other than rock ledge) or as directed in writing. It shall include, but not be limited to, earth materials such as peats, organic or inorganic silts, clay, sand and gravel, cobbles and boulders less than 3 cubic yards in volume, soft or disintegrated rock which, in the opinion of the Engineer, can be removed without hammering or drilling, pavement, and all obstructions not specifically included in another section.
- C. The Engineer shall be present during all backfilling operations. Contractor to provide the Engineer with a minimum of 24 hours notice ahead of backfilling operations.
- D. Prior to placing any backfill, remove all trash, debris, and/or any other unsuitable material from areas where backfill is to be placed. Do not place frozen backfill. Do not place backfill on frozen ground or in areas where standing water is present.
- E. All excavations shall be backfilled as specified. All compacted fill shall be placed in controlled lift thickness of adequate thickness to ensure the full thickness of each lift meets the specified compaction requirements; however, under no circumstance should the loose lift thickness exceed 12 inches. Smaller lift thickness will be required in areas that require use of smaller compaction equipment; specific examples of these areas include (but are not limited to) in between sheet pile webs and along the edge and corners of walls and footings. Each layer shall be systematically compacted by approved compaction equipment to not less than 98 percent relative compaction.
- F. Compaction equipment in open areas shall consist of a vibratory drum roller with a minimum static weight of 10,000 lbs.

- G. Compaction equipment in confined area (in trenches and adjacent to walls) shall be accomplished by hand-operated or remote operated vibratory compaction.
- H. Material that is allowed to become saturated may be difficult to traverse, place, and compact. Care shall be taken to maintain the appropriate moisture content and prevent ground water, surface water, or precipitation from saturating stockpiled or placed material.
 - 1. Elastic-type deformation (pumping or weaving) may indicate there is excess moisture in the soil without adequate drainage time as the load is applied. Notify the Engineer of this condition.
 - 2. The contractor, at no cost to the Owner, may decide to stay off the area until the excess pore water pressure is dissipated naturally, or the material can be removed and replaced with dryer approved material.
- I. Do not operate earth-moving or other heavy equipment within a distance that will cause damage to new or existing structures. Compact backfill adjacent to and on top of existing and new structures, utilities, and concrete walls with hand-operated vibratory compactors or other acceptable equipment. Compaction shall be performed in a manner which will not damage new or existing structures and utilities.
- J. The cleaned rock surface shall be inspected by the Engineer prior to the Contractor placing backfill or concrete against the rock. Backfill placed against the surface of rock without prior inspection by the Engineer shall be subject to removal and replacement at the discretion of the Engineer at no additional cost to the Owner.

3.02 WORK IN FREEZING WEATHER

- A. Protect material stockpiles as well as excavation bottoms and sides against freezing when atmospheric temperature is less than 35 degrees Fahrenheit.
- B. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of a day's operation. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks and compaction equipment. Once compacted material should be protected from freezing. Material that freezes after compaction is subject to rejection, removal, and replacement at the discretion of the Owner/Engineer at no additional cost.
- C. The Contractor shall not place a layer of fill on top of snow, ice, or soil that was permitted to freeze.
 - 1. Removal of these unsatisfactory materials will be required as determined by the Owner/Engineer.
 - 2. Fill to be incorporated into the work shall not be permitted to freeze. "Breaking up" frozen soil will not be considered suitable for making frozen soils suitable for reuse.

3.03 REMOVAL OF WATER

- A. Refer to Section 02400, DEWATERING CONTROL AND DIVERSION OF WATER.

3.04 STOCKPILE OPERATION

- A. Keep stockpiles and areas around them graded to drain and take all necessary precautions to minimize erosion including but not limited to the installation of baled hay. Maintain access roads as necessary at the Contractor's expense. Excavation at the stockpiles shall be limited to that depth which will permit the completed area to slope to drain to the surrounding area after completion of all work.

1. The Contractor shall be responsible for protecting stockpiles of suitable material.
 2. Protect the stockpile so that the stockpiled material remains in a condition suitable for use in the project.
 3. Cover or otherwise protect the stockpiles to prevent saturation of the material from precipitation and to protect the material from the development of frost.
 4. Material lost through erosion or deemed unacceptable for reuse due to improper stockpiling shall be replaced by the Contractor at no additional cost to the Owner
- B. Remove all stockpiles at the completion of the project. Grade the surrounding area at completion and finish the area as specified in Section 02900, LANDSCAPING.

3.05 GENERAL EXCAVATION

- A. All excavations shall progress under good practice and shall abide to all State and Federal regulations.
- B. The contractor shall provide the means necessary to dewater excavations so as to achieve a firm and stable subgrade upon reaching the bottom of the excavation.

3.06 TRENCH EXCAVATION

- A. Excavation: All obstructions, such as tree roots, stumps, and other material of any type shall be removed.
- B. Trench Width: Minimum width of unsheeted trenches or the minimum clear width of Sheeted trenches in which pipe is to be laid shall be 24 inches. Sheeting requirements shall be independent of trench width. The maximum clear width at the top of the pipe or above the pipe will not be limited, except in cases where excess width of excavation would cause damage to adjacent structures.
- C. After completion of excavation, and prior to backfill placement, compact the excavation surface with a heavy vibratory roller or other suitable equipment to detect soft or loose zones. Notify the Engineer prior to commencement of compacting. If soft or loose zones are found excavate the soft or loose material to a depth accepted by the Engineer, then fill with Embankment Fill or Gravel Borrow as specified for such fill. The cost of such excavation shall be paid for under the appropriate unit price bid item.
- D. Trench excavations shall be backfilled utilizing material specified within the Construction Drawings.

3.07 MOISTURE CONTROL

- A. During the compacting operations, the moisture content of the material shall be within the range necessary to obtain the specified compaction, as determined by laboratory testing.
- B. Maintain moisture content throughout the lift. Insofar as practicable, add water to the material at the site of excavation. Supplement, if required, by sprinkling the material.
- C. Do not compact material that contains excessive moisture. Aerate material by blading, discing, harrowing, or as approved, to hasten the drying process.
- D. Stockpiled soils which are left uncovered on the site may become saturated due to rainfall or other precipitation events. The Contractor shall protect stockpiled material from becoming too wet to achieve

adequate compaction. Any soil which becomes too wet shall be dried or replaced by the Contractor at no additional cost to the Owner.

3.08 COMPACTION

- A. All backfill shall be placed in controlled lift thickness of adequate thickness to ensure the full thickness of each lift meets the specified compaction requirements; however, under no circumstance should the loose lift thickness exceed 12 inches. Smaller lift thickness will be required in areas that require use of smaller compaction equipment; specific examples of these areas include (but are not limited to) in between sheet pile webs and along the edge and corners of walls and footings.
- B. Each lift to not less than 98 percent of the maximum dry density as determined by the Modified Proctor Test.
- C. The Contractor shall make all necessary excavations and preparations for testing by the Owner. Excavations for density tests shall be backfilled with material similar to that excavated, and compacted to the specified density by the Contractor. Failure of the backfill material to achieve the specified density will be just cause for rejection of any or all portions of the excavation section tested. The Contractor will not be granted an extension of time or additional compensation for testing or repair of backfill ordered by the Engineer.

3.09 PROOF COMPACTION

- A. Areas requiring excavation shall be excavated to subgrade and then proof rolled, this is inclusive of slopes requiring additional fill after stripping of loam and topsoil. Areas requiring filling shall be proof rolled in their existing condition prior to any filling.
- B. Proof rolling on horizontal surfaces shall be accomplished by using a 20 ton, vibratory roller. At least six passes of the total area shall be made, three in each direction. Procedure for proof rolling of sloped surfaces shall be discussed with the Engineer prior to execution.
- C. If any unstable areas or areas indicating problem soils are discovered, these areas shall be removed and replaced with compacted granular fill.
- D. Proof rolling operations shall be completed in the presence of the Engineer.

3.10 ROCK EXCAVATION

- A. General
 - 1. If rock is encountered prior to reaching the proposed elevation for footings or other structures, the Contractor shall immediately notify the Engineer and provide an estimate of the required volume for removal to reach the proposed elevation and provide an estimate of the rocks condition.
 - 2. Rock excavation includes the removal of rock to the lines and grades shown on the plans and as specified within this Section and the disposal of the Rock off site by legal methods.
 - 3. The use of explosives to remove rock is strictly prohibited.
 - 4. All rock excavation shall be included within the original Contract Sum under the associated items. No additional payment will be made for rock excavation.

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5. Allowance for Rock Excavation: The Contractor shall carry in the Base Bid an allowance for 10 cubic yards for rock encountered in trench excavation removed from the site. The Base Bid shall cover all costs relating to such rock excavation, including blasting, removal and placement of the excavated material, overhead and profit. No amount other than that herein specified will be paid by the Owner for excavation herein defined.
6. Unit prices for bid items inclusive of rock excavation shall include all labor, equipment, and materials required for removal of rock and hauling of rock off-site. Bid items inclusive of rock excavation shall also include all labor, equipment, and materials required for replacement of rock excavation with approved materials where the rock excavation extends beyond the specified excavation limits. Any excavation beyond the specified excavation limits must be approved by the Engineer prior to removal.
7. Rock capable of removal through standard excavation procedures shall be removed from the excavation, measured by the Contractor, and verified by the Owner's Representative.
8. Rock that cannot be removed by standard excavation measures shall be uncovered to expose all faces of rock in the area that requires excavation. The Contractor shall notify the Owner. The dimensions and quantity of the rock in place and the rock removed from the trench shall be measured by a Licensed Land Surveyor registered in the Commonwealth of Massachusetts at the Contractor's expense. All survey information shall be supplied to the Owner's Representative for verification of the quantity.

B. Rock Removal Limits

1. The rock removal limits below are the specified limits of excavation in all locations where rock is present. Additional details are provided in subsequent sections.
2. The Contractor shall remove rock to elevations, which will allow the installation of all utilities and structures shown on the drawings.
3. The Contractor shall remove rock to a minimum of 12" below bottom of footing elevation.
4. The Contractor shall remove rock to provide a level surface along the natural grade of the rock for the soldier pile and lagging wall along the upstream slope.
5. Around proposed utilities, the Contractor shall remove rock to the lines and subgrade elevations indicated on drawings and as dictated within this specification. The Contractor shall remove sufficient rock to permit the installation of permanent construction without exceeding 6 inches beneath pipe in trench, and the greater of 24 inches wider than pipe or 36 inches wide.

C. Excess Rock and Processed Rock Fill

1. The Contractor may reuse rock that has been removed on-site if processed to meet the requirements and gradations of Satisfactory Soils, Riprap, and/or Bedding Stone as described above or in Section 02300.
2. The Contractor shall remove and legally dispose of excess rock not used during construction off site.

D. Rock Excavation for the Installation of Structures

1. Boulders and bedrock encountered during the site preparation should be removed to a depth of at least 12 inches below the bottom foundation elevation. Voids that result from boulder removal should be

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backfilled with compacted "Common Fill".

2. Bedrock excavated for footings should be over excavated to allow for the placement of a 12-inch "Engineered Fill" cushion below the footing. The cushion material should extend a minimum of 2 feet beyond the horizontal limits of the footing. Care should be taken when removing rock adjacent to the existing structures to prevent undermining and disturbance of the footing.
- E. Rock Excavation for the Removal of Utilities and Structures
1. Remove rock directly above and to the sides of piped utilities and structures proposed for removal without exceeding the following dimensions:
 - i. 12 inches outside of concrete structures, walls, and footings.
 - ii. 12 inches from either edge of piped utility and 6 inches below piped utility
 - iii. 6 inches outside of edge of concrete cast against grade.
 - iv. 6 inches beneath bottom of concrete pads or slabs on grade.
 2. Upon uncovering rock within a trench that cannot be removed by standard excavation measures, the Contractor shall expose all faces of rock within the trench and notify the Owner. The dimensions of the rock in place shall be measured by survey instrument by a MA Licensed Land Surveyor at the Contractor's expense and verified by the Owner's Representative.
 3. Rock capable of removal through standard excavation procedures shall be removed from the trench, measured by the Contractor, and verified by the Owner's Representative.

END OF SECTION

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**SECTION 02270
EROSION AND SEDIMENT CONTROL**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. Work covered under this Section shall include all work for erosion and sediment control.
- B. All work shall conform to the requirements stated herein and to the requirements of the regulatory agencies having jurisdiction over the areas of work.

1.02 SUBMITTALS

- A. Provide the following submittals:
 - 1. Manufacturer's certificate of compliance for geotextiles.
 - 2. Manufacturer's data sheet for turbidity barriers.

1.03 COMPLIANCE

- A. All work shall be done in compliance with the provisions of all local, state and federal regulatory agencies. Failure to comply with these provisions shall constitute grounds for the Owner ordering work to cease until such provisions are met.
- B. If required, the Contractor shall meet with the Town of Wayland Conservation Commission and other regulatory agencies with purview for clarification regarding requirements of the execution of, and compliance with, environmental protection programs. The Contractor shall familiarize itself with the nature of the work to be performed. The Contractor shall be responsible for scheduling its submittals and/or meetings, if required, with the regulatory agencies.

PART 2.00 - PRODUCTS

2.01 STRAWBALES

- A. Bales of straw fastened with wire and have a minimum size of 1 foot by 1.5 feet by 3 feet and conform to the applicable portions of Section 767 of The Commonwealth of Massachusetts, MassHighway Standard Specifications for Highways and Bridges, latest edition. Bales shall be made of straw with forty pounds minimum weight and one hundred and twenty pounds maximum weight. They should be either wire or nylon bound.
- B. Hay bales are prohibited on this project.

2.01 SILTATION FENCE

- A. Filter fabric siltation fencing shall be a woven filter fabric having a permittivity of not less than 0.05 sec-1, a water flow rate of a minimum 12 gallons per minute per square foot, and a grab tensile strength of a minimum of 100 lbs. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics.

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- B. Silt fences or sedimentation barriers shall consist of wood posts with industrial support netting and sediment control filter fabric attached.
- C. Wood post shall be standard 2"x2"x4.5' long hardwood stakes commonly used to support filter fabric. Silt fence shall be furnished standard with filter fabric attached to hardwood posts and spaced at a maximum distance of 8 feet.
- D. Provide suitable heavy nylon cord for securing abutting silt fence posts.
- E. The filter fabric material shall be needle punched non-woven polypropylene geotextile conforming to the following criteria:

Fabric Properties	Minimum Acceptance Value	Test Method
Grab Tensile Strength (lbs)	124	ASTM D4632
Elongation of Failure (%)	15	ASTM D4632
Mullen Burst Strength (PSI)	300	ASTM D3786
Puncture Strength (lbs)	100	ASTM D4833
Flow Rate (gal/min/sf)	10	ASTM D4491
Apparent Opening Size (sieve)	30	ASTM D4751
Ultraviolet Radiation (% strength retained)	70	ASTM D4355
Unit Weight	5	ASTM D3776
Thickness	80	ASTM D1777
Trapezoidal Tear Strength	50	ASTM D4533
Permittivity	.01	ASTM D4491

- F. Acceptable filter fabric materials include "Mirafi Envirofence", "Propex Silt Stop" by Amoco Fabrics Co or equal approved by the Designer.
- G. Control fabric shall be at least 3 feet wide.

2.02 EROSION CONTROL MATS

- A. Erosion control mats shall consist of temporary degradable rolled erosion control product composed of processed natural or polymer fibers mechanically, structurally or chemically bound together to form a continuous matrix to provide erosion control and facilitate vegetation establishment.

2.03 WETLAND CROSSING MATS

- A. Wetland crossing mats shall consist of HDPE plates, steel road plates, or timber mats bound with steel pins.
- B. Mats shall not be treated with creosote and shall be cleaned of oils, gasoline,

2.04 FILTER SOCKS

- A. Filter Socks are biodegradable sediment-trapping devices. Manufacturers include SiltSoxx, Corr Logs, Straw Wattles, or equal.

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2.05 WOODEN STAKES

- A. Stakes: Oak wood, minimum 2-inch by 2-inch, by minimum 54 inches long.

2.06 TURBIDITY BARRIER

- A. Turbidity barrier shall extend a minimum of the full depth of the channel during high tide water levels. Barrier shall be capable of enduring conditions at the site. Turbidity barrier shall be secured to prevent sediment from migrating into water bodies beyond the limits of work.

2.07 WATER

- A. Water used for dust control and equipment washes shall be clean and free of salt, oil, and other injurious materials.
- B. Equipment washing shall occur only in marked staging areas. Water from equipment washing shall not be permitted to flow into the impounded waters forming Old Wayland Reservoirs or the Snake Brook.

2.08 CONSTRUCTION ENTRANCE/EXIT MATS

- A. Geotextile: A non-woven geotextile fabric that meets the requirements of Section 804.11 of the Standard Specifications for Highway Construction "Geotextile Fabric for Slope Protection".
- B. The surface course of the first 50 feet of the access road off of any paved roadway shall consist of 1-1/2" crushed stone. Beyond 50-feet, the roadway can consist of Engineered Fill, Common Fill or existing materials.

PART 3.00 - EXECUTION

- A. The Contractor shall take every precaution to minimize and control erosion and turbidity within the contract area. These precautions shall be subject to approval by the Engineer and shall include, but not necessarily be limited to, the following:
 - 1. Straw bale erosion barriers and sedimentation control fencing shall be staked in place down gradient from all exposed materials storage areas in order to reduce the amount of suspended solids in runoff water. The Contractor shall promptly remove any sedimentation buildup over 6 inches in depth that accumulates behind the erosion barriers. Barriers shall be checked after every storm and at regular weekly intervals.
 - 2. The Contractor shall furnish, install, and maintain a turbidity barrier with anchorage to fixed structures to prevent loss of sediment. At the completion of the project, the barrier shall be removed such that the release of accumulated sediment is prevented.
 - 3. The Contractor is advised that erosion and sediment controls shown on the Plans are a minimum. Additional sedimentation barriers may be required as site conditions warrant. It is the Contractor's responsibility to implement the erosion and sediment controls to the extent required to prevent erosion and sedimentation.
- B. If necessary, the Contractor shall furnish, install, and remove dewatering basins in accordance with the

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Contract Documents.

- C. The Contractor shall maintain baled straw, filter socks, and siltation fence in good condition, rotating bales and replacing fencing periodically to maximize their effectiveness as sediment traps. The Contractor shall remove accumulated sediment periodically as directed by the Engineer. Remove baled straw, filter socks, and siltation fence in its entirety upon completion of the Work.
- D. The Contractor is advised that impoundment flows and water levels of resource areas may vary substantially due to climatic and seasonal conditions and Contractor shall be responsible for controlling and handling ground and or surface water regardless of the volume of water and regardless of whether this flow is due to flood waters from storms.
- E. Wetland crossing mats shall be used to reduce ground pressures to 500 psf or less and provide a physical barrier between equipment and the wetland surface. Wetland crossing mats shall also be used in dewatered reservoir areas.
- F. Removal and clean up: All temporary erosion control facilities and accumulated sediments shall be removed and legally disposed in a neat and workmanlike manner when all disturbed areas have been satisfactorily stabilized.
- G. Provide approved jute mesh or erosion control mats installed in accordance with manufacturer's recommendations on slopes steeper than 3H:1V or as otherwise required or as requested by the Owner's representative.

END OF SECTION

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RIPRAP

PART 1.00 - GENERAL

1.01 SCOPE OF WORK:

- A. Work covered by this specification includes all material, labor, plant and equipment required to install the channel paving where indicated on the Drawings.

1.02 QUALITY ASSURANCE:

- A. The work shall be performed by a qualified contractor having experience in constructing stone slope protection of similar type.
- B. Provide stone with the physical properties required by ASTM Standard C33 for quarry stone for producing coarse aggregate for concrete. Conform to ASTM C88 and C131 for the testing for soundness and resistance to abrasion. Conform to the requirements of the abrasion test for stone and provide the requirements of the soundness test for all stone. Use representative chips, one inch in size taken from the stone as furnished.
- C. Employ and pay for an independent testing laboratory in the business of testing soils and soil aggregate. The laboratory shall have a minimum of 10 years experience, be accredited by the American Association of State Highway and Transportation Officials (AASHTO) and have completed 3 jobs of equivalent size and complexity.

1.03 REFERENCES:

- A. American Society of Testing and Materials Publications:
 - 1. C33: Concrete Aggregates
 - 2. C88: Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
 - 3. C127: Specific Gravity and Absorption of Coarse Aggregate.
 - 4. C131: Resistance of Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

1.04 SUBMITTALS:

- A. Submit the following in accordance with Section 01340:
 - 1. Independent laboratory test results for unit weight and for gradation specified in subparts 2.01 and 2.02 and conforming to all requirements in subpart 1.03. Submit before delivery and within one week after subsequent tests.
 - 2. Submit independent testing laboratory's qualifications as specified in paragraph 1.3 C. Include with all references the names, current addresses, and telephone numbers of person in charge of representing the Owner or Owners at the time of previous work.

PART 2 - MATERIALS

2.01 QUALITY OF IMPORTED STONE

- A. All imported stone shall consist of sound, hard, dense, durable rock which has been separated from bedrock in place by quarrying. Unit weight of stone shall not be less than 165 pounds per cubic foot, dry in air. The stone shall be free from open or incipient cracks, seams and fissures, and from porous structure, solution cavities, planes of weakness, and from component minerals and cementing or

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RIPRAP

bonding materials that may contribute to spalling or breakdown during handling and placing and from wave action and chemical action from air and water. No stone shall be used in which the least principal dimension is less than one third of the greatest dimension. Slabs, boulders and round stones will be rejected. Stone shall, in general, be of irregular and angular shape; however, not more than 25% may be roughly rectangular, provided such stone is placed with its long axis perpendicular to the length of the structure.

- B. Gradation of imported stone shall meet the requirements as specified in the following sections. The contractor shall coordinate with his supplier as necessary to provide material in accordance with these specifications.
- C. Stone used for dumped riprap shall be hard, durable, angular in shape, resistant to weathering and shall meet the gradation requirement specified. Neither breadth nor thickness of a single stone should be less than one-third its length. Rounded stone or boulders will not be accepted unless authorized by special provisions.
- D. Stone shall be free from overburden, spoil, shale, and organic material
- E. Each load of riprap shall be reasonably well graded from the smallest to the maximum size specified. Stones smaller than the specified 10% size and spalls will not be permitted in an amount exceeding 10% by weight of each load.
- F. Control of gradation will be by visual inspection. The Contractor shall provide at the locations specified a mass of rock of at least five tons meeting the gradation for the class specified. The sample at the construction site may be a part of the finished riprap covering. At the quarry, an additional sample shall be provided. These samples shall be used as a frequent reference for judging the gradation of the riprap supplied. Any difference of opinion between the Engineer and the Contractor shall be resolved by dumping and checking the gradation of two random truckloads of stone. Mechanical equipment, a sorting site and labor needed to assist in checking gradation shall be provided by the Contractor at no additional cost to the Owner.

2.02 GRANITE BLOCK

- A. Granite Block shall be utilized as the top/surface layer of the channel paving. Granite Blocks shall be rectangle shaped granite blocks with cut faces capable of being installed to create a generally flat surface and tight stone to stone joints and having the the following general dimensions:
 - a. Thickness: 4 to 6 inches
 - b. Width: > 12 inches
 - c. Length: > 24 inches
 - d. Weight: > 150 lbs.

2.03 TRAP ROCK

- A. Trap rock shall be utilized as the bedding layer for channel paving. Trap Rock shall be imported or salvaged on-site material conforming to M.2.02.0 of the MassDOT Standard Specifications with the following gradations:

Bedding Stone Size (in.)	Maximum % of Total Weight Smaller than Given Size
3	100
2	50
1	15

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2.06 GEOTEXTILE FABRIC

- A. Refer to Section 02200; EARTHWORK, for material specifications.

2.07 REJECTED STONE

- A. Any stone not meeting the requirements of these specifications will be rejected and shall be removed from the site and replaced with suitable stone at the sole expense of the Contractor.

PART 3 - EXECUTION

3.01 GENERAL

- A. Installation of the channel paving shall be completed to meet the desired intent of providing a smooth, low profile (minimum thickness), scour resistant surface to the lines, grades, and limits shown on the drawings.
- B. For the spillway discharge channel, channel paving will be omitted where sound bedrock is encountered above, at, or within a foot of subgrade for the channel paving. In these areas, the surface of the channel can be the exposed bedrock surface.
- C. In areas where sound bedrock is encountered above the proposed grades of the channel, bedrock removal may be required at the discretion of the Engineer based upon how the elevated bedrock would impact the hydraulic capacity of the spillway system and its discharge channel.

END OF SECTION

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**SECTION 02400
DEWATERING, CONTROL, AND DIVERSION OF WATER**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. Work covered under this section consists of the dewatering, control, and diversion of water as required to perform the Work.
- B. The Contractor shall develop a comprehensive Control of Water Plan that allows the project to be completed and meets or exceeds the design requirements detailed herein. The Contractor shall assume full responsibility for the Control of Water design and implementation; and acknowledges that the conceptual design information provided within SECTION 1.02 is done so for reference only.

1.02 CONTROL OF WATER DESIGN REQUIREMENTS

- A. Note, the control of water plan was developed during the design phase of the project based upon the design analyses and engineering judgement; all information provided is for reference only. Actual control of water systems and phasing shall be as designed, reviewed (by the Engineer, Owner, and ODS), and implemented by the Contractor

B. Phase I Control of Water Systems:

- 1. The Phase I Control of Water Systems will allow all work with the exception of the work in and around the spillway area to be completed; with that work being completed in Phase II.
- 2. Install the Phase I water diversion system to implement and maintain the construction drawdown to the specified drawdown elevation (El. 220.0) by being capable of bypassing the average baseflow expected for the river/impoundment (1.5 CFS; Ratio of 2cfs/m applied to the 0.8 mi² drainage area).
 - a. As conceptually developed a siphon system comprised of twin 6-inch siphons is capable of passing the average baseflow while maintaining the construction drawdown.
- 3. Remove material in the area of the spillway control section to establish an emergency overflow section to be available for use during/after a rain event; 10-foot minimum linear feet in length at El. 222. Remove the roof off of the the existing spillway discharge culvert to maximize capacity of that culvert.
- 4. As conceptually developed, this combined system of the drawdown, siphon diversion system, and emergency overflow area at the spillway has the following performance during specific storm events:

Phase I Control of Water Systems Performance Summary					
Storm		Flows		Impoundment Level	
Interval	Rainfall	Inflow	Outflow	WSEL	Dam FB ¹
Baseflow	None	1.5	1.5	220.0	6.3
2-	3.3	23	13	222.5	3.8
5-	4.3	44	30	223.1	3.2
10-	5.1	67	49	223.6	2.7
25-	6.3	105	84	224.4	1.9
50-	7.1	157	115	225.1	1.2

**SECTION 02400
DEWATERING, CONTROL, AND DIVERSION OF WATER**

100 ⁻²	8.1	205	155	225.8	0.5
1) As measured from the low point of the dam crest = El. 226.3.					
2) If the 100-year storm hits during the dam crest and core wall raising work, The Contractor shall implement measures to reestablish the dam crest at or above El. 226.					

5. Note that the adequate performance of the Phase I control of water systems (demonstrated in the table above) is driven in large part by the emergency overflow section that is established at the spillway. Note that beaver activity is present at the spillway; as such, maintenance and monitoring efforts to ensure the overflow section remains clear of debris at all times will be a necessary component of the Contractor's control of water implementation plan. Lastly, this is dependent on the
6. The Phase I control of water systems will allow all work with the exception of the spillway work to be completed. The work within the impoundment is expected to be completed underwater, not requiring the installation of a cofferdam to dewater the work area. The work within the chamber and excavation for removal of the existing LLO outlet culvert and installation of the new low level outlet conduit will require the installation of a downstream cofferdam to prevent tailwater from backing up into the excavation and chamber; the required height of this cofferdam could be limited to 3-4 feet as excessive tailwater is not expected to develop.
7. Excavation dewatering system will be required to allow the base of the excavation within and around the work area to be maintained in a near-dry state on a consistent basis from the start of excavation until such time that the excavation and installed work has been backfilled to an elevation in which excavation dewatering is no longer necessary. Systems that are anticipated include, but are not limited to perimeter trenching with pumping, multiple pumping locations, covering of subgrades, draining pitch to pump locations, as well as other means, methods, and systems.

C. Phase II Control of Water Systems:

1. The Phase II water diversion system may be the same as that of Phase I and/or the use of the newly constructed low level outlet system.
2. Note under this phase, the ability of establishing an emergency overflow section to accommodate storm flows is not expected and without such overflow section the ability to accommodate storm events without supplemental siphon systems or fuller operation of the low level outlet system is far less than it is under Phase I. The following table provides the performance summary of the Phase II control of water systems should no supplemental systems be installed nor fuller operation of the low level outlet system be performed.

Phase II Control of Water Systems Performance Summary – No Supplemental Systems of Operations					
Storm		Flows		Impoundment Level	
Interval	Rainfall	Inflow	Outflow	WSEL	Dam FB*
Baseflow	None	1.5	1.5	220.0	7.0
1-	2.7	13	2.4	222.2	4.8
2-	3.3	23	2.7	223.6	3.4
5-	4.3	44	3.2	226.0	1.0
10-	5.1	67	3.3	226.9	0.4

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* As measured from the reconstructed dam crest elevation (El. 227.0).

As evident in the table above, with no supplemental systems and no operations of the LLO system, most rain events result in notable increases in the impoundment elevations with events greater than the 5-year storm event threatening to overtop the dam. This risk exposure level is not preferred for this project; as such, supplemental systems and/or operations of the LLO system in response to rain events and rising impoundment elevations will be a required component of the Contractor's Phase II control of water plan of work.

3. With operations of the low level outlet system complete in such a way that does not draw down the impoundment below EL. 220.0 but increases the dam's outflow capacity when the impoundment begins to rise as a result of the runoff, this performance is notably improved as evident in the performance table provided below:

Phase II Control of Water Systems Performance Summary – With Operations of the LLO System					
Storm		Flows		Impoundment Level	
Interval	Rainfall	Inflow	Outflow	WSEL	Dam FB*
Baseflow	None	1.5	1.5	220.0	6.3
1-	2.7	13	13	220.1	6.2
2-	3.3	23	17	220.6	5.7
5-	4.3	44	20	222.9	3.4
10-	5.1	67	22	225.1	1.2
25-	6.3	105	51	227.1	-0.1
* As measured from the reconstructed dam crest elevation (El. 227.0).					

Note, as evident in the table, the active operations of the LLO system during/after rain events greatly improves the performance of the control of water systems by limiting the rise in the impoundment elevation. The dam is not expected to begin to experience overtopping until storm events greater than the 10-year event. This level of performance (or better) combined with the implementation of the Contractor's extreme rain event monitoring plan described herein is deemed an acceptable performance criterion for this phase of the project.

4. The Phase II control of water systems will allow the work within and around the spillway area to be completed. An upstream cofferdam will be needed within the impoundment to prevent the work area from being inundated during elevated impoundment elevation. The required top elevation of this cofferdam is EL. 227.0. The impoundment bottom in the area of the expected cofferdam is variable ranging from El. 220 to 227 which would put the maximum expected height of the cofferdam around 7 feet; note, the Contractor shall confirm actual bottom elevations and conditions and utilize that information within their control of water and cofferdam design.
5. Excavation dewatering system will be required to allow the base of the excavation within and around the work area to be maintained in a near-dry state on a consistent basis from the start of excavation until such time that the excavation and installed work has been backfilled to an elevation in which excavation dewatering is no longer necessary. Systems that are anticipated include, but are not limited to perimeter trenching with pumping, multiple pumping locations, covering of subgrades, draining pitch to pump locations, as well as other means, methods, and systems.

SECTION 02400
DEWATERING, CONTROL, AND DIVERSION OF WATER

D. Extreme Rain Events:

1. The Contractor shall monitor rain events (both forecast and actual) and identify rain events that may result in the impoundment elevation reaching the top of dam elevation (El. 226.3). The effort needed to monitor rain events shall be included within the Contractors base bid under the Control of Water bid item.
 2. The Contractor shall develop a site potential plan that would be implemented in the event that such a rain event does occur or is forecast to occur. Development of the site protection plan shall be included in the Contractor's bid under the Control of Water bid item. Implementation of the plan (if needed) shall be on a time and materials basis. The site protection plan should include, but not be limited to, the following:
 - a. Increase the hydraulic capacity of the dam through mobilization and installation of supplemental siphon or pumping systems.
 - b. Protect the dam from overtopping through deployment of a plastic sheeting system adequately anchored and installed to resist displacement of the sheeting during the overtopping event.
 - c. Protect vulnerable areas of the site to avoid damage of expected floodwaters to the extent practical.
 - d. Removal of such measures when no longer needed.
 - e. Restoration of the project site including restoring areas where the storm event resulted in damage to certain areas of the site.
 3. The storm event that would trigger the implementation of the site protection plan under each of the two phases as conceptually developed and presented herein are the following:
 - a. Phase I: >100-year storm event (8.1-inch 24-hour event)
 - b. Phase II: >10-year event (5.1-inch 24-hour event)
 4. Contractor is required to install the water level and rain gage sensor in a temporary location to assist in their monitoring plan.
- E. A reference HydroCAD model has been included within Appendix B. The Contractor shall verify information provided within the model as it relates to their design of Control of Water Systems.

1.03 SUBMITTALS

- A. The Contractor shall provide a comprehensive Control of Water plan detailing all elements as described in SECTION 1.02 and deemed necessary by the Contractor for the completion of the project.
- B. Any required design calculations/analyses of the plan (stability analyses, seepage analyses, hydrologic and hydraulic calculations, etc.) is completed and bears the stamp of a Professional Engineer licensed in the State of Massachusetts.
- C. The Control of Water plan shall be subject to multiple rounds of review and comment from the Engineer, Owner, and Office of Dam Safety.

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**SECTION 02400
DEWATERING, CONTROL, AND DIVERSION OF WATER**

PART 2.00 - PRODUCTS

- A. The Contractor shall provide all materials and equipment necessary for their control of water systems.
- B. The Contractor shall provide the following system (or approved equal) for water level monitoring. Note that the Contractor shall be responsible for the cost of the monitoring system communication plan for the duration of the construction project. Upon substantial completion, the account and cost associated with the communication plan will be transferred to the responsibility of the Town.
 - 1. HOBOnet Field Monitoring System equipped with the following:
 - a. Data Logger – HOBOnet RX3000
 - b. Communication – Cellular with premium 4G data plan
 - c. Power: 15 Watt Solar Panel with Battery Backup
 - d. Added Sensors: HOBOnet Rainfall (inches) Sensor
 - e. Water Level Sensor: Freshwater SS Level Sensor, 30' Titanium / Acetal, 2.8 m Cable, Water Level Sensor Module and Well Cap
 - f. Added Modules: HOBOnet Manager

PART 3.00 - EXECUTION

- A. The Contractor shall design, implement/install, adjust, amend, augment, and maintain all control of water systems developed and identified within their Control of Water Plan and as required to complete the project.

END OF SECTION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section specifies the requirement of high density polyethylene (HDPE) pipe and ductile iron pipe related work.

1.02 REFERENCES

- A. All work specified in this Section shall conform to “Standard Specifications for Highway and Bridge Construction” of the Massachusetts Department of Transportation, latest revision, herein referred to as “State Standards”.
- B. American Water Works Association (AWWA):
 - 1. AWWA C104: Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
 - 2. AWWA C110: Standard for Ductile-Iron and Gray-Iron Fittings for Water
 - 3. AWWA C111: Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
 - 4. AWWA C150: Standard for the Thickness design of Ductile Iron Pipe
 - 5. AWWA C151: Standard for Ductile Iron Pipe, Centrifugally Cast
 - 6. AWWA C153: Standard for Ductile-Iron Compact Fittings for Water Service
 - 7. AWWA C906: Standard for Polyethylene (PE) Pressure Pipe
 - 8. AWWA M41: Ductile Iron Pipe and Fittings
- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM D-638: Tensile Properties
 - 2. ASTM D-3350: Specification for Polyethylene Pipe and Fittings
 - 3. ASTM F-714: Polyethylene (PE) Plastic Pipe (SDR-PR)

1.03 SUMMARY

- A. Related sections include the following:
 - 1. 02200 – Earthwork

1.04 SUBMITTALS

- A. Product Data and Shop Drawings:
 - 1. For each type of product indicated.
 - 2. Shop drawing of temporary connection backflow preventer used for testing and disinfection.
- B. Operation and Maintenance Data: For water valves and specialties to include in emergency, operation, and maintenance manuals.

- C. Each shipment of valves, tapping sleeves and appurtenances shall be accompanied with the manufacturer's notarized certificate certifying conformance with the requirements of the Specifications.

1.05 ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements of the Owner, the designated authority, and the National Standard Plumbing Code including requirements pertaining to the tapping of water mains and backflow prevention.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
 - 1. Marking of all pipes shall conform to the requirements of AWWA C151, latest revision.
 - 2. Marking of all fittings shall conform to the requirements of AWWA C153 or C110, latest revision.
 - 3. Marking of all ductile iron pipes shall conform to the requirements of AWWA C151, latest revision, and marking of all fittings shall conform to the requirements of AWWA C153, latest revision.
- C. All materials shall conform to American Iron and Steel (AIS) requirements.
- D. Any water pipe, fitting, or appurtenance that does not meet the specifications, field quality testing, or is damaged during installation, shall be removed and disposed from the project site and replaced with new material conforming to this specification at no additional cost to the Owner.

1.06 MANUFACTURER'S REPRESENTATIVE

- A. The Contractor shall furnish, at no additional expense to the Owner, the services of pipe manufacturer's representatives for instruction of the Contractor's personnel who will be installing the pipe, tapping sleeves, transition couplings, and valves. The instruction shall include proper handling, installation, and jointing and other construction areas, and shall be for such lengths of time required to fully familiarize the Contractor's personnel with the proper techniques. This information shall be bound and indexed for each type of unit as herein specified.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Preparation for Transport: Prepare valves according to the following:
 - 1. Ensure that valves are dry and internally protected against rust and corrosion.
 - 2. Protect valves against damage to threaded ends and flange faces.
 - 3. Set valves in best position for handling. Set valves closed to prevent rattling.
- B. During Storage: Use precautions for valves, according to the following:
 - 1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
 - 2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
 - 3. Do not store HDPE piping, fittings, or appurtenances within sunlight.

- C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use hand wheels or stems as lifting or rigging points.
- D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture. If factory-applied end caps are not present, plastic covering shall be used over each end of the pipe. The covering shall be secured in-place with a cord or cable and each pipe opening shall be provided with its own covering.
- E. Pipe and related materials shall be stored in locations and in a manner approved by the Engineer. The locations and manner of storage shall be as to minimize handling of materials.
- F. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- G. Protect flanges, fittings, and specialties from moisture and dirt. Piping or materials damaged during delivery storage or handling shall be replaced at the expense of the Contractor.
- H. The Contractor shall, at all times, be solely responsible for the safe storage of all materials.

1.10 COORDINATION

- A. The Contractor shall contact "Dig Safe" at 1-888-Dig Safe to verify locations of existing underground utilities in areas of proposed excavation at least 72 hours prior to commencing any excavation effort. Timeframe excludes weekends and legal holidays.

1.12 QUALITY CONTROL

- A. Reference Standards: Except as modified or supplemented herein, the testing of the pipeline system shall meet the requirements of the following standard specifications:
 - 1. AWWA C600, Latest Revision - Pressure and Leakage Tests; and C651, Latest Revision - Disinfecting Water Mains.

PART 2 PRODUCTS

2.01 GENERAL

- A. All materials to be incorporated into the work shall be new and purchased specifically for the project.
- B. All material shall be made in the United States of America in accordance with the American Iron and Steel (AIS) requirements.
- C. All materials, coatings, lubricants and/or protective oils used on materials that will eventually be in contact with potable water must be ANSI/NSF approved standard 60 or 61 as appropriate.

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- D. All water piping, fittings, and appurtenances are to follow the designated authority's rules and regulations for product requirements.

2.02 HDPE PIPE

- A. HDPE pipe shall be PE 3408 manufactured in accordance with AWWA C906, and shall conform to ASTM D3350 cell classification 345464C, latest revision. Pipe shall be ductile iron pipe size (DIPS), iron pipe size (IPS) shall not be allowed. Pipe shall be butt-fused conforming to ASTM D-3261, except where mechanical joints are specified on the Drawings. The material used in the distribution of potable water shall be approved by the National Sanitation Foundation (NSF) Standard 61.
- B. HDPE pipe shall be rated for use at a pressure class of 200 psi.

2.03 DUCTILE-IRON PIPE AND FITTINGS:

- A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell and plain spigot end used only where connections to fittings are made.
 - 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - 2. Glands, Gaskets, and Bolts: AWWA C111, ductile iron glands, rubber gaskets, and steel bolts.
 - 3. Piping shall have a working pressure rating of 200 psi minimum.
 - 4. Lubrication material is to be food grade quality, kept in original container and stored according to Manufacturer's recommendations.
- B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell and plain spigot end used where no connection to fittings is required.
 - 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile iron standard pattern or AWWA C153, ductile iron compact pattern.
 - 2. Piping shall have a working pressure rating of 200 psi minimum.
 - 3. Gaskets: AWWA C111, rubber.
- C. Ductile Iron Pipe shall be Class 52 and shall conform to AWWA C150, C151, and C111, latest revision. Pipe shall have an asphaltic coating approximately 1-mil on all exterior surfaces.
- D. Interior pipe surfaces shall be covered with a double cement-mortar continuous lining not less than 1/16" thick, of materials, and applied in accordance with, ANSI/AWWA C104/A21.4 standards.
- E. Ductile Iron Pipe shall be manufactured by one of the following.
 - 1. Pacific States Cast Iron Pipe Company
 - 2. United States Pipe Company
 - 3. Griffin Pipe Products Company
 - 4. American Cast Iron Pipe Company
 - 5. Approved Equivalent

2.04 FITTINGS

- A. HDPE Pipe:
 - 1. Fittings shall be PE 3408 and, where applicable, shall meet the requirements of AWWA C906. Molded fittings shall be manufactured in accordance with either ASTM D2683 (socket fused) or ASTM D3261 (butt fused) and shall be so marked.

2.05 JOINTS

- A. Joints between plain ends of HDPE shall be made by butt fusion (ASTM D3261).
- B. If mechanical joints or fittings are utilized at any location, the recommendation of the mechanical fitting manufacturer must be followed.

2.11 STRAIGHT AND TRANSITION PIPE COUPLINGS

- A. The center sleeve and end rings of couplings shall be made of ductile iron, meeting or exceeding ASTM A536. The coupling shall accommodate the entire O.D. range in the specified size by use of interchangeable color-coded end rings and gaskets. Couplings shall have pressure rating that meets or exceeds piping to be joined.
- B. The coupling gasket shall be made of virgin rubber compound for water use. The SBR shall meet or exceed ASTM D2000-3-BA715. The gasket shall have raised lettering and sizing and state the proper color code for the appropriate end ring.
- C. The coupling shall be equipped with stainless steel bolts, washers, and nuts and conform to the latest edition of the AWWA specification designation C111.
- D. Straight couplings shall be as manufactured by Smith Blair Model 441, or approved equivalent.
- E. Transitional couplings shall be as manufactured by Smith Blair Model 441, or approved equivalent.
- F. All straight and transition pipe couplings shall be mechanically restrained with approved means. Contractor shall submit to the Engineer for review and approval proposed means of restraint for all pipe couplings.

2.12 VALVE BOXES AND COVERS

- A. Cast iron valve boxes shall be two-piece adjustable style, slip type, as manufactured by Mueller H-10334, or approved equivalent. Barrel inside diameter shall be 4½ inches to 5½ with 33-inch section lengths adjusted to finish grade.
- B. Covers shall be cast iron, 5¼ inch, with the word "WATER" and a direction to open arrow imprinted thereon. The boxes and covers shall be compatible with the valves to which they attach.
- C. An approved operating key shall be provided.

2.13 THRUST RESTRAINTS

- A. Restraining devices shall be utilized on all mains under the following conditions:
 - 1. Pipeline direction changes (tees, bends)
 - 2. Dead end lines (caps or plugs)
 - 3. Transition pieces (reducers)
 - 4. Couplings
 - 5. All mechanical joints
- B. Mechanical restraining devices may be utilized on bends, mechanical joints, valves where applicable.
 - 1. Unless otherwise directed, thrust restraint of mechanical joint pipe bends or other fittings, for use with standard push-on C900 PVC and Ductile Iron pipe, shall be provided via ductile iron restraint gland mechanism conforming to ANSI/AWWA C111/A21.11, C110/A21.10 and C153/A21.53, latest revisions.
 - 2. Restrained joint pipe lengths (restrained length) shall be sufficient to restrain thrust imparted by 1½ times the anticipated working pressure but not less than 200 psi.
 - 3. Restraint mechanisms used for restraint beyond the mechanical joint locations shall be suitable for push-on pipe bells of the pipe specified herein.
 - 4. Pipe restrained joints shall be the Series 1100 or 2000PV (as appropriate) Megalug restraining system, as manufactured by EBAA Iron Sales, Inc.
- C. Concrete thrust blocks may be used to thrust restraint. Thrust blocks shall be designed to withstand the force imparted by the main with a minimum 1-½ times the anticipated working pressure but not less than 200 psi. Maximum lateral bearing capacity shall be 1,500 lb/sf. Sizing guidelines for thrust blocks are detailed on the project Drawings.
- D. All valves shall be anchored with concrete blocks. Provide straps or stirrups to secure valve to block. Anchorage shall be provided in accordance with manufacturer's recommendations.
- E. Thrust restraint utilizing tie-rods shall not be utilized unless approved by the Owner or specifically indicated. Tie-rod diameters shall be 2 times the diameter required to restrain the main. All rods shall be protected from corrosion with two coats of bituminous paint or epoxy.

PART 3 EXECUTION

3.01 EARTHWORK

- A. Refer to Section 02200 - Earthwork

3.02 Notifications

- A. The designated authority shall be notified at least forty-eight (48) hours prior to any item being installed within the water system.
- B. Pressure testing and/or chlorination shall require a two (2) business day notification. It is required that the designated water authority witness *all* testing.

3.03 PIPE INSTALLATION

A. General:

1. Contractor shall verify the locations of all potentially conflicting utilities and structures as indicated on the Drawings.
2. Lay out piping as shown on the Drawings. Any deviation from the layout shown must be approved by the Engineer.
3. Piping shall be cut from measurements taken at the site and not from the plans. All necessary provisions shall be taken in laying out piping to provide for expansion and contraction caused by temperature fluctuations.
4. Pipe shall be carried manually or by mechanical equipment with flat forks or fabric slings. Cables and chains shall not be used. Pipe shall be assembled and welded immediately adjacent to its final location and set or carefully rolled into position. Pipe shall not be dragged on the ground.
5. Cleaning and Inspection: The interior of all pipe, fittings, valves, and appurtenances shall be thoroughly cleaned of all foreign material and inspected for cracks, flaws, or other defects before installation, and shall be kept clean until the work is accepted.
6. Pipelines shall be constructed in dry trenches and shall not be laid when the conditions of the trench or the weather is unsuitable for such work.
7. All pipes and accessories shall be carefully inspected by the Contractor for defects before installation and any defective, unsound, or damaged materials shall be rejected. Any damaged pipe shall be removed from the site and replaced by the Contractor at no additional cost to the Owner.

B. Storage:

1. Pipe shall be stored on a clean, level, dry ground. If the pipe must be stacked for storage, such stacking should be done in accordance with the pipe supplier's recommendations. The handling of the pipe should be done in such a manner that the pipe is not damaged by dragging over sharp objects or cut by lifting equipment.
2. Segments of pipe having cuts or gouges in excess of 10% of the wall thickness shall not be incorporated into the system.

C. Inspection of Piping:

1. Carefully inspect all pipe fittings before installation, removing all dirt. The pipe shall be installed with the markings up for visual inspection and verification.
2. All pipe shall have smooth exterior and interior surfaces, be first quality, be free from cracks, blisters, and other imperfections, and be true to shape or form throughout each length. Piping judged by the Owner or Engineer to be unacceptable shall be removed from the site and new undamaged pipe shall be provided at no extra cost to the Owner.
3. The interior of the pipeline shall be kept free from all dirt, joint material, and other foreign materials as the work progresses. Tight fitting stoppers or bulkheads shall be securely placed at the ends and any other openings of the pipe when work is stopped temporarily or at the end of the workday to prevent dirt or refuse from entering the pipe.

D. Installation:

1. HDPE Pipe:

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- a. Sections of HDPE pipe shall be joined into continuous lengths on the job site following the guidelines of ASTM D-2657, using the simultaneous butt fusion method of joining the pipe.
 - b. The pipe system supplier shall provide and approve all fusion equipment used for the pipe system. The butt fusion equipment used to join the pipe and fittings shall be as recommended by the manufacturer and capable of quality assurance documentation for pipe fusion parameters such as the time, temperature, and pressure for each fusion made.
 - c. Fused segments of pipe shall be handled with the pipe system supplier's recommendations. Bending of the pipe during installation shall be limited and shall not exceed the pipe system supplier's recommendations.
 - d. All buried pipe shall be installed in accordance with ASTM D-2774-12, Underground installation of thermoplastic pressure pipe.
2. Ductile Iron Pipe:
- a. Sections of PVC pipe shall be joined together as required by the manufacturer. No machine shall be used to push pipe sections together even with blocking.
 - b. Bending of the pipe during installation shall be limited and shall not exceed the pipe system supplier's recommendations.
 - c. The trench bottom and gravel bedding shall be shaped and compacted to give substantially uniform unyielding circumferential support to the lower fourth of the full length of each pipe.
 - d. Holes for the bells shall be excavated so that after placement the pipe and coupling receive uniform bearing pressure from the trench bottom.
 - e. Each pipe shall be laid to the line and grade and in such a manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line.
 - f. As the work progresses, the interior and exterior of the pipes and couplings shall be cleaned of all dirt and superfluous material of every description.
 - g. To keep interior of pipe clean, a suitable drag shall be kept in the pipe and pulled forward past each joint immediately after the jointing has been completed.
 - h. At times when work is not in progress, open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substance will enter the pipe or fitting.
 - i. Any pipe that has been disturbed after laying shall be taken up and re-laid.
 - j. All materials found to be defective during the progress of the work will be rejected by the Owner and the Contractor shall promptly remove such defective material from the site of the work and replace with new material at no additional expense to the Owner.
 - k. The Contractor shall be responsible for the safe storage and proper handling of all materials.
 - l. No shims or mounds of earth shall be used to raise the pipe to grade.
 - m. All pipes shall be maintained accurately to the required line and grade.
 - n. No pipe shall be covered until the Owner or Engineer has inspected the joints.
 - o. The pipeline shall not be used to convey trench drainage during construction.
 - p. Pipes shall be protected at all times during construction against flotation. They shall be thoroughly secured, properly supported and bedded to prevent settlement or disturbance. Compaction of bedding and backfill material shall be in strict accordance with Section 02200 – Earthwork.

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- q. Bends, crosses, tees, caps, plugs, and other appurtenances shall be strapped and clamped where indicated and/or as directed. Steel bars, rods and plates shall be of structural steel. Straps, bridle rods, clamps, anchors and such other parts shall be provided to the details as directed and as approved. After installation, all parts of the strapping and clamping devices shall be given two (2) heavy coats of an approved coal tar base protective coating.
- r. All lumps, burrs, excessive coatings, and irregularities on the plain and socket ends of the pipe, valves, sleeves, and appurtenances shall be removed.
- s. Field cutting of the pipe is to be square and free of any burrs and defects.
- t. Water shall be laid with a minimum horizontal separation of 5' from all utilities and 10' from sewer lines. Sewer lines crossing over water lines shall be constructed of ductile iron or sleeved in ductile iron for 10 feet on either side of crossing regardless of vertical separation distance. Sewer lines crossing under water lines shall be constructed with a minimum vertical separation of 18" or the sewer shall be constructed of ductile iron or encased in concrete for 10 feet on either side of crossing.
- u. Bury piping with depth of cover over top at least 60 inches.
- v. Connect to water-supply source and construct water-service piping to a point 5 feet from the outside face of the building wall in locations and pipe sizes indicated on Drawings. It is the responsibility of the plumber to construct the required piping from this point through the building wall.
- w. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, and other supports.
- x. Valves shall be set in the pipeline as directed. Blocking or supports of a permanent nature shall be placed under each valve to ensure against settlement.
- y. Each valve shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely tightened.
- z. All Building connections to the Water System or at any potential cross connection shall have a backflow prevention device installed.

E. Pipe Embedment and Backfill:

- 1. Ductile Iron pipe systems and fittings shall be installed in full compliance with the manufacturer's recommendations.
- 2. Care should be taken to ensure that the haunching of the pipe is performed without disturbing the pipe. Initial backfill shall be placed in 6-inch layers and hand tampered to assure compaction.
- 3. Reference Specification Section 02300 – Earthwork.
- 4. Contractor shall not flood excavations to compact backfill.

F. Joint Construction:

- 1. Make ductile iron pipe joints according to the following:
 - a. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 - b. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
- 2. No pipes shall be jointed until couplings and ends of pipe have been inspected to determine that the joint surfaces are free from any defects in materials or workmanship, and free from dirt or other foreign matter.

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3. Pipe, pipe fittings and accessories shall be stored, installed, jointed and protected by the Contractor in strict accordance with the printed recommendations of the manufacturer of the piping material, and as approved.
4. Field assembled joints shall be checked with a suitable gauge as recommended by the manufacturer to ensure that the rubber rings are properly located.
5. If inspection indicates that the rings are improperly located, the contractor shall disassemble, and properly install the pipe.
6. Pipe stoppers shall be installed, sealed and blocked in such a manner as to prevent any leakage and so as to withstand an internal hydrostatic pressure of no less than 5 psi.
 - a. Timber blocking shall be of adequate size and arrangement to prevent the stopper from being blown off the line.
 - b. Timber bracing shall extend back to the undisturbed end of the trench.
7. Jointing by pushing the pipe home with a backhoe bucket or other heavy equipment shall not be permitted. Utilizing the backhoe and a sling to suspend the pipe while pushing home by bar or jack is permitted.
8. Protect the end of the pipe from damage at all times by using a timber header between the end of the pipe and the bar or jack.
9. Bolts and nuts used with all mechanical joints shall be tightened to the manufacturer's specified torque with a torque wrench to verify that all bolts and nuts receive the same tightening. Under no conditions shall extension wrenches or pipe over handle of ordinary ratchet or wrench be used to secure greater leverage.

3.04 THRUST RESTRAINTS

- A. Install mechanical restraining devices on all bends, mechanical joints, valves, tees, plugs and caps, bends, crosses, valves, and hydrant branches. Anchorages and restrained-joint types that may be used include the following:
 1. Concrete thrust blocks.
 2. Megalug Restraining System or approved equivalent.
 3. Locking mechanical joints.
 4. Reinforced concrete wall anchors
- B. The Contractor shall provide the type of anchorage or restrained joint as specified by the Engineer.
- C. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.05 SETTING VALVES AND VALVE BOXES

- A. Valves shall be set in the pipelines as directed. Blocking or supports of a permanent nature shall be placed under each valve to ensure against settlement. Concrete Anchoring for each valve shall be provided. Construct anchoring in accordance with PVC pipe manufacturer's recommendations. Provide straps to secure valve to anchor.
- B. Each valve shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely tightened.

- C. Valve boxes shall be set for all valves and shall be locking type. They shall be carefully fitted together and to the valve and securely held during backfilling. They shall be centered over the valve-operating nut. The bedding material around them shall be thoroughly tamped in place and the box cover set to the finished grade.

3.06 PIPE REMOVAL

- A. Where old pipe conflicts with new pipe, old pipe shall be cut and capped on both ends and the caps shall be secured. No fittings or pipe deflections will be allowed on new pipe to go over or under old pipe. In areas where water mains are to be removed, the Contractor shall disconnect each service lateral from the main at the corporation prior to removal of the main. The contractor shall be responsible for legal disposal of the removed water main.

3.07 FIELD QUALITY CONTROL

- A. Manufacturer Testing (HDPE):
 - 1. Testing of HDPE pipe shall be done in accordance with AWWA C906, latest revision.
- B. Field Testing:
 - 1. Alignment Tests: Each section of pipe will be checked by the Engineer in order to determine whether any displacement of the pipe has occurred. The Contractor shall provide suitable assistance to the Engineer. The Contractor shall repair any poor alignment, displaced pipe, or other defects discovered, as directed by the Engineer.

3.11 RECORD DRAWINGS

- C. All installed underground utilities shall be designated on as-built drawings by the contractor of record and provided to the Owner and Engineer in AutoCad format prior to completion of the project. All as-built drawings, (underground and above ground) shall be dimensioned from permanent benchmarks such as existing buildings and include depths at various points throughout the extent of the work, and invert elevations at all structures. Top of pipe elevations shall be provided on the as-built at every bend and every 50 linear feet along a straight run of piping.

3.12 POLYETHYLENE WATER SERVICE PIPING

- A. Service pipe shall be installed at a minimum depth of 5.0 feet and laid in a straight line wherever practicable. All new services shall be flushed before connecting to the existing water service.
- B. Install pipe in accordance with Section 3.02 Notifications
- C. The designated authority shall be notified at least forty-eight (48) hours prior to any item being installed within the water system.
- D. Pressure testing and/or chlorination shall require a two (2) business day notification. It is required that the designated water authority witness *all* testing.
- E. PIPE INSTALLATION.

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- F. The Contractor shall furnish and install all required brass goods to install pipe and connect to service pipes at buildings at no additional cost to the Owner.

END OF SECTION

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PART 1.00 GENERAL

1.01 WORK INCLUDED

- A. This section covers the work necessary for finish grading and grass establishment, complete, including furnishing and delivery of material, fertilizing, seeding, and maintenance of grass. General Seed Mix shall be used for seeding slopes, crest, and all areas disturbed by construction.

1.02 SUBMITTALS

- A. Provide certifications of performance for mulch products and analysis of proposed seed products that have been tested by a recognized laboratory for seed testing. Do not use seed that has become wet or moldy.
- B. Provide moisture content test results for imported loam and normalize for 8% moisture content.

PART 2.00 PRODUCTS

2.01 LOAM BORROW

- A. Loam Borrow may be available from stockpiles on the site from the Contractor's stripping. Prior to using stockpiled loam, contractor shall screen material to ensure it complies with required specifications. Reuse of onsite loam is subject to approval of the Owner's representative. If more loam borrow is needed than has been stockpiled, supply imported loam borrow at the Contractor's sole expense.
- B. Loam Borrow shall consist of fertile, friable, natural topsoil typical of the locality, without admixture of subsoil, refuse or other foreign materials, and shall be obtained from a well-drained arable site. It shall be such a mixture of sand, silt and clay particles as to exhibit sandy and clayey properties in and about equal proportions. It shall be reasonably free of stumps, roots, heavy or stiff clay, stones larger than 1 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other litter.
- C. Prior to stripping, the loam shall have demonstrated by the occurrence upon it of healthy crops, grass or other vegetative growth that is reasonably well drained and that it does not contain toxic amounts of either acid or alkaline elements.
- D. The loam shall contain not less than 4% nor more than 20% organic matter as determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 230°F ±9°.
- E. Delivered loam shall be normalized to 8% moisture content.

2.02 ORGANIC SOIL

- A. Organic soil for use in the Wetland Seeding Areas shall be a 1:1 mix of Loam Borrow and Processed Planting Material.
 - a. Processed planting material shall conform to M.1.06.0 of the Massachusetts Standard Specifications for Highways and Bridges.
 - b. Processed planting material should be sourced from local sites, using material from on-site whenever possible.

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- B. Delivered organic soil shall be normalized to 10% moisture content.

2.03 pH CONTROL

- A. The following amendments shall be included in soils where required by the soils analysis tests:

- 1. Soil sulfur.
- 2. Commercially packaged gypsum.
- 3. Ground dolomitic limestone.

2.04 LIME

- A. Ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes the 100-mesh sieve and 90 percent the 20-mesh sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

2.05 FERTILIZER

- A. Commercial Fertilizer: A complete plant food containing 16 percent nitrogen, 6 percent available phosphoric acid, and 6 percent potash, conforming to applicable state fertilizer laws, availability of plant nutrients conforming to standards of the Association of Official Agricultural Chemist (AOAC), uniform in composition, dry free-flowing, and delivered in original, unopened containers bearing manufacturer's guaranteed analysis.
- B. Superphosphate: Ammonium phosphate (16-20-0) containing 1.4 percent sulfur; granular, dry, free flowing delivered in original bags.

2.06 TEXTURAL SOIL AMENDMENTS

- A. Peat: A natural residue formed by decomposition of reeds, sedges, or mosses from fresh-water site, free from lumps, roots, and stones, absorbing at least four times its dry weight of water, organic matter not less than 90 percent on a dry weight basis. The maximum moisture content at time of delivery shall be 6% percent by weight.
- B. Sand: Clean, coarse, well-graded material meeting all of the requirements of ASTM C33 for fine aggregate.

2.07 MULCH

- A. Straw Mulch: Threshed straw of oats, wheat, or rye, free from seed of obnoxious weeds or clean salt hay.

2.08 NETTING

- A. Jute Netting: Heavy, twisted jute netting, weighing 1 pound per square yard. Openings between strands of approximately 1-inch square.

2.09 SEED

- A. General: Certified, blue tag, clean delivered in original, unopened packages and bearing an analysis of the contents, guaranteed 95 percent pure and to have a minimum germination rate of 85 percent within 1 year

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of test.

- B. General Seed Mix: Slope Mix shall be used for any areas with a slope in excess of 5H:1V. Grassplots Mix shall be utilized in all other areas.

Grass seed shall be of the previous year's crop and in no case shall the weed seed content exceed 1 % by weight. The grass seed shall conform to the requirements of the following tables:

	Proportion	Germination Minimum	Purity Minimum
<u>For Slopes, Crest, & Shoulders</u>			
Creeping Red Fescue	50%	85%	95%
Kentucky 31	30%	85%	95%
Little Bluestem	10%	90%	98%
Switch/Panic Grass	5%	85%	92%
Ladino Clover	5%	85%	96%

The seed shall be furnished and delivered premixed in the proportions specified above. All seed shall comply with State and Federal seed laws. The seed mixture specified for slopes and shoulders consists of a tough hardy type for use on slopes graded at the rate of 4:1, and steeper slopes, and on shoulders adjacent to the roadway pavement or as otherwise directed. The mixture for grass plots is of a finer type which will produce finer turf. A manufacturer's Certificate of Compliance to the specifications shall be submitted by the manufacturers with each shipment of each type of seed. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates.

- C. Temporary Protective Seed: Annual rye grass applied at rate of 120 pounds/acre.
- D. Inoculate: Pure culture of nitrogen-fixing bacteria prepared specifically for the legume species. A mixing medium as recommended by the manufacturer shall be used to bond the inoculate to the seed.

2.10 **CHEMICAL SOILS TESTS**

- A. Submit samples of Subgrade Soil to the County or State Soil Testing Service for chemical analysis of soil after completion of rough grading to determine lime and/or super phosphate requirements.
- B. Submit Loam Borrow for chemical analysis after incorporation of soil conditioners to determine lime and fertilizer requirements of County or State Soil Testing Service using samples taken from the top 4 inches of soil at 10 locations following standard soil sampling procedures. One copy of the fertilizer and liming recommendation report shall be submitted to the Engineer.

2.11 **MECHANICAL SOILS TEST**

- A. Have mechanical analysis of topsoil performed by a soil analyst or Engineer to determine conformance to specified physical properties in accordance with AASHTO T 88-72, Mechanical Analysis of Soils.

PART 3.00 EXECUTION

3.01 **SEEDING SCHEDULE**

- A. Within 20 calendar days of the date specified for commencement of seeding work, submit to the Engineer a proposed time schedule indicating dates for beginning and completion of the following operations:
 - 1. Delivery of materials.
 - 2. Preparation of seedbed.
 - 3. Planting grass.
 - 4. Maintenance.

3.02 CONSTRUCTION METHODS

- A. Preparation of Subgrade: After rough grading is completed and before Loam Borrow is spread, apply lime and/or super phosphate as determined by chemical analysis, and thoroughly scarify ground to a minimum depth of 8 inches with a toothed ripping machine by running in two directions at right angles over the entire surface to be planted.
- B. Spreading of Loam Borrow: Spread Loam Borrow and textural soil amendments over the prepared rough grade to provide a finished topsoil thickness as specified on plans. Use a rubber-tired tractor with grader blade or equivalent not weighing more than 3½ tons. Loam Borrow shall be spread to the required thickness at impacted bordering vegetated wetland (BVW) areas.
- C. Disturbed areas within the embankment crest, slopes, staging area, roadways, and construction areas shall be top dressed as required to replace stripped material and grade to original elevations.
- D. Liming and Fertilizing:
 - 1. Apply lime and/or super phosphates uniformly at the rate determined from soil test.
 - 2. Apply commercial fertilizer at the rate of 40 lbs per 1,000 sf distributing uniformly with a mechanical spreader, or at rate determined from soil test.
- E. Finish Grading:
 - 1. Thoroughly mix the applied materials to a depth of 8 inches by running a rototiller over the entire area in two directions at right angles.
 - 2. Rake the topsoil area to a uniform grade so that all areas drain, as indicated on the final grading plan.
 - 3. Lightly compact with a cultipacker before planting grass. Care shall be taken not to over compact or seal the surface of the topsoil.
 - 4. Remove all trash and stones exceeding 2 inches in diameter from area to a depth of 2 inches prior to preparation and planting grass.
- F. Reseeding Disturbed Areas:
 - 1. All areas within the staging area and temporary roadways that have become completed due to stockpiled material or the movement of traffic across the site shall be scarified to a depth of 8 inches.
 - 2. Finish grading shall be performed as described above.
- G. Seeding:
 - 1. Time of Seeding: Conduct seeding under favorable weather conditions during seasons which are normal for such work as specified in the RIDOT Standard Specifications.
 - 2. Inoculating Seed: Inoculate shall be stored as recommended by the manufacturer and shall not be

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used later than the date indicated on the container or as otherwise specified. Inoculation of legumes shall be done within 48 hours before seeding.

3. Mechanical Seeding: Plant grass seed only when temperature and moisture conditions are suitable for work of this nature. Sow grassed areas evenly with a mechanical spreader at rate of 3 lbs per 1,000 sf, roll with cultipacker to cover seed, and water with fine spray. Method of seeding may be varied at discretion of Contractor on his own responsibility to establish a smooth, uniformly grassed area.
4. Hydroseeding:
 - a. Seeding shall be done within 10 days following soil preparation at rate of 3 pounds seed per 1,000 sf.
 - b. Proceed with seeding operation on moist soil, but only after free surface water has drained away.
 - c. Exercise due care to prevent drift and displacement of mixture into other areas.
5. Winter Protective Seeding: If seeding has not occurred by October 15, apply winter protective seed at a rate of 120 pounds per acre to all areas that are bare or incomplete. Remobilize to complete seeding in the spring.

H. Mulching and Protection:

1. Mulch all areas by spreading a uniform light cover of straw mulch over the seeded area at a rate of 2½ tons per acre not later than 2 days after seeding has been performed and tackify at a rate of 5 gallons per 1,000 sf.
2. Mulch all areas with a slope steeper than 20 percent, or in areas requested by the Owner's representative, as described and place jute netting or erosion control mats in strips paralleling the slope to completely cover newly seeded areas. Pin mulch to ground with 6-inch long wire staples at 5-foot intervals immediately after seeding.

3.03 CONTRACTOR MAINTENANCE

- A. Maintenance Period: Begin maintenance immediately after each portion of grass is planted and continue for a minimum of 8 weeks after all lawn planting is completed or until final acceptance.
- B. Maintenance Operations: Water to keep surface soil moist. Repair washed out areas by filling with Loam Borrow, liming, fertilizing, and seeding. Replace mulch on banks when washed or blown away. Mow frequently enough to keep grass from exceeding 6 inches. Weed by hand only after first planting season when grass is established.

3.04 GUARANTEE

- A. If, at the end of the 8-week lawn maintenance period, a satisfactory stand of grass has not been produced (as determined by the Owner or Engineer), the Contractor shall renovate and reseed the grass or unsatisfactory portions thereof immediately, or, if after October 15, during the next planting season. If a satisfactory stand of grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season meeting all of the requirements specified under CONSTRUCTION METHODS.
- B. A satisfactory stand is defined as grass or section of grass of 10,000 square feet or larger that has:
 1. No bare spots larger than 3 square feet.
 2. Not more than 10 percent of total area with bare spots larger than 1 square foot.
 3. Not more than 15 percent of total area with bare spots larger than 6 inches square.

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3.05 INSPECTION FOR ACCEPTANCE

- A. Eight weeks after the start of maintenance on the last section of completed grass and on written notice from the Contractor, the Engineer will, within 15 days of such written notice, make an inspection to determine if a satisfactory stand has been produced. If a satisfactory stand has not been established, another inspection will be made after written notice from the Contractor that the grass is ready for inspection following the next growing season. Final approval is subject to acceptance by the local Conservation Commission.

END OF SECTION

**Town of Wayland
Snake Brook Dam Rehabilitation**

DIVISION 3 – CONCRETE

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SECTION 03100
CONCRETE FORMWORK

PART 1.00 - GENERAL

1.01 DESCRIPTION

- A. This section specifies requirements for concrete formwork to produce cast-in-place concrete structures as shown on the Drawings and as specified herein. The work shall consist of designing, furnishing, constructing and removing formwork for all cast-in-place concrete structures.
- B. Use forms, wherever necessary, to confine the concrete and shape it to the required lines, and to provide the specified finish. Construct forms with sufficient strength to structurally support the work and withstand the pressure resulting from placement and vibration of the concrete, and maintain forms rigidly in position. Construct forms sufficiently tight to prevent loss of mortar from the concrete.

1.02 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 117: Standard Specification for Tolerances for Concrete Construction and Materials.
 - 2. ACI 301: Standard Specification for Structural Concrete.
 - 3. ACI 347: Guide to Formwork for Concrete.
- B. Massachusetts State Building Code

1.03 QUALITY CONTROL

- A. Provide in accordance with the requirements as specified.
- B. Tolerances:
 - 1. Permissible surface irregularities for the various classes of concrete surface finish as specified in Section 03300, Cast-in-Place Concrete, are defined as “finishes”, and are to be distinguished from tolerances as specified herein. Deviations from the established lines, grades, and dimensions will be permitted to the extent set forth herein.
 - 2. The tolerance limits specified in this Section and the surface finish irregularities permitted in Section 03300, Cast-in-Place Concrete, are not the limits to which forms may be built or by which damaged from sheathing may be used. These limits are provided only for the occasional slight misalignment or irregularity of surface that may occur despite a serious effort to build and maintain the forms accurately and securely with an even surface. These limits will be allowed only for inadvertent or relatively infrequent irregularities of the degree mentioned, but practices and form materials will be prohibited which without doubt will result in the creation of additional irregularities, even though these would be within the limits specified.
 - 3. Where specific tolerances are not stated herein or shown on the Drawings for a structure, portion of a structure, or other feature of the work, permissible deviations will be interpreted conforming to the tolerances stated herein for similar construction. Specific maximum or minimum tolerances as shown on the Drawings in connection with any dimension shall be considered as supplemental to the tolerances specified herein and shall govern. Concrete forms shall be set and maintained within the tolerance limits necessary to ensure that the completed work will be within the tolerances specified. Concrete construction that exceeds the tolerance limits specified or as shown on the Drawings shall be remedied or removed and replaced by the Contractor at no cost to the Owner.
 - 4. Tolerances shall be as specified in ACI 117, Standard Specifications for Tolerances for Concrete and Materials.

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SECTION 03100
CONCRETE FORMWORK

1.04 DESIGN REQUIREMENTS

- A. Design formwork to support vertical loads and lateral pressures resulting from placement and vibration of concrete in accordance with the requirements of ACI 301 and ACI 347, and as specified herein.
- B. Camber the formwork to compensate for anticipated deflections due to the weight and pressure of the fresh concrete and due to construction loads.
- C. Provide shores and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations. Use wedges or jacks, individually or in combination for adjustment.
- D. Design forms and falsework to include assumed values of live loads, dead load, weight of moving equipment operated on formwork, concrete mix, height of drop, vibrator frequency, ambient temperature, lateral stability, and other factors pertinent to the safety of the structure during construction.
- E. Provide and design forms to conform with expansion and construction joint locations.

1.05 SUBMITTALS

- A. Submittals for the following items shall be made in accordance with the requirements as specified.
- B. Submit the following at least 30 days before the first concrete placement:
 - 1. Manufacturer's data and installation instructions for proprietary form accessories, form coatings, pipe sleeves and seals, form ties and manufactured form systems if used.
 - 2. Certification that form coatings comply with the requirements of this Section.

PART 2.00 - PRODUCTS

2.01 MATERIALS

- A. Forms for Exposed Finish Concrete: Construct formwork for exposed concrete surfaces with smooth faced undamaged plywood or metal, metal-framed plywood faced or other acceptable panel-type facing materials approved by Engineer, to provide continuous, straight, smooth as-cast surfaces, and produce a uniform and consistent texture and pattern on the surfaces. Metal patches on forms for these surfaces will not be permitted. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on the drawings.
 - 1. Use overlaid plywood complying with U.S. Product PS-1 "A-C or B-B High Density Overlaid Concrete Form", Class I.
 - 2. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- C. Tubular Fiber Forms:

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1. Provide forms with spirally constructed laminated plies of fiber.
2. Provide forms with wall thickness as recommended by the manufacturer to meet load requirements of the various uses and sizes.
3. Provide forms with wax coated outside surfaces for moisture resistance.
4. Provide forms with inside surface coated with bond-breaker compound.

D. Form Ties:

1. Form Ties: For concrete structures, which will not be in view or buried below finish grade, use carbon steel factory-fabricated, removable or stay in place snap-off type form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units, which will leave no metal closer than 1-1/2" to surface. Provide ties which, when removed, will leave holes not larger than 1" diameter in concrete surface. Patch all holes with non-shrink grout.
2. Form ties and spreaders for walls in areas exposed to view shall be Stainless Steel Cone-Tight Tyscru by Richmond Screw Anchor Co.; Dayton Sure-Grip and Shore Co.; or substitute approved by Engineer with Plastic cone-tight type cones having a 1" setback and a taper from 1" to 1-1/4". Tycone holes shall be sealed with plastic set back plugs, color as selected by Engineer from manufacturer's standard color selection or filled with non-shrink grout. Tyscru ties shall be sized to satisfy loading requirements.
3. In lieu of form ties specified above, fiberglass form tie systems shall be used. Fiberglass form ties shall be standard gray color. The concrete structure shall be finished by grinding the fiberglass form tie flush with the finish surface of the concrete structure.

E. Form Releasing Agents: Provide commercial formulation form-releasing agents that will not bond with, stain, nor adversely affect concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds. Volatile organic compound emissions of form coating agent shall not exceed 2.09 pounds per gallon (250 grams per liter).

F. Chamfer Strips: Provide 1-inch triangular fillets to form all exposed concrete corners. Material shall be rubber or polyvinyl chloride type, or smooth clear, sealed softwood.

G. Sleeves: Sleeves for wall and floor penetrations shall be pre-engineered Century-Line sleeves as manufactured by Thunderline Corporation or Engineer approved substitute. Sleeves shall be constructed of high impact thermoplastic with waterstop collar, reinforcing ribs and nailer end caps for positioning forms. Sleeve shall be designed to work with modular mechanical seal for through wall penetrations. Size of sleeves shall be selected according to manufacturer's recommendations for pipe sizes indicated on drawings.

H. Seals: Sleeve/pipe seals shall be Link-Seal modular mechanical seals as manufactured by Thunderline Corporation or Engineer approved substitute. The seal shall be modular, mechanical; type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and the wall opening. The elastomeric element shall be sized and selected per manufacturer's recommendations and have the following properties as designated by ASTM:

1. For standard service applications: (-40°F to 250°F) EPDM – ASTM D2000 M3 BA 510.
2. For hydrocarbon service applications: (-40°F to 210°F) Nitrile – ASTM D2000 M1BF510.
3. For high temperature or fire seal applications: (-60°F to 400°F) Silicone – ASTM D2000 M1GE505.

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PART 3.00 - EXECUTION

3.01 INSPECTION

- A. Examine the substrate and conditions under which work of this Section is to be performed, and correct unsatisfactory conditions, which would prevent proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 FORM CONSTRUCTION

A. General:

- 1. Construct forms as designed and in accordance with Contractor's approved working drawings conforming to ACI 347, to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, level, and plumb work in finished structures.
- 2. Provide for openings, offsets, keyways, recesses, moldings, chamfers, blocking, screeds, bulkheads, anchorages, inserts, and other features required. Use selected materials to obtain required finishes.
- 3. Forms for concrete which accommodate work of other trades, fabricated before the opportunity exists to verify the measurements of adjacent construction, shall be accurately sized and located as dimensioned on the Drawings. In the event that deviation from the Drawing dimensions results in problems in the field, the Contractor shall be responsible for resolution of the conditions as approved by the Engineer, at no cost to the Owner.

B. Fabrication:

- 1. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage concrete surfaces.
- 2. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to temporary openings on forms in as many inconspicuous locations as possible, commensurate with design requirements. Form intersecting planes to provide true, clean-cut corners.

C. Falsework:

- 1. Erect falsework and support, brace, and maintain it to safely support vertical, lateral, and asymmetrical loads applied until complete structure has attained design strength. Construct falsework so that adjustments can be made for take-up and settlement, and access is provided for inspection.
- 2. Provide wedges, jacks or chamfer strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to product work of required dimensions.

D. Forms for Exposed Concrete:

- 1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes
- 2. Provide sharp clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
- 3. Use extra studs, walers, and bracing to prevent bowing of forms between studs and to avoid

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bowed appearance in concrete. Do not use narrow strips of form material, which will produce bow.

E. Corner Treatment:

1. Unless shown otherwise, form chamfers with $\frac{3}{4}$ -inch by $\frac{3}{4}$ -inch strips, accurately formed and surfaced to produce uniformly straight lines and tight edge joints on exposed concrete. Extend terminal edges to require limit and miter chamfer strips at changes in direction.

F. Control Joints: Locate as indicated on the Drawings.

G. Provision for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Verify size and location of openings, recesses and sleeves with the trade requiring such items. Accurately place and securely support items to be built into forms.

H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove encrusted mortar and grout, chips, wood, sawdust, dirt, and other debris just before concrete is placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.03 FORM COATINGS

A. Coat form contact surfaces with form-releasing agent before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces that will be bonded to fresh concrete. Apply in strict compliance with manufacturer's instructions.

B. Remove surplus coating on form surfaces before placing concrete.

3.04 INSTALLATION OF EMBEDDED ITEMS

A. Set and build into the forms, anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of the items to be attached thereto.

B. Set edge forms or bulkheads and intermediate screed strips for slabs, to obtain required elevation and contours in the finished slab surface. Provide and secure units to support types of screeds required.

3.05 REMOVAL OF FORMS

A. Formwork not supporting concrete, such as sides of walls, columns, and similar parts of the Work, may be removed after cumulatively curing at not less than 50 degrees F for 72 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operation, and provided that curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as elevated beams, joists, slabs and other structural elements may not be removed until concrete has attained 70% of its design minimum 28-day compressive strength and has cumulatively cured for no less than 7 days. Concrete shall have sufficient strength to safely support its own weight and construction live loads and lateral pressures. Determine potential compressive strength of in-place concrete testing field-cured specimens representative of the concrete location or members, as specified in Section 03300, Cast-in-Place Concrete.

C. Form facing material may be removed one day after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing

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shores and supports.

- D. Form ties: The concrete structure shall be finished by grinding the fiberglass form ties flush with the finish surface of the concrete structure.

3.06 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable. When forms are reused for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Apply new form releasing agent to all form areas that will be in contact with concrete.
- B. Do not reuse forms if there is any evidence of surface wear and tear, splits, fraying, delamination, or other damage which would impair the quality of the concrete surface or prevent obtaining the specified concrete finish.

END OF SECTION

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SECTION 03200
REINFORCING STEEL

PART 1.00 - GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Furnish and install all reinforcing bars and associated items required and/or indicated on the Drawings for all cast-in-place concrete.

B. Related Sections:

1. 03300 CAST-IN-PLACE CONCRETE
2. 03399 PRECAST CONCRETE STRUCTURES

1.02 REFERENCES

A. The latest editions of the following American Concrete Institute (ACI) publications shall be used as reference standards:

1. ACI SP-66 ACI Detailing Manual
2. ACI 301 Specifications for Structural Concrete for Buildings
3. ACI 315: Details and Detailing of Concrete Reinforcement
4. ACI 315R: Manual of Engineering and Placing Drawings for Reinforced Concrete Structures

B. The latest editions of the following American Society for Testing and Materials (ASTM) publications shall be used as reference standards:

1. A36: Standard Specification for Carbon Structural Steel
2. A90: Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
3. A153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
4. A185: Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement
5. A615: Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
6. A 706/A 706M: Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement
7. A767: Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
8. A775: Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
9. A934: Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.

C. The latest editions of the following American Welding Society (AWS) publications shall be used as reference standards:

1. AWS D1.4: American Welding Society, Structural Welding Code, and Reinforcing Steel.

D. Massachusetts State Building Code

1.03 SUBMITTALS:

A. Submit the following:

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1. Mill test reports for each shipment of reinforcement bars and steel sections containing results of material tests conducted by a certified laboratory. Identify reports with specific lots in shipments and submit prior to use of reinforcement in work. No steel reinforcing will be accepted unless accompanied with delivery by mill certificates.
2. Chemical composition of reinforcing steel bars and sections. Ladle analysis to identify percentage of carbon, phosphorous, manganese and sulfur present in steel.
3. Welder's certification in accordance with AWS D1.4 prior to welding, when welding is indicated or specified.
4. Shop and placement drawings to the Engineer for review prior to fabrication, which show:
 - a. All construction and expansion joints.
 - b. Reinforcement detailed in conformance with ACI SP-66.
 - c. Support bars and details of bar supports including type, size and spacing.
 - d. Product data sheets for centralizers or spacers to be used to align steel and maintain embedment depth
 - e. Marking for each reinforcement item.
5. Testing procedures for proof loading of adhesive anchor reinforcement.
6. Testing plan for epoxy adhesive anchors.
7. Location plan for epoxy adhesive anchors.

1.04 QUALITY ASSURANCE:

- A. Provide in accordance with the requirements of the Quality Control section and as specified.
- B. Do not fabricate reinforcement until shop and placement drawings have been approved by the Engineer.
- C. Tolerances: Tolerances shall be as specified in ACI 315R.

1.05 PRODUCT HANDLING:

- A. Protection:
 1. Use all means necessary to protect reinforcing steel before, during, and after installation and to protect the installed work and materials of all other trades.
 2. Store in a manner to prevent excessive rusting and fouling with dirt, grease, and other bond-breaking coatings.
 3. Use all necessary precautions to maintain identification after the bundles are broken.
- B. Replacements:
 1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 2.00 - PRODUCTS

2.01 REINFORCING BAR MATERIALS

- A. All reinforcing steel shall be newly rolled deformed bars, free from rust, and comply with ASTM A-615, grade 60.

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REINFORCING STEEL**

1. Reinforcement bars shall be ASTM A767, Class 1, zinc coated after fabrication and bending.
 2. Bars to be welded shall conform to ASTM A706 deformed, Grade 60.
 3. Provide mill bent reinforcing bars, bent cold to the dimensions indicated and conforming to the requirements of ACI SP-66.
- B. Welded wire fabric shall conform to ASTM A 185, with a minimum ultimate tensile strength of 70,000 psi. Provide in sizes indicated. Provide support bars and reinforcing bar supports as specified to obtain the concrete cover. Galvanized welded wire fabric shall meet ASTM A185, plain, fabricated from galvanized-steel wire into flat sheets.
- C. Bar support and accessories shall be galvanized or plastic coated and shall conform to ACI 315. Provide minimum size number 5 support bars.
- D. Wire for tying uncoated reinforcement in place shall be No. 16 AWG or heavier black soft-annealed wire. Use galvanized steel wire ties to fasten zinc-coated steel reinforcement. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

2.02 STRUCTURAL STEEL REINFORCING MATERIALS

- A. All structural steel reinforcing shall be piles shall be new rolled W-sections of structural steel conforming to the ASTM A36 minimum specifications for structural steel.
- B. Structural Steel reinforcement shall be furnished in sufficient lengths to meet specified reinforcement requirements

2.03 ADHESIVE ANCHOR EPOXY

- A. All adhesive anchoring systems shall be a two-component epoxy adhesive capable of being applied in wet conditions.
- B. Epoxy adhesive shall be Hilti HIT-RE 500 V3 Epoxy Adhesive or approved equivalent.

2.04 OTHER MATERIALS:

- A. All other materials, not specifically described but required for a complete and proper installation of reinforcing steel, shall be as selected by the Contractor subject to the approval of the Engineer.

2.05 FABRICATION:

- B. Fabricate reinforcement only after shop drawings have been returned by the Engineer marked "Approved".
- A. Provide reinforcing bars that have been cut and bent before shipment. If bars must be bent on site, bend reinforcing steel cold, and do not straighten or rebend in a manner, which will damage the material. Bend in conformance with requirements of ACI SP-66 or with ASTM A767 when reinforcement is to be galvanized.
- B. Reinforcing Bar Splices:

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REINFORCING STEEL**

1. Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying for the full length of the splice. All lap splices shall be ACI 318, Class B, and as modified by S 25.4.2.4, unless indicated otherwise on the Drawings.
2. Adjacent splices shall be staggered whenever possible.

PART 3.00 - EXECUTION

3.01 SURFACE CONDITIONS:

A. Inspection:

1. Prior to installation of the work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Verify that reinforcing steel may be installed in strict accordance with all pertinent codes and regulations, the approved Shop Drawings, and the original design.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Engineer.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 BENDING:

A. General:

1. Fabricate all reinforcement in strict accordance with the approved Shop Drawings.
2. Do not use bars or steel sections with kinks or bends not shown on the Drawings or on the approved Shop Drawings.
3. Do not bend or straighten steel in a manner that will damage the material.

B. Design:

1. All bends shall be in accordance with ACI 318. Bend all bars cold.

3.03 PLACING:

A. General:

Before the start of concrete placement, accurately place all reinforcing steel, positively securing and supporting by concrete blocks, metal chairs or spacers, or by metal hangers. For structural steel reinforcement non-corrosive centralizers and spacers that facilitate proper alignment of the steel reinforcement shall be used in the Work

B. Splicing:

1. Horizontal Bars:
 - a. Place bars in horizontal members with minimum laps at splices sufficient to develop the strength

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of the bars in accordance with ACI 318, and as modified by S 25.4.2.4,.

- b. Bars may be wired together at laps except at points of support of the member, at which points preserve the clear space described above.
- c. Wherever possible, stagger the splices of adjacent bars.

2. Dowels:

- a. Place all required steel dowels and securely anchor them into position before the concrete is placed. Dowels placed into existing concrete shall be securely anchored with high strength epoxy as indicated on the Drawings.

3. Obstructions:

- a. In the event conduits, piping, inserts, sleeves, or any other items interfere with placing reinforcement as indicated on the Drawings or as otherwise required, immediately consult the Engineer and obtain approval of new procedure before placing concrete.

5. Use precast concrete bar support blocks for foundation mats.

3.04 MINIMUM COVER

A. Unless otherwise shown, provide the following minimum cover:

Formed Concrete Exposed to Earth or Water	3" +/- 1/2"
Cast Concrete Exposed to Earth	4" +/- 1/2"
Formed Surfaces with Formliner	4" +/- 1/2"

3.05 CLEANING AND TOUCH-UP OF REINFORCEMENT

- A. Steel reinforcement, at the time concrete is placed around it, shall be free from rust scale, loose mill scale, oil, paint, and all other coatings which will destroy or reduce the bond between steel and concrete.
- B. After installation and prior to placing concrete or mortar, touch-up galvanized reinforcing with damaged or missing coatings. Galvanizing repair paint shall be SSPC-Paint 20; MIL-P-21035B; or engineer-approved equivalent with dry film containing a minimum of 94 percent zinc dust by weight.

END OF SECTION

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SECTION 03255
HYDROPHILIC AND POLYVINYL CHLORIDE WATERSTOPS

PART 1.00 – GENERAL

1.01 SCOPE

- A. Provide hydrophilic and or PVC waterstops as indicated and specified.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:
 - 1. D412: Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension
 - 2. D638: Test Method for Tensile Properties of Plastics
 - 3. D624: Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
 - 4. D1149: Test Method for Rubber Deterioration – Surface Ozone Cracking in a Chamber
 - 5. D1203: Test Methods for Volatile Loss from Plastics Using Activated Carbon Methods
 - 6. D2240: Test Method for Rubber Property – Durometer Hardness
- B. Corps of Engineers: CRD-C 572-74
- C. Bureau of Reclamation: C-902

1.03 SUBMITTALS

- A. Shop Drawings: Submit the following as specified in Section 01340, Submittals.
 - 1. Manufacturer's printed data and literature for all specified materials and locations where materials are to be used.
 - 2. Manufacturer's procedure for splicing sections of waterstops.
- B. Samples of waterstops.
- C. Certification that materials proposed for use are non-toxic and have no effect on the quality or appearance of potable water. Materials shall be NSF approved for contact with potable water.

1.04 QUALITY CONTROL

- A. Reject and replace waterstops that have become wet or exhibit swelling prior to concrete placement.
- B. Require a manufacturer's service representative to visit the job site before any waterstops are installed to demonstrate the correct installation and splicing procedures.
- C. Correctly position waterstops in joints.
- D. Provide waterstops in maximum practical lengths to minimize joints.
- E. Use adhesives manufactured by or recommended by the waterstop manufacturer for attachment of the waterstop to concrete.
- F. Waterstops shall be positioned to provide a minimum of 3" concrete cover. Provide increased

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cover when recommended by the manufacturer.

- G. Waterstops shall be positioned to provide a minimum of 1.5" separation from reinforcing steel. Provide increased separation when recommended by the manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING.

- A. Transport, handle and deliver materials to the job site in the manufacturer's sealed bags, unopened containers or banded pallets.
- B. Store materials off the ground on a platform or skids and protect with covers from snow, rain and ground splatter.
- C. Store waterstops under cover in a dry cool location, out of direct sunlight. Hydrophilic waterstops shall be maintained in a dry condition until concrete placement

PART 2.00 - PRODUCTS

2.01 HYDROLPHILIC GASKET WATERSTOPS

- A. Provide hydrophilic rubber gasket waterstops fabricated of non-vulcanized rubber, chloroprene rubber, urethane polymers, vinylester polymers or combinations of these materials.
- B. Waterstops shall be of solid construction and 3/8" X 3/4" minimum in cross section.
- C. Provide waterstops as recommended by manufacturer for specific installation.
- D. Waterstops containing bentonite shall not be used.
- E. Provide hydrophilic gasket waterstops that meet or exceed the criteria in Table 03256-1.

TABLE 03256-1

Property	Test Method	Limit
Ultimate Elongation	ASTM D 412	70% minimum
Tensile Strength	ASTM D 412	25 psi [170 kPa] minimum
Ozone Resistance	ASTM D 1149	No Failure
Volatile Loss	ASTM D 1203	0.50% maximum
Hardness, Shore A	ASTM D 2240	20 to 60
Tear Resistance	ASTM D 624	50 lb/inch
Expansion Ratio	Volumetric Change-Distilled water @70°F	3 to 1 min.

- F. Provide hydrophilic rubber gasket waterstops as manufactured by:
1. No. CJ-1020-2K as manufactured by Greenstreak Plastic Products Company, St. Louis, MO;
 2. Adeka Ultraseal MC-2010M manufactured by Adeka North America, Spearfish, SD;
 3. Swellseal 8 manufactured by De Neef Construction Chemicals, Inc., Waller, TX;
 4. or equal.

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HYDROPHILIC AND POLYVINYL CHLORIDE WATERSTOPS

2.02 HYDROPHILIC PASTE WATERSTOPS

- A. Provide hydrophilic rubber paste waterstops of urethane paste, thixotropic vinyl monomer or similar materials.
- B. Hydrophilic rubber paste shall be compatible with waterstop material.
- C. Hydrophilic paste shall be 100% solids.
- D. Provide hydrophilic paste waterstops that meet or exceed the criteria in Table 03256-2.

TABLE 03256-2

Property	Test Method	Limit
Ultimate Elongation	ASTM D 412	50% minimum
Tensile Strength	ASTM D 412	25 psi [170 kPa] minimum
Ozone Resistance	ASTM D 1149	No Failure
Volatile Loss	ASTM D 1203	0.50% maximum
Hardness, Shore A	ASTM D 2240	20 to 60

- E. Provide hydrophilic rubber paste as manufactured by:
 - 1. Duroseal Paste manufactured by BBZ USA, Southington, CT;
 - 2. Adeka Ultraseal P-201 manufactured by Adeka North America, Spearfish, SD;
 - 3. Swellseal Cartridge manufactured by De Neef Construction Chemicals, Inc., Waller, TX;
 - 4. Or acceptable equivalent product.

2.03 PVC WATERSTOPS

- A. Provide flexible, ribbed, center-bulb, PVC waterstop with the geometry and size indicated on the Drawings.
- B. The PVC waterstop shall be extruded from an elastomeric plastic material of which the basin resin is prime virgin polyvinyl chloride.
- C. The PVC compound shall not contain any scrapped or reclaimed material or pigment.
- D. Provide PVC waterstop that meet or exceed the criteria in Table 03256-3.

TABLE 03256-3

Property	Test Method	Limit
Water absorption	ASTM D 570	0.15% max
Tear Resistance	ASTM D 624	200 lb/in (35kN/m) minimum
Ultimate Elongation	ASTM D 638	350% minimum
Tensile Strength	ASTM D 638	2000 psi [13.78 MPa] minimum
Low Temperature Brittleness	ASTM D 746	No Failure @-35°F (-37°C)

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Stiffness in Flexure	ASTM D 747	600 psi (4.13 Mpa) min.
Specific Gravity	ASTM D 792	1.45 max
Hardness, Shore A	ASTM D 2240	79±3

- E. Provide factory made waterstop fabrications for all changes of direction, intersection, and transitions leaving only straight butt joint splices for the field.
- F. Provide hog rings or grommets spaced at 12 inches on center along the length of the waterstop.
- G. Provide Teflon coated thermostatically controlled waterstop splicing irons for field butt splices.

PART 3.00 - EXECUTION

3.01 INSTALLATION GENERAL

- A. Provide hydrophilic rubber gasket and paste waterstops where specifically indicated.
- B. Center waterstops in joints unless otherwise indicated.
- C. Consolidate concrete during placement in vicinity of waterstop without damaging or dislodging waterstop.
- D. Clean joint surface of dirt, dust, debris and laitance immediately before applying waterstop and remove standing water.
- E. Protect waterstops from moisture until concrete is placed. Waterstops that exhibit swelling prior to concrete placement shall be removed and replaced at the Contractor's expense.

3.02 HYDROPHILIC GASKET WATERSTOPS

- A. Install hydrophilic gasket waterstops in continuous lengths to minimize joints. Provide waterstop in one continuous length as practicable. Butt ends at joints of waterstop or overlap a minimum of 2" or per manufacturer's instructions.
- B. Seal joints in hydrophilic gasket waterstops with a hydrophilic rubber paste compound as recommended by the manufacturer.
- C. Do not bend hydrophilic gasket waterstop. Cut square and butt joints at corners.
- D. Waterstop shall be in continuous contact with the concrete surface.
- E. Attach hydrophilic gasket waterstop to concrete surface with continuous bead of hydrophilic rubber paste or adhesive. Paste or adhesive shall be provided by or as recommended by the waterstop manufacturer.
- F. Fix hydrophilic gasket waterstop to concrete surface with masonry or concrete nails or powder activated fasteners at a maximum 12-inch spacing.
- G. Provide one fastener one inch from the top and a second fastener four inches from the top of vertical hydrophilic gasket waterstops regardless of which fastening method is used.

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HYDROPHILIC AND POLYVINYL CHLORIDE WATERSTOPS

- H. Do not compress or otherwise deform hydrophilic gasket waterstop when fastening to concrete.
- I. Do not wrap hydrophilic gasket waterstops around pipes less than the minimum diameter recommended in the manufacture's printed instructions.

3.03 HYDROPHILIC PASTE WATERSTOPS

- A. Clean dirt and debris from area to receive hydrophilic paste waterstop.
- B. Bead of hydrophilic paste waterstop shall be a minimum of 1/4 thick by 1/2 inches wide.
- C. Apply hydrophilic paste waterstop such that there is no break in the bead.
- D. Install hydrophilic paste waterstops in accordance with the manufacture's printed instructions.

3.04 PVC WATERSTOPS

- A. Field butt splices shall be heat fused welded using a Teflon covered thermostatically controlled waterstop splicing iron at approximately 380°F or as recommended by the manufacturer.
- B. Lapping over overlaying of waterstops, use of adhesives or solvents shall not be allowed.
- C. Center waterstop in joint and secure waterstop to correct position using hog rings or grommets spaced at 12 inches on center along the length of the water stop; wire tie to adjacent reinforcing steel. Nailing, stapling, or any other means of fastening PVC waterstops in place that creates a puncture in the waterstop is strictly prohibited.
- D. Notch waterstops to fit around reinforcing steel so that the waterstop will remain vertical and unbent when reinforcing steel interferes with waterstop placement.

END OF SECTION

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**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. The work covered under this Section includes, but is not limited to, the furnishing of all plant, labor, equipment, appliances and materials including all joint fillers and sealants, and performing all operations in connection with providing the construction of all Portland cement concrete in accordance with these specifications and in reasonably close conformity with the lines and grades shown.

1.02 QUALITY CONTROL

- A. As the work progresses, the Contractor will be required to perform tests and/or engage a testing laboratory in order to confirm that the quality of the concrete will be in conformance with these Specifications. Concrete shall be sampled in accordance with Section 01400, QUALITY CONTROL/QUALITY ASSURANCE.
 - 1. The independent testing laboratory onsite representative shall remain onsite throughout each concrete placement. Observing the contractors means and methods of concrete placement, including transporting concrete (i.e. pumping or hopper methods), discharging, vibrating, and finishing.
- B. Slump tests shall be made according to ASTM C143. Slump test shall be performed for each day's pour of each type of concrete; perform additional tests when concrete consistency seems to have changed. Tests shall be taken at the point of discharge and prior to placement. If the concrete has been modified after testing has commenced, a new sample shall be taken of the modified mix and testing redone at no additional cost to the owner. No slump in excess of 4 inches shall be permitted without written consent of the Engineer.
- C. Air content of concrete made with normal-weight aggregates that have low absorption shall be tested according to either ASTM C231 or ASTM C173. Air content of concrete test shall be performed at a frequency of not less than one test per concrete truck of concrete placed. Tests shall be taken at the point of discharge and prior to placement. If the concrete has been modified after testing has commenced a new sample shall be taken of the modified mix and testing redone at no additional cost to the owner.
 - 1. The concrete air content for all structural concrete shall be in the range of 6% +/-1.5% at the point of placement (i.e. at the end of the chute if the concrete is being placed directly from a truck, at the end of the concrete pump hose if placed by truck, or from the bottom of a hopper if placed by hopper). No air content outside of this range shall be permitted without written consent of the Engineer.
- D. Concrete Temperature: Test hourly when air temperature is below 40°F, when above 80°F, and each time a set of compression test specimens, slump test, or air entrainment test are required.
- E. Compression test specimens will be made by the Contractor and cured according to ASTM C31. Six specimens shall be collected for each 50 cubic yards of concrete placed; or for concrete pours of less than 50 cubic yards, each pour at a structure.
 - 1. Specimens shall be tested with one sample tested at 3 days, two samples tested at 7 days and two samples tested at 28 days and one specimen retained in reserve for a 56 days test if required. If

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both 28 days specimens achieve the required compression strength, the reserve specimen shall be broken at 28 days.

- F. Compressive test specimens shall be tested according to ASTM C39.
- G. If the concrete is found to be substandard as a result of the initial testing, then any additional work for replacement or removal of the substandard concrete or retesting shall be at the Contractor's expense.
- H. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- I. Strength levels of concrete will be considered satisfactory if averages of sets of three consecutive strength cylinders meet or exceed required strength and no individual strength test results fall below specified compressive strength by more than 500 psi.
- J. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- K. Additional Tests: The Contractor's Independent testing service shall make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed by the Engineer.

1.03 SUBMITTALS

A. Submit the following:

- 1. Batch plant details giving the location, layout, capacity, and type of batch plant and the method of transporting concrete from the batch plant to the work location. Contractor shall provide documentation that all requirements of local authorities and regulations have been met.
- 2. Notification to the Engineer of concrete deliveries, a minimum of 24 hours in advance of the scheduled delivery. Include within this notification, class and quantity of concrete, frequency of trucks, and ordered slump.
- 3. Description of methods for cold-weather and hot weather batching, mixing and delivery.
- 4. Concrete Mix Designs:
 - i. Submit concrete mix designs to the Engineer within a minimum of 30 calendar days prior to placement. Include a complete list of materials including admixtures, applicable reference specifications, and copies of test reports showing the mix has been successfully tested to produce the properties specified.
 - ii. For each design mix
 - a. Certifications by the concrete supplier that ingredients conform to the specified

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requirements.

- b. Certifications by the concrete supplier that design mix conforms to specified strength, unit weight, maximum size aggregate, air entrainment, slump and to be free of soluble chloride content.
- c. Coarse aggregate gradation, specific gravity, and dry rodded unit weight.
- d. Identify admixtures, and planned dosage rate.

5. Compression test results.

- i. Test results will be reported in writing to the Engineer within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name and location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7 day tests and 28 day tests.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Order concrete from batching plant so that trucks arrive at discharge locations when concrete is required. Avoid excessive mixing of concrete or delays in placing successive layers of concrete in forms.
- B. Deliver concrete to discharge locations in watertight agitator or mixer trucks without altering the water-cement ratio, slump, air entrainment, temperature and homogeneity. Addition of water will not be permitted once the concrete has left the batch plant, unless approved in writing by the Engineer of Record.
- C. Concrete not conforming to specification, unsuitable for placement, exceeding the time or temperature limitations or not having a complete delivery batch ticket will be rejected.

1.05 JOBSITE CONDITIONS

- A. Weather: Protect concrete from damage and reduced strength or performance due to weather extremes during mixing, placing and curing.
- B. Cold Weather: Unless special precautions are taken to protect concrete, do not work temperatures are below 40°F or when temperatures are expected to fall below 40°F within 72 hours after placing concrete.
 - 1. Comply with ACI 306 in cold weather.
 - 2. Maintain concrete temperature of at least 60°F. Reinforcement, forms and ground in contact with concrete shall be free of frost.
 - 3. Maintain a temperature of at least 50°F, for reinforcement, forms and ground in contact with concrete prior to placement.
 - 4. Keep concrete and formwork at least 50°F for at least 96 hours after placing concrete.
 - 5. The use of calcium chloride in any form is not permitted. Non-chloride accelerator shall be used when ambient temperature is below 50°F.
 - 6. Admixture manufacturer shall provide technical assistance at no additional cost. A manufacturer's representative shall be available for consultation by phone of on-site upon 72-

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hour notice.

- C. Hot Weather: Concrete, when deposited, shall be less than 85°F. Cool the mix in a manner acceptable to the Engineer if the concrete temperature is higher.
 - 1. Comply with ACI 305 in hot weather.
 - 2. Retarder shall be used when ambient temperature exceeds 80°F.

PART 2.00 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Portland Cement:
 - 1. ASTM C 150, Type II for all work unless otherwise specified. Use one brand of cement throughout project.
- B. Normal Weight Aggregates: ASTM C 33, and as herein specified. Use ¾" maximum size for all concrete, unless otherwise directed or specified. Provide aggregates from a single source for exposed concrete.
- C. Water: Clean, potable and free from foreign materials in amounts harmful to concrete and embedded steel. Provide water which meets ACI/ASTM requirements for concrete mix water.
- D. Fly Ash: ASTM C618, Type F
 - 1. Fly ash shall be used in concrete designated as "Mass Concrete" as a cementitious replacement for Portland cement at ratio of 1:1, up to 25% but no less than 15% by weight, unless noted otherwise.
 - 2. Fly ash type F shall be from one production source throughout the work and shall meet or exceed the requirement of ASTM C618, Type F, Tables No. 1 and No. 2. The source shall be in conformance with U.S. Army Corps of Engineers Pre-qualification requirements.
 - 3. The concrete supplier shall furnish a notarized certificate from the fly ash supplier at the time of submittal of concrete mix designs indicating conformance with these requirements specified. Also, a copy of the most recent chemical analysis shall be provided.
 - 4. Fly ash shall be considered as a part of the cementitious material when calculating water cement ratio.
- E. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
 - 1. Products: Subject to compliance with requirements, products, which may be incorporated in the work, include the following
 - a. "Air-Mix"; Euclid Chemical Co.
 - b. "Sika Aer"; Sika Corp.
 - c. "MB-VR or MB-AE"; Master Builders
 - d. "Darex AEA" or "Daravair"; W.R. Grace
 - e. Or equal.

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- F. Water Reducing Admixture: ASTM C 494, Type A, and containing not more than 0.1% chloride ions. Follow manufacturer's recommendations for amount of admixture to be added to the concrete. Admixture shall be compatible with air-entraining admixtures.
- a. "WRDA Hycol"; W. R. Grace.
 - b. "Eucon WR-75"; Euclid Chemical Co.
 - c. "Pozzoloth Normal"; Master Builders.
 - d. "Plastocrete 160"; Sika Chemical Corp.
 - e. Or equal.
- G. High-Range Water Reducing Admixture (SuperPlasticizer): ASTM C 494, Type F or Type G and containing not more than 0.1% chloride ions. Follow manufacturer's recommendations.
1. Products: Subject to compliance with requirements, products which may be incorporated in the work include the following:
 - a. "WRDA 10" or "Daracem"; W. R. Grace.
 - b. "PSP"; Protex Industries Inc.
 - c. "Super P"; Anit-Hydro.
 - d. "Sikament"; Sika Chemical Corp.
 - e. "Rheobuild"; Master Builders.
 - f. Or equal.
- H. Water Reducing, Non-Chloride Accelerator Admixture: ASTM C 494, Type E or C, and containing not more than 0.1% chloride ions.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. "Accelguard 80"; Euclid Chemical Co.
 - b. "Pozzutec 20"; Master Builders, Inc.
 - c. "PolarSet"; Grace Construction Products.
 - d. Or equal.
- I. Water Reducing, Retarding Admixture: ASTM C 494 Type D, and containing not more than 0.1% chloride ions.
1. Products: Subject to compliance with requirements, products that may be incorporated in the work include the following:
 - a. "Edoco 20006"; Edoco Technical Products.
 - b. "Pozzoloth Retarder"; Master Builders.
 - c. "Eucon Retarder 75"; Euclid Chemical Co.
 - d. "Daratard"; W. R. Grace.
 - e. "Plastiment"; Sika Chemical Co.
 - f. Or equal.
- J. Prohibited Admixtures: Calcium chloride thiocyanates or admixtures containing more than 0.1% chloride ions are not permitted.

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2.02 RELATED MATERIALS

- A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. Per sq. yd., complying with AASHTO M 182, Class 2.
- B. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
 - 1. Waterproof paper.
 - 2. Polyethylene film.
 - 3. Polyethylene-coated burlap.
- C. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.055 gr./sq. cm. when applied at 200 sq. ft./gal.
 - 1. Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. "Masterseal"; Master Builders.
 - b. "A-H 3 Way Sealer"; Anti-Hydro Waterproofing Co.
 - c. "Ecocure"; Euclid Chemical Co.
 - d. "Clear Seal"; A.C. Horn, Inc.
 - e. "Sealco 309"; Gifford-Hill/American Admixtures.
 - f. "J-20 Acrylic Cure"; Dayton Superior.
- D. Underlayment Compound: Free flowing, self-leveling, pumpable cementitious base compound.
 - 1. Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. "Ardex K-15"; Ardex Engineered Cements.
 - b. "Silflo 200"; Silpro Masonry Systems.
 - c. "Ultra/Plan"; Mapei.
- E. Bonding Compound: Polyvinyl acetate or acrylic base.
 - 1. Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. Acrylic or Styrene Butadiene:
 - ii. "J-40 Bonding Agent"; Dayton Superior Corp.
 - iii. "Everbond"; L & M Construction Chemicals.
 - iv. "Hornweld"; A. C. Horn, Inc.
 - v. "Daraweld C"; W. R. Grace.

2.03 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to the Engineer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.

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- B. Submit written reports for review of design mix for specified strength of concrete within 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed.
- C. Strength: Provide concrete having the following minimum compressive strength at 28 days:
1. Class 5000 psi –3/4”: Use in all concrete, unless otherwise specified.
- D. The concrete quality, mixing and placing shall conform to ACI-318, Chapter 5.
- E. Design mixes to provide normal weight concrete with the following properties, as indicated:
- | | | | | |
|-------------|-----------|-------------|-------------|----------|
| Design | Minimum | Laboratory | Minimum ** | Maximum* |
| Compressive | Strength | Testing Age | Cement | W/C |
| Strength, | fc 7 days | 28 day | Lbs./cu.yd. | Ratio |
| 5,000 psi | 3,500 psi | 5,000 psi | 705 | 0.40 |
- *Maximum: Decrease if possible
**Minimum: Increase as necessary to meet all other stated requirements.
- F. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by the Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Engineer before using in work.
- G. Admixtures
1. Use water-reducing admixture or high range water reducing admixture (super plasticizer) in all concrete in strict accordance with the manufacturer’s printed instructions.
 2. Use air-entraining admixture in all concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer’s prescribed rate to result in concrete at point of placement having total air content of 6% with a tolerance of ±1.5%.
- H. Consistency:
1. The consistency shall be uniformly maintained within the allowable range of slump for the job materials. Ordinarily the slump shall not be less than 1-1/2 nor more than 3 inches, unless in the opinion of the Engineer, job conditions warrant exceeding these limits. The consistency shall be determined by the AASHTO Method T-119. This range of slump is to be maintained for all concrete including pumped concrete.
 2. Concrete containing HRWR admixture (super-plasticizer): Not more than 7” after addition of HRWR to site-verified 1-1/2” to 3” slump concrete.

2.04 CONCRETE MIXING

- A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified. Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water after the concrete has been batched will not be permitted, unless approved in writing by the Engineer of Record.
1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required. When air temperature is between 85°F (30° C) and 90°F (32° C), reduce mixing and delivery time from 1-1/2 hours to 75

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- minutes, and when air temperature is above 90°F (32°C), reduce mixing and delivery time to 60 minutes.
2. During cold weather heat water, sand and cement materials per recommendations of ACI 306.

PART 3.00 - EXECUTION

3.01 FORMWORK

- A. All formworks shall be completed as provided for within Section 03100.
- B. Forms shall conform to shapes, lines and dimensions of the members as called for on the Drawings and shall be sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape.
- C. Forms shall be removed in such a manner as to ensure the complete safety of the structure. In no case shall supporting forms or shoring be removed until members have acquired sufficient strength to support their weight and imposed loads safely.

3.02 INSTALLATION

- A. Batch, mix and deliver Portland cement concrete in conformance with ASTM 94. Batch all constituents at central batching or mixing plant. Produce concrete in conformance with ACI 301 and as specified.
- B. "Mass Concrete", defined as concrete placements with a thickness of 3'-0" or greater, shall conform to the additional requirements of Section 3.6 - "Mass Concrete Placing, Curing, Protecting and Finishing" below.
- C. Seasonal Conditions:
 1. Conform to ACI 305R and as specified for hot weather concreting. Do not add retarder admixture to any concrete.
 2. Conform to ACI 306R and as specified for cold weather concreting. Do not add accelerator admixture to any concrete.

3.03 INSTALLATION OF EMBEDDED ITEMS

- A. Set and build into work, anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.
- B. Install anchor rods, accurately located, to elevation required and complying with the following tolerances (acceptable deviation from rod locations shown on the Drawings):
 1. 3/4" and 7/8" diameter rods: +/- 1/4"
 2. 1", 1-1/4", and 1-1/2" diameter rods: +/- 3/8"
 3. 1-3/4", 2", and 2-1/2" diameter rods: +/- 1/2"
- C. Clean embedded items of oil, ice, dirt and all other foreign items.

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- D. For embedded pipes, complete all necessary testing requirements prior to placing concrete.

3.04 PLACING CONCRETE

A. General:

1. Concrete shall not be placed when the Engineer or Owner is not present without prior written permission.
2. Do not place concrete until the depth, character and adequacy of forms, falsework, embedments, and the placing of the steel reinforcement have been approved by the Engineer. The method and manner of placing the concrete shall be such as to avoid segregation of aggregate and displacement of the reinforcement. Non-aluminum troughs, pipes and round bottom chutes may be used as aids in placing concrete when necessary. Dropping the concrete a distance of more than five feet, or depositing a large quantity at one point and moving concrete over an extended distance with mechanical vibrators, will not be permitted. Concrete shall be placed upon clean, damp surfaces, free from running water, or upon properly consolidated soil.
3. Before placement, all equipment for mixing and transporting the concrete shall be cleaned, and all debris and ice shall be removed from the places to be occupied by the concrete. Forms shall be thoroughly wetted (except in freezing weather) or oiled. The reinforcement shall be thoroughly cleaned of ice, dirt, rust scale or other deleterious coatings.
4. Retempering of concrete by adding water or any other material shall not be permitted.
5. Concrete placement, finishing and curing, and all other pertinent construction practices shall be in accordance with ACI 117 and ACI 301. In addition to the requirements of ACI 117 and ACI 301, the following shall apply:
 - a. When placing is started, it shall be carried on as a continuous operation until placement is completed.
 - b. Concrete shall be placed so that a uniform appearance of surfaces will be obtained.
 - c. Concrete shall be placed and consolidated free of rock pockets, honeycombs, and voids.
 - d. Concrete shall be deposited as nearly as practicable in its final position, to avoid segregation due to rehandling or flowing, and shall not be subjected to any procedure that will cause segregation.
 - e. Concrete shall be placed and consolidated in walls in approximately 18-inch layers, proceeding at a uniform rate or per the form designer's recommendation.
 - f. Do not add water to concrete during delivery, at the Project site, or during placement, unless approved by the Engineer of Record in writing. Amount of water to be added (if permitted by Engineer of Record) at the project site shall be indicated on the mix design and batch tickets submitted by the contractor. Water shall be added prior to on-site testing of the concrete mix.
 - g. Before placing concrete, and if agreed upon by the Engineer of Record, water may be added at the Project site, subject to the limitations of ACI 301.
 - h. Do not add water to concrete after adding high-range water-reducing admixtures.
6. Prepare top and sides of existing walls to remain in accordance with Section 3.03E. Engineer shall be notified at least 48 hours in advance of pouring new concrete on existing to observe prepared surface.

B. Consolidating:

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1. Consolidate concrete with suitable mechanical vibrators operating within concrete. When necessary, vibrating shall be supplemented by hand spading with suitable tools to assure proper and adequate consolidation. Vibrators shall be manipulated so as to work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. The vibration at any joint shall be of sufficient duration to accomplish consolidation but shall not be prolonged to the point where segregation occurs.
 2. Employ as many vibrators and tampers as necessary to secure the desired results. For every two vibrators required for the job, an additional standby vibrator shall be kept on the site. Do not place subsequent layers of concrete until the previous layer has been consolidated as specified. Internal vibrators shall have a minimum frequency of 8000 vibrations per minute when immersed in concrete and shall have sufficient amplitude to effectively consolidate the concrete.
 3. Prevent the following practices:
 - a. Pushing of concrete with vibrator.
 - b. External vibration of forms.
 - c. Allowing vibrator to vibrate against reinforcing steel where steel projects into green concrete.
 - d. Allowing vibrator to vibrate against the contact faces of forms.
- C. Underwater Placement: Concrete shall not be placed below the water table.
- D. Cold Weather: Do not place concrete when the ambient temperature is below 40°F, unless specifically authorized by the Engineer. Conform to the requirements of ACI 306R during cold weather.
- E. Hot Weather: Do not place concrete with a mix temperature exceeding 90°F, unless specifically authorized by the Engineer. Conform to the requirements of ACI 305R during hot weather.
- F. Construction Joints:
1. When the placing of concrete is suspended, necessary provisions shall be made for joining future work before the placed concrete takes its initial set. For the proper bonding of old and new concrete, such provisions shall be made for grooves, steps, keys, dovetails, reinforcing bars or other devices as may be prescribed. Before depositing new concrete against existing concrete or concrete which has hardened, the surface of the hardened concrete shall be cleaned by a heavy steel broom, roughened slightly (approximately ¼-inch) amplitude), wetted, and covered with a neat coating of cement paste or grout. Install joint sealant where shown on the Drawings, in accordance with manufacturer's instructions.
 2. Joints shall be perpendicular to the main reinforcement.
- G. Defective Work:
1. All defective work disclosed after the forms have been removed shall be immediately removed and replaced. If dimensions are deficient, or if the surface of the concrete is bulged, uneven, or shows honeycomb, which in the opinion of the Engineer cannot be repaired satisfactorily, the entire section shall be removed and replaced at no cost to the Owner.
 2. Other work considered to be defective includes, but is not limited to, the following:
 - a. Concrete in which defective or inadequate steel reinforcement has been placed.

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- b. Concrete incorrectly formed, or not conforming to details and dimensions on the Drawings or with the intent of these documents, or the concrete surfaces of which are out of plumb or level beyond specified tolerances.
- c. Concrete below specified strength.
- d. Concrete containing wood, cloth, or other foreign matter, rock pockets, voids, honeycombs, cracks or cold joints not scheduled or indicated on the Drawings.

3.05 CONCRETE FINISHING

- A. All exposed concrete surfaces, unless otherwise noted, shall receive a formliner finish that produces a simulated stone texture. Formliner finish will be carried on both horizontal and vertical surfaces. The Fitzgerald Formliners, Pattern 17922 "Zion Random Rock" (Graylastic) product has been selected as the basis of the design. The Owner / Engineer reserves the right to select an alternate formliner pattern, texture or orientation during the submittal process.
- B. The following requirements shall govern concrete finishes, as otherwise indicated on the Drawings.
 - 1. Rubbed Finish: After forms have been removed, bug holes shall be filled with a low water-cement-ratio paste. Paste shall then be rubbed over the wall using a brush or sponge application to provide the desired finish.
 - 2. Float Finish: Force coarse aggregate away from surface; float to a smooth and even surface.
 - a. This finish shall be applied to all concrete surfaces in direct contact with water (i.e. apron/approach slabs)
 - 3. Trowel Finish:
 - a. After floating, begin the first trowel finish operation using a power-driven trowel; begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.
 - b. Consolidate the concrete surface by the final hand troweling operation, free from trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10'-0" when tested with a 10'-0" straight-edge
 - 4. Broom Finish:
 - a. Apply nonslip broom finish to exterior concrete as specified, immediately after trowel finishing; roughen the concrete surface by brooming in the direction perpendicular to the main traffic route.
 - i. Use a fiber bristle broom.
 - ii. Frequently clean broom to avoid deep brooming.
 - b. This finish shall be applied to surfaces accessible by the public (i.e. top of the low-level outlet).
 - 4. As-Cast Finish:
 - a. Rough form finish; tie holes and defects shall be patched.
 - i. Fins exceeding 1/4 Inch in height shall be chipped off or rubbed off.
 - ii. Otherwise, surfaces shall be left with the texture imparted by the forms.
 - b. Smooth form finish: the form facing material shall produce a smooth, hard, uniform texture on concrete.
 - i. The arrangement of the facing material shall be orderly and symmetrical, and the number of seams kept to the practical minimum.
 - ii. Forms shall be supported by studs or other backing capable of preventing excessive deflection.

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- iii. Form-facing material with raised grain, torn surfaces, worn edges, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used.

3.06 CURING AND PROTECTION

- A. Initial Curing: All concrete shall be properly cured and protected in accordance with ACI 308. Maintain concrete above 50 degrees Fahrenheit during first seven days after placing. The work shall be protected from the elements, flowing water, and from defacement of any nature, during construction. The concrete shall be cured as soon as it has sufficiently hardened, by covering with an approved material. Water-absorptive coverings shall be thoroughly saturated when placed, and kept saturated for a period of at least seven days. Curing mats or blankets shall be sufficiently weighted or tied down to keep the concrete surface covered and to prevent the surface from being exposed to air currents. Where wooden forms are used, they shall be kept wet at all times until removed, to prevent the opening of joints and drying out of the concrete. Membrane curing compounds shall be coordinated with the surface to be painted, covered with plaster, covered with sealer, and other surfaces which curing compound would adversely affect subsequent construction.
- B. Duration of Curing: The final curing shall continue until the cumulative number of days or fractions thereof, not necessarily consecutive, during which the temperature of the air in contact with the concrete is above 50°F, has totaled 7 days beyond the initial curing period.
 - 1. Rapid drying at the end of the curing period shall be prevented.
- C. Formed Surfaces: Steel forms heated by the sun and all wood forms in contact with the concrete during the curing period shall be kept wet.
 - 1. If forms are to be removed during the curing period, one of the specified curing materials or methods shall be employed immediately.
 - 2. Such curing shall be continued for the remainder of the curing period.

3.07 MASS CONCRETE PLACING, CURING, PROTECTING AND FINISHING

- A. Mass concrete shall be in accordance with these specifications and with the following additional requirements:
 - 1. Maximum concrete temperature at the time of placement shall be 70°F.
 - 2. A combination of the mix design, components selected, and methods of precooling or post cooling, if employed, and surface insulation, if used, shall limit the temperature differential between any point in the interior of the concrete element and the surface of the concrete element, thereby preventing thermal cracking. During the period following concrete placement, the temperature differential shall be limited to a maximum of 35°F. Other material selections or methods which produce these results are acceptable if approved by the Engineer.
 - 3. Pre-cooling may be used to prevent cracking caused by heat of hydration. Acceptable means include, but are not limited to, cooling mixing water by providing some mixing water in the form of chipped, shaved or flaked ice, cooling the aggregate, cooling the aggregate, cooling the mix with liquid nitrogen prior to placing, or using other methods approved by the Engineer.

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4. Post-cooling is acceptable if it works within the parameters of the construction schedule. Piping within the concrete shall be non-metallic and the system shall be approved by the Engineer.
5. Temperature Monitoring: Regardless of methods used, install temperature sensing devices within the concrete in each placement. The devices shall operate in the range of 32°F to 212°F with an accuracy of plus or minus 2°F. The temperatures shall be recorded automatically by an approved strip chart recorder provided by the Contractor. Connect sensing devices with armor-sheathed wire.
 - iii. The Contractor shall submit temperature monitoring data to the Engineer on a daily basis.

3.08 CONCRETE SURFACE REPAIRS

- A. General: Any defective work disclosed after removal of forms shall be immediately removed and replaced. If in the opinion of the Engineer, the surface of the concrete cannot be repaired satisfactorily, the entire section shall be removed and replaced at no additional expense to the Owner.
- B. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to the Engineer.
 1. Cut out honeycomb, rock pockets, voids over 1" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case, to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brushcoat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
- C. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- D. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to the satisfaction of the Engineer. Surface defects, as such, include color and texture irregularities, bulges, uneven surfaces, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- E. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
- F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.
- G. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square

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CAST-IN-PLACE CONCRETE

cuts and expose reinforcing steel with at least $\frac{3}{4}$ " clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

- H. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
- I. Perform structural repairs with prior approval of the Engineer for method and procedure, using specified epoxy adhesive and mortar.
- J. Repair methods not specified above may be used, subject to acceptance of the Engineer.

END OF SECTION

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SECTION 03600
GROUT

PART 1.00 - GENERAL

1.01 SCOPE

- A. This section specifies the requirements of all grout related work.

1.02 SUBMITTALS

- A. Submit Certificate of Compliance of products with these specifications.
 - 1. Manufacturer's printed data and literature for all specified materials and locations where materials are to be used.
 - 2. Manufacturer's installation/application instructions.
 - 3. Grout mix-design

1.03 QUALITY

- A. Ensure surfaces to be grouted are clean and sound and are not feathered at edges.
- B. Observe safety precautions as outlined in the manufacturer's literature and as printed on containers and labels.

1.04 REFERENCES

- A. AASHTO M 288: Geotextile Specification for Highway Applications
- B. AASHTO T 27: Sieve Analysis of Fine and Coarse Aggregate
- C. AASHTO T 99: Moisture Density Relations of Soils Using a 5.5 Lb. Rammer and a 12-inch drop.
- D. AASHTO T 104: Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
- E. AASHTO T 180: Moisture Density Relations of Soils Using a 10 lb Rammer and a 18 inch Drop
- F. ASTM C 127: Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
- G. ASTM C 535: Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- H. ASTM C 618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

PART 2.00 - PRODUCTS

2.01 NONSHRINKING GROUT

- A. Non-shrinking grout shall be furnished factory premixed so that only water is added at the jobsite.
 - 1. Additives to allow for the underwater placement of non-shrink grouts shall meet the Army Corps of Engineers, Concrete Research Division (CRD) C661-06 Specification for Anti-washout Admixtures for Concrete
 - 2. Grout shall be mixed in a mechanical mixer.
 - 3. No more water shall be used than is necessary to produce a flowable grout.
- B. Provide non-shrink, non-metallic cement-based grout with a minimum 28-day compressive strength of 6000 psi.

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- C. Provide shrinkage and compensation characteristics in both the plastic and hardened states, conforming to ASTM C-1107, Grade C.
- D. Grout shall exhibit small but predictable amount of expansion sufficient to counteract the normal shrinkage of cement.
- E. The expansion shall occur after initial set to insure maximum contact between grout and base plates, beams, masonry, or other surfaces.

2.02 EPOXY GROUT FOR REINFORCING BARS

- A. Epoxy bonding/grouting adhesive shall be a multi-purpose 2 component, 100% solids, moisture tolerant structural epoxy adhesive conforming to the current ASTM C881 specifications.
- B. Manufactured by:
 - 1. "Hilti HIT-RE 500 V3 Epoxy Adhesive" as manufactured by Hilti Corporation
 - 2. "Congressive 1490" as manufactured by Master Builders, Inc.
 - 3. "Sikadur 32, Hi Mod" by Sika Corporation
 - 4. "Resi-Bond (J-58)" by Danton Superior
 - 5. Approved Substitute.

2.03 EPOXY GROUT FOR ANCHORS

- A. Miscellaneous Concrete Anchors
 - 1. Epoxy bonding/grouting adhesive shall be a multi-purpose 2 component, 100% solids, moisture tolerant structural epoxy adhesive conforming to the current ASTM C881 specifications.
 - 2. Manufactured by:
 - a. "Hilti HIT-RE 500 V3 Epoxy Adhesive" as manufactured by Hilti Corporation
 - b. "Congressive 1490" as manufactured by Master Builders, Inc.
 - c. "Sikadur 32, Hi Mod" by Sika Corporation
 - d. "Resi-Bond (J-58)" by Danton Superior
 - e. Approved Substitute.

PART 3.00 – EXECUTION

3.01 NONSHRINKING GROUT

- A. Preparation
 - 1. Remove dust, algae, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials by mechanical abrasion methods such as sandblasting or wire brush mounted on a grind wheel. Sandblast or wire brush structural and reinforcing steel to remove loose material and expose sound metal.
 - 2. Surfaces which are permanently immersed should be sand blasted or cleaned with a high pressure water jet.
 - 3. Construct appropriate sturdy forms to contain grout at the fluidity level at which it will be used.
 - 4. Formwork for underwater grouting applications shall be grout tight, achieved by the use of foam and/or rubber sealing strips at form edges.

SECTION 03600
GROUT

B. Placement

1. Unless otherwise specified or indicated on the drawings, grout between metal members and hardened concrete shall be 1-1/2 inches thick.
2. Grout shall be placed in strict accordance with the directions of the manufacturer so that all spaces and cavities are completely filled, without voids.
3. Forms shall be provided where structural components will not confine the grout.
4. Place grout only from one side to avoid entrapping air. Provide adequate air vent holes in large areas. Work or flow into place, filling all cavities.
5. When abandoning pipes with grout, a vent pipe should be inserted and removed in accordance with the Contractor's plan to ensure the pipe is completely filled with grout.
6. Reinforce grout pads or applications three inches or more in thickness with wire mesh or reinforce bars.
7. Excessive means of vibration may cause segregation of aggregates and will not be permitted.

C. Edge Finishing

1. In all locations where the edge of the grout will be exposed to view, the grout shall be finished smooth after it has reached its initial set. Except where shown to be finished on a slope, the edges of grout shall be cut off flush at the baseplate, bedplate, member, or piece of equipment.

D. Curing

1. Nonshrinking grout shall be protected against rapid loss of moisture by covering with wet cloths or polyethylene sheets. After edge finishing is completed, the grout shall be wet cured for at least 3 days and then an acceptable membrane curing compound shall be applied.
2. Hydraulically placed grouts shall be kept wet for at least 7 days after placement.

3.02 NONSHRINKING GROUT FOR SLIPLINING

A. Preparation

1. Install surface and ground water control measures as needed to perform work in dry conditions.
2. Remove all sediment and debris within the abandoned pipe as indicated within the Drawings.
3. Cut the existing pipe as indicated within the Drawings.

B. Placement

1. Do not place grout mix when the daily minimum temperature is less than 40 degrees F. Maintain at minimum temperature of 50 degrees F and not more than 90 degrees F during the placement and the curing periods.
2. Do not place on frozen surfaces.
3. Allow excess water to drain within the pipe and achieve a dry saturated surface condition.
4. Do not re-temper grout mix by adding water in field.

C. Curing

1. Keep exposed surfaces continuously moist for the seven-day curing period.

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GROUT

2. Grout shall be kept between 50°F and 90°F during the seven-day curing period.
 - a. Do not allow the temperature to fluctuate more than 20 degrees F during the curing period.
3. Maintain moisture by sprinkling, fog spraying, or by covering with continuously moistened canvas, cloth mats, straw, sand or similar material.
 - a. Protect the grout during the curing process without causing damage to the grout surface by erosion or other mechanisms during water or moist covering.

3.03 EPOXY GROUT.

Epoxy grout shall consist of a two-component liquid epoxy adhesive of viscosity appropriate to the location and application, and an inert aggregate filler component, if recommended by the adhesive manufacturer. Components shall be packaged separately at the factory and shall be mixed immediately before use. Proportioning and mixing of the components shall be done in accordance with the manufacturer's recommendations.

A. Preparation

1. Where indicated on the drawings, anchor bolts, threaded rod anchors, and reinforcing bars shall be epoxy grouted in holes drilled into hardened concrete. Diameters of holes shall be as follows:

<u>Item</u>	<u>Diameter of Hole</u>
Reinforcing Bars and Threaded Rod Anchors	1/8 inch larger than the outside diameter of the bar of the rod
Headed Anchor Bolts	Bolt diameter plus 2 inches

2. The embedment depth for epoxy grouted anchor bolts, threaded rod anchors, and reinforcing bars shall be at least 15 bolt, rod, or bar diameters, unless otherwise indicated on the drawings.
3. Holes shall be prepared for grouting as recommended by the grout manufacturer.

B. Installation

1. Anchor bolts, threaded rod anchors, and reinforcing bars shall be clean, dry, and free of grease and other foreign matter when installed.
2. The bolts, rods, and bars shall be set and positioned and the epoxy grout shall be placed and finished in accordance with the recommendations of the grout manufacturer.
3. Care shall be taken to ensure that all spaces and cavities are filled with epoxy grout, without voids.
4. During assembly of all threaded stainless-steel components, anti-seize thread lubricant shall be liberally applied to the threaded portion not embedded in concrete.

END OF SECTION

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DIVISION 5 – METALS

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**SECTION 05250
MISCELLANEOUS METALS AND HARDWARE**

PART 1.00 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all labor, materials, equipment and incidentals required to install the miscellaneous metal accessories and miscellaneous hardware specified herein or indicated on the drawings.
- B. Work shall include, but not be limited to: lockable access hatch, galvanized steel screen, railings, and rung ladder

1.02 QUALITY ASSURANCE

A. Workmanship and Finish

- 1. Metalwork shall be fabricated in shops having experience with similar work and in accordance with the highest standards for the respective type of work.
- 2. Exposed surfaces shall be smooth finish with well-defined lines.
- 3. All work shall be true to details, well formed to shape and size and fabricated with proper joints, shape lines and angles, and all curved work sprung evenly to curves.
- 4. All necessary appurtenances shall be provided to assemble the work at the shop as complete as possible.
- 5. Holes for bolts and screws shall be drilled and fastenings concealed where practicable.
- 6. Complete shop drawings of all metalwork items will be required for review and approval by the Owner prior to fabrication of the units.
- 7. All shop work shall be delivered to the site complete and ready for erection.
- 8. Work shall be fabricated and installed in a manner that will provide for expansion and contraction, prevent the shearing of bolts, screws and other fastenings, ensure rigidity and provide close fitting of sections.
- 9. Welding shall conform to the requirements of the American Welding Society and shall be done in a manner that will prevent permanent buckling, and all welds exposed in the finished work shall be ground smooth.
- 10. Proper care shall be exercised in handling all work so as not to injure the finished surfaces.
- 11. The Contractor shall provide all anchors, bolts and appurtenant items necessary for the complete erection of all work. All fasteners shall be hot-dipped galvanized.

B. Submissions

The Contractor shall submit to the Owner for approval completely detailed and certified shop and erection drawings of all metalwork. Necessary load and design calculations of all materials shall be submitted for the Owner's use in approving shop drawings. The shop drawings shall show the alloy, tempers and the finish of all metalwork.

C. Checking

The Contractor shall be responsible for checking the general arrangements, details and dimensions of the miscellaneous metalwork shown on the drawings and/or the approved shop drawings and for checking the details and dimensions of the structure to ensure the proper and satisfactory fitting of the metalwork into the construction.

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SECTION 05250
MISCELLANEOUS METALS AND HARDWARE

PART 2.00 - PRODUCTS

2.01 ROLLED SECTIONS, STEEL PRODUCTS & ACCESSORIES

- A. All connection bolts shall conform to ASTM A325, Type 3.
- B. Hardware shall be hot-dipped galvanized after fabrication in accordance with ASTM A123. Bolts shall be A325 hot-dipped galvanized with matching nuts and washers, unless otherwise noted. Washers shall be provided under all turned components.
- C. Fasteners for aluminum components shall be stainless steel, Type 316L, with matching nuts and washers, unless otherwise noted. Washers shall be provided under all turned components.
- D. All steel for railing shall be stainless steel.
- E. All steel for the rung and steps of the ladder shall be corrugated, knurled dimpled. And coated with skid resistant material, or otherwise treated to minimize slipping.

PART 3.00 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Inspection:
 - 1. Prior to installation of the work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Discrepancies:
 - 1. In the event of discrepancy, the Contractor shall immediately notify the Owner.
 - 2. The Contractor and fabricators shall not proceed with fabrication or installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 FABRICATION:

- A. General
The Contractor shall install all work of this section in strict accordance with the approved Shop Drawings and the referenced standards.

3.03 WELDING:

- A. General:
 - 1. For details of joints, comply with requirements for AWS joints accepted without qualification tests.
 - 2. Follow applicable sections of AWS specifications.

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B. Types of Welds:

Unless otherwise noted:

All fillet welds shall be 5/16-inch minimum depth.

3.04 PAINTING:

- A. All painting shall be per the manufacturer's recommendation.
- B. All surfaces shall be primed, painted, and coated as specified.
- C. Drying time shall be per manufacturers recommendations.
- D. All field welding shall be touched up with galvanizing paint prior to acceptance by the Engineer.

END OF SECTION

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SECTION 05510
RUNG LADDERS

PART 1.00 GENERAL

1.01 DESCRIPTION:

- A. Scope: Contractor shall furnish and install all material and labor for the Rung Ladder as shown on the Drawings and specified herein.
- B. The ladder shall be installed in accordance with the latest edition of OSHA 1926.1053.
- C. Coordination: Review installation procedures under Sections and other Contracts and coordinate the work, which is related to this Section.
- D. Related Work Specified Elsewhere:
 - 1. Section 05250 – MISCELLANEOUS METALS AND HARDWARE.
- E. Contractor shall verify all dimensions prior to installation of rung ladder.

1.02 WORK INCLUDED

- A. This specification relates to the materials of construction, furnishing, and installation of the rung ladder shown on the plans.

1.03 QUALITY ASSURANCE

- A. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
 - 1. OSHA 1926.1053: Ladders.

1.04 SUBMITTALS

- A. Shop Drawings and Product Data:
 - 1. Comply with the general notes of the Contract Drawings, where applicable.
 - 2. Submit Shop Drawings showing the following:
 - a. Complete description in sufficient detail to permit item by item comparison with the Specifications.
 - b. Dimensions.
 - c. Weights.
 - d. Capacity.
 - e. Layout drawing for all equipment showing installation details.
 - f. Deviations from Drawings and Specifications.
 - g. Manufacturer's standard guarantee.

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SECTION 05510
RUNG LADDERS

PART 2.00 PRODUCTS

2.01 RUNG LADDER

A. General:

1. Rung Ladder:

- a. Type: Fixed ladder, unless otherwise specified.
- b. Each fixed ladder shall support at least two loads of 250 pounds.
- c. Individual step or rung shall be capable of supporting a single concentrated load of at least 250 pounds.
- d. Ladder steps shall be parallel, level, and uniformly spaced.
- e. The rung and step of the ladder shall be corrugated, knurled, dimpled, coated with skid-resistant material.
- f. Minimum clearance between the ladder and any obstruction behind the ladder shall be 7 inches.
- g. The minimum perpendicular clearance between the center line of fixed ladder rung and any obstruction on the climbing side of the ladder shall be 30 inches.
- h. At the point of access/egress shall have a step-across distance of not less than 7 inches nor more than 12 inches as measured from the centerline of the steps or rungs to the nearest edge of the landing area.
- i. The rungs/steps of the ladder shall be spaced 10"-14" O.C.
- j. The rung ladder shall have 15" minimum clearance to any permanent obstruction from the centerline of the ladder.
- k. Individual bands shall be fastened to the side rails of the ladder.
- l. Ladder shall be maintained free of oil, grease, and other slipping hazards.
- m. Ladder shall be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder.

PART 3.00 - EXECUTION

3.01 GENERAL

- A. Contractor shall verify all dimensions and connections prior to installing the rung ladder.

3.03 INSTALLATION

- A. Installation of the rung ladder shall be done in a workmanlike manner.
- B. The Contractor shall review the installation drawings and installation instruction prior to installing the rung ladder.
- C. The rung ladder assembly shall be installed in a true vertical plane, square and plumb.

END OF SECTION

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SECTION 05520
PIPE AND TUBE RAILINGS

PART 1.00 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all labor, materials, equipment and incidentals required to install the galvanized steel pipe and/or tube railings specified herein or indicated on the drawings.
- B. Work shall include, but not be limited to the installation of railings along the top of training walls and spillway weir.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 SUMMARY

- A. Section Includes:
 - 1. Galvanized steel pipe and tube railings.
- B. Related Sections:
 - 1. 03300 Cast-In-Place Concrete

1.04 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - 1. Galvanized Steel: 72 percent of minimum yield strength.
 - 2. Stainless Steel: 60 percent of minimum yield strength.
- C. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
 - b. Infill load and other loads need not be assumed to act concurrently.

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PIPE AND TUBE RAILINGS

- D. Delete both paragraphs below if only interior railings are required.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- F. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.05 SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Railing brackets.
 - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design.
- D. Samples for Verification: For each type of exposed finish required.
 - 1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
 - 2. Fittings and brackets.
 - 3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.
 - a. Show method of connecting members at intersections.
- E. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- F. Qualification Data: For qualified professional engineer.
- G. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- H. Calculations: For welding or other connection to structural steel.
- I. Welding certificates.

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**SECTION 05520
PIPE AND TUBE RAILINGS**

1.06 COORDINATION AND SCHEDULING

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2.00 - PRODUCTS

2.01 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.02 GALVANIZED STEEL

- A. Recycled Content of Steel Products: Provide products with average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.03 FASTENERS

- A. General: Provide the following:
 - 1. Galvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
- B. Fasteners for Anchoring Railings to Other Construction: Railing shall be embedded and grouted into the pile cap as indicated in the drawings.
- C. Fasteners for Interconnecting Railing Components:

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PIPE AND TUBE RAILINGS

1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.

2.04 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
 1. For stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- E. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
 1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.05 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

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PIPE AND TUBE RAILINGS

- G. Connections: Fabricate railings with either welded or non-welded connections.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Subparagraph below is an alternative to concealed mechanical fasteners and fittings.
 - 2. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- J. Form changes in direction as follows:
 - 1. By bending or by inserting prefabricated elbow fittings.
- K. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- L. Close exposed ends of railing members with prefabricated end fittings.
- M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.
- N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
- O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- P. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.06 FINISHES GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary

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protective covering before shipping.

- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.07 GALVANIZED STEEL FINISHES

A. Galvanized Railings:

- 1. Hot-dip galvanize steel and iron railings, including hardware, after fabrication.
 - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
 - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
 - 4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- D. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning".
- 1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 3. Railings Indicated to Receive Primers Specified in Division 09 Section "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 4. Other Railings: SSPC-SP 3, "Power Tool Cleaning."
- E. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
- F. Shop-Painting of Galvanized Steel:
- 1. Galvanized Surfaces: Galvanized steel work under this section shall be shop painted at the galvanizers plan with high-performance epoxy primer and polyurethane top coat.
 - a. Primer: Within 21 hours after the galvanizing process has been completed all exposed to view hot-dip galvanized steel shall be thoroughly cleaned, pretreated for positive paint adhesion, and then given one coat of galvanizing processor's performance-guaranteed polyamide-epoxy primer.

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- b. Polyurethane Top Coat: Top coat applied over epoxy primer coat shall be Acrylic Polyurethane Enamel equal to Duncan "Colorgalve" system. Dry film thickness shall be 1.5-2.5 mils.
- 2. Color: Shall be subject to Engineer's Approval.

PART 3.00 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.02 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.03 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

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- B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- C. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material.
- D. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.
- E. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
 - 1. For stainless-steel pipe railings, weld flanges to post and bolt to supporting surfaces.
 - 2. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.
- F. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.04 ATTACHING RAILINGS

- A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.
- B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends.
- C. Attach railings to wall with wall brackets, except where end flanges are used. Provide brackets with 1-1/2-inch clearance from inside face of handrail and finished wall surface. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
 - 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- D. Secure wall brackets and railing end flanges to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. For steel-framed partitions, use toggle bolts installed through flanges of steel framing or through concealed steel reinforcements.

3.05 ADJUSTING AND CLEANING

- A. Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded

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areas and repair galvanizing to comply with ASTM A 780.

- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.06 ADJUSTING AND CLEANING

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

**Town of Wayland
Snake Brook Dam Rehabilitation**

DIVISION 6 – TIMBER

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**SECTION 06125
TIMBER DECKING AND RAILING**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. Timber decking for the construction of the proposed gatehouse floor as shown on the Drawings.

1.01 REFERENCES

- A. American Lumber Standards Committee (ALSC)
 - 1. Softwood Lumber Standards.
- B. American Society for Testing and Materials (ASTM)
 - 1. A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 2. A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 3. A307 - Carbon Steel Bolts, Studs, and Threaded Rod
- C. American Wood Preservers Association (AWPA)
 - 1. UC3B Exterior Constriction Above Ground Uncoated or poor water runoff
 - 2. M4 - Care of Pressure Treated Wood Products.
- D. National Forest Products Association (NFPA)
 - 1. National Design Specification for Wood Construction.

1.02 QUALITY ASSURANCE

- A. Lumber Grading Agency: Certified by ALSC.
- B. Contractor to provide technical data on wood preservative materials and application instructions. In lieu of grade stamping, Contractor to submit manufacturer's certificate that products meet or exceed specified requirements.

PART 2.00 - PRODUCTS

2.01 MATERIALS

- A. Lumber Grading Rules: NFPA.
- B. Lumber Decking and Railing: Southern Yellow Pine Grade No. 1 Dry (MC19) or better, S4S.
 - 1. Decking shall be S4S.

2.02 RELATED MATERIALS

- A. Fasteners: Carbon Steel ASTM A307 and galvanized in accordance with ASTM A123 and A153 for exterior and treated wood locations, as shown on Contract Drawings.

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**SECTION 06125
TIMBER DECKING AND RAILING**

2.03 FABRICATION

- A. Contractor to verify dimensions and site conditions prior to fabrication.
- B. All timber cut or drilled in any manner on-site shall receive penetrating sealer in accordance with AITC requirements.
- C. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.055 gr./sq. cm. when applied at 200 sq. ft./gal.

2.04 WOOD TREATMENT

- A. All timber, except oak, shall have pressure treatment in conformance with AWPA M4 and P5 Ammoniacal copper Quaternary (ACQ) in accordance with AWPA UC3B. Timber decking shall have minimum retention of 0.25 pounds per cubic foot. The presence of the AWPB quality mark MLP shall be accepted as evidence of conformance to this specification.
- B. All timber shall be supplied at a maximum moisture content of 19%.
- C. Cut or drilled surfaces of all timbers shall be treated with a minimum of two saturating coats of copper naphthenate preservative (min. 2% metallic copper) in accordance with AWPA M4 and P5.

PART 3.00 – EXECUTION

3.1 INSPECTION

- A. Contractor to verify that surfaces are level and ready to receive decking.
- B. Contractor to verify that lumber is dry (MC19) prior to installation.

3.2 INSTALLATION

- A. Decking lumber will be placed to the dimensions indicated by the Drawings.
- B. Install decking with heartwood down, using 6-inch-long deck spikes (2 per intersection). Deck planks shall be spaced 1/4-inch using dry timber.

3.3 SITE APPLIED WOOD TREATMENT

- A. Site-sawn ends of timber shall have preservative treatment applied in accordance with manufacturer's instructions. Preservative shall be allowed to cure prior to erecting members.

END OF SECTION

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**SECTION 06130
TIMBER FRAMING**

PART 1.00 - GENERAL

1.01 WORK INCLUDED

- A. The work under this Section shall include the installation of new timber beams, joists, gatehouse access hatch, and other timber members associated with the gatehouse improvements. Timber members excluded from this section are members associated with timber decking and railing.
- B. Related Sections: Documents affecting the work in this section include, but are not necessarily limited to, the General Instructions and applicable portions of the following specifications:

Section 06125 TIMBER DECKING AND RAILING

1.01 REFERENCES

- A. American Lumber Standards Committee (ALSC)
 - 1. Softwood Lumber Standards.
- B. American Society for Testing and Materials (ASTM)
 - 1. D245 – Standard Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber
 - 2. D255 – Standard Practice for Establishing Clear Wood Strength Values
 - 3. A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Product
 - 4. A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 5. A307 - Carbon Steel Bolts, Studs, and Threaded Rod
- C. American Wood Preservers Association (AWPA)
 - 1. UC4A Ground Contact or Fresh Water Non-critical components
 - 2. M4 – Care of Pressure Treated Wood Products
- D. National Forest Products Association (NFPA)
 - 1. National Design Specification for Wood Construction.
- E. American National Standards Institute/American Welding Society
 - 1. D1.1 – Structural Welding Code
- F. National Forest Products Association (NFPA)
 - 1. National Design Specification for Wood Construction
- G. American Wood Preservers Bureau (AWPB)
 - 1. MLP - Standard for Softwood Lumber, Timber, and Plywood Pressure Treated for Marine (Saltwater) Exposure

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**SECTION 06130
TIMBER FRAMING**

H. American Institute of Timber Construction (AITC)

1.02 QUALITY ASSURANCE

- A. Lumber Grading Agency: Certified by ALSC.
- B. Contractor to provide technical data on wood preservative materials and application instructions. In lieu of grade stamping, Contractor to submit manufacturer's certificate that products meet or exceed specified requirements.

PART 2.00 - PRODUCTS

2.01 MATERIALS

- A. Lumber Grading Rules: NFPA, RIS, SPIB, SFPA, WCLIB and WWPA.
- B. Lumber Pile Caps, Stringers, Bracing, and other timber members: Southern Yellow Pine Grade No. 1 Dry (MC19) or better, S4S.
- C. Timber shall have pressure treatment in conformance with AWPA M4 and P5 Alkaline Copper Quaternary (ACQ) in accordance with AWPA UC4A. Beams and joists shall have a minimum retention of 0.4 pounds per cubic foot, and pile caps and stringers shall have a minimum retention of 0.4 pounds per cubic foot. The presence of the AWPA quality mark MLP shall be accepted as evidence of conformance to this specification.
- D. All timber shall be supplied at a maximum moisture content of 19%.
- E. Cut or drilled surfaces of all timbers shall be treated with a minimum of two saturating coats of copper naphthenate preservative (min. 2% metallic copper) in accordance with AWPA M4 and P5.

2.02 ACCESSORIES

- A. Connectors: Gusset Plates and Hurricane Straps.
- B. Bolts, Nuts, Washers, Lags, Screws, and Drift Pins: Medium carbon steel with galvanized coating. Size and type to suit application in conformance with ASTM A153.
- C. Washers shall be round steel plate, 3" minimum O.D. and 1/4" minimum thickness, galvanized.
- D. Galvanizing: All hardware and plates shall be hot-dipped galvanized after fabrication and threading of stock, in accordance with ASTM-A153.

2.03 FABRICATION

- A. Fabricate components in accordance with AITC. Joints shall be neatly fitted, welded, and ground smooth.

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**SECTION 06130
TIMBER FRAMING**

2.04 FINISHES

- A. Galvanized connectors in accordance with ANSI/ASTM A123 and A153

2.05 STORAGE

- A. Wood products delivered at the site shall be carefully piled, off the ground, in such a manner as to assure proper drainage, ventilation, and protection from the weather.
 - 1. All lumber and timber shall be stored under dry conditions.
 - 2. Care of pressure treated wood products shall comply with AWP A Standard M4.
- B. Hardware and fasteners shall be stored in their original containers and under dry conditions until ready for use.

2.06 DECKING

- A. Decking shall be in accordance with Section 06125 TIMBER DECKING.

PART 3 EXECUTION

3.01 ERECTION

- A. Set structural members level and plumb, in correct position as indicated on the Drawings.
- B. Make provision for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Holes for machine bolts shall be bored with a bit 1/16" larger than the bolt diameter, and holes for drift bolts shall be 1/16" smaller than the bolt diameter as approved by the Engineer.
- D. Drilled holes shall be thoroughly flushed with preservative. Similarly, cut timber surfaces shall be given two brush coats of preservative before installation, in accordance with AWP A M4.
- E. All bolts shall bear on round plate washers under the nut and the head.
- F. After nuts have been tightened, there shall be at least ½-inch, but not more than 2-inches, of exposed thread beyond the nuts.
- G. After erection, touch-up galvanized surfaces with primer consistent with shop coat.
- H. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing structural timber to itself, or to in-place construction.
- I. Cutting, Fitting, and Placement: Perform cutting, drilling and fitting required for installation of structural timber. Provide temporary bracing as required. For items required to fit previously constructed spaces, take measurements at job and fabricate to fit actual spaces. Repair cut surface with preservative brushed on to dry surface as recommended by the manufacturer.

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**SECTION 06130
TIMBER FRAMING**

- J. Fit exposed connections accurately together to form tight joints. Cut exposed joints smooth and repair cut surfaces. Do not cut or abrade the surfaces of items which have been hot-dip galvanized.
- K. Fastening of one member to another shall be accomplished in such a manner that no cracking or splitting of timber members shall occur. Cracked or split members shall be replaced by the Contractor, to the approval of the Engineer, at no additional cost to the Owner.

3.02 DEMOLITION AND COORDINATION

- A. Demolition and legal disposal of existing and/or waste timber members and hardware shall be in accordance with Sections 02050 – DEMOLITION AND REMOVAL.

END OF SECTION

**Town of Wayland
Snake Brook Dam Rehabilitation**

DIVISION 15 – MECHANICAL

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SECTION 15000
KNIFE GATE VALVE

PART 1.00 GENERAL

1.01 DESCRIPTION:

- A. Scope: Contractor shall furnish and install all material and labor for the knife gate valve as shown on the Drawings and specified herein.
- B. Coordination: Review installation procedures under Sections and other Contracts and coordinate the work, which is related to this Section.
- C. Contractor shall verify all dimensions prior to installation of knife gate valve.
- D. This specification is based on DeZURIK cast knife gate valves as manufactured by Dezurik of Sartell, Minnesota. Including these particular models, any manufacturer's name and/or model is identified herein are intended to assist in establishing a general level of quality, configuration, functionality, and appearance required. This is NOT a proprietary specification, and it should be noted that "Or approved equal" applies to all products denoted herein. It is understood that all manufacturers as an approved equal. It is the intent of this specification to encourage open and competitive involvement from multiple manufacturers that are able to supply similar products.

1.02 WORK INCLUDED

- A. This specification relates to the materials of construction, furnishing, and installation of the 14-inch knife gate valves as shown on the plans.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Manufacturer shall have a minimum of 10 years' experience in producing similar type equipment and shall have evidence of 100 installations in satisfactory operation upon request.
 - 2. All valves shall have a 2-years manufacturer's warranty.

1.04 SUBMITTALS

- A. Shop Drawings and Product Data (For Each Gate):
 - 1. Comply with the general notes of the Contract Drawings, where applicable.
 - 2. Submit Shop Drawings showing the following:
 - a. Complete description in sufficient detail to permit item by item comparison with the Specifications.
 - b. Material of construction
 - c. Dimensions.
 - d. Weights.
 - e. Elastomer characteristics.
 - f. Pressure rating.
 - g. Layout drawing for all equipment showing installation details.
 - h. Deviations from Drawings and Specifications.
 - i. Manufacturer's standard guarantee.

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SECTION 15000
KNIFE GATE VALVE

PART 2.00 PRODUCTS

2.01 Knife Gate Valve

A. General:

1. Valve shall be the boneless knife gate.
2. Gate edge shall be machined and finished. The gate face shall be finished machined. Metal seated valves shall have a beveled bottom gate; resilient seated valve shall have a flat bottom gate.
3. Packing system shall consist of multiple layers of packing. The selected packing system shall be for dry service. The packing gland shall match the valve body material. The fastener shall be stainless steel.
4. Body shall be a one-piece casting of type 316 stainless steel for corrosive applications. Metal seated valve body shall incorporate rugged guides and jams to support and wedge the gate against the seat. Valve inside port diameter shall conform to MSS SP-81 requirements for both metal and resilient seated valves.
5. Seat shall be resilient seated. Resilient seated valves shall have a perimeter seat design and provide bubble-tight shutoff in both directions to the full rating of the valve.
6. Face to face dimension shall meet MSS SP-81 for knife gate valve.
7. Cold working pressure valve rating shall meet or exceeded MSS SP-81 for knife gate valves.
8. Cold working pressure valve rating shall meet or exceed MSS SP-81. Valves shall be 150 psi (1030 kPa).
9. Flange drilling shall be in accordance with ASME B16.5 class 150
10. Actuation: Valve shall be supplied with handwheel actuators.
11. The manual operated valve's actuator yoke shall be 304 stainless steel. The yoke stem nut shall be aluminum bronze or brass. The stem shall be stainless steel.

PART 3.00 - EXECUTION

3.01 GENERAL

- A. Contractor shall verify all dimensions and connections prior to installing the knife gate valve.

3.03 INSTALLATION

- A. Installation of the knife gate valve shall be done in a workmanlike manner.
- B. The Contractor shall review the installation drawings and installation instruction prior to installing the knife gate valve.

END OF SECTION

Town of Wayland
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APPENDIX A – PERMITS

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ORDER OF CONDITIONS



TOWN OF WAYLAND
MASSACHUSETTS
01778
CONSERVATION COMMISSION

TOWN BUILDING
41 COCHITUATE ROAD
TELEPHONE: (508) 358-3669
conservation@wayland.ma.us

Wayland's Wetlands and Water Resources Protection Bylaw
CHAPTER 194 PERMIT
80 Rice Road – October 2, 2023
(Also DEP File 322-1017)

Applicant/Address: Linda Hansen
41 Cochituate Road
Wayland, MA 01778

Subject Property: 80 Rice Rd, Wayland, MA

Owner/Address: Linda Hansen

Deed Reference: Book 1493 Page 0134, South Middlesex Registry

Project Description: An application filed for the rehabilitation of the Snake Brook Dam and appurtenances within Land Under Water, Bank, Riverfront Area, bordering vegetated wetlands, and buffer zones at 80 Rice Road Wayland, shown on Assessor's Map 45, Parcel 004A.

Decision: The Wayland Conservation Commission (hereinafter "Commission") voted to issue a Chapter 194 permit approving the proposed work, as conditioned herein pursuant to Chapter 194 Bylaw. The work is proposed as follows:

A water diversion system will be installed to implement and maintain a construction drawdown; vegetation and debris will be cleared in the area of proposed work and then reseeded with grass; the embankment will undergo several improvements: the wall will be raised to elevation 227.5, the crest will be raised to el. 228, the downstream slope will be regraded; the low-level outlet will undergo several improvements; the interior of the gatehouse will be renovated; the spillway will be enlarged, a beaver deceiver will be installed, and a wetland replication area will be established.

This permit is subject to the conditions noted below and based upon the findings listed below thereafter. The Commission finds that the conditions are necessary, in accordance with the provisions of Chapter 194, to protect those interests noted in the findings.

Plan References:

1. *Project Summary to Accompany Notice of Intent, Snake Brook Dam Rehabilitation*; project no. 19167.02; dated August 11, 2023.
2. WPA Form 3- Notice of Intent and Wetland Fee Transmittal form; dated August 10, 2023.
 - a. Certified abutters list included.
3. Chapter 194 Application and Submittal Requirements; dated August 10, 2023.
4. *Snake Brook Dam Rehabilitation Prepared for the Town of Wayland Conservation Commission, Wayland, MA (Sheets 1.0, 2.0, 2.1, 2.2, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 4.0)*; dated November 2022; stamped and signed by Matthew E. Dunn MA P.E. No. 53359; scale: 1" = 20'.

5. *Site Location Map and Annotated Aerial Photograph* (MassGIS); dated June 2023
6. FEMA Flood Insurance Rate Maps; dated June 20, 2023.
7. *Design Basis Report: Snake Brook Dam, Wayland, MA*; dated April 2020; signed by Allen R. Orsi, MA P.E. no. 46904.
8. *Wetland Field Report: Snake Pond Dam*; dated November 6, 2019

All documents prepared by PARE Corporation.

The work shall conform to these plans *except* as herein conditioned.

Special Conditions Issued by the Wayland Conservation Commission:

CONDITIONS TO BE MET BEFORE COMMENCING WORK:

1. **Prior to commencing any work**, the applicant shall provide *written notice*, not less than two or more than five business days prior to commencing any activity permitted by this Order, to the Commission.
2. **Prior to commencing any work permitted by this permit**, a copy of this permit shall be filed at the Middlesex South Registry of Deeds.
3. **Prior to commencing any work**, a revised plan shall be submitted if the scope of the project changes, including any additional trees that require removal.
4. **No work shall begin until the 10-day appeal period has expired for the Order of Conditions issued pursuant to the Wetlands Protection Act.**
5. **Prior to commencing any work**, the applicant shall provide the name of the person responsible for all on-site erosion controls, the name of the person who shall make the inspection of the sediment barriers and the name of any alternate.
6. **Prior to commencing any work at the site**, the Commission or Conservation Administrator shall inspect the sediment barriers once they have been installed to ensure that the barriers have been properly installed. The completion of this inspection does not imply the barriers have been installed in the required location – this is the responsibility of the applicant.
7. **Prior to commencing any work at the site**, the contractor shall provide a construction schedule for the duration of the work on site.
8. **All written submissions to the Commission shall include: a date, the DEP File Number and the condition or conditions that the submission is intended to meet.** The work authorized hereunder shall be completed within three years from the date of this permit unless extended pursuant to Chapter 194.

CONDITIONS TO BE MET DURING THE PROJECT:

9. This permit may be extended by the Commission for up to three years upon application to the Commission at least 30 days prior to the expiration date of the decision.
10. This permit does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
11. A copy of this Permit shall be provided to the site contractor and shall be available on the site at all times during construction.

12. This Permit does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of property rights.
13. Any fill used in connection with the embankment improvements and backfilling any other excavation done shall be clean fill. Any backfill shall *contain no trash, refuse, rubbish, or debris, including but not limited to wood, bricks, plaster, asphalt, wire lath, paper, cardboard, pipe, tires, ashes, or parts of any of the foregoing.*
14. **Tracking on the paved road/street shall be avoided. A stone stabilization pad** shall be installed to protect the construction entrance of the site to prevent tracking of sediment onto easement or public right-of-ways. The paved private drive/public street shall be swept as needed for any tracking from the on-site activities. Any evidence of tracking on the road may result in the installation of a construction entrance or the issuance of a stop-work order.
15. The installation of sediment barriers should be done by hand or with equipment designed to minimize the amount of land disturbed.
16. Sediment barriers shall be staked 12-inch diameter straw wattles or FilterMitt, unless an alternative has been approved prior to installation by the Commission, and shall be installed around the perimeter of the proposed work as shown on the plan referenced in this permit. The applicant shall be responsible for documenting that the sediment barriers were installed in the proper location (including photographs).
17. The erosion control barriers shall define the limit of work. No heavy equipment shall work outside the limit of work. Soil stockpiles shall be located within the limit of work or the paved driveway area and surrounded by erosion control if left overnight.
18. A small supply of erosion control shall be stockpiled for emergency use only. The applicant shall immediately control any erosion/sedimentation problems that occur on the site. They shall also immediately notify the Commission if corrective action is necessary. The need for any additional erosion/sedimentation controls found to be necessary by either the applicant or the Commission during construction shall be implemented by the applicant.
19. Thirty trees >6" DBH shall be removed in the area of spillway construction. The applicant plans to replace these trees with 24 native shrubs and 5 red maple trees. The replacement shall be installed in the wetland replication area. This area will be enhanced with a native wetland plant seed mix to remain undisturbed after construction.
20. The installed shrubs shall survive two growing seasons. Shrubs that do not survive two growing seasons shall be replaced.
21. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Permit.
22. No concrete wash-out is permitted on site.
23. No untreated runoff shall be directed to the stream or the wetlands during construction.
24. No permanent drainage structure shall be used as a temporary sedimentation basin or for erosion control during construction.
25. All disturbed or exposed areas shall be brought to final finished grade and stabilized with loam and seed.
26. A copy of this Permit shall be provided to the project supervisor and shall be available on the site at all times during construction.

27. Excess excavated material shall be disposed of legally. Evidence shall be provided when requesting a Certificate of Compliance demonstrating compliance with this condition.
28. Any waste deposited in the 100-foot wetland buffer zone shall be removed and properly disposed of. A Certificate of Compliance will not be issued if construction waste or debris generated from clearing activities is located in the buffer area.
29. Equipment shall not be refueled or serviced within 100 feet of the wetlands, and any other resource area or within the buffer zone except as conditioned herein. **The equipment shall be refueled in the area designated on the site plan.**
30. There shall be no more than a total of 50 gallons of flammable or combustible chemicals relating to this project stored on the site at any one time. No routine servicing of vehicles used for this project shall be permitted on the site. The Commission shall be notified prior to initiating any emergency repair on the site.
31. Any dewatering or draw down activities shall **NOT** be directly discharged into a resource area or catch basin. The Commission's approval does not alter the need for the work to be conducted in compliance with State or Federal regulations and permitting applicable to construction dewatering. See Mass DEP requirements for Permit #BRP WM10 including submission to EPA for coverage under the Federal General Permit for Construction Dewatering. <http://mass.gov/dep/water/approvals/wm10.pdf>. **Any dewatering shall be approved, in advance, by the Conservation Commission or Conservation Administrator. Thereafter,** prior to commencing any dewatering, the contractor shall provide 24 hours written notice (excluding holidays and weekends) to the Conservation Administrator.

CONDITIONS TO CONTINUE IN PERPETUITY – These conditions shall remain in force permanently and shall be recorded on the Certificate of Compliance.

32. No composting and/or dumping of debris are permitted within 100 feet of a wetland resource area. Any existing material within the buffer zone shall be removed.
33. A permanent 15-foot wide native vegetated buffer shall be maintained in perpetuity. All vegetation within the buffer zone shall be a native variety.
34. Conservation Department Staff will be responsible for monitoring the wetland replication area on an annual basis and perform maintenance as needed AFTER the first growing season.
35. The removal of invasive plants by hand or with hand tools does not require additional permitting by the Commission.
36. No pesticides, herbicides, or insecticides shall be used on the grounds located within the 100-foot wetland buffer zone, except with the prior written permission of the Commission.

CONDITIONS ADDRESSING PROJECT COMPLETION:

37. The Commission and/or Conservation Administrator may require the removal and dispersal of the erosion controls after the site has been fully stabilized to their satisfaction. Sediment barriers may also be removed if, upon a required site inspection, the P.E. has certified that the site is permanently stabilized.
38. The applicant shall submit a request for a Certificate of Compliance not less than **60** days before this decision expires. That request shall include the following items:

- a. The request for a Certificate of Compliance shall be submitted with a **detailed narrative** (signed original plus two copies and electronic submittal) prepared by a P.E. registered in the Commonwealth of Massachusetts, which lists conditions that were not complied with, the reasons for non-compliance, and details the manner and extent of any deviations from compliance with any condition, shall be submitted with a request for a Certificate of Compliance. This narrative shall certify compliance with the approved plans referenced above and this Permit and setting forth any deviation/s that exist with a note as to how it/they may be corrected. Work that is not complete shall be detailed in a schedule of planned completion dates prior to expiration of the Permit with a certification to the commitment of resources by an authorized official representative of the applicant to complete the work prior to expiration of the Permit.
- b. Two sets of 11 x 17 inch as-built site plans and one full size plan plans shall be prepared and stamped by a registered land surveyor, P.E. showing the resource areas, grades, all improvements installed, and landscaping. These plans shall include the date/s of fieldwork. **The plan shall be based upon the NGVD datum and indicated on plan.**
- c. A filled-out Chapter 194 Form for a Certificate of Compliance and the required fee.
- d. A final Operation and Maintenance Plan complete with technical specifications, inspection requirements, and inspection templates.
- e. A copy of the as built and the request for a Certificate of Compliance including the narrative shall be submitted electronically (in .pdf format) to the Conservation Administrator at conservation@wayland.ma.us.

This decision is not valid without a signature sheet.

The page numbering does not include the signature sheet.

This Permit expires on October 2, 2026

If necessary, an extension must be filed by September 2, 2026.

Findings:

- a. Chapter 194 requires filing an application for any work within a resource area – work is proposed within 100 feet to bordering vegetated wetlands and directly within Land Under Water, BVW, and Inland Bank.
- b. The resource areas that have been identified in the application are: Land Under Water, Bank, Riverfront Area, bordering vegetated wetlands and the 100-foot Buffer Zone. The wetland delineation was not formally approved by the Commission as part of this permit.
- c. Impacts to resource areas listed herein are deemed necessary in order to comply with the Certificate of Non-Compliance and Dam Safety Order issued by the Department of Conservation and Recreation (DCR) on September 1, 2022. The dam poses a safety concern and may cause loss of life and/or destruction of property if no action is taken.
- d. These resource areas identified have values relating to: prevention of pollution, wildlife habitat, prevention of flooding, prevention of storm damage, and protection of ground water.
- e. A public hearing was opened and closed on August 30, 2023.
- f. The minutes of the hearings are incorporated as part of the record for this decision.
- g. Inspections by a P.E. will be required given the direct impacts to resource areas and to ensure compliance with dam safety regulations.
- h. Sediment barriers will be required until disturbed areas are permanently stabilized.
- i. This decision is intended to run concurrently with the Order of Conditions issued pursuant to the Wetlands Protection Act for DEP File 322-1017.
- j. The requirements and findings of this permit are consistent with the provisions of Chapter 194 and are intended to be more stringent than the Order of Conditions. As noted above, the buffer zone is a resource area as defined by Chapter 194.

- k. The Commission will accept an alternative sediment barrier providing the specifications for these have been submitted for formal approval by the Commission.
- l. To protect wetland areas from disturbance by invasive plants, the Commission requires that landscaping be achieved with native noninvasive plants according to *The Vascular Plants of Massachusetts: A County Checklist* (First Revision 2011) by Melissa Dow Cullina, Bryan Connolly, Bruce A. Sorrie and Paul Somers, for work in a resource area or buffer zone. A cultivar may be accepted as a substitute plant on a case-by-case basis.
- m. All excess excavated and construction material shall be removed from the site. The Commission will require documentation of compliance with this requirement.
- n. Discharges to protected resources or the drainage system, if not properly permitted by DEP or EPA, are prohibited.
- o. During construction, precautions must be taken to avoid accidental spills of concrete wash-out, oils, or hazardous materials in or near the wetland resources or other resource areas. Precautions include limiting where equipment is serviced and refueled, having spill containment kits at the site, and taking steps to avoid spills and accidents.
- p. Any deviation from the approved, detailed plan will require a formal determination by the Commission as to whether this decision may be modified or a new filing will be required.
- q. Failure to comply with the conditions of this permit is a violation of the Wetlands Bylaw. Violations of Chapter 194 may result in the imposition of non-criminal penalties in the amount of \$300 in addition to other remedies available. Each day the violation exists may be considered a separate violation of the Bylaw.
- r. Site plans are required to be based upon the National Geodetic Vertical Datum (NGVD) and indicated on plan.
- s. Submission of an as-built plan showing significant deviations from the approved plan may result in a requirement to file a new application, enforcement action, or other actions as deemed appropriate by the Commission.



TOWN OF WAYLAND
MASSACHUSETTS
01778
CONSERVATION COMMISSION

TOWN BUILDING
41 COCHITUATE ROAD
TELEPHONE: (508) 358-3669
FAX: (508) 358-3606

CHAPTER 194 PERMIT
WETLANDS AND WATER RESOURCES PROTECTION BYLAW

Signature Sheet

DEP File Number 322-1017
80 Rice Road

Wayland Conservation Commission:

Linda Hansen, Conservation Administrator

Duly authorized to sign by a vote recorded with the
Middlesex South Registry of Deeds in Book 78298, Page 320

Date issued: October 2, 2023

This Permit is issued to the applicant as follows: by hand delivery on October 2, 2023
by certified mail on



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:322-1017
eDEP Transaction
#:1614280
City/Town:WAYLAND

A. General Information

1. Conservation Commission WAYLAND
2. Issuance a. ☒ OOC b. ☐ Amended OOC
3. Applicant Details
- a. First Name LINDA b. Last Name HANSEN
- c. Organization TOWN OF WAYLAND CONSERVATION COMMISSION
- d. Mailing Address 41 COCHITUATE ROAD
- e. City/Town WAYLAND f. State MA g. Zip Code 01778
4. Property Owner
- a. First Name CONSERVATION COMMISSION b. Last Name
- c. Organization TOWN OF WAYLAND CONSERVATION COMMISSION
- d. Mailing Address 41 COCHITUATE ROAD
- e. City/Town WAYLAND f. State MA g. Zip Code
5. Project Location
- a. Street Address 80 RICE ROAD
- b. City/Town WAYLAND c. Zip Code 01778
- d. Assessors 45 e. Parcel/Lot# 004A
- f. Latitude 42.33758N g. Longitude 71.34100W
6. Property recorded at the Registry of Deed for:
- a. County SOUTHERN MIDDLESEX b. Certificate 1493 c. Book 134 d. Page 134
7. Dates
- a. Date NOI Filed : 8/17/2023 b. Date Public Hearing Closed: 8/30/2023 c. Date Of Issuance: 10/2/2023
8. Final Approved Plans and Other Documents

a. Plan Title: SNAKE BROOK
DAM
REHABILITATION
(11 SHEETS)

b. Plan Prepared by: PARE CORP.

c. Plan Signed/Stamped by: MATHEW E. DUNN, P.E.
53359

d. Revised Final Date: November 2022

e. Scale: VARIOUS

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. ☒ Public Water Supply	b. ☒ Land Containing Shellfish	c. ☒ Prevention of Pollution
d. ☒ Private Water Supply	e. ☒ Fisheries	f. ☒ Protection of Wildlife Habitat
g. ☒ Ground Water Supply	h. ☒ Storm Damage Prevention	i. ☒ Flood Control



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2. Commission hereby finds the project, as proposed, is:

Approved subject to:

- a. ☒ The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

- b. ☐ The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. ☐ The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☒ Bank	455 a. linear feet	455 b. linear feet	0 c. linear feet	 d. linear feet
5. ☒ Bordering Vegetated Wetland	150 a. square feet	150 b. square feet	465 c. square feet	465 d. square feet
6. ☒ Land under Waterbodies and Waterways	2901 a. square feet 0 e. c/y dredged	2901 b. square feet f. c/y dredged	0 c. square feet	 d. square feet
7. ☐ Bordering Land Subject to Flooding	 a. square feet	 b. square feet	 c. square feet	 d. square feet
Cubic Feet Flood Storage	 e. cubic feet	 f. cubic feet	 g. cubic feet	 h. cubic feet
8. ☐ Isolated Land Subject to Flooding	 a. square feet	 b. square feet		
Cubic Feet Flood Storage				



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9. ☒ Riverfront Area	c. cubic feet 26725	d. cubic feet 26725	e. cubic feet	f. cubic feet
Sq ft within 100 ft	a. total sq. feet 22030	b. total sq. feet 22030		
Sq ft between 100-200 ft	c. square feet 4695	d. square feet 4695	e. square feet	f. square feet
	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	c. c/y dredged	d. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		



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22.

☐ Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

23.

☐ Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing



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the words,

" Massachusetts Department of Environmental Protection"
[or 'MassDEP']
File Number : "322-1017"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order(the "Project") is (1) ☐ is not (2) ☒ subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
 - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
 - b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction



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BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
 - 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 - 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 - 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.



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- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:

SEE ATTACHMENT FOR SPECIAL CONDITIONS ISSUED BY THE WAYLAND CONSERVATION COMMISSION PURSUANT TO THE WETLANDS PROTECTION ACT (310 CMR 10.0).



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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Conservation Commission hereby (check one that applies):

a. ☐ DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____

2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. ☒ APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw _____
WETLANDS AND
WATER RESOURCES
PROTECTION
BYLAW

2. Citation CHAPTER 194

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:

SEE CHAPTER 194 PERMIT FOR SPECIAL CONDITIONS ISSUED BY THE WAYLAND CONSERVATION COMMISSION PURSUANT TO THE WETLANDS AND WATER RESOURCES PROTECTION BYLAW.



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E. Signatures

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

10/2/2023

1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

5

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Tom Davidson

Sean Fair

Jennifer Pearlman

Barbara Howell

Luke Legere

☒ by hand delivery on

10/2/2023

Date


LINDA HANSEN

☐ by certified mail, return receipt requested, on

Date

Duly Authorized to sign by a vote recorded with the Middlesex Registry of deeds in Book 78298, Page 320

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:322-1017
eDEP Transaction #:1614280
City/Town:WAYLAND

subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

WAYLAND

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

WAYLAND

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

80 RICE ROAD

Project Location

322-1017

MassDEP File Number

Has been recorded at the Registry of Deeds of:

County

Book

Page

for:

Property Owner CONSERVATION COMMISSION

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Rev. 4/1/2010



Wayland Conservation Commission Attachment to Order of Conditions

to accompany Mass. Wetlands Prot. Act M.G.L. c. 131, §40 Order of Conditions

Date of Issue: October 2, 2023

Applicant: Linda Hansen

Owner: Linda Hansen

Project Location: 80 Rice Rd

Map and Lot Number(s): Map 45, Parcel 004A

Project Description:

The parcel of land subject to this Order of Conditions (OOC) is located at 80 Rice Road in Wayland, Massachusetts, further identified as Wayland Assessors Map 45, Parcel 004A. This parcel is bounded to the east by residential properties and Rice Road, to the west and south by residential properties, and to the north by Town of Wayland Conservation Land. Existing improvements at the Site consist of the Snake Brook Dam, spillway channel, stone culvert, several water supply intake lines, an iron conduit, and a stone masonry gatehouse. On-site Areas Subject to Protection and/or Jurisdiction under the Wetlands Protection Act (M.G.L. ch. 131 §40) (the Act) and the Wayland Wetlands and Water Resources Bylaw (Chapter 194) (the Bylaw) consist of Bank, Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), Riverfront Area, and associated Buffer Zones.

Proposed work will consist of the rehabilitation of the dam and appurtenances. A water diversion system will be installed to implement and maintain a construction drawdown; vegetation and debris will be cleared in the area of proposed work and then reseeded with grass; the embankment will undergo several improvements: the wall will be raised to elevation 227.5, the crest will be raised to el. 228, the downstream slope will be regraded; the low-level outlet will undergo several improvements; the interior of the gatehouse will be renovated; the spillway will be cleared of debris, a beaver deceiver will be installed, and a wetland replication area will be established.

Plans and Documents:

The Wayland Conservation Commission (Commission) voted to approve the following site plans and documents subject to the pre-construction conditions required in Condition 20 below:

1. *Project Summary to Accompany Notice of Intent, Snake Brook Dam Rehabilitation*; project no. 19167.02; dated August 11, 2023.
2. WPA Form 3- Notice of Intent and Wetland Fee Transmittal form; dated August 10, 2023.
 - a. Certified abutters list included.
3. Chapter 194 Application and Submittal Requirements; dated August 10, 2023.
4. *Snake Brook Dam Rehabilitation Prepared for the Town of Wayland Conservation Commission, Wayland, MA (Sheets 1.0, 2.0, 2.1, 2.2, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 4.0)*; dated November 2022; stamped and signed by Matthew E. Dunn MA P.E. No. 53359; scale: 1" = 20'.
5. *Site Location Map and Annotated Aerial Photograph (MassGIS)*; dated June 2023
6. FEMA Flood Insurance Rate Maps; dated June 20, 2023.
7. *Design Basis Report: Snake Brook Dam, Wayland, MA*; dated April 2020; signed by Allen R. Orsi, MA P.E. no. 46904.
8. *Wetland Field Report: Snake Pond Dam*; dated November 6, 2019

All documents prepared by PARE Corporation.



Wayland Conservation Commission Attachment to Order of Conditions

to accompany Mass. Wetlands Prot. Act M.G.L. c. 131, §40 Order of Conditions

Critical Dates:

1. This Order of Conditions is valid for three (3) years. Expiration date October 2, 2026

Findings:

1. Linda Hansen (Conservation Administrator) filed a Notice of Intent (NOI) application as a limited project under the provision of 310 CMR 10 53(3)(i) with the Commission on August 7, 2023 for the rehabilitation of the Snake Brook Dam and its appurtenances. The hearing was opened on August 30, 2023. The Commission voted to close the hearing and issue an OOC approving the project at the August 30, 2023 meeting.
2. The Commission finds that the resource areas within and adjacent to the Site are significant to the interests identified on Page 2 of the WPA Form 5 associated with this OOC, with no evidence presented by the Applicant to rebut any of these presumptions.
3. The Commission finds that Bordering Vegetated Wetlands, Bank, LUW, and riverfront area are present at the Site. The buffer zone associated with the wetlands constrain the work proposed under this NOI.
4. The Commission finds that the Project will result in direct impacts to the resources areas identified, including: 150 sf of permanent impacts to BVW; 2,901 sf of permanent impacts to LUW; 455 linear ft of permanent impact to Bank.
5. The Commission finds that the proposed wetland replication area is sufficient to mitigate the permanent impacts to BVW. All proposed plantings should be obligate or facultative wetland species native to New England in accordance with the proposed Wetland Impact Plan.
6. The dam as it stands is classified as an Intermediate sized, Significant hazard under the Commonwealth of Massachusetts dam safety rules and regulations. Impacts to resource areas listed herein are deemed necessary in order to comply with the Certificate of Non-Compliance and Dam Safety Order issued by the Department of Conservation and Recreation (DCR) on September 1, 2022. The project described in the Notice of Intent meets the performance standards of the state Wetlands Protection Act to the extent practicable, provided that all Conditions of the state Order and all conditions listed below are met.
7. The Commission finds that the project consists of maintenance of structures in existence prior to August 7, 1996, which exempts the project from requirements for Riverfront Area.
8. The Commission finds that erosion controls and staged turbidity barriers, as specified on the plans-of-record, shall be sufficient in protecting resource areas as the Project is currently proposed. The Conservation Administrator reserves the right to require additional erosion controls at their discretion.
9. A separate Chapter 194 Bylaw permit for the work permitted by this Order of Conditions is issued pursuant to Wayland's Wetlands and Water Resources Bylaw. This permit includes additional conditions not listed in this Order that require compliance.

Conditions:

Note: These conditions are issued under the Massachusetts Wetlands Protection Act. Numbering begins with #20, to be consecutive and integrated with and the conditions issued under the state Wetlands Protection Act. Conditions #1-19 are pertinent and are considered a part of this order of conditions.

Before Project Begins (Prior to any Alteration):

20. A site meeting with an Agent of the Commission and agreement upon/proof of the following must occur before any work may commence on the site.
 - A. Final Site Plans/documentation:



Wayland Conservation Commission Attachment to Order of Conditions

to accompany Mass. Wetlands Prot. Act M.G.L. c. 131, §40 Order of Conditions

- 1) The Applicant shall provide revised engineered site plans to the Commission if the scope of the project changes after the issue date of this permit.
 - 2) A sign at least 2 x 2 feet in size with the DEP file number shall be prominently displayed at the entrance to the site at Rice Rd.
- B. Erosion controls** shall be installed at the limit of work, as identified on the referenced site plan and will include staked 12-inch diameter straw wattles or FilterMitt. Erosion controls must be **inspected and approved** by the Agent prior to commencing work.
- C. Contact information** shall be provided to the Administrator including a written list of names, addresses, business phone numbers, and mobile phone numbers of the project supervisor and the overall project manager who will be responsible for ensuring on-site compliance with this Order and his/her alternate, including 24-hour contact information of the person responsible for the site.
- D.** Proof that a **copy of the specific project plans, specifications, and this Order of Conditions has been provided to the Contractor**. The plans and the Order must be available at all times at the work site for reference. This Order shall be included in all contracts and subcontracts dealing with the work proposed, and shall supersede any conflicting contract requirements.
- E. Limit of work line** for this project is considered the location of the erosion control barrier. No work may be performed beyond the limit of work line.
- F. Additional approvals:** No work beyond what is shown on the most recently revised plans-of-record is permitted without prior Commission approval.
- G. Emergency supplies:** The Applicant must keep a stockpile of the approved erosion control materials on-site in the event of erosion control failure or the requirement for additional erosion controls as directed by the Agent.
- H. Start of Work Notification:** The applicant or contractor shall submit notification to the Commission not less than two (2), or more than five (5) business days before construction commences.
- I. A separate Bylaw decision for the work permitted by this Order of Conditions was issued pursuant to Wayland's Wetlands and Water Resources Bylaw Chapter 194. That decision contains conditions not listed in this decision that the Applicant must follow per requirements of the Bylaw.**
- J. Appeal Period:** No work shall begin until the ten-day appeal period has expired for this OOC.

During Construction

21. **Order of Conditions prevails:** Except where modified by these Conditions, all work must be performed in accordance with the plans outlined by the applicant and referenced on Page 1 of this OOC. Where a conflict exists between the referenced plans and these Conditions, the Conditions will govern.
22. **Thirty** trees are proposed for removal in the area of the spillway construction. Compensation for the tree shall follow the Wetland Impact Plan (dated November 2022) in accordance with Standard Replacement Tree and Shrub Requirements.
23. **The replacement shrubs** proposed, shall be installed within the 465 sf wetland replication area, and a wetland seed mix will be planted in this area. The wetland replication area shall be created according to the Massachusetts Inland Wetland Replication Guide.
24. **Stop Work Orders:** An Agent of the Commission shall have the right to halt all or a portion of the work on the site if the Agent determines that any of the work is not in compliance with the OOC. Work shall not resume until the Commission is satisfied that the work will comply with the OOC and has so notified the Applicant in writing.



Wayland Conservation Commission Attachment to Order of Conditions

to accompany Mass. Wetlands Prot. Act M.G.L. c. 131, §40 Order of Conditions

25. **Maintain Erosion Controls:** Erosion controls shall be properly maintained throughout construction until the Site is in a final stabilized condition. The Site shall be managed such that no sediment leaves the proposed limit of disturbance to protect adjacent resource areas.
26. A **stone stabilization pad** shall be installed to protect the construction entrance of the site to prevent tracking of sediment onto the easement or public right-of-ways.
27. **Dewatering:** The proposed Project will require dewatering, temporarily exposing about 3 acres of pond bottom. The proposed water diversion system should follow the design shown on the referenced plans. Applicant shall submit a final detailed plan designed by the Contractor to the Commission/Agent for review no less than two (2) business days in advance of its proposed implementation. Approval of this plan must be granted by the Agent prior to commencing dewatering operations.
28. **Construction Schedule:** The Agent of the Commission shall be kept apprised of the construction schedule and any potential delays or modifications.
29. **Work must conform to the limit of work:** At no time shall work, disturbance, alteration, or heavy equipment operation occur beyond the erosion control barrier. The erosion control barrier shall serve as the limit of work. No construction materials, stockpiled soil or fill, debris, brush, leaves, or other materials may be placed beyond the limit of work.
30. **Material stockpiling:** Any stockpiled soil, sand, or similar unconsolidated material must be stored within the limits of work unless otherwise authorized by the Commission or Agent thereof. Any stockpile of soil, sand, or similar materials that is stored within Buffer Zone must be surrounded within a line of staked straw bales or straw wattles. In the event that all earthwork ceases for more than 30 days, all exposed soils must be stabilized with a temporary vegetative cover, straw mulch, or other method of erosion control accepted by the Commission.
31. **Any debris** which is deposited into an Area Subject to Protection under the Act or Bylaw shall be removed immediately by hand, and the Agent shall be notified. All construction debris and trash shall be properly disposed of off-site, with the exception of some logs to be used in the wetland replication area referenced above. No yard waste shall be deposited in the wetlands or the 15-ft wetland buffer zone. Documentation that this condition has been met shall be submitted with, or before, seeking a Certificate of Compliance.
32. **Equipment** shall not be refueled or serviced within 100 feet of Bank or LUW. A spill containment kit shall be maintained on-site at all times.
33. **Fuel storage:** No more than a total of 50 gallons of flammable or combustible chemicals relating to this Project shall be stored on the site at any one time. No routine servicing of vehicles used for this Project shall be permitted on the site. The Commission shall be notified prior to initiating any emergency repair on the site.
34. **Site stabilization during construction:** During construction, bare ground that cannot be permanently stabilized shall be temporarily stabilized by a method approved by the Commission, such as jute netting or hydroseeding (not mulch).

Upon Completion of Project

35. **Site stabilization:** Following the completion of the Project, all exposed soils must be stabilized, and any remaining stockpiles must be removed from the Site. The seed mix proposed for stabilization must be approved by the Administrator prior to application.
36. **Wetland Replication:** A wetland scientist shall be responsible for establishing the wetland replication area, confirming the number and variety of plants are sufficient, and monitoring the success for the wetland replication area during the first growing season after construction is complete.



Wayland Conservation Commission Attachment to Order of Conditions

to accompany Mass. Wetlands Prot. Act M.G.L. c. 131, §40 Order of Conditions

37. **Removal of erosion controls:** With the approval of the Commission or its Administrator, erosion control devices may be removed from the Site when the surface is permanently stabilized and seed has germinated.
38. **Ongoing Conditions:** Ongoing conditions shall be referenced in the Certificate of Compliance stating the requirement for future grantees of the Site to be provided with this OOC and the as-built plan to apprise grantees of regulatory permitting requirements.
39. **Notification of completion of the Project/Request for Certificate of Compliance:** Within thirty (30) calendar days of completion of the Project, the Applicant shall make a written request to the Commission for a Certificate of Compliance (Form WPA 8A) and shall submit the following items with the request:
 - A. **Two sets of As-Built Plans** (in 11 x 17" format) and one large scale plan showing the locations of completed work.
 - B. **Photographs:** Post-construction photographs shall be submitted with the COC request.
 - C. **Compliance report** and detailed narrative prepared by a Professional Engineer registered in Massachusetts certifying compliance with this OOC. Any conditions not in compliance shall be addressed. Any deviations or changes to the approved plans shall be described for review by the Commission.
 - D. **An electronic copy** of the compliance report and any plans shall be submitted electronically to the Conservation@wayland.ma.us (if this is not possible please contact the Commission).

Conditions In Perpetuity

The following conditions must be included on the Certificate of Compliance, and must continue in perpetuity. The property owner will have the right to request from the Conservation Commission an amendment to the conditions in perpetuity. If, in the judgment of the Commission, the proposed amendment will not detrimentally affect the values of the wetland resource areas, the Commission will amend this Order or the Certificate of Compliance.

20. The wetland replication area will remain undisturbed and unmowed in perpetuity. Conservation Department Staff will monitor the wetland replication area on an annual basis and perform maintenance as needed. Removal of invasive plants by hand or with hand tools and establishment of native plants are allowed as part of the Order of Conditions.
21. **15-foot vegetated buffer:** A 15-foot wide native vegetated buffer along the bordering vegetated wetlands shall be maintained in perpetuity. All vegetation proposed within the buffer zone must be native.
22. **Disposal of debris:** Yard waste or other debris cannot be disposed in the 100-foot wetland area. The applicant shall remove any disposed yard waste within the resource area.
23. **Prohibition of Chemical Applications**
 - A. **Deicing salts:** Only calcium-based deicing chemicals may be used on surfaces where runoff or drainage will discharge into wetland resource areas. This condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.
 - B. **Lawn fertilizer:** No fertilizer may be applied within the resource areas (within the 100-foot buffer zone). This condition is ongoing and does not expire with the expiration of the Order of Conditions or the issuance of a Certificate of Compliance.
 - C. **Herbicide or Insecticides:** No herbicides or insecticides shall be used on the lawns or grounds located within the 100-foot buffer zone except with the prior written permission of the Commission.
 - D. **Sprinkler systems:** No underground sprinkler systems shall be installed or reconnected within the 100-foot buffer zone.

End of Attachment to Order of Conditions

MASSACHUSETTS HISTORICAL COMMISSION

MHC PNF



The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth

March 8, 2023

Massachusetts Historical Commission

Secretary Rebecca Tepper
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

ATTN: Nicholas Perry, MEPA Office

RE: Snake Brook Dam Rehabilitation, West of 68 Rice Road, Wayland, MA. MHC# RC.72790. LEA #16671.

Dear Secretary Tepper:

Staff of the Massachusetts Historical Commission (MHC) has reviewed the Environmental Notification Form (ENF) that was submitted for the project referenced above and has the following comments.

The ENF indicates that the proposed project consists of the rehabilitation of the Snake Brook Dam located west of 68 Rice Road. This work includes the demolition and reconstruction of the spillway channel and stone culvert, improvements to the interior of the adjacent pumphouse, and various site modifications. The information provided indicates that the project requires permits from the U.S. Army Corps of Engineers, Massachusetts Department of Environmental Protection, and Department of Conservation and Recreation.

The project site includes the Wayland Water Works Pumphouse (WAY.929), which is included within MHC's Inventory of Historic and Archaeological Assets of the Commonwealth.

It is the opinion of MHC staff that the Wayland Water Works Pumphouse may meet the criteria of eligibility for listing in the National Register of Historic Places.

After review of the MHC's files and the information submitted, the MHC believes that the proposed project will have "no adverse effect" (36 CFR 800.5(b), 950 CMR 71.07(20(b)(2))) on the Wayland Water Works Pumphouse.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800), M.G.L Chapter 9, Sections 26-27C (950 CMR 71.00), and MEPA (301 CMR 11). If you have questions, please do not hesitate to contact Edward L. Bell, Deputy State Historic Preservation Officer and Senior Archaeologist, or Joshua Dorin, Preservation Planner, at the MHC.

Sincerely,

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

cc: Tammy R. Turley, US Army Corps of Engineers, NED-Regulatory
DCR Office of Dam Safety

Linda Hansen, Wayland Conservation Department
Katherine Gardner-Westcott, Wayland Historical Commission

• Tonya Largy, Wayland Archaeology Group
• Lauren Gluck; PARE Corporation

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617)327-8470 Fax: (617) 727-5128 [www.state.
ma. us/sec/mhc](http://www.state.ma.us/sec/mhc)

MEPA CERTIFICATE



*The Commonwealth of
Massachusetts
Executive Office of Energy and Environmental
Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114*

Maura T. Healey
GOVERNOR

Kimberley Driscoll
LIEUTENANT
GOVERNOR

Rebecca L. Tepper
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
<http://www.mass.gov/eea>

March 27, 2023

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Snake Brook Dam Rehabilitation
PROJECT MUNICIPALITY : Wayland
PROJECT WATERSHED : SuAsCo
EEA NUMBER : 16671
PROJECT PROPONENT : Town of Wayland
DATE NOTICED IN MONITOR : February 24, 2023

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF), the Town of Wayland proposes to rehabilitate the Snake Brook Dam to address structural deficiencies and to bring the dam into compliance with the Department of Conservation and Recreation (DCR)'s Office of Dam Safety regulations (302 CMR 10.00). According to the ENF, the dam is considered a Significant Hazard Potential dam because failure of the dam may cause loss of life and serious damage to property. The proposed project includes the following components:

- Impoundment drawdown (temporary), installation of turbidity barriers, silt fences, temporary cofferdams, and diversion systems;

- Removal of trees and woody vegetation from within 20 ft. of the dam embankment;
- Cleanup of impoundment bottom;
- Dredging of an estimated 74 cubic yards of aquatic sediments over an approximate area of 2,262 square feet;
- Sliplining and fitting an existing 18" water supply line with gate valves to allow it to function as a low level outlet (LLO);
- Primary spillway maintenance and improvements consisting of removal of debris and grading, replacement of a stone culvert with a 10 foot by 4 foot culvert, installation of bubbler pipe, training walls, culvert and railings, and backfilling;
- Embankment upgrades including raising the top of the existing core wall from elevation 225.0' to 226.75', installation of supplemental riprap on the upstream slope, regrading the downstream slope, and raising the existing dam crest from elevation 226.5' to elevation 227' to accommodate inflows from the Spillway Design Flood (the 100-year storm event) and;
- Wetland replication.

The project also includes interior improvements to the Wayland Water Works Pump house that are needed to address dam safety concerns and deficiencies including: removing existing piping, filling in the bottom of the structure to within a foot of the 14" water line invert and installing ladder rungs and installing an operator floor.

Project Site

The 18.7-acre project site contains the Snake Brook Dam, which impounds the Old Wayland Reservoir, located west of Rice Road within the Town of Wayland, Massachusetts. The dam discharges into Snake Brook, which eventually flows into Lake Cochituate approximately 2.5 miles southwest of the dam. The Town of Wayland owns the dam and is primarily responsible for its maintenance and operations. According to historical records, the dam was originally constructed with the intended use as a water supply structure for the Town. However, it has since been used to impound water for recreational uses.

Snake Brook Dam consists of an approximately 130-foot-long earthen embankment with a maximum structural height of approximately 25 feet. The dam is currently classified as an Intermediate sized, Significant (Class II) hazard potential dam under Commonwealth of Massachusetts dam safety regulations in 302 CMR 10.00. The appurtenant structures include a spillway located northwest to the left abutment, a water supply system and a waste pipe system.

The primary spillway channel extends southwest approximately 50 feet north of the dam structure. The spillway consists of a 10-foot-wide open channel with a stone masonry "waste" weir located at the upstream end. A timber sluiceway and siphon pipe were installed within the spillway to combat buildup of beaver debris and currently act as regulating structures for the reservoir elevation. The upstream portion of the spillway near its entrance extends through an area of bedrock. As the channel continues downstream, it consists of dry-laid stone masonry walls before passing through a 6' stone culvert near the right end of the dam. After passing through the culvert, the channel converts to a steep bedrock and boulder lined trapezoidal channel that extends along the right downstream groin of the dam.

According to the ENF, the Massachusetts Historical Commission (MHC) Massachusetts Cultural Resource Information System (MACRIS) interactive map shows the Pumphouse on the downstream side of the dam as a structure on the Inventory of Historic and Archaeological Assets of the Commonwealth. The project includes interior improvements to the Pumphouse that are needed to address dam safety concerns. Exterior alterations to the structure are not anticipated, aside from the necessary regrading of the downstream slope of the dam that will result in the earthen slope extending to the structure. As such, the project will not impact the historic character of the existing structure.

Environmental Impacts and Mitigation

Potential environmental impacts associated with the project include the alteration of 155 square feet (sf) of Bordering Vegetated Wetlands (BVW) (5 sf temporary and 150 sf permanent), 6,445 sf of Land Under Water (LUW) (3,544 sf temporary and 2,901 sf permanent), and 531 linear feet (lf) of Bank (76 lf temporary and 455 lf permanent). The project will clear, grub, and strip all trees, stumps, shrubs, brush, woody vegetation, and loam within the limits of work and dredge 74 cubic yards of material.

Measures to avoid, minimize, and mitigate environmental impacts include converting 465 sf of onsite upland area bordering the dam to BVW to provide greater than 3:1 replication for the approximately 150 sf proposed to be permanently altered. This area is located within the impact area of the proposed dam rehabilitation work and therefore would not result in unwarranted disturbance to surrounding open space. The project also calls for the placement of loam and seed on the downstream slope, crest and all areas disturbed by construction activity.

Jurisdiction and Permitting

This project is subject to MEPA review and preparation of an ENF pursuant to 301 CMR 11.03(3)(b)(1)(b) and to 301 CMR 11.03(3)(b)(1)(f) of the MEPA regulations because it requires an Agency Action and will result in the alteration of 500 or more lf of bank along a fish run or inland bank and the alteration of one-half or more acres of wetlands. The project will require a 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection and a Chapter 253 Dam Safety Permit from the DCR Office of Dam Safety (ODS). The project may require a Chapter 91 Dredge Permit from MassDEP under M.G.L. c. 91.

The project requires an Order of Conditions (OOC) from the Wayland Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). The project also requires authorization from the U.S. Army Corps of Engineers under the General Permits for Massachusetts in accordance with Section 404 of the Federal Clean Water Act.

The Town has applied for an Executive Office of Energy and Environmental Affairs (EEA) FY2024 Dam and Seawall Grant for construction of the project. Because the Town is seeking Financial Assistance from the Commonwealth for the project, MEPA jurisdiction is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

Review of the ENF

The ENF provides a description of existing and proposed conditions and preliminary project plans. It identifies project elements and describes alternatives that were considered by the Proponent. It identifies existing environmental conditions, assesses potential environmental impacts, and identifies measures to avoid, minimize and mitigate impacts. Comments from MassDEP do not request additional analysis in the form of an EIR but identify additional information that should be provided during the permitting process.

Alternatives Analysis

As described in the ENF, alternatives were evaluated based on their ability to meet the project purpose while minimizing environmental impacts. The ENF evaluated the following alternatives: the No-Build Alternative, the Dam Removal Alternative and the Dam Repair and Rehabilitation Alternative (the Preferred Alternative). The No-Build Alternative would not result in any environmental impacts, nor would it include any repairs or modifications. This alternative was rejected because it would not address the structural and safety deficiencies of the existing dam. In addition, the dam would continue to present a hazard to the public from its potential for overtopping and failure. The risk of failure would likely increase over time as the dam became subject to continued structural deterioration. The Removal of the Dam Alternative would include removal of the existing dam structure in order to permanently address the safety concerns, restore the natural stream processes and eliminate future costs associated with dam inspection and maintenance. Removal of the dam would render it incapable of impounding water permanently lowering 6.6 acres of impoundment. According to the ENF, this Alternative was dismissed as it would lead to scouring and increased hydraulic changes to the downstream infrastructure along the river channel including increases in flow rate, flow velocity, and flow depths which in turn could result in a greater lateral extent of inundation. As the dam currently does serve to attenuate a portion of the storm events, there are likely some improvements needed to the downstream area to limit the impact to the downstream infrastructure. This Alternative could also release sediment downstream and would require sediment removal within the impoundment prior to dam removal. This alternative was dismissed based on the potential impacts to downstream infrastructure, the loss of the dam as a recreational resource, potential sediment contamination downstream and high range of estimated costs.

The Preferred Alternative will address safety concerns posed by structural deficiencies observed in the dam, which will help maintain the recreational and ecological functions of Old Wayland Reservoir. It will also provide increased flood attenuation and help manage beaver activity through an improved spillway with beaver exclusion devices. For these reasons, the Dam Repair and Rehabilitation Alternative was chosen as the Preferred Alternative.

Wetlands, Water Quality and Waterways

The Wayland Conservation Commission will review the project to determine its consistency with the Wetlands Protections Act (WPA), the Wetland Regulations (310 CMR 10.00), and associated performance standards. MassDEP will review the project for its consistency with the 401 WQC Regulations (314 CMR 9.00).

The project will require a 401 WQC because it will result in more than 5,000 square feet of cumulative impacts (temporary and permanent) to LUW and BVW. Permanent LUW impacts (2,901 sf permanent) include improvements to the primary spillway and downstream channel and replacing the existing stone culvert with a 10-foot-wide by 4-foot-high culvert, top dressing the existing riprap, installing a 14" HDPE Pipe with an operator extension that extends along the slope to the operator box, and installing riprap in an isolated section of missing riprap. Temporary impacts (3,544 sf temporary) include control of water and the installation of a temporary drawdown/ diversion system and sediment controls located at the upstream and downstream ends of the spillway.

Permanent and Temporary BVW impacts (5 sf temporary and 150 sf permanent) will result from the embankment grading located west of the spillway channel. A wetland replication area will provide greater than 3:1 replication for the lost wetland within the project limits of work, just north of the impact area.

I refer the Proponent to comments from MassDEP Northeast Regional Office, which note that the ENF only delineated a limited portion of existing BVW within the proximity of the dam. All temporary and permanent impacts to BVW need to be quantified. Comments from MassDEP also state that additional information should be provided demonstrating that the new culvert will not create a bottleneck. The proponent should describe how the proposed culvert crossing meets the Massachusetts Stream Crossing Standards. The Proponent should consult with MassDEP regarding these comments.

The ENF does not include an evaluation of the project site relative to Chapter 91 jurisdiction pursuant to the regulatory standards at 310 CMR 9.04(1)(e). I refer the Proponent to comments made by MassDEP's concerning Chapter 91 Waterways Regulation Program and recommend that the Proponent consult with Chapter 91 staff to address any regulatory requirements.

Dam Safety

The ENF states that Snake Brook Dam, which is subject to Department of Conservation and Recreation Office of Dam Safety (ODS) jurisdiction and requires a Chapter 253 Dam Safety Permit, is classified as a Significant Hazard Potential Dam in Poor condition. A dam is deemed to be of Significant Hazard Potential where dam failure may cause loss of life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities. A Poor condition rating is assigned when structural deficiencies are identified and the dam condition presents a significant risk to the public located downstream from the dam. The ENF states that completion of the project will result in significant improvement to overall dam condition, operability and public safety. The following provides the storm events that the dam will be able to accommodate once the project is complete, both with no operations of the Low Level Outlet (LLO) and with operations of the LLO to bring it into compliance with ODS regulations.

No Operations of the LLO: Dam can accommodate the 200-year storm event without overtopping; erosive overtopping not expected to occur until storm events in excess of the 1,000-year storm event.

Storm Event	Proposed Top of Dam Elevation (ft)	Peak Water Surface Elevation (ft)	Freeboard (ft)
100-year	227.0	226.0	0.7
200-year		226.6	0.2
500-year		227.1	-0.1
1000-year		227.3	-0.3

With Operations of the LLO, the Dam can accommodate the 500-year storm event without overtopping; erosive overtopping not expected to occur until storm events well in excess of the 1,000-year storm event.

Storm Event	Proposed Top of Dam Elevation (ft)	Peak Water Surface Elevation (ft)	Freeboard (ft)
100-year	227.0	225.6	1.4
200-year		226.1	0.9
500-year		226.9	0.1
1000-year		227.3	-0.3

Additionally, with proactive operations of the LLO in advance of forecast storms (which the Town intends to do with the new low level outlet system), peak outflows from the dam can be significantly reduced during lower storm events that in turn will reduce flood related impacts downstream of the dam.

Cultural Resources

According to the ENF, the Massachusetts Historical Commission (MHC) Massachusetts Cultural Resource Information System (MACRIS) interactive map shows the Pumphouse on the downstream side of the dam as a structure on the Inventory of Historic and Archaeological Assets of the Commonwealth. According to the ENF, MHC provided a determination to the Proponent indicating that the proposed project will have "no adverse effect" on the Pumphouse.

Climate Change

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the ENF, the project has a "High" exposure rating based on the project's location for the following climate parameters: extreme precipitation (urban flooding and riverine flooding) and extreme heat. Based on the 100-year useful life and the self-assessed criticality of the Snake Brook Dam, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 500-year (.2% chance) storm event when designing the dam for the extreme precipitation parameter. The

tool recommends planning for the 50th percentile with respect to extreme heat (which indicates an increase in extremely hot days as compared to a historical baseline).

The MA Resilience Design Tool output indicates that the site has a maximum annual daily rainfall exceeding 10 inches within the overall project's useful life. The project will also result in the removal of existing trees (approximately 30). These factors are indicated in the Tool as contributing to the High exposures for the extreme precipitation and heat climate parameters. The ENF indicates that the project is adding resiliency through structural and hydraulic improvements to restore long-term safety and stability to the existing dam structure. The useful life of the rehabilitated dam is expected to be at least 100 years before major repairs are anticipated. The dam rehabilitation will increase the resiliency of the dam by raising the top of the dam by 2 feet to reduce overtopping risk and mitigate downstream flooding risks. The project will enable the dam to withstand overtopping up to the (current) 200-year and 500-year storm events, depending on whether the LLO is operated. I encourage the Proponent to consider further design changes to accommodate more intense storm events under future climate conditions.

Construction Period

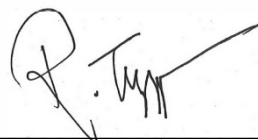
All construction and demolition (C&D) activities should be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management, etc.) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). All construction activities should be undertaken in compliance with the conditions of all State and local permits. I encourage the Proponent to reuse or recycle C&D debris to the maximum extent.

Conclusion

The ENF has adequately described and analyzed the project and its alternatives, and assessed its potential environmental impacts and mitigation measures. Based on review of the ENF and comments received on it, and in consultation with Agencies, I have determined that an EIR is not required. The project may proceed to permitting.

March 27, 2023

Date



Rebecca L. Tepper

Comments received:

3/16/2023	Massachusetts Department of Environmental Protection (MassDEP) Waterways Regulation Program
3/16/2023	Massachusetts Department of Conservation and Recreation (DCR)
3/16/2023	Massachusetts Historical Commission
3/17/2023	Massachusetts Department of Environmental Protection (MassDEP) Northeast Regional Office

RLT/NSP/nsp



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 150 Presidential Way Woburn, MA 01801 • 978-694-3200

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

March 16, 2023

Rebecca L. Tepper, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Lynn
Snake Brook Dam Rehabilitation
EEA # 16671

Attn: MEPA Unit

Dear Secretary Tepper:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Environmental Notification Form (ENF) for the proposed Snake Brook Dam Rehabilitation project in Wayland. MassDEP provides the following comments.

Wetlands

The ENF states that the normal pool elevation of Snake Brook Pond is elevation 224.5. To perform the Snake Brook Dam Rehabilitation project, Snake Brook Pond is proposed to be drawdown to elevation 220. It was stated during the MEPA consultation session that the work would occur during low water conditions (summer) and would continue into the winter until completed. Based on the submitted plans, it appears only limited portions of existing Bordering Vegetated Wetlands (BVW) were delineated within proximity to the dam. There appears to be additional BVW located along Snake Brook Pond that need to be delineated, as the drawdown will result in impacts to those wetland resource areas. Temporary and permanent impacts to BVW need to be quantified. Following the completion of the dam rehabilitation project, areas of BVW impacted by the pond drawdown should be monitored to ensure that the vegetation has not been negatively impacted.

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.

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Based on review of the plans provided in the ENF, the project proposes to widen and grade portions of Snake Brook downgradient of the new spillway. Additional information should be submitted which ensures that the widening of the stream does not impact the streams functions or low flow conditions. Also, additional details will be needed of the proposed stream grading and how the natural stream substrate will be kept and/or how the new material will match existing substrate. The applicant should assess the characteristics of Snake Brook at portions located further downstream to assist with their design.

The ENF states that an existing stone culvert on Snake Brook will be removed and replaced with a 10' wide by 4' high culvert. At this location, portions of Snake Brook are being widened upgradient and downgradient of this new culvert. Information needs to be provided demonstrating that the new culvert will not create a bottleneck on the stream. The proponent must describe how the proposed culvert crossing meets the Massachusetts Stream Crossing Standards.

As currently proposed, the project will require a 401 WQC as the project will result in more than 5,000 square feet of cumulative impacts (temporary and permanent) to Land Under Water and BVW.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Kristin.Divris@mass.gov at (508) 887-0021 for further information on wetlands issues. If you have any general questions regarding these comments, please contact me at John.D.Viola@mass.gov or at (857) 276-3161.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission,
Eric Worrall, Kristin Divris, MassDEP-NERO



March 16, 2023

Secretary Rebecca L. Tepper
Executive Office of Energy and Environmental Affairs
MEPA Office, Attn: Nicholas Perry
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: EEA#16671 Snake Brook Dam Rehabilitation (Wayland) ENF

Dear Secretary Tepper:

The Department of Conservation and Recreation (“DCR”) Office of Dam Safety (“ODS”) has reviewed the Environmental Notification Form (“ENF”) for the Snake Brook Dam Rehabilitation project (the “Project”) located in Wayland, submitted by Pare Corporation (“Pare”) on behalf of the Town of Wayland (the “Proponent” and “Owner”).

As presented in the ENF, ODS understands the project scope includes the following: removal of trees and woody vegetation from within 20 ft. of the dam embankment as required by ODS’s *Policy of Trees on Dams*; sliplining and fitting an existing 18” water supply line with gate valves to allow it to function as a low level outlet; abandonment of an existing 10” water supply intake pipe; replacement of the gatehouse’s existing masonry outflow culvert with a 14” ductile iron pipe; modifications to the interior of the dam’s gatehouse; clearing debris and rehabilitation of the spillway including installation of a control weir, culvert, reinforced concrete training walls and railings; embankment upgrades including raising the top of the existing core wall from elevation 225.0’ to 226.75’, installation of supplemental riprap on the upstream slope, regrading the downstream slope, and raising the existing dam crest from elevation 226.5’ to elevation 227’ to accommodate inflows from the Spillway Design Flood (the 100-year storm event).

Snake Brook Dam, which is subject to ODS jurisdiction, is classified as a Significant Hazard Potential Dam in Poor condition. A dam is deemed to be of Significant Hazard Potential where dam failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities. A Poor condition rating is assigned when structural deficiencies are identified and the dam condition presents a significant risk to the public located downstream from the dam.

Implementation of the project design will address several dam deficiencies which have been documented during past inspections of the dam. Successful project completion will result in significant improvement to overall dam condition, operability and public safety. ODS acknowledges the Proponent’s proposal to perform the work while Old Wayland Reservoir is drawn down four feet below normal pool elevation. This will reduce risk to both public safety and the safety of construction personnel during execution of the work and will provide for improved site conditions to ensure higher quality construction.

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Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114-2199
617-626-1250 617-626-1351 Fax
www.mass.gov/dcr



Maura T. Healey	Rebecca L. Tepper, Secretary
Governor	Executive Office of Energy & Environmental Affairs
Kimberley Driscoll	Douglas J. Rice, Commissioner
Lt. Governor	Department of Conservation & Recreation

This dam alteration project will require a Chapter 253 Dam Safety Permit. The permit application must be submitted to ODS for review. ODS staff will communicate with the Proponent's design engineer as part of the permit process to ensure all required documentation is provided. After receipt of all required technical information demonstrating compliance with ODS regulations, a Chapter 253 Dam Safety Permit will be prepared and issued by ODS. ODS is available to provide additional guidance through the permitting process.

DCR appreciates the opportunity to comment on this project. Please contact David Ouellette at (617) 626-1347 with any questions or to request additional information or coordination with ODS.

Sincerely,

Douglas Rice

Douglas J. Rice
Commissioner

cc: Priscilla Geigis, Patrice Kish, Tom LaRosa, Robert Lowell, DCR Dam Safety File



Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

Memorandum

To: Nicholas Perry, Environmental Analyst, MEPA/EEA

From: Ivan Morales, Waterways Regulation Program, MassDEP/Boston

Cc: Daniel Padien, Program Chief, Waterways Regulations Program, MassDEP/Boston

Re: **Snake Brook Dam Rehabilitation Project, EEA #16671 / ENF
Comments from the Chapter 91 Waterways Regulation Program**

Date: March 16, 2023

The Department of Environmental Protection Waterways Regulation Program (the “Department”) has reviewed the above referenced Environmental Notification Form (EENF) (EEA #16671), submitted by the Pare Corporation, on behalf of the Town of Wayland (“the Proponent”) for the rehabilitation of an earthen dam and associated structures thereto, within waters of the Old Wayland Reservoirs (Snake Brook), in the Town of Wayland, Middlesex County (the “project site”).

Chapter 91 Jurisdiction:

The Department has determined that the Old Wayland Reservoirs are a non-tidal, navigable, enlarged section of the Snake Brook subject to jurisdiction pursuant to M.G.L Chapter 91 and the Waterways Regulations, per 310 CMR 3.04(1)(e). All work located landward of the ordinary high water mark of said waterways is located outside of Chapter 91 jurisdiction and not subject to licensing thereto.

Water Dependency:

The Department has determined that this project is water-dependent use project pursuant to 310 CMR 9.12(2)(a)(9), (11), (12).

Snake Brook Dam Rehabilitation Project, EEA #16671 / ENF
Comments from the Chapter 91 Waterways Regulation Program

Chapter 91 Regulatory Analysis:

In the ENF, the Proponent proposes to rehabilitate a 130-foot-long earthen dam, spillway and associated structures thereto. Specifically, the proposed project includes the following activities:

- Impoundment drawdown, installation of turbidity barriers, silt fences, temporary cofferdams, and diversion systems;
- Tree, stump and debris removal;
- Cleanup of impoundment bottom;
- Dredging of an estimated 74 cubic yards of aquatic sediments over an approximate area of 2,262 square feet;
- Clean and slipline the existing 18" line with a 14" I.D. HDPE conduit;
- Gatehouse repair;
- Primary spillway maintenance and improvements consisting of removal of debris and grading, replacement of a stone culvert with a 10 foot by 4 foot culvert, installation of bubbler pipe, training walls, culvert and railings, and backfilling;
- Embankment repair consisting of rip rap installation, core wall raising, regrading, and backfilling, and
- Wetland replication.

Based on the information and documents submitted along with the ENF, the Department concludes that this is an unlicensed public service project per 310 CMR 9.02. Certain project elements appear to fit the regulatory criteria for maintenance such as sliplining of existing piping and replacing missing fitted stone or riprap. Other project elements described in the ENF do not meet the are not adequately described to demonstrate that they meet the definition of maintenance and are presumed to require licensing. These include the removal of accumulated sediment (dredging), construction of the northeast end of the training wall (located the water side of the normal pool elevation), the channel surface treatment between the existing 12-inch pipe at the northern end of the spillway and the impoundment, and potentially the temporary cofferdam. In the absence of additional information clarifying these details, the Department presumes these activities required a new Chapter 91 license and/or dredge permit pursuant to 310 CMR 9.05(1)(a) and 310 CMR 9.05(b).

The proponent is encouraged to contact the Department to schedule a prefilings consultation meeting to clarify the project elements described above and facilitate review of the project.

If you have any questions regarding the Department's comments, please contact Ivan Morales at (857) 276-3013 or Ivan.Morales@mass.gov



The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth

March 8, 2023

Massachusetts Historical Commission

Secretary Rebecca Tepper
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

ATTN: Nicholas Perry, MEPA Office

RE: Snake Brook Dam Rehabilitation, West of 68 Rice Road, Wayland, MA. MHC# RC.72790. LEA #16671.

Dear Secretary Tepper:

Staff of the Massachusetts Historical Commission (MHC) has reviewed the Environmental Notification Form (ENF) that was submitted for the project referenced above and has the following comments.

The ENF indicates that the proposed project consists of the rehabilitation of the Snake Brook Dam located west of 68 Rice Road. This work includes the demolition and reconstruction of the spillway channel and stone culvert, improvements to the interior of the adjacent pumphouse, and various site modifications. The information provided indicates that the project requires permits from the U.S. Army Corps of Engineers, Massachusetts Department of Environmental Protection, and Department of Conservation and Recreation.

The project site includes the Wayland Water Works Pumphouse (WAY.929), which is included within MHC's Inventory of Historic and Archaeological Assets of the Commonwealth.

It is the opinion of MHC staff that the Wayland Water Works Pumphouse may meet the criteria of eligibility for listing in the National Register of Historic Places.

After review of the MHC's files and the information submitted, the MHC believes that the proposed project will have "no adverse effect" (36 CFR 800.5(b), 950 CMR 71.07(20(b)(2))) on the Wayland Water Works Pumphouse.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800), M.G.L Chapter 9, Sections 26-27C (950 CMR 71.00), and MEPA (301 CMR 11). If you have questions, please do not hesitate to contact Edward L. Bell, Deputy State Historic Preservation Officer and Senior Archaeologist, or Joshua Dorin, Preservation Planner, at the MHC.

Sincerely,

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

cc: Tammy R. Turley, US Army Corps of Engineers, NED-Regulatory
DCR Office of Dam Safety

Linda Hansen, Wayland Conservation Department
Katherine Gardner-Westcott, Wayland Historical Commission

• Tonya Largy, Wayland Archaeology Group
• Lauren Gluck; PARE Corporation

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617)327-8470 Fax: (617) 727-5128 [www.state.
ma. us/sec/mhc](http://www.state.ma.us/sec/mhc)

**DEP COMBINED DREDGE &
FILL WATER QUALITY CERTIFICATION (WQC)**



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Department of Environmental Protection

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Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

July 10, 2024

Lauren H. Gluck, P.E.
10 Lincoln Road, Suite 210
Foxborough, MA 02035

RE: 401/WAYLAND
24-WW10-0016
Snake Brook Dam

re: **WATER QUALITY CERTIFICATION**

Application for: **BRP WW 10**, Water Quality Certification
Major Project – Snake Brook Dam Rehabilitation Project

at: 80 Rice Road, Wayland
DEP Transmittal # **24-WW10-0016**
DEP WETLANDS FILE # **322-1017**
USACE # **NAE 2023-00319**
EEA # **16671**

Dear Ms. Gluck:

The Northeast Regional Office of the Massachusetts Department of Environmental Protection, Wetlands Program (MassDEP), has reviewed your application for Water Quality Certification (WQC), as referenced above. In accordance with the provisions of MGL c.21, §§ 26-53 and Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), it has been determined there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards.

The purpose of the project proposed by the Town of Wayland is to rehabilitate the Snake Brook Dam located at 80 Rice Road in Wayland, MA. The dam discharges into Snake Brook and impounds the Old Wayland Reservoir. The existing dam has a maximum height of approximately 25 feet and a total length of approximately 130 feet. It is an earthen embankment structure with a spillway, a water supply system, and a waste pipe system.

The spillway is located northwest to the left abutment, and its 10-foot-wide primary spillway channel extends to the southwest, approximately 50 feet north of the dam. Within the spillway is a timber sluiceway and siphon pipe. The upstream portion of the spillway consists of bedrock.

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.

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As it progresses downstream, the channel consists of masonry walls before extending through a culvert and converting to bedrock and boulders.

The original intended use of the dam was to create a water supply structure for the Town of Wayland. Overtime, the intended purpose changed, and water has been impounded for recreational uses. The date of the dam is unknown; the Pumphouse on the downstream side of the dam is a listed structure on the Inventory of Historic and Archaeological Assets of the Commonwealth.

Noted deficiencies of the dam structure include accumulated debris at the spillway, inadequate discharge capacity to accommodate the spillway design flood (SDF), an inoperable low level outlet system, areas of overgrown trees and sinkholes, unsafe gatehouse access, sediment accumulation, as well as routine beaver activity causing damage to the dam.

The proposed work to rehabilitate the dam includes the following;

- Installation of erosion control
- Temporary impoundment drawdown
- Raising of core wall and dam crest
- Removal of tree and woody vegetation
- Cleanup of impoundment bottom
- Regrading of downstream slope
- Removal of beaver debris
- Removal and replacement of beaver deceivers
- Enlargement of spillway
- Installation of new control weir
- Installation of Low-Level Outlet Control System
- Sliplining of existing 18" water supply line with gate valves
- Establishment of a restored outlet conduit
- Addressing gatehouse issues

The proposed dam rehabilitation will require the dredging of 75 cubic yards of material. The project will temporarily alter approximately 5 square feet of vegetated wetlands, and permanently alter 150 square feet of vegetated wetlands. Land Under Water (LUW) impacts include 3,544 square feet of temporary impacts and 2,901 square feet of permanent impacts. Bank impacts include 76 linear feet of temporary impacts and 455 linear feet of permanent impacts. A construction drawdown level of Elevation 220, 4 feet below normal pool, will be implemented prior to construction. Approximately 465 square feet of onsite upland area will be converted to Vegetated Wetlands, providing approximately a 3:1 replication ratio for permanently altered wetlands.

MassDEP concurs that impacts to Vegetated Wetlands and LUW from the proposed activities have been avoided and minimized while also meeting pertinent engineering requirements that serve to prevent hazardous flooding and the overtopping of the dam. The Applicant has explored sufficient alternatives regarding the need for impacts to resource areas as related to the design requirements and arrived at an alternative that minimizes impacts. Further, by dedicating an

upland area within the impact area as the location for wetland replication, unnecessary impacts to open space and unaltered areas were avoided.

The Criteria for Evaluating Proposed Discharge to Wetlands at 314 CMR 9.00 of the Regulations requires the submittal of information necessary for MassDEP to determine that the project complies with the Wetlands Protection Act, minimizes individual and cumulative impacts, and complies with the Massachusetts Surface Water Quality Standards. This information has been provided and specific mitigating measures required by MassDEP are itemized below. Therefore, based upon information currently in the record, MassDEP grants a Water Quality Certification subject to the following conditions to maintain water quality, to minimize impact on the waters and wetlands, and to ensure compliance with the appropriate state law. MassDEP did not receive any public comments on the project.

All activities shall conform to the following plans:

1. "SNAKE BROOK DAM REHABILITATION prepared by Pare Corporation, dated November 2022, signed and stamped by Mathew E. Dunn, P.E. consisting of twelve sheets entitled:
 - Cover Sheet
 - General Notes and Legend
 - Full Impoundment Plan
 - Existing Conditions Plan
 - Existing Conditions Sections & Details
 - Proposed Site Plan
 - Proposed Sections
 - Spillway Sections and Details
 - Low Level Outlet Sections and Details
 - Gatehouse Sections and Details
 - Wetland Replication Plan
 - Miscellaneous Details

On File with: MassDEP, the Wayland Conservation Commission, and the US. Army Corps of Engineers.

2. The Applicant shall be responsible for compliance with the terms and conditions contained in this permit and shall be responsible for ensuring its Contractors' compliance with this permit. [314 9.09(1)(d)].
3. MassDEP shall be notified of all changes in plans affecting waters or wetlands. MassDEP will determine whether the changes require a revision to this certification [314 CMR 9.09(2)].
4. All activities shall conform to the requirements set forth in the National Pollutant Discharge Elimination System (NPDES) Construction General Permit. Any violation of this permit shall be considered a violation of the 401 Water Quality Certification [314 CMR 9.06(f)].

5. Areas required to facilitate construction access shall be limited to those shown on the referenced plans. In the event that other access areas are required by the applicant or by the contractors, MassDEP shall be notified [314 CMR 9.05(1)].
6. The project proponent shall employ an Environmental Monitor (EM) to oversee the wetland replication area and any emergency placement of controls and regular inspection or replacement of sedimentation and turbidity control devices (if necessary) for this project. The EM must be a qualified wetland professional with a minimum of 5 years of professional experience and shall have, at a minimum a working knowledge of botany, hydrology, and general construction practices. The name and phone number of the EM shall be provided to MassDEP prior to the start of work. The EM may also be the wetlands scientist specified to perform monitoring activities required herein.[314 9.09(d)(1)].
7. To prevent erosion and sedimentation from disturbed areas from entering the waterways, the following erosion and sedimentation control measures will be taken [314 CMR 9.06(6)(a)(8)]:
 - a. An erosion control plan shall be deployed as shown on the referenced plans and described in the Notice of Intent and application for 401 Certification. Any further erosion control plan or site-specific Stormwater Pollution Prevention Plan (SWPPP) developed for this project shall be supplied to MassDEP and the Medford Conservation Commission prior to construction activities. Noncompliance with the SWPPP shall constitute non-compliance with the requirements of this Certification.
 - b. Siltation devices shall be installed before the commencement of any site work. These devices shall be inspected regularly, and entrapped silt shall be removed and disposed of in an upland location greater than 100 feet from wetland resource areas. Siltation devices shall be maintained or replaced when clogged with sediment or deteriorated.
 - c. Prior to the commencement of any other work within vegetated wetlands a qualified EM shall inspect all sedimentation controls (e.g., compost filter tubes, hay bales, silt fence, etc.) within and immediately adjacent to wetland resource areas) prior to construction.
 - d. Construction should be scheduled so that areas shall be denuded or disturbed for only the duration necessary for the specific phase of construction. Siltation control devices shall be used during all phases of construction to reduce flow velocity and intercept the sediment before it leaves the construction area.
8. Pre-construction photographs of areas of LUW and Vegetated Wetlands where impacts are anticipated shall be submitted to MassDEP prior to the start of work [314 CMR 9.09 (1)(d)].

9. Permanent impacts to Vegetated Wetlands (approximately 150 sf) will be replicated in accordance with the plan titled, "Wetland Replication Plan," including approximately 465 sf of wetland replication. Activities involving construction in and restoration of these impacted areas, including but not limited to: inspecting and confirming site flagging prior to and after alteration; identifying appropriate organic soils to be placed in the restored areas; overseeding final grading of the areas; inspecting final elevations and confirming ground water elevations; obtaining, plantings, and maintaining the specified wetlands plants; and monitoring and reporting on the replication areas shall be overseen by a wetlands professional who will act as the Environmental Monitor (EM). An annual evaluation of the extent and type of restoration of the restored area of BVW shall be submitted. Reports shall be sent to this office until the Vegetative Wetlands replication area becomes revegetated with 75% indigenous species according to the plan and for at least five years following the completion of the work. These reports shall include sufficient photographs to determine replication has occurred in accordance with the approved plans. If replication does not meet the criteria for success, submission of reports shall continue annually until such time restoration meets the criteria. [314 CMR 9.06(2)(a)].
10. Selection of photographic stations to provide "control" sites in unaltered areas adjacent to the areas of alteration and adjacent to the replication and restoration areas, where photographs shall be taken as representative baseline conditions. Additionally, photographic stations shall be selected within the replication and restoration areas where photographs shall be taken to monitor replication and restoration success. Such photographs shall be taken during each monitoring inspection and submitted with reports
11. The effective time period for the WQC runs with the overlying USACE PGP which expires on June 1, 2028. Time allowed for completion of the project allowed herein is the same as that allowed under the PGP; specifically, those activities that commence before the PGP's expiration date will have until June 1, 2029, to complete the activity under the terms and general conditions of the current PGP. Work within jurisdiction that is not completed by June 1, 2029, will be able to proceed only in accordance with any reissued or new PGP [314 CMR 9.09 (1)(d)].
12. All temporary construction fill shall be completely removed after the construction phase of this project is complete [314 CMR 9.09 (1)(d)].
13. The contractor shall be provided with a copy of this Certification and all documents referenced herein, and copies shall be available at the work site headquarters [314 CMR 9.09(1)(d)].
14. No sediments, plumes, floatables, debris or pollutants shall be introduced into the water or wetlands. All refueling and maintenance of oil and hydraulic fluid levels shall be done outside of water or wetlands [314 CMR 9.09 (1)(d)].

15. MassDEP and the Wayland Conservation Commission shall have the right to enter and conduct site inspections throughout the construction process to evaluate compliance with the conditions herein. Such visits shall be coordinated with the applicant's representatives, but MassDEP reserves the right to make unannounced compliance inspections. MassDEP may require the submittal of any data deemed necessary relative to this WQC. The applicant and their contractors shall respond to all requests made by MassDEP to comply with the terms of this WQC or to prevent environmental damage to jurisdictional areas. [314 CMR 9.09 (1)(d)].
16. Prior to the commencement of any activity on this site, there shall be a pre-construction meeting between the project supervisor, the contractor responsible for the work, and the EM, to ensure that the requirements of the WQC are understood. The pre-construction meeting shall be held two weeks prior to any activity regulated by this WQC. [314 CMR 9.09 (1)(d)].
17. During construction, storing, servicing, or cleaning of equipment, including but not limited to fueling, changing, adding, or applying lubricants or hydraulic fluids, or washing/rinsing of trucks or equipment, shall be performed outside of jurisdictional areas. If a spill of hazardous materials occurs, contaminated soils shall be removed according to MassDEP guidance and applicable requirements of the MCP [(310 CMR 40.00)].
18. During work on this project there shall be no intentional discharge of pollutants or release of any oil or hazardous material, including sediments contaminated by any such discharge or release, into any jurisdictional area. The Contractor shall take all reasonable precautions to prevent the discharge of pollutants or the release of oil or hazardous material by ignorance, negligence, accident, or vandalism. Any release of oil or hazardous material that is a reportable quantity pursuant to the MCP, accidental or otherwise, including sediments, shall be reported in accordance with the MCP and to the MassDEP's Wetlands Section, the MassDEP Bureau of Waste Site Cleanup (BWSC) and the Woburn Conservation Commission. [314 CMR 9.09 (1)(d)].
19. This Office, attention Kyle Lally, Wetlands Program (kyle.lally@mass.gov) and the Wayland Conservation Commission shall be notified 48 hours in advance of construction activity for this project. The 48 hours shall not include weekends or holidays [314 CMR 9.09 (1)(d)].

Section 61 Findings: Pursuant to MGL Chapter 30, Sections 61 to 62H (MEPA), this project was reviewed as EEA number **16671** and the Secretary's Certificate, issued March 27th, 2023, found that the Environmental Notification Form (ENF) adequately and properly complies with MEPA and its implementing regulations. Pursuant to MGL Chapter 30, Section 61, MassDEP determines that the proposed project as conditioned, will incorporate the appropriate feasible measures to avoid or minimize potential environmental impacts that may result from construction and operation of the project.

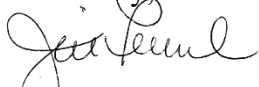
No activity may begin prior to the expiration of the appeal period or until a final decision is issued by MassDEP if an appeal is filed.

Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, MGL c.21A §16, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This Certification does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. This includes, but is not limited to, conditions of the Order of Conditions.

If you have any questions regarding this decision, please contact Kyle Lally at kyle.lally@mass.gov.

Sincerely,



Jill Provencal
Section Chief
Wetlands Program - NERO



Kyle Lally
Section 401 Coordinator
Wetlands Program - NERO

cc: Wayland Conservation Commission, 41 Cochituate Road, Wayland, MA 01778

Notice of Appeal Rights

Appeal Rights and Time Limits

Certain persons shall have a right to request an adjudicatory hearing concerning certifications by the Department when an application is required: (a) the applicant or property owner; (b) any person aggrieved by the decision who has submitted written comments during the public comment period; any ten (10) persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or (c) any governmental body or private organization with a mandate to protect the environment which has submitted written comments during the public comment period. Any person aggrieved, any ten (10) persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. chapter 30A section 10, a Notice of Claim must be made in writing provided that the request is made by certified mail or hand delivery to the Department, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within twenty-one (21) days from the date of issuance of this Certificate, and addressed to:

Docket Clerk
Office of Administrative Appeals
Department of Environmental Protection
One Winter Street, 3rd Floor
Boston, MA 02108

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands and Waterways Program at:

Department of Environmental Protection, Northeast Regional Office
One Winter Street; 5th Floor
Boston, MA 02108

A. Contents of Hearing Request

A Notice of Claim for Adjudicatory Hearing shall comply with the Department's Rules for Adjudicatory Proceedings, 310 CMR 1.01 (6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a. the 401 Certification Transmittal Number and DEP Wetlands Protection Act File Number;
- b. the complete name of the applicant and address of the project;
- c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax, and telephone number of the attorney;

- d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of “aggrieved person” found at 314 CMR 9.02;
 - a. a clear and concise statement that an adjudicatory hearing is being requested;
 - b. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to the Certificate, including specifically the manner in which it is alleged to be inconsistent with the Department’s Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification, and
 - a. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Environmental Management (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

A. Filing Fee and Address

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
 Department of Environmental Protection
 Commonwealth Master Lockbox
 P.O. Box 4062
 Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the applicant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06 (2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

DEP CHAPTER 91 DREDGING PERMIT



Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

October 25, 2024

Lindan Hansen, Wayland Conservation Administrator
c/o Lauren Gluck – Pare Corporation
10 Lincoln Drive, Suite 210
Foxborough, MA 02035

RE: ISSUANCE OF CHAPTER 91 WATERWAYS PERMIT No: WW01-0000504

80 Rice Road, Waters of Old Wayland Reservoirs (Snake Brook Pond), Wayland, Middlesex County

Dear Ms. Hansen:

The Department of Environmental Protection Waterways Regulation Program (the “Department”) has approved the enclosed, above-referenced Waterways Permit, authorizing the Town of Wayland to perform improvement dredging pursuant to Massachusetts General Law Chapter 91, the Public Waterfront Act, and its regulations at 310 CMR 9.00.

Pursuant to 310 CMR 9.17(1)(a) and 9.17(2), the Permittee may appeal this decision within twenty-one (21) days of the date of permit issuance.

NOTICE OF APPEAL RIGHTS

Who has the right to appeal?

The following persons shall have the right to an adjudicatory hearing concerning this decision by the Department to grant or deny a license or permit, in accordance with 310 CMR 9.17(1): (a) an Applicant who has demonstrated property rights in the lands in question, or which is a public agency; (b) any person aggrieved by the decision of the Department to grant a license or permit who has submitted written comments within the public comment period; (c) ten (10) residents of the Commonwealth who, pursuant to M.G.L. Chapter 30A, § 10A, have submitted comments within the public comment period with at least 5 of the 10 residents residing in the municipality(s) in which the license or permitted activity is located. The appeal shall clearly and specifically state the facts and grounds for the appeal and the relief sought, and each appealing resident shall file an affidavit stating the intent to be part of the group and to be represented by its authorized representative; (d) the municipal official in the affected municipality who has submitted written comments within the public comment period; and (e) CZM, for any project identified in 310 CMR 9.13(2) (a) for CZM participation or, in an Ocean Sanctuary, if it has filed a notice of participation within the public comment period.

How can I request an adjudicatory hearing?

A person requesting an adjudicatory hearing must submit a "Notice of Claim" to the Department, with a copy of the MassDEP Adjudicatory Hearing Fee Transmittal Form and include the details specified below, within twenty-one (21) days of the date of issuance of this decision. The MassDEP Adjudicatory Hearing Fee Transmittal Form is available at the following website: <https://www.mass.gov/doc/adjudicatory-hearing-fee-transmittal-form> The Notice of Claim must be made in writing and sent by certified mail or hand delivery to:

MassDEP Office of Appeals and Dispute Resolution
Case Administrator
100 Cambridge Street, 9th Floor
Boston, MA 02114

A copy of the complete Notice of Claim must be sent at the same time by certified mail or hand delivery to: (1) the Applicant, (2) the municipal official of the city or town where the project is located, and (3) the issuing office of the MassDEP, which in this case is located at:

MassDEP
Waterways Regulation Program
100 Cambridge Street, 9th Floor
Boston, MA 02114

The MassDEP Adjudicatory Hearing Fee Transmittal Form and a valid check payable to "The Commonwealth of Massachusetts" in the amount of one hundred dollars (\$100) must be mailed to:

MassDEP
Commonwealth Master Lockbox
P.O. Box 4062
Boston, MA 02211

What information must be included in the hearing request?

Pursuant to 310 CMR 9.17(3), any Notice of Claim requesting an adjudicatory hearing must include the following information:

- (a) the MassDEP Waterways Application File Number;
- (b) the complete name, address, fax number and telephone number of the Applicant;
- (c) the address of the project;
- (d) the complete name, address, fax number, and telephone number of the party filing the request and, if represented by counsel, the name, address, fax number, and phone number of the attorney;
- (e) if claiming to be a person aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found in 310 CMR 9.02;
- (f) a clear statement that a formal adjudicatory hearing is being requested;
- (g) a clear statement of the facts which are the grounds for the proceedings, the specific objections to the MassDEP's written decision, and the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written decision; and
- (h) a statement that a copy of the request has been sent to the Applicant and the municipal official of the city or town where the project is located.

Chapter 91 Waterways Permit №: WW01-0000504
80 Rice Road, Old Wayland Reservoirs, Wayland, Middlesex County
October 25, 2024

Dismissal of request

The request for appeal will be dismissed if the filing fee is not paid, unless the appellant is exempt or is granted a waiver.

Exemptions

The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

Waiver

The Department may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Please contact Ivan Morales-Parra of the Waterways Regulation Program at (857) 276-2013 or Ivan.Morales@mass.gov if you have any questions.

Sincerely,



Daniel J. Padien
Program Chief
Waterways Regulation Program

cc: Town Manager's Office, Town of Wayland
Wayland Select Board
Wayland Planning Board
Wayland Conservation Commission
Lindan Hansen, Town Conservation Administrator

Encl: Waterways Permit №: WW01-0000504



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

PERMIT No: WW01-0000504

NAME AND ADDRESS OF PERMITTEE:

Town of Wayland
c/o Linda Hansen
41 Cochituate Road,
Wayland, MA 01778

ISSUANCE DATE: October 25, 2024

EXPIRATION DATE: October 25, 2029

Subject to the appeal rights identified in the Waterways Regulations at 310 CMR 9.17, permission is hereby given by the Department of Environmental Protection Waterways Regulation Program (the "Department") for the Town of Wayland (the "Permittee") to perform improvement dredging in waters of the Old Wayland Reservoirs (Snake Brook Pond) off 80 Rice Road, in Wayland, Middlesex County, as further detailed below.

The proposed improvement dredging located within jurisdiction of M.G.L. Chapter 91 authorized hereto includes approximately 24± cubic yards of aquatic sediments over an approximate area of 455± square feet to a maximum depth of El. 222 feet NAVD88 including 1-foot overdredge (3.0 ft below ordinary high water, El. 225 feet NAVD88). The project also includes the temporary installation of a cofferdam at the existing spillway channel to divert the water flow during the dredging activities and a temporary turbidity barrier to be installed to control turbidity within the water column and to avoid migration of suspended solids beyond the work area. Dredged material may be reused onsite or dewatered and legally disposed of at an upland facility.

All work authorized herein shall be performed in the locations/elevations shown and to the dimensions indicated on the attached Permit Plans entitled: *"Chapter 91 Permit, Snake Brook Dam Rehabilitation, Wayland, Middlesex County"* (1 Sheet), prepared by Pare Corporation, signed and sealed by Matthew E. Dunn, Massachusetts Civil PE No. 53359.

Based on the materials presented in the permit application and review of other relevant materials as appropriate, the Department hereby determines:

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.

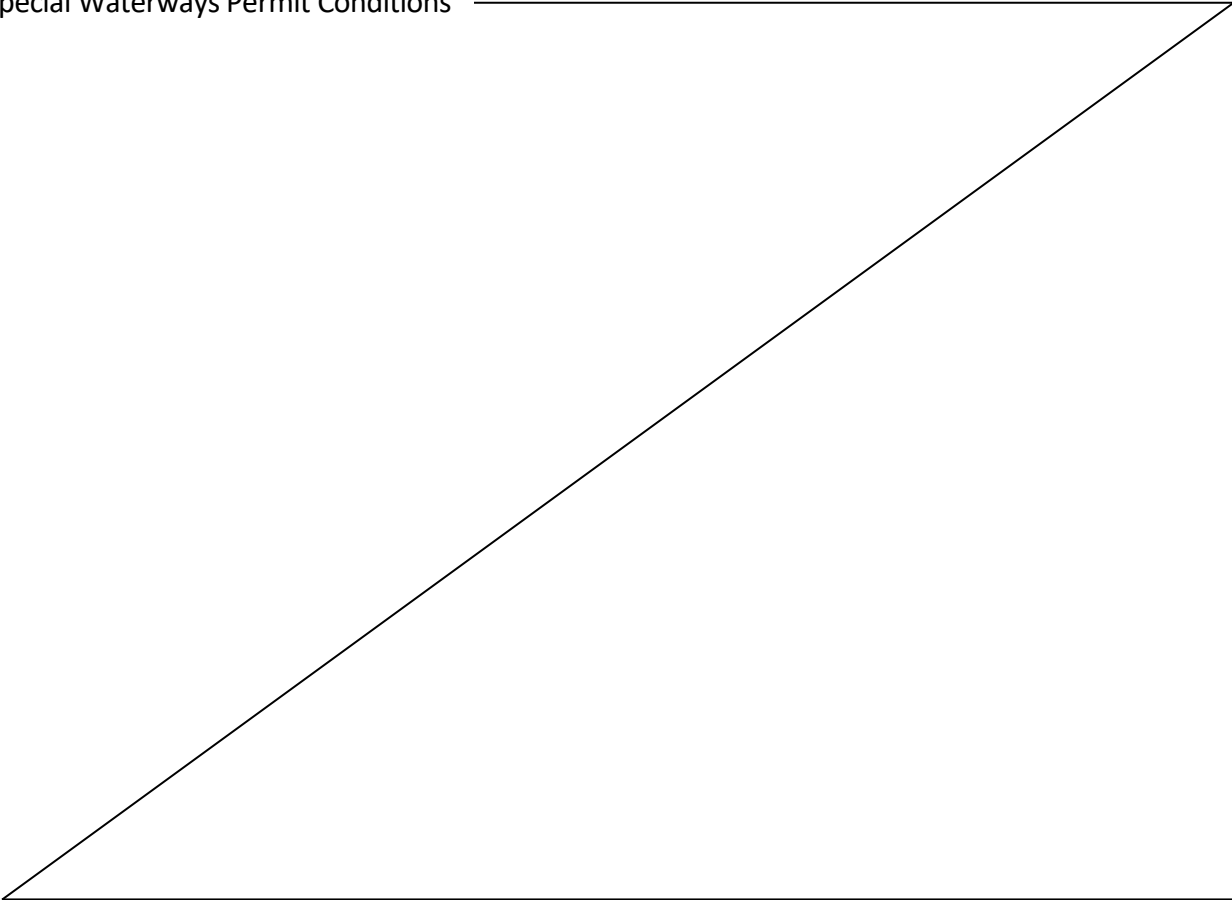
TTY# MassRelay Service 1-800-439-2370

MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

1. The proposed dredging project meets the definition of improvement dredging stipulated in 310 CMR 9.02.
2. The Old Wayland Reservoirs (Snake Brook Pond) is a geographic area subject to jurisdiction pursuant to M.G.L. Chapter 91, per 310 CMR 9.04(1)(e).
3. Any structural alteration, change in use, or and other modifications to the existing dam and associated structures/fill thereto, shall require the prior review of the Department to determine whether additional licensing/permitting is required pursuant to M.G.L. Chapter 91 and the Waterways Regulations at 310 CMR 9.00.

Pursuant to M.G.L. Chapter 91, and in accordance with all applicable provisions of 310 CMR 9.00, the Department hereby approves the work described in the Permit Application and depicted on the Permit Plans attached hereto, subject to the following Standard Waterways Permit Conditions and Special Waterways Permit Conditions



STANDARD WATERWAYS PERMIT CONDITIONS

1. Acceptance of this authorization shall constitute an agreement by the Permittee to conform to all terms and conditions stated herein.
2. Any modification from that explicitly authorized herein and contained on the Plans shall require prior review of the Department to determine whether additional authorization is required pursuant to M.G.L. Chapter 91, the Public Waterfront Act, and the Waterways Regulations at 310 CMR 9.00.
3. The Permittee shall inform the Department in writing at least three (3) days before commencing any authorized dredging or dredge material disposal.
4. This authorization is issued upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee/Permittee prior to the commencement of any activity hereby authorized.
5. This authorization shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This authorization may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee/Permittee, or his agent, and those persons who have filed a written request, with the Department, for such notice and have afforded the Licensee/Permittee a reasonable opportunity to correct said noncompliance. Failure to correct noncompliance after the issuance of a written notice by the Department shall render this authorization void.
6. This authorization is issued subject to all applicable federal, state, county, and municipal laws, ordinances, bylaws, and regulations, including but not limited to, a valid Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, §40 and a valid Water Quality Certification issued pursuant 314 CMR 9.00.
7. This authorization is issued upon the express condition that dredging, transportation, and disposal of dredge material shall be in strict conformance with all applicable requirements and authorizations of the Department. Any subsequent maintenance dredging and transportation and disposal of dredge material during the term of this authorization shall be in strict conformance with all applicable requirements and authorizations of the Department.
8. Unless otherwise authorized in accordance with a Special Condition of this authorization, no maintenance dredging beyond the time authorized herein is permitted.
9. The dredging under this authorization shall be conducted as to cause no unnecessary obstruction of the free passage of vessels.
10. In conducting the dredging authorized, care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Permittee shall, at his expense, remove the shoal areas. The Licensee/Permittee shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the Licensee/Permittee shall pay all costs associated with such work.
11. Nothing in this authorization shall be construed as to impair the legal rights of any persons or authorize dredging on land not owned by the Licensee/Permittee without consent of the owner(s) of such property.
12. The Permittee shall assume and pay all claims and demands arising in any manner from the work authorized herein and shall save harmless and indemnify the Commonwealth of Massachusetts, its officers, employees, and agents from all claims, audits, damages, costs and expenses incurred by reason thereof.
13. Whosoever violates any provisions of this authorization shall be subject to a fine of twenty-five thousand dollars and zero cents (\$25,000.00) per day for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment; or shall be subject to civil penalty not to exceed twenty-five thousand dollars and zero cents (\$25,000.00) for each day such violation occurs or continues.
14. In the event of any conflict between the Special Conditions and the Standard Conditions, the Special Conditions shall prevail.

SPECIAL WATERWAYS PERMIT CONDITIONS

- 1) This Waterways Permit does not relieve the Permittee of the obligation to obtain all other applicable authorizations that may be required under local, state and federal jurisdictions. Copies of said permits shall be provided to the Department as such permits are modified, extended or renewed.
 - 2) No new or existing fill, structures or changes in use are authorized by this permit.
 - 3) The Permittee shall allow agents of the Department to enter the project site to verify compliance with the conditions of this Permit.
 - 4) At least 48 hours prior to the commencement of in-water work, the Permittee shall provide written notice to the Department (via email to: dep.waterways@mass.gov with copy to ivan.morales@mass.gov , affected property owners, and abutters).
-

DEPARTMENT OF ENVIRONMENTAL PROTECTION

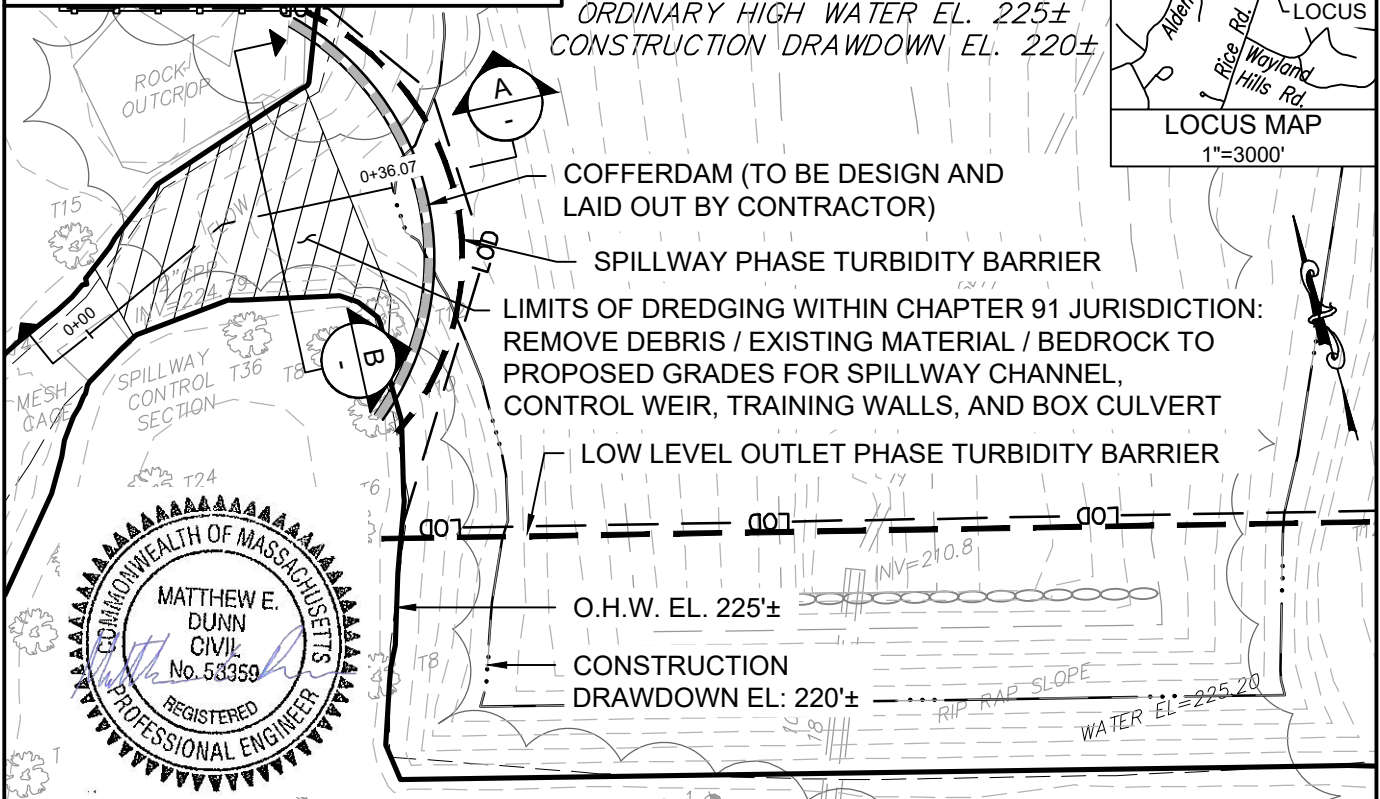
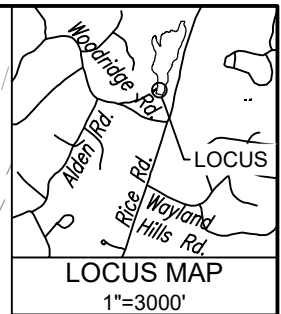


Daniel J. Padien
Program Chief
Waterways Regulation Program

MASSDEP PERMIT NO. WW01-0000504

DATE APPROVED: OCTOBER 25, 2024

TOWN OF WAYLAND
RESERVOIR
(SNAKE BROOK POND)
ORDINARY HIGH WATER EL. 225±
CONSTRUCTION DRAWDOWN EL. 220±



Scale: 1"=20'



PLAN

DREDGE DIMENSIONS IN CH 91 JURISDICTION

MAX LENGTH: 27' MAX WIDTH: 28'

MAX DEPTH: 2' AREA: 455 SF +/-

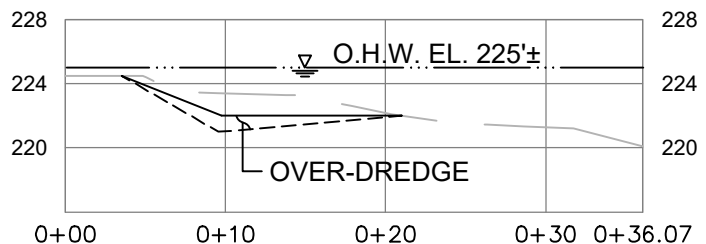
TOTAL DREDGE VOLUME: 24 CY

*INCLUDES 1' OVERDREDGE

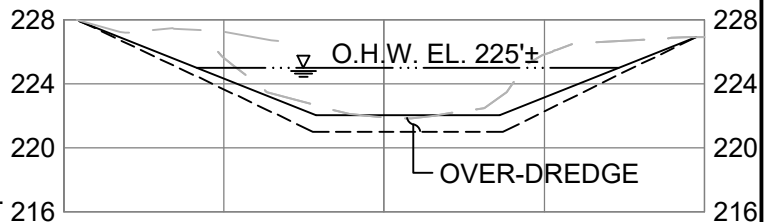
DISPOSAL OF DREDGED MATERIAL:

DREDGED MATERIAL WILL EITHER BE REUSED ONSITE OR STORED IN AN UPLAND AREA ONSITE WITHIN THE PROJECT LOD. IF OFFSITE DISPOSAL IS REQUIRED, MATERIAL WILL BE HAULED TO THE TOWN DPW FACILITY AND/OR AN APPROVED RECEIVING FACILITY.

ELEVATIONS REFERENCE NAVD 1988.
HORIZONTAL DATUM REFERENCES NAD 1983.
HORIZONTAL AND VERTICAL CONTROL BASED UPON NOAA'S NATIONAL GEODETIC SURVEY (NGS) NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) OPUS SESSION.



A PROFILE
SCALE: 1"=12'



B SECTION A
SCALE: 1"=12'

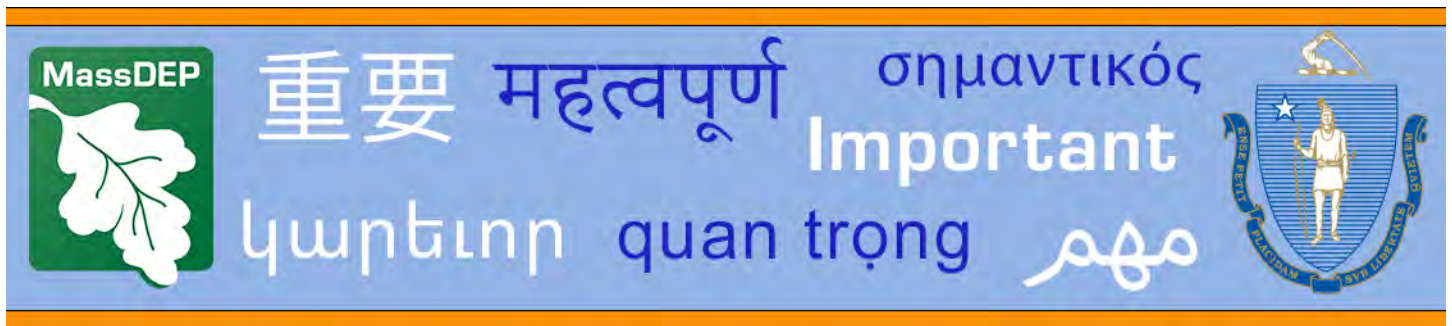


PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS

8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1755
14 BOBALA ROAD, SUITE 2B
HOLYOKE, MA 01040
413.507.3448

CHAPTER 91 PERMIT
SNAKE BROOK DAM
REHABILITATION

TOWN OF WAYLAND
SNAKE BROOK
TOWN OF WAYLAND
MIDDLESEX COUNTY
SHEET 1 OF 1
AUGUST 2024



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of EJ at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido de inmediato. Si necesita este documento traducido, comuníquese con la Directora de Diversidad de MassDEP al número de teléfono que aparece más abajo.

Português Portuguese

Este é um documento importante e deve ser traduzido imediatamente. Se precisar de uma tradução deste documento, entre em contato com o Diretor de Diversidade da MassDEP nos números de telefone listados abaixo.

繁體中文 Chinese Traditional

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼聯絡 MassDEP 多元化負責人。

简体中文 Chinese Simplified

本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与 MassDEP 的多元化主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradwi l imedyatman. Si ou bezwen dokimar sa a tradwi, tanpri kontakte Direktè Divèsite MassDEP la nan nimewo telefòn endike anba.

Việt Vietnamese

Tài liệu này rất quan trọng và cần được dịch ngay lập tức. Nếu quý vị cần dịch tài liệu này, xin liên lạc với Giám đốc Đa dạng của MassDEP theo các số điện thoại ghi dưới đây.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះគឺសំខាន់ហើយគួរត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការឱ្យគេបកប្រែឯកសារនេះ:

សូមទាក់ទងមកនាយកដ្ឋានពិពិធកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Kel dokumentu li é inportáti y debe ser traduzidu imidiatamenti. Se bu meste di kel dokumentu traduzidu, pur favor kontakta Diretor di Diversidádi di MassDEP na numeru abaxu indikadu.



Contact Deneen Simpson 857-406-0738

**Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114**

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 4.21.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это важный документ, и он должен быть безотлагательно переведен. Если вам нужен перевод данного документа, пожалуйста, свяжитесь с директором по вопросам многообразия (Diversity Director) компании MassDEP по указанному ниже телефону.

العربية Arabic

هذه الوثيقة مهمة ويجب ترجمتها على الفور. إذا لزم الأمر، يرجى الاتصال بمدير التنوع PMassDE على رقم الهاتف المدرج أدناه.

한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP의 다양성 담당 이사에 문의하시기 바랍니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է և պետք է անմիջապես թարգմանվի: Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանել, դիմեք MassDEP-ի բազմազանության տնօրենին ստորև նշված հեռախոսահամարով:

فارسی Farsi Persian

این سند مهم است و باید فوراً ترجمه شود. اگر به مترجم های سخنرانی از برای لطفاً به مدیر بخش تنوع ژادی MassDEP به شماره تلفن ذکر شده در زیر تماس بگیرید.

Français French

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, veuillez communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Sofern Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an den Diversity Director MassDEP unter der unten aufgeführten Telefonnummer.

Ελληνική Greek

Το παρόν έγγραφο είναι σημαντικό και θα πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του παρόντος εγγράφου, παρακαλούμε επικοινωνήστε με τον Διευθυντή Διαφορετικότητας του MassDEP στους αριθμούς τηλεφώνου που αναγράφονται παρακάτω.

Italiano Italian

Comunicazione per parti che non parlano inglese. Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, potete contattare il Direttore di Diversità di MassDEP al numero di telefono elencato di seguito.

Język Polski Polish

Dokument ten jest ważny i powinien zostać natychmiast przetłumaczony. Jeśli potrzebujesz przetłumaczonej wersji dokumentu, prosimy o kontakt z dyrektorem ds. różnorodności MassDEP pod jednym z numerów telefonu wymienionych poniżej.

हिन्दी Hindi

यह दस्तावेज़ महत्वपूर्ण है और इसका तुरंत अनुवाद किया जाना चाहिए. यदि आपको इस दस्तावेज़ का अनुवाद करने की आवश्यकता है, तो कृपया नीचे सूचीबद्ध टेलीफोन नंबरों पर मासडेप्स डाइवर्सिटी के निदेशक से संपर्क करें.

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 4.21.2023) 310 CMR 1.03(5)(a)

USACE PRE-CONSTRUCTION NOTIFICATION (PCN) AUTHORIZATION



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

May 2, 2025

Regulatory Division
File Number: **NAE-2023-0319**

Town of Wayland
Attn: Linda Hansen, Conservation Administrator
41 Cochituate Road
Wayland, Massachusetts 01778
Sent by email: [lhansen@wayland.ma.us]

Dear Ms. Hansen:

The U.S. Army Corps of Engineers (USACE) has reviewed your application to discharge dredged and/or fill material into approximately **6,595** square feet of waters of the United States, including adjacent wetlands, associated with the Old Wayland Reservoirs and Snake Brook, adjacent to 80 Rice Road in Wayland, Massachusetts as part of the Snake Brook Dam Rehabilitation Project. The goal of this project is to rehabilitate the existing Snake Brook Dam (#MA01119) in order to preserve passive recreational, ecological, and flood attenuation functions that the existing dam and associated impoundment provide.

This dam rehabilitation project includes raising the dam embankment core wall and dam crest; regrading the embankment downstream slope; removing woody vegetation from the embankment to maintain a grassed cover; removing existing beaver dam/debris and installing new beaver deceiver/deterrent structures; enlarging the primary spillway and installing a new control weir; slip lining the existing 18-inch low-level outlet and installing a new low-level outlet control system; and making improvements to the downstream spillway channel. In addition, the Town proposes repairs within the existing reservoir gatehouse.

As part of this project the Town proposes to install a temporary cofferdam at the spillway inlet and to draw down the **11.5**-acre Snake Pond impoundment by up the four feet so that the in-pond construction work can be completed "in the dry".

The Town plans to create approximate **465** square feet of on-site wetland to compensate for permanent wetland impacts.

This work is described on the enclosed plan drawings entitled "TOWN OF WAYLAND CONSERVATION COMMISSION – SNAKE BROOK DAM REHABILITATION (MA01119), WAYLAND, MASSACHUSETTS," on a total of thirteen sheets, dated "NOVEMBER 2022".

Based on the information that you have provided, we verify that the activity is authorized under General Permit **#2** (Maintenance) of the June 2, 2023, federal permit known as the General Permits for the Commonwealth of Massachusetts (GP MA). The GP MA is available at <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit>.

Please review the GP MA carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GP MA are fully aware of and comply with its terms and conditions. A copy of the GP MA and this verification letter shall be available at the work site as required by General Condition **#17**. In addition, you must perform this work in compliance with the following special conditions:

1. You must maintain the activity authorized herein in good condition and in conformance with the terms and conditions of this authorization. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition **#39** on page 50 of the GP MA. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this authorization from this office, which may require restoration of the area.

2. The Town of Wayland (the permittee) must complete and return the enclosed Work Start Notification Form to this office at least two weeks before starting the authorized work.

3. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plan drawings entitled "TOWN OF WAYLAND CONSERVATION COMMISSION – SNAKE BROOK DAM REHABILITATION (MA01119), WAYLAND, MASSACHUSETTS," on a total of thirteen sheets, dated "NOVEMBER 2022". If you make changes to the plans or construction methods for work within Snake Brook, the Old Wayland Reservoirs and/or in adjacent wetlands, please contact us immediately to discuss modification of this authorization. The Corps must approve any changes before you undertake them.

4. This Corps permit does not authorize you to "take" a federally listed endangered or threatened species, in particular the northern long-eared bat (*Myotis septentrionalis*). See 16 USC 1532(13) and 16 USC 1532(19) for definitions of take, which include harassment and harm. See 50 CFR 17.3 which further define harassment and harm.

5. No tree-clearing operations shall be conducted during the time-period between June 1st and July 31st of any year, in order to avoid impacts to bat pup roosting habitat areas. However, if an appropriate project-specific survey demonstrates that bats are absent from the action area, this special condition would not apply. Please contact us if you would like to conduct a survey in accordance with the “Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines.”

6. If during sediment removal or other construction activities, previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, the permittee shall temporarily suspend all construction activities that may damage or alter such resources. Resources covered by this paragraph include, but are not limited to, human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, and other cultural deposits. Upon such discovery or find, immediately notify the Corps so that the Massachusetts State Historic Preservation Officer (MA SHPO), the Tribes, and other appropriate authorities may be notified, and a determination made as to their significance and disposition (see Special Condition **#14(d)** of the GP MA for more details).

7. Appropriate measures must be taken to maintain normal downriver flows and to minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, etc., are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must be placed in a manner that will not be eroded by expected high flows. See General Condition **#22(f)** of the GP MA for more details.

8. Sediment to be removed shall be dewatered in place or within an on-site dewatering facility. This will allow the suspended sediment to settle and the filtered water to evaporate, percolate into the ground, or flow downstream in Snake Brook. The scheduling of sediment removal and dewatering operations shall be such that the capacity of the dewatering area is not exceeded under any circumstances.

9. All sediment removal and management activities authorized under this permit shall be conducted in accordance with the requirements of Massachusetts DEP’s water quality certification for this project.

10. Prior to transporting any sediment off-site for permanent disposal, the Town of Wayland or their contractor will coordinate with the Corps the location(s) of the upland facilities where the excavated sediments will be permanently disposed.

11. All temporary construction fills and non-biodegradable sedimentation/erosion controls installed during the demolition/construction phase of this project shall be removed promptly after the completion of construction, to minimize the potential entrapment of wildlife. Any plastic construction debris shall be completely removed from this site. See General Conditions **#25(e)** of the GP MA for more details.

12. The introduction, spread, or the increased risk of invasion of non-native invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work is prohibited and shall be managed appropriately. The Corps may require the Town, to develop a DRAFT invasive species control plan (ISCP) if this becomes an issue. The DRAFT ISCP would need to be coordinated with the Corps for our approval prior to implementing it. See General Condition **#29** GP MA for more details.

13. Prior to being onsite, the contractor shall thoroughly inspect and remove seeds, plant material, soil, mud, insects, and other invertebrates on all equipment, including construction mats, to be used on the project site to prohibit introduction of invasive organisms. At a minimum, the following shall be inspected and cleaned on terrestrial vehicles where applicable:

Rubber Tired Vehicles - Crevices in upper surface and panels, tires, rims, and fender wells, spare tire mounting area, bumpers, front and rear quarter panels, around and behind grills, bottom of radiator vent openings, brake mechanisms, transmission, stabilizer bar, shock absorbers, front and rear axles, beds, suspension units, exhaust systems, light casings, and mirrors.

Tracked Land Vehicles - Crevices in upper surface and panels, top of axles and tensioners, support rollers, between rubber or gridded areas, beneath fenders, hatches, under casings, and grills.

Interiors of All Vehicles - Beneath seats, beneath floor mats, upholstery, beneath foot pedals, inside folds of gear shift cover.

14. Except where stated otherwise, reports, drawings, correspondence, and any other submittals required by this permit shall be marked with the words "Permit **#NAE-2023-0319**" and submitted via: a) MAIL: Massachusetts Section - Regulatory Division, Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751; b) EMAIL: paul.j.sneeringer@usace.army.mil and cenae-r@usace.army.mil; or c) FAX: (978) 318-8303. Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit. Requirements for immediate notification to the Corps shall be done by telephone to (978) 318-8338.

15. Within one month of the completion of the Snake Brook Dam Rehabilitation Project, the Town of Wayland shall fill out and return the enclosed Compliance Certification Form verifying that that this project was completed in compliance with all conditions of this GP MA authorization.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on June 1, 2028. You must commence or be under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special conditions provided above or all the terms and conditions of the GP MA may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey>.

Please contact Mr. Paul Sneeringer of my staff at (978) 318-8491 or at paul.j.sneeringer@usace.army.mil if you have any questions about this authorization letter.

Sincerely,

A handwritten signature in cursive script that reads "Kara Hellige".

Kara A. Hellige
Chief, Massachusetts Section
Regulatory Division

Enclosures

Ed Reiner, U.S. EPA, Region 1, Boston, Massachusetts, reiner.ed@epa.gov

Haley Miller, U.S. EPA, Region 1, Section 401(a)(2), Boston, Massachusetts,
miller.haley@epa.gov

Brent Wacho, Federal Emergency Management Agency, Hazard Mitigation Assistance
FEMA Region 1, Mitigation Division, brent.wacho@fema.dhs.gov

David Simmons, USFWS, U.S. Fish and Wildlife Service, New England Field Office,
70 Commercial Street, Suite 300, Concord, New Hampshire,
david_simmons@fws.gov

Kyle Lally, Massachusetts DEP Northeast Regional Office, Wetland and Waterways,
Woburn, MA, kyle.lally@mass.gov [Transmittal # **24-WW10-0016**]

Jill Provencal, Massachusetts DEP Northeast Regional Office, Wetland and Waterways,
Woburn, MA, jill.provencal@mass.gov [DEP File **#322-1017**]

Kristin Divris, Massachusetts DEP Northeast Regional Office, Wetland and Waterways,
Woburn, MA, kristin.divris@mass.gov (DEP File **#322-1017**)

Ivan Morales, MassDEP-WRP, Boston, MA, ivan.morales@mass.gov
(Chapter 91 Permit License **#WW01-000054**)

Brona Simon, Massachusetts State Historic Preservation Officer, 220 Morrissey
Boulevard, Boston, Massachusetts 02125 [**MHC# RC.72790**]

David Robinson, Massachusetts Board of Underwater Archaeological Resources
(BUAR), Boston, Massachusetts, david.s.robinson@mass.gov

Sean Fair, Wayland Conservation Commission, 41 Cochituate Road, Wayland,
Massachusetts, concommembers@wayland.ma.us

Lauren Gluck, Pare Corporation, 10 Lincoln Road, Suite 210, Foxborough,
Massachusetts, lgluck@parecorp.com

Permittee: lhansen@wayland.ma.us



US Army Corps
of Engineers®
New England District

General Permits for the Commonwealth of Massachusetts

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks before work begins)

EMAIL TO: paul.j.sneeringer@usace.army.mil and cenae-r-ma@usace.army.mil; or

MAIL TO: **Paul Sneeringer**
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

A verification from the U.S. Army Corps of Engineers, file #**NAE-2023-0319** was issued to the Town of Wayland (the permittee) on **April 30, 2025**. This permit authorized the Town to discharge dredged and/or fill material into approximately **6,595** square feet of waters of the United States, including adjacent wetlands, associated with the Old Wayland Reservoirs and Snake Brook, adjacent to 80 Rice Road in Wayland, Massachusetts as part of the Snake Brook Dam Rehabilitation Project. The goal of this project is to rehabilitate the existing Snake Brook Dam (#MA01119) in order to preserve passive recreational, ecological, and flood attenuation functions that the existing dam and associated impoundment provide.

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This work is described on the enclosed plan drawings entitled "TOWN OF WAYLAND CONSERVATION COMMISSION – SNAKE BROOK DAM REHABILITATION (MA01119), WAYLAND, MASSACHUSETTS," on a total of thirteen sheets, dated "NOVEMBER 2022".

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

Phone & email: (____) _____ (____) _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: April 30, 2025 **Date Permit Expires:** June 1, 2028

FOR USE BY THE CORPS OF ENGINEERS

PM: Paul Sneeringer **Submittals Required:** Yes

Inspection Recommendation: Yes



US Army Corps
of Engineers®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification
within one month of the completion of work.)

Permit Number: NAE-2023-0319

Project Manager: Paul Sneeringer

Name of Permittee: Town of Wayland – Snake Brook Pond Dam

Rehabilitation Permit Issuance Date: May 2, 2025

Please sign this certification and return it to our office upon completion of the activity.

* E-MAIL TO: cenae-r-ma@usace.army.mil; or *
* * * * *
* MAIL TO: Massachusetts Section *
* Regulatory Division *
* U.S. Army Corps of Engineers, New England District *
* 696 Virginia Road *
* Concord, MA 01742-2751 *

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

Printed Name

Date of Work Completion

() _____
Telephone Number

() _____
Telephone Number

Prepared for The:

TOWN OF WAYLAND CONSERVATION COMMISSION SNAKE BROOK DAM REHABILITATION

MA01119

WAYLAND, MASSACHUSETTS

NOVEMBER 2022

Drawing Index

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1.0	GENERAL NOTES AND LEGEND
2.0	FULL IMPOUNDMENT PLAN
2.1	EXISTING CONDITIONS PLAN
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3.0	PROPOSED SITE PLAN
3.1	PROPOSED SECTIONS
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3.3	LOW LEVEL OUTLET SECTIONS AND DETAILS
3.4	GATEHOUSE SECTIONS AND DETAILS
3.5	WETLAND REPLICATION PLAN
4.0	MISCELLANEOUS DETAILS



Prepared by:

PARE CORPORATION
Foxboro, Massachusetts



P:\WORK\19_A001\19167.02_Wayland-SnakebrookDamRehabilitat-MADW0551.dwg 02/08/2024 10:05:41 AM

GENERAL NOTES:

1. FOR THE PURPOSE OF THIS PROJECT
- OWNER – TOWN OF WAYLAND, MASSACHUSETTS
41 COCHITUATE ROAD, TOWN BUILDING
WAYLAND, MA 01778-2614

CONTACT – LINDA HANSEN, CONSERVATION ADMINISTRATOR

ENGINEER – PARE CORPORATION
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035

CONTACT – ALLEN ORSI, P.E.
2. ALL CONSTRUCTION INDICATED ON THESE PLANS SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE MASSACHUSETTS STATE BUILDING CODE, THE SPECIFICATIONS INCLUDED IN THIS CONTRACT, AND 302 CMR 10.00 DAM SAFETY. THESE PLANS ARE INCOMPLETE UNLESS ACCOMPANIED BY THE SPECIFICATIONS INCLUDED IN THE CONTRACT DOCUMENTS.
3. THE PLANS WERE DEVELOPED FROM A SURVEY PERFORMED BY BAY COLONY GROUP, INC. OF FOXBOROUGH, MA. DATED JANUARY 17, 2020. AS WELL AS AVAILABLE LIDAR DATA THROUGH MASS GIS.
4. ELEVATIONS REFERENCE NAVD 1988. HORIZONTAL DATUM REFERENCES NAD 1983. HORIZONTAL AND VERTICAL CONTROL BASED UPON NOAA'S NATIONAL GEODETIC SURVEY (NGS) NATIONAL SPATIAL REFERENCE SYSTEM (NSRS) OPUS SESSION.
5. BATHYMETRIC CONTOURS WERE SKETCHED IN BASED ON 1879 HISTORIC PLAN. ACTUAL BATHYMETRIC CONTOURS MAY VARY.
6. SEDIMENT/LEAF DEBRIS DEPTH IN THE AREA OF THE LOW LEVEL OUTLET INTAKE WAS APPROXIMATED AT 1 FOOT ABOUT THE PIPE INVERT (WHICH WOULD BE 4+ FEET ABOVE THE BATHYMETRY CONTOURS IN THAT AREA. OTHER AREAS OF SEDIMENT/DEBRIS ACCUMULATION ARE LIKELY. ACTUAL SEDIMENT/DEBRIS DEPTHS MAY VARY.
7. BORINGS WERE COMPLETED BY SOIL X, CORP. AND OBSERVED BY PARE PERSONNEL BETWEEN OCTOBER 31 TO NOVEMBER 1, 2019. DEPTHS AND THICKNESS OF THE SUBSURFACE STRATA INDICATED HEREIN ARE GENERALIZED FROM THE SUBSURFACE DATA COLLECTED. INFORMATION SHOWN FOR THE DAM IS INTERPOLATED AND MAY DIFFER. BORING LOGS ARE INCLUDED WITHIN THE SPECIFICATIONS.
8. WETLAND FLAGS WERE FLAGGED BY PARE PERSONNEL ON NOVEMBER 6, 2019 WITH SUPPLEMENTAL DELINEATION IN SUPPORT OF ACCESS, STAGING.
9. WATER DEPTH MEASUREMENTS TAKEN BY PARE ON OCTOBER 25, 2019 WHILE POOL LEVEL WAS NEAR EL. 225.2±.
10. ANY DISCREPANCIES ON THESE PLANS WITH REGARD TO DIMENSIONS OR CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PORTION OF WORK.
11. BRUSH AND TREE GROWTH HAS CONTINUED SINCE THE DATE OF THE SURVEY AND SHOULD BE REVIEWED BY THE CONTRACTOR.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS. PLANS SHALL NOT BE SCALED FOR DIMENSIONS.
13. CONSTRUCTION SHALL BE MADE FROM APPROVED SHOP DRAWINGS ONLY.
14. NOTES, TYPICAL DETAILS AND SCHEDULES APPLY TO ALL WORK UNLESS OTHERWISE NOTED. FOR CONDITIONS NOT SPECIFICALLY SHOWN, PROVIDE DETAILS OF SIMILAR NATURE. VERIFY APPLICABILITY BY SUBMITTING SHOP DRAWINGS FOR REVIEW.
15. INFORMATION REGARDING THE LOCATION OF SURROUNDING STRUCTURES, UTILITIES, AND THE AS-BUILT CONFIGURATION AND CONDITION OF THE EXISTING DAM AND OUTLET WORKS IS FURNISHED SOLELY FOR THE CONVENIENCE OF THE CONTRACTOR AND SHALL BE FIELD VERIFIED. THE CONTRACTOR SHALL CONDUCT ITS OWN INDEPENDENT EXAMINATION OF SITE CONDITIONS FOR THE PURPOSE OF BIDDING, FABRICATION, AND CONSTRUCTION ASSOCIATED WITH THE PROJECT. ANY RELIANCE UPON INFORMATION MADE AVAILABLE BY THE OWNER OR THE ENGINEER SHALL BE AT THE CONTRACTOR'S RISK.
16. THE CONTRACTOR SHALL PROTECT ALL ADJACENT STRUCTURES AND UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ALL DAMAGE TO ADJACENT STRUCTURES AND UTILITIES AT NO ADDITIONAL COST TO THE OWNER.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL PROJECT DEMOLITION AND EXCESS MATERIAL IN ACCORDANCE WITH MASSACHUSETTS, LOCAL, AND FEDERAL LAWS.
18. THE CONTRACTOR SHALL FOLLOW ALL OSHA AND OTHER APPLICABLE FEDERAL, STATE, AND LOCAL STANDARDS FOR ALL PROJECT COMPONENTS AND ACTIVITIES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL SITE SAFETY PROCEDURES AND PRACTICES REGARDLESS OF THE PRESENCE OF THE OWNER OR ENGINEER.
19. ALL CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO THE LIMITS OF WORK AND TEMPORARY EASEMENTS DEFINED HEREIN.
20. WHERE REFERENCE IS MADE TO ANY STANDARD SPECIFICATION IT SHALL MEAN THE MOST RECENT SPECIFICATION, CODE, STANDARD, OR INTERIM SPECIFICATIONS OF THE ORGANIZATION REFERRED TO AND SHALL BE CONSIDERED A PART OF THESE CONTRACT DOCUMENTS TO THE EXTENT INDICATED. IN CASE OF CONFLICT, THE MORE RIGID REQUIREMENTS AND CODES SHALL GOVERN. THESE CODES INCLUDE, BUT ARE NOT LIMITED TO: AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
21. THE CONTRACTOR SHALL STAGE ALL EQUIPMENT IN THE DESIGNATED STAGING AREA. ALL GREASING AND REFUELING ACTIVITIES SHALL OCCUR IN THE STAGING AREA.
22. THE CONTRACTOR SHALL MAINTAIN A SECURE SITE AND PROVIDE APPROPRIATE SAFETY MEASURES TO PREVENT ACCIDENTS. THE SAFETY MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO SIGNAGE, BARRICADES, FENCES, FLASHING WARNING LIGHTS, AND POLICING IF NECESSARY.
23. NO WORK OR DISCHARGES, OTHER THAN THAT SHOWN, SHALL BE PERFORMED WITHIN WETLANDS WITHOUT FIRST RECEIVING PROPER PERMITS FROM THE REGULATORY AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING, RESTORING AND REPAIRING ALL DAMAGE AS A RESULT OF UNAUTHORIZED WORK OR DISCHARGES TO THE WETLAND AREA AT NO ADDITIONAL COST TO THE OWNER.
24. ALL TREES ARE NOT SURVEY LOCATED AND CONTRACTOR SHALL DETERMINE NUMBER OF TREES REQUIRED FOR REMOVAL.

DIVERSION NOTES:

1. THE CONTRACTOR SHALL MAINTAIN FLOW THROUGHOUT CONSTRUCTION.
2. THE CONTRACTOR SHALL REGULATE DISCHARGES AND PHASE CONSTRUCTION SO THAT CONSTRUCTION EQUIPMENT DOES NOT PASS THROUGH OR ENTER FLOWING WATER.
3. ANY NECESSARY COFFERDAMS AND DIVERSIONS SHALL BE DESIGNED AND BEAR THE STAMP OF A PROFESSIONAL ENGINEER. REVIEW AND APPROVAL BY THE OWNER AND ENGINEER IS REQUIRED PRIOR TO INSTALLATION. DESIGN REQUIREMENTS ARE INCLUDED WITHIN SPECIFICATION SECTION 02400.
4. THE CONTRACTOR SHALL MAINTAIN A STOCKPILE OF MATERIAL ONSITE TO BE UTILIZED TO STABILIZE THE EXCAVATION IN THE EVENT OF HIGH WATER OR OTHER CONDITIONS WHICH MAY COMPROMISE THE COFFERDAM STABILITY. THE STOCKPILE SHALL BE MAINTAINED IN ACCORDANCE WITH A FLOOD EMERGENCY RESPONSE PLAN TO BE DEVELOPED BY THE CONTRACTOR AND SUBJECT TO APPROVAL BY THE ENGINEER, OWNER, AND OFFICE OF DAM SAFETY.

EROSION AND SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION AND SEDIMENT CONTROLS INCLUDING STRAW BALES, SILT FENCE, TURBIDITY BARRIERS, AND ANY OTHER CONTROLS AS INDICATED IN THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR SHALL PREVENT SEDIMENT FROM ENTERING THE IMPOUNDMENT VIA DISCHARGES THROUGH ANY DRAINAGE STRUCTURES, COFFERDAMS, OR SEDIMENT CONTROL BARRIER.
3. STOCKPILES SHALL BE A MINIMUM OF 1-FOOT FROM THE EDGE OF ANY SLOPE TO LIMIT RUNOFF DOWN THE EMBANKMENT SLOPES.
4. EROSION CONTROLS SHALL BE MODIFIED OR EXPANDED AS FIELD CONDITIONS WARRANT.
5. ALL EROSION CONTROLS SHALL BE INSPECTED IN ACCORDANCE WITH THE CONTRACTOR'S NPDES SWPPP FOR THIS PROJECT.
6. ANY DAMAGED AREAS SHALL BE REPAIRED WITHIN 24 HOURS OF DISCOVERY.
7. DEWATERING BASINS SHALL CONSIST OF STRAW BALE ENCLOSURES, TANKS, PERMEABLE BLADDERS, OR OTHER APPROPRIATE METHOD. DEWATERING WASTE WATERS SHALL BE PUMPED TO THE DEWATERING BASINS AND TREATED PRIOR TO DISCHARGE.
8. DISCHARGE OF TURBID WATER TO THE RIVER, IMPOUNDMENT, OR ANY WETLAND IS PROHIBITED.
9. UPON COMPLETION OF GRADING, ALL EXPOSED SURFACES NOT OTHERWISE TO BE TREATED SHALL BE COVERED WITH A MINIMUM OF 6" OF LOAM AND SEEDED. THE CONTRACTOR SHALL MAINTAIN ALL SEEDED AREAS UNTIL A SATISFACTORY STAND OF HEALTHY GRASS IS ESTABLISHED AS DEFINED IN THE SPECIFICATIONS.

CONSTRUCTION SEQUENCE:

THE FOLLOWING SEQUENCE IS INTENDED TO BE GENERAL IN NATURE AND SHALL NOT BE CONSIDERED DIRECTION BY THE ENGINEER OR THE OWNER. ALTHOUGH IT IS LIKELY THAT SOME OF THE WORK ITEMS WILL OVERLAP, CONSTRUCTION SEQUENCES FOR THE VARIOUS PROJECT COMPONENTS ARE DESCRIBED SEPARATELY AND MAY NOT NECESSARILY PROCEED IN CONSECUTIVE ORDER. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.

MOBILIZATION

1. CONTRACTOR MOBILIZATION.
2. INSTALL ALL NECESSARY SIGNAGE.
3. COMPLETE SITE TREE CLEARING.
4. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS INCLUDING TURBIDITY BARRIER AND SILT FENCE.
5. ESTABLISH ACCESS AND STAGING AREAS.

WATER CONTROL AND DIVERSION

1. IMPLEMENT AND MAINTAIN THE CONSTRUCTION DRAWDOWN.
2. INSTALL COFFERDAMS AND DIVERSION SYSTEMS AS NEEDED TO COMPLETE THE WORK.

TREE AND STUMP REMOVAL

1. REMOVE FALLEN TREES AND OTHER DEBRIS FROM WITHIN THE LIMITS OF WORK.
2. CLEAR, GRUB, AND STRIP ALL TREES STUMPS, SHRUBS, BRUSH, WOODY VEGETATION, AND LOAM WITHIN THE LIMITS OF WORK.
3. FILL RESULTING VOIDS WITH APPROVED MATERIAL IN COMPACTED LIFTS.

LOW LEVEL OUTLET WORK

1. REMOVE SEDIMENT AND DEBRIS TO THE EXTENT NEEDED TO COMPLETE THE WORK; COMPLETE CLEAN UP OF THE IMPOUNDMENT BOTTOM.
2. CLEAN AND SLOPLINE THE EXISTING 18-INCH LINE WITH A 14-INCH I.D. HDPE CONDUIT. GROUT THE ANNULUS.
3. INSTALL THE UPSTREAM GATE VALVE WITH OPERATOR EXTENSION ROD ALONG UPSTREAM SLOPE; INSTALL THE SECONDARY GATE VALVE WITHIN THE GATEHOUSE.
4. INSTALL OPERATOR CHAMBER ALONG UPSTREAM EDGE OF CREST.
5. INSTALL SCREEN
6. CUT AND GROUT THE EXISTING 10-INCH LINE
7. EXCAVATE TO REMOVE THE EXISTING STONE CULVERT; BACKFILL TO SUBGRADE FOR THE PROPOSED 14-INCH CONDUIT.
8. INSTALL THE 14-INCH CONDUIT AND CRADLE
9. INSTALL THE DOWNSTREAM HEADWALL
10. BACKFILL THE EXCAVATION.
11. INSTALL THE RIPRAP SCOUR APRON

GATEHOUSE WORK

1. REMOVE THE EXISTING PIPING WITHIN THE GATEHOUSE.
2. FILL THE BOTTOM OF THE GATEHOUSE TO WITHIN 1 FOOT OF THE 14-INCH LINE INVERT.
3. INSTALL THE 2-INCH DRAIN LINE ALONG AND WITHIN THE CRADLE OF THE THE 14-INCH LLO OUTLET PIPE.
4. INSTALL LADDER RUNGS.
5. INSTALL OPERATOR FLOOR.

SPILLWAY WORK

1. REMOVE DEBRIS AND OTHER MATERIAL TO SUBGRADE FOR THE PROPOSED COMPONENTS AND GRADES. COMPLETE BEDROCK PREPARATION WHERE ENCOUNTERED (REMOVAL TO SOUND BEDROCK; CLEANING; ANCHORS)
2. INSTALL THE PROPOSED COMPONENTS INCLUSIVE OF THE CONTROL WEIR, BUBBLER PIPE, TRAINING WALLS, CULVERT, AND RAILINGS.
3. BACKFILL ALL COMPONENTS WITH APPROVED MATERIAL IN COMPACTED LIFTS.

EMBANKMENT WORK

1. INSTALL RIPRAP IN AREAS OF MISSING RIPRAP.
2. RAISE THE CORE WALL FROM EL. 225 TO EL. 226.75.
3. ESTBALISH A DAM CREST 15 FEET WIDE AT EL. 227.
4. REGRADE THE DOWNSTREAM SLOPE TO 2.5H:1V; COMPLETE PREPARATION OF THE GATEHOSUE WALLS PRIOR TO PLACEMENT OF FILLS AGAINST GATEHOUSE.

WETLAND REPLICATION

1. INSTALL WETLAND REPLICATION.

PROJECT COMPLETION

1. PLACEMENT OF LOAM AND SEED ON THE DOWNSTREAM SLOPE, CREST, AND ALL AREAS DISTURBED BY THE CONSTRUCTION ACTIVITIES.
2. NOTIFY ENGINEER OF SUBSTANTIAL PROJECT COMPLETION.
3. DEMOBILIZE AND RETURN DISTURBED AREAS OF THE SITE TO PRE-CONSTRUCTION CONDITIONS.

LEGEND

EXISTING		PROPOSED
	CONTOUR 5'	
	CONTOUR 1'	
	CART PATH	
	CONCRETE WALL	
	PROPERTY LINE	
	CLEAN OUT	
	EDGE OF WATER	
	WATER DEPTH MEASUREMENT	
	EDGE OF WETLAND WETLAND FLAG	
	100 FT. WETLAND BUFFER	
	200 FT RIVERBANK AREA	
	FLOODPLAIN	
	TURBIDITY BARRIER	
	COFFERDAM	
	TREELINE	
	TREES	
	SILT FENCE	
	STRAW BALE	
	FILTER SOCK	
	LIMIT OF DISTURBANCE	
	BORING	

CONTROL POINTS

HORIZONTAL:

POINT ID	COORDINATES	ELEVATION	DESCRIPTION
TBM#1	N: 2946845.116 E: 699041.178	228.772	BOLT
TBM#2	N: 2946737.499 E: 698900.164	204.183	STONE BOUND
TBM#3	N: 2946880.530 E: 698842.038	224.187	FIELD STONE BOUND



SCALE ADJUSTMENT GUIDE
0" 1/2"
BAR IS 1/2 INCH ON ORIGINAL DRAWING

SNAKE BROOK DAM REHABILITATION

MA01119

WAYLAND, MASSACHUSETTS

TOWN OF WAYLAND CONSERVATION COMMISSION

REVISIONS:

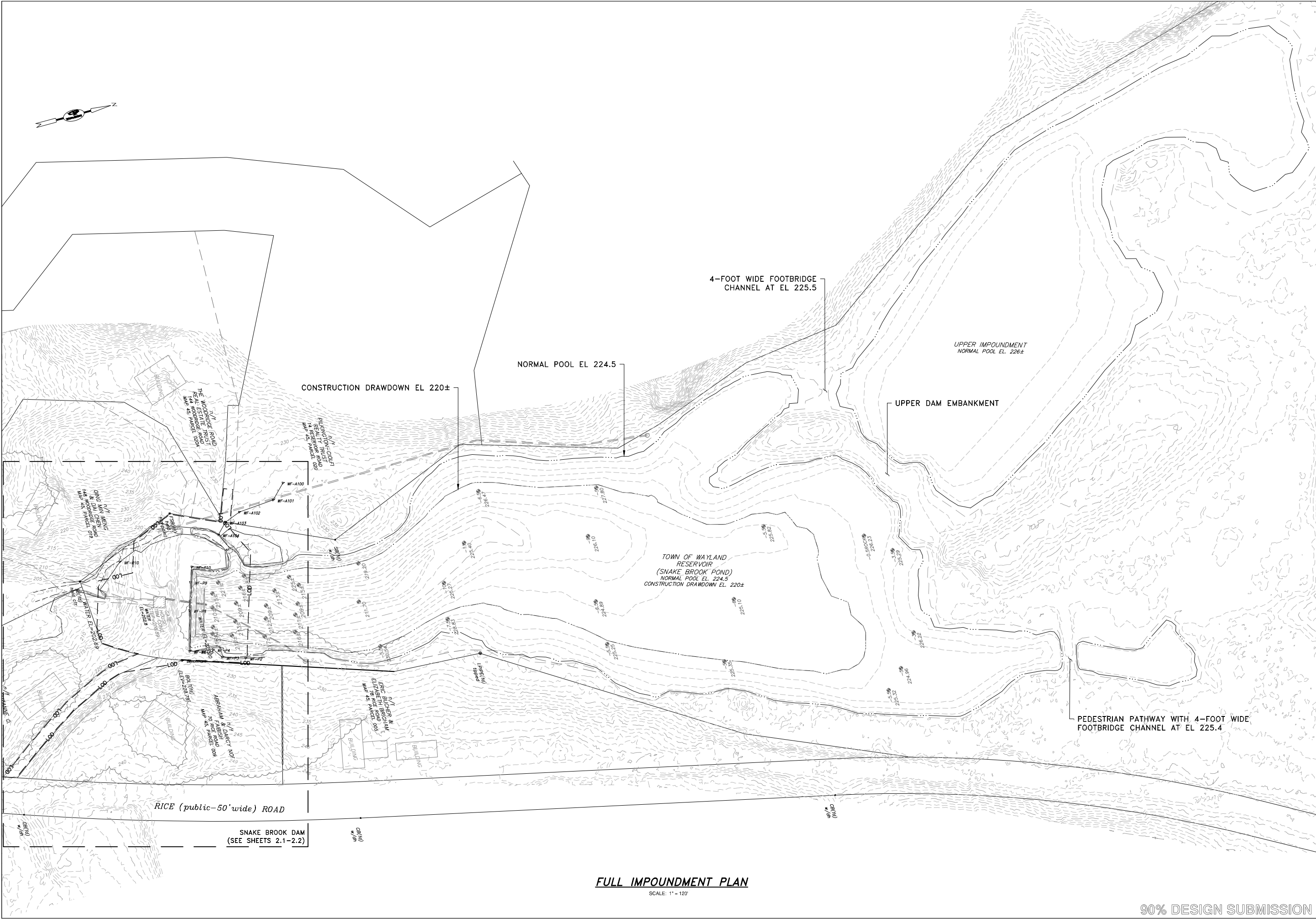
PROJECT NO.:	19167.02
DATE:	NOVEMBER 2022
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

GENERAL NOTES
AND LEGEND

SHEET NO.:

1.0

90% DESIGN SUBMISSION



FULL IMPOUNDMENT PLAN

SCALE: 1" = 120'

90% DESIGN SUBMISSION



SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

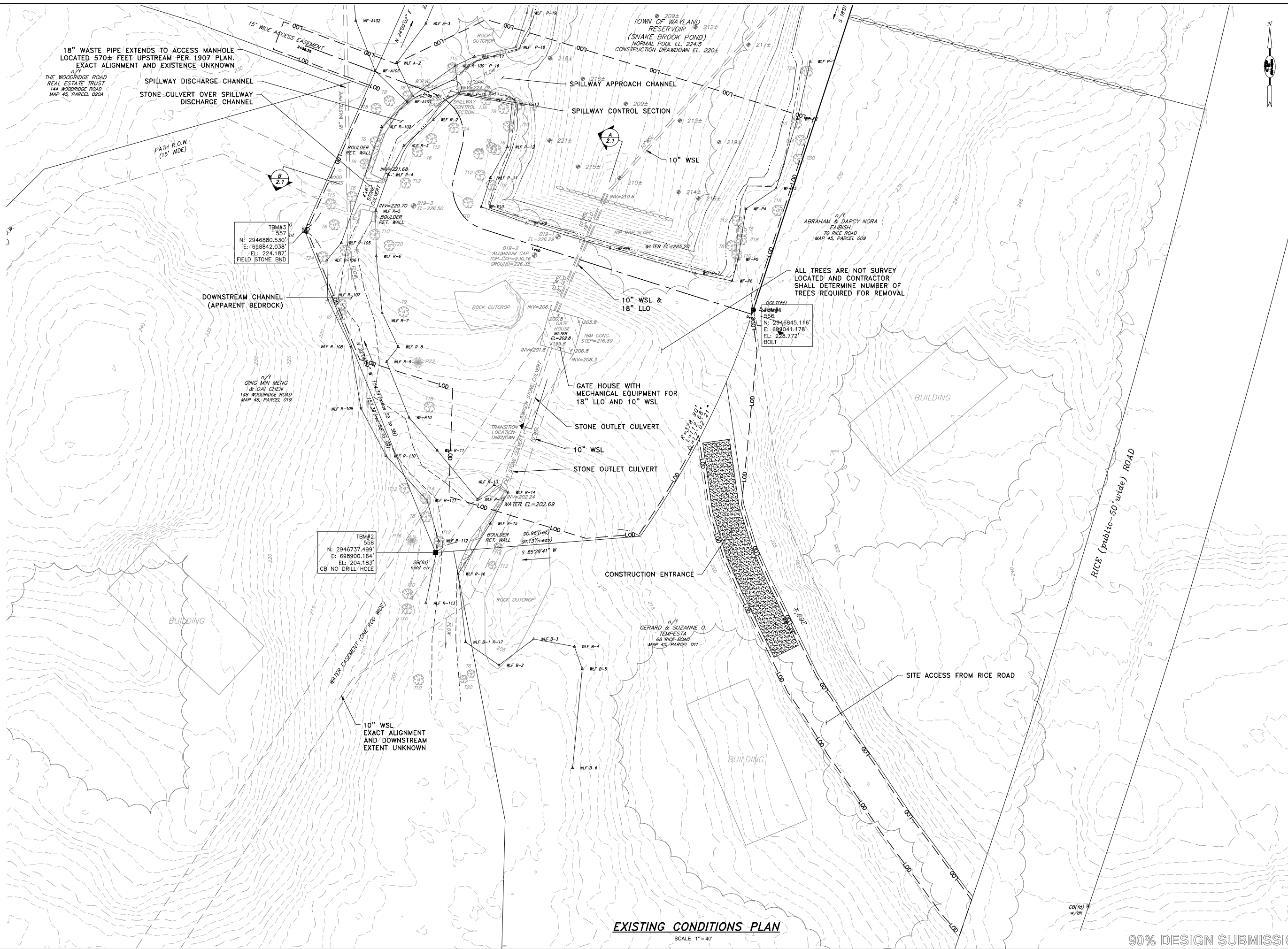
Snake Brook Dam Rehabilitation
MA01119
Wayland, Massachusetts
Town of Wayland Conservation Commission

REVISIONS:	
PROJECT NO.:	19167.02
DATE:	NOVEMBER 2022
SCALE:	AS NOTED
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CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

FULL IMPOUNDMENT
PLAN

SHEET NO.:
2.0

D:\WORKS\19_000\19167.02 Snake Brook Dam Rehabilitation - MA\WORKS\2.1 EXIST CONDITIONS PLAN.dwg



EXISTING CONDITIONS PLAN

SCALE: 1" = 40'

90% DESIGN SUBMISSION



SCALE ADJUSTMENT
GUIDE
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BAR IS 1/2 INCH ON
ORIGINAL DRAWING

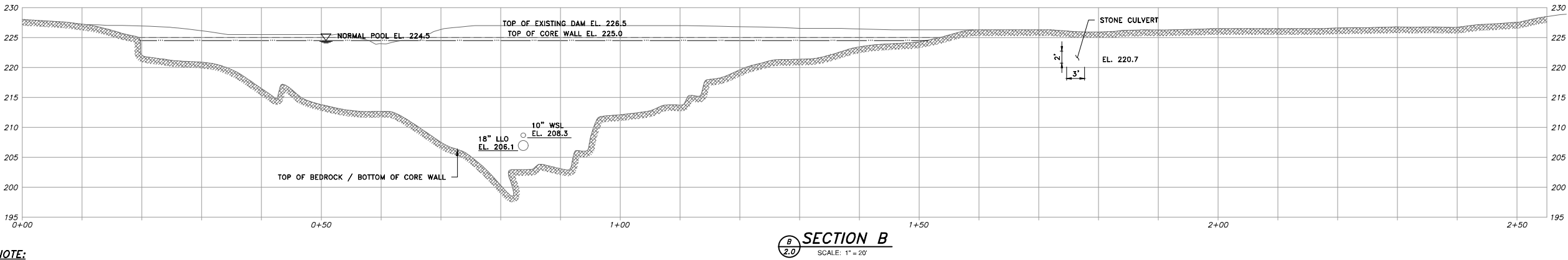
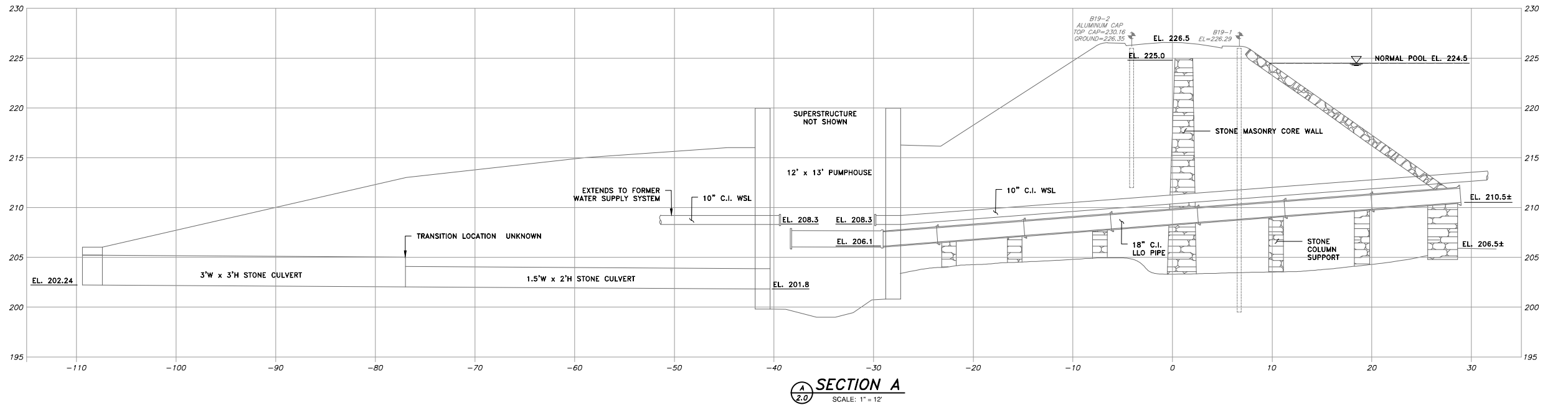
Snake Brook Dam Rehabilitation
MA01119
Wayland, Massachusetts
Town of Wayland Conservation Commission

REVISIONS:

PROJECT NO.:	19167.02
DATE:	NOVEMBER 2022
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

EXISTING
CONDITIONS PLAN

SHEET NO.:



NOTE:
BOTH SECTIONS A AND B ON THIS SHEET WERE DEVELOPED UPON INFORMATION PROVIDED WITHIN THE 1897 HISTORICAL DRAWINGS OF THE DAM.

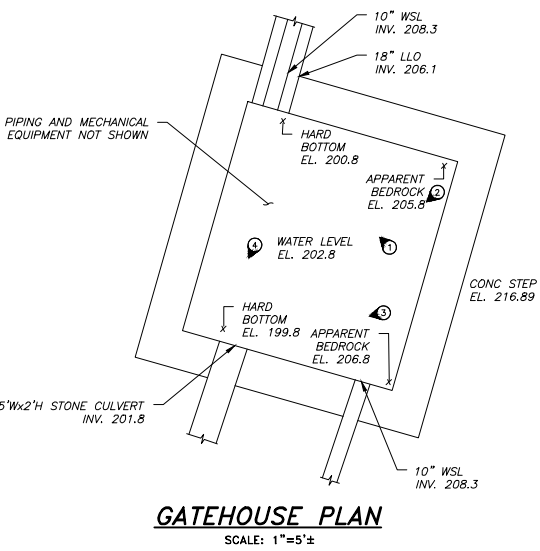


PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4

PUMP HOUSE PHOTOS



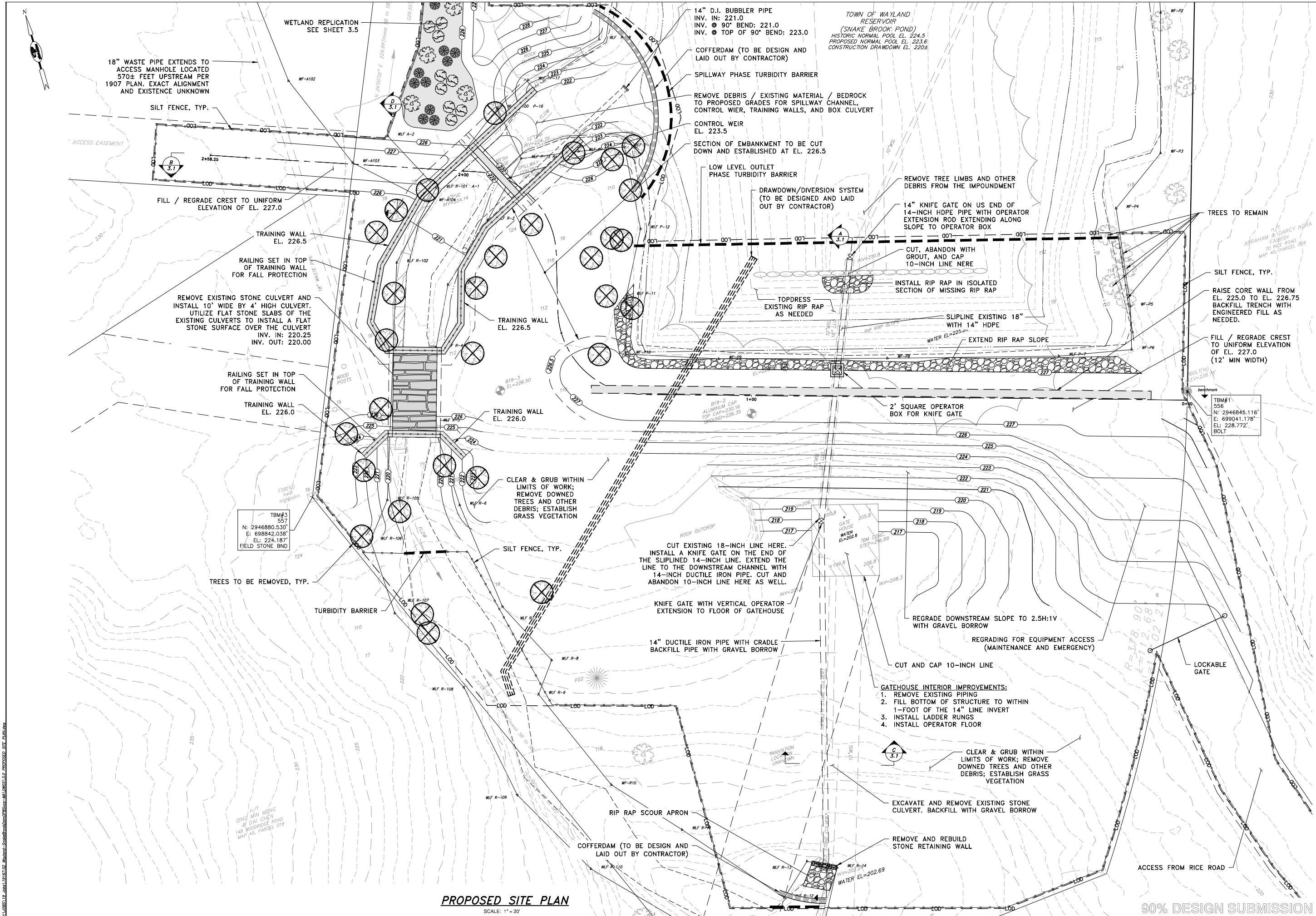
SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

SNAKE BROOK DAM REHABILITATION
MA01119
WAYLAND, MASSACHUSETTS
TOWN OF WAYLAND CONSERVATION COMMISSION

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DRAWN BY:	LMC
APPROVED BY:	ARO

EXISTING CONDITIONS
SECTIONS & DETAILS

SHEET NO.:
2.2





PARE
PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1755



SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

Snake Brook Dam Rehabilitation

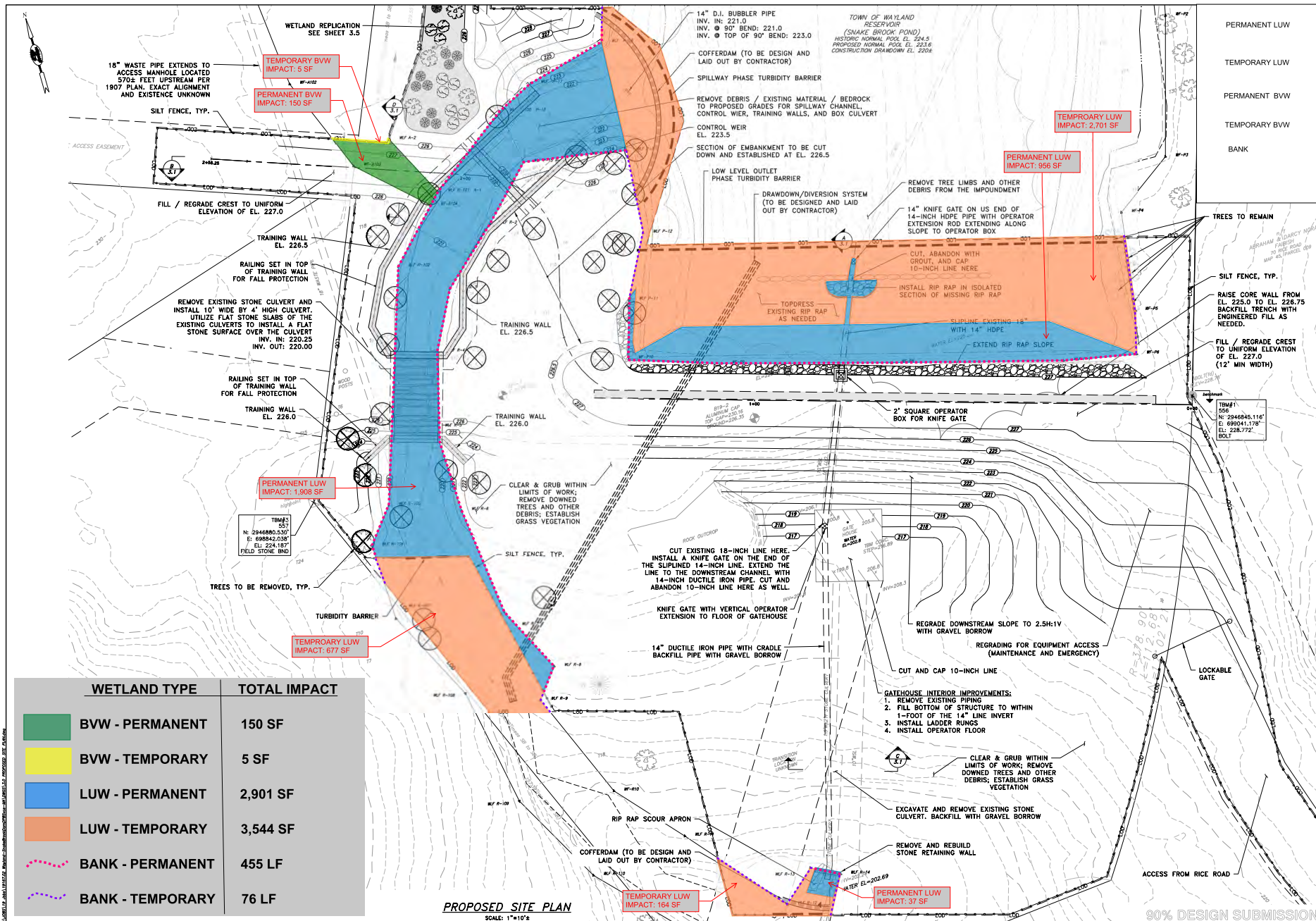
MA01119
Wayland, Massachusetts
TOWN OF WAYLAND CONSERVATION COMMISSION

REVISIONS:	

PROJECT NO.: 19167.02
DATE: NOVEMBER 2022
SCALE: AS NOTED
DESIGNED BY: MLP
CHECKED BY: MED
DRAWN BY: LMC
APPROVED BY: ARO

PROPOSED
SITE PLAN

SHEET NO.: 3.0





PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 01535
(508) 543-1700



SCALE ADJUSTMENT GUIDE
1" = 10'
BAR IS ONE INCH ON ORIGINAL DRAWING.

Snake Brook Dam Rehabilitation
MA01119
WAYLAND, MASSACHUSETTS
TOWN OF WAYLAND CONSERVATION COMMISSION

PERMANENT LUW
TEMPORARY LUW
PERMANENT BVW
TEMPORARY BVW
BANK

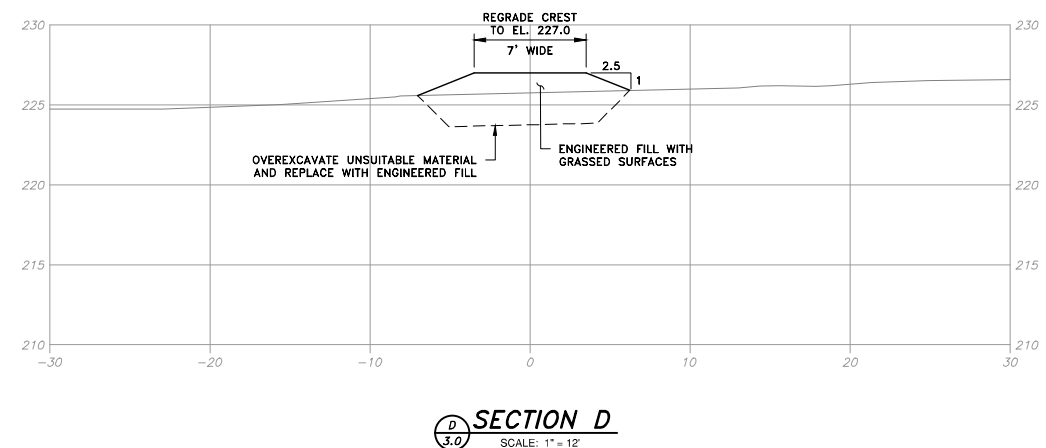
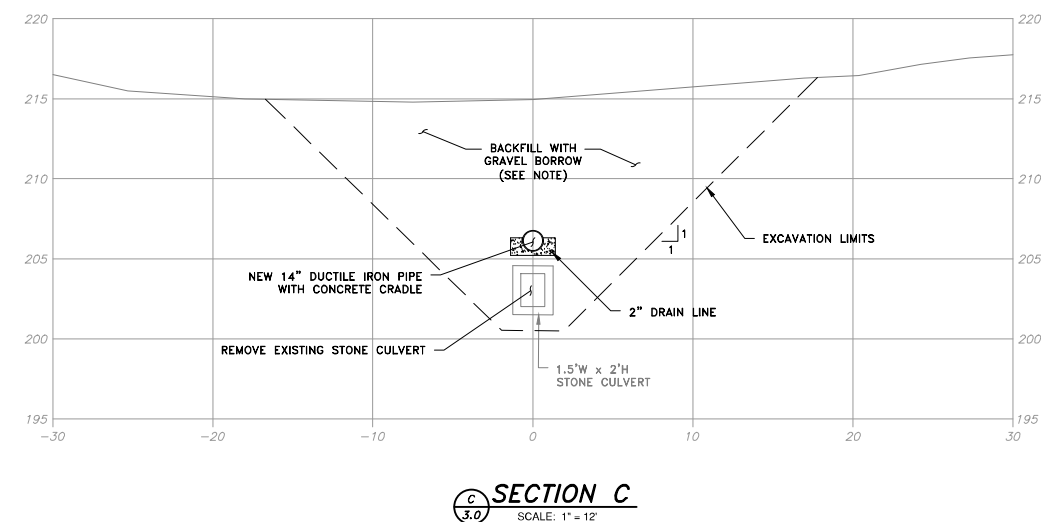
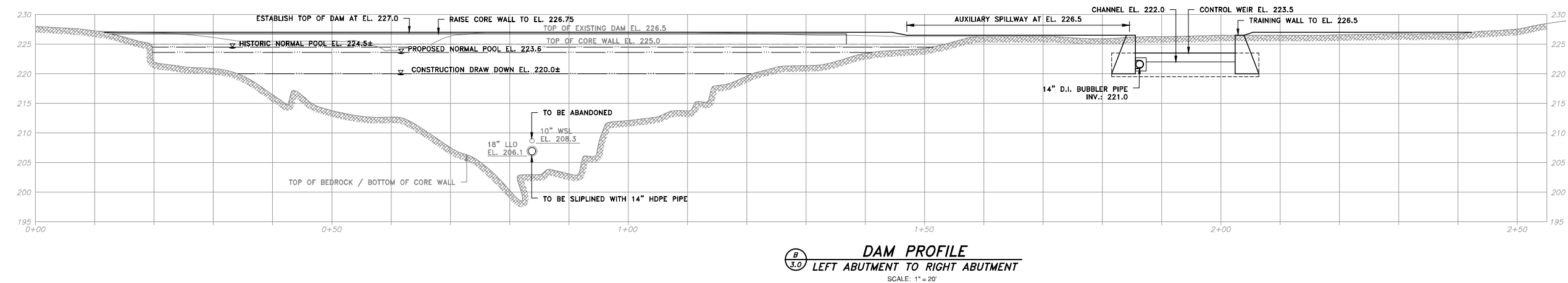
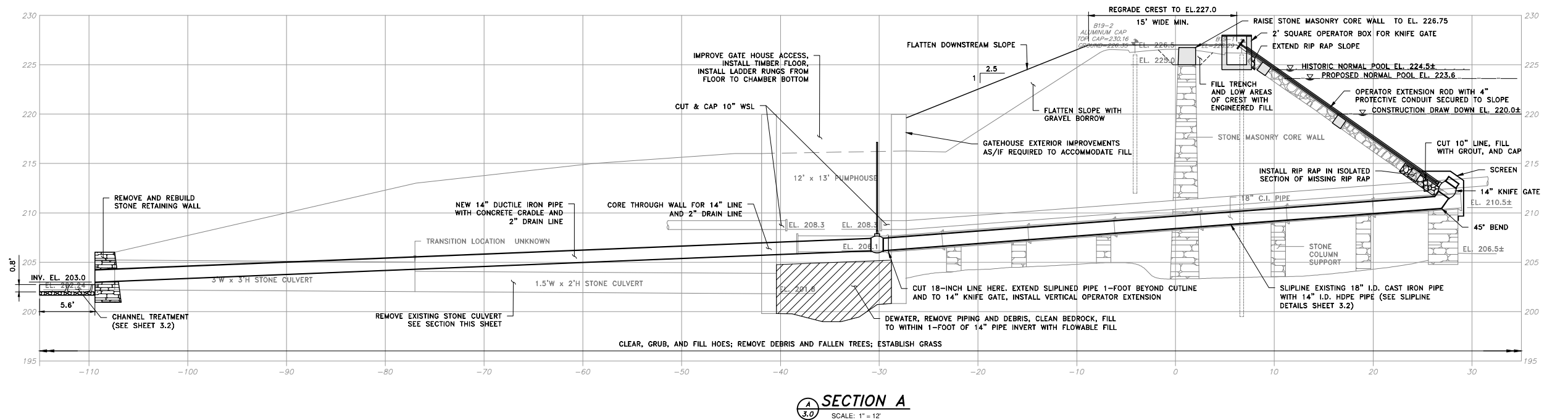
TREES TO REMAIN
SILT FENCE, TYP.
RAISE CORE WALL FROM EL. 225.0 TO EL. 226.75 BACKFILL TRENCH WITH ENGINEERED FILL AS NEEDED.
FILL / REGRADE CREST TO UNIFORM ELEVATION OF EL. 227.0 (12' MIN WIDTH)

REVISIONS:

NO.	DATE	DESCRIPTION

PROJECT NO.: 19167.02
DATE: NOVEMBER 2022
SCALE: AS NOTED

FIGURE 4
WETLAND IMPACT PLAN



NOTE:
BASED UPON SUBSURFACE CONDITIONS DURING AND AFTER EXCAVATION, A DIFFERENT BACKFILL MATERIAL TYPE (ENGINEERED FILL AND/OR MASS CONCRETE) MAY BE SPECIFIED IN AREAS BY THE ENGINEER.



SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

SNAKE BROOK DAM REHABILITATION
MA01119
WAYLAND, MASSACHUSETTS
TOWN OF WAYLAND CONSERVATION COMMISSION

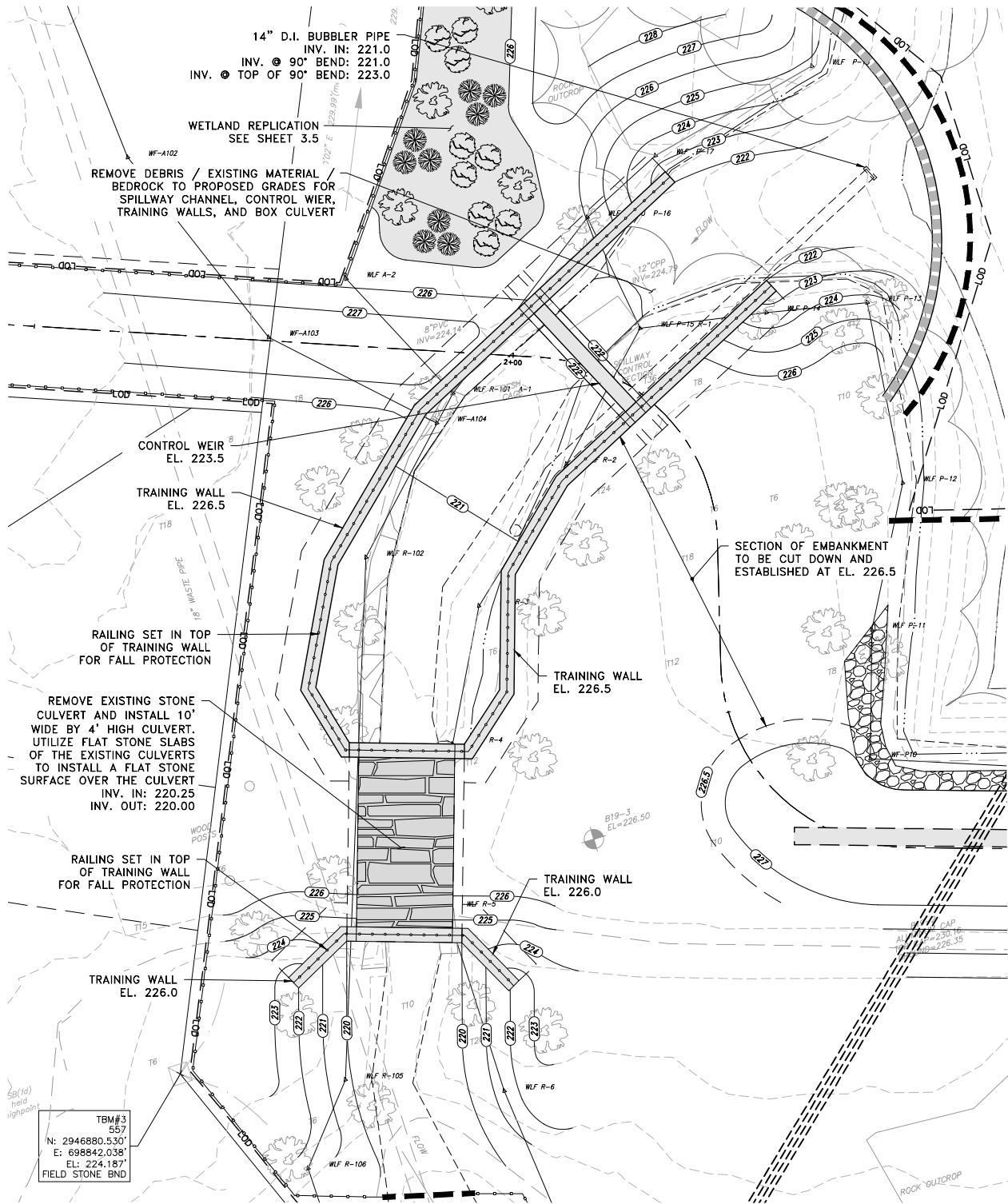
REVISIONS:

PROJECT NO.: 19167.02
DATE: NOVEMBER 2022
SCALE: AS NOTED
DESIGNED BY: MLP
CHECKED BY: MED
DRAWN BY: LMC
APPROVED BY: ARO

PROPOSED
SECTIONS

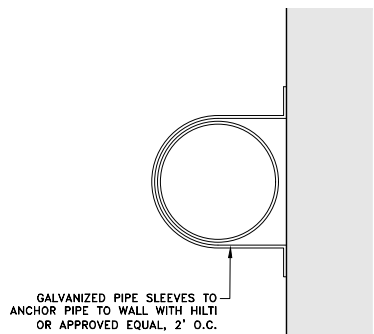
SHEET NO.:

3.1

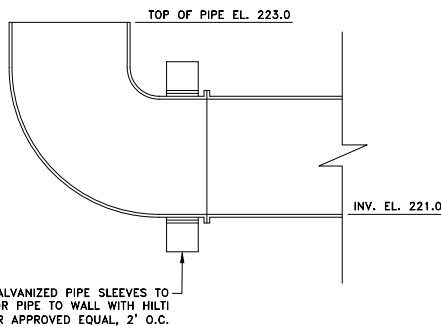


PROPOSED SPILLWAY PLAN

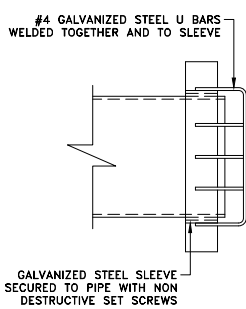
SCALE: 1" = 16' +/-



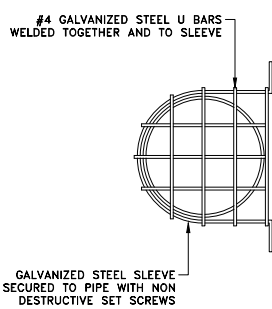
PIPE ANCHOR SECTION



PIPE ANCHOR PROFILE



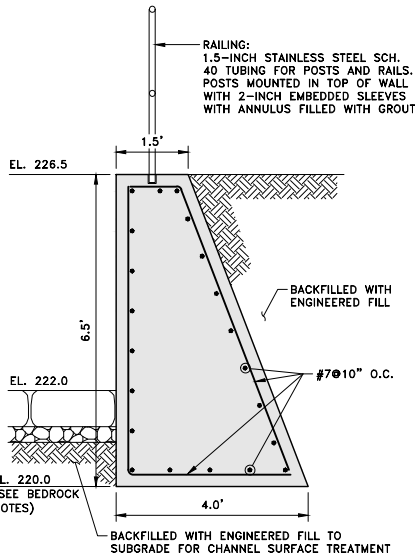
SCREEN



SCREEN

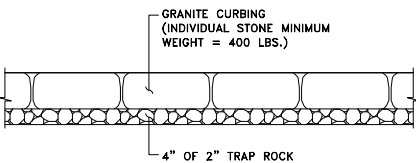
BUBBLER PIPE DETAILS

SCALE: 1" = 2' +/-



TRAINING WALL

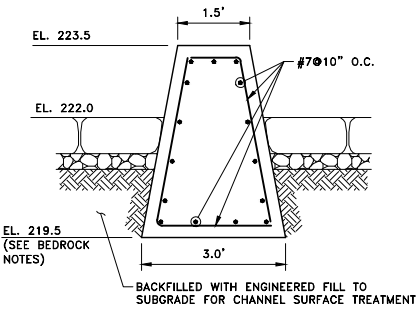
SCALE: 1" = 4'



CHANNEL SURFACE TREATMENT

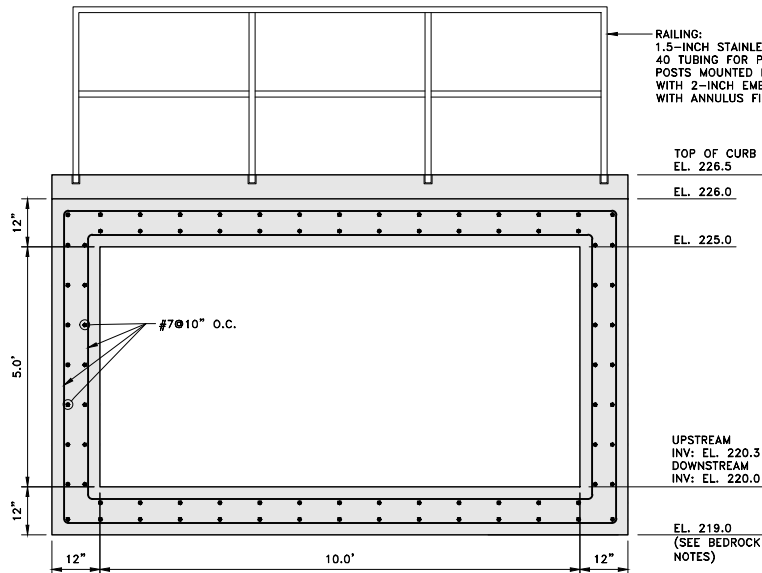
NOT TO SCALE

NOTE:
CHANNEL SURFACE TREATMENT IS NOT NEEDED WHERE BEDROCK IS
ENCOUNTERED WITHIN 1-FOOT OF PROPOSED CHANNEL GRADES



WEIR WALL

SCALE: 1" = 4'



SPILLWAY CULVERT

SCALE: 1" = 4'

NOTE:
IF BEDROCK IS ENCOUNTERED AT OR ABOVE THE SPECIFIED BOTTOM OF CULVERT GRADE, THE BOX CULVERT APPROACH CAN BE REVISED TO
ELIMINATE THE NEED FOR THE FLOOR AND INSTALL AN OPEN BOTTOM CULVERT WITH GRAVITY LEFT AND RIGHT WALLS (SIMILAR SECTION AS
THE TRAINING WALL SECTION PROVIDED ON THIS SHEET) AND THE 12-INCH THICK CONCRETE ROOF SHOWN ON THIS SECTION.

BEDROCK NOTES:

- BEDROCK IS LIKELY TO BE ENCOUNTERED WITHIN AND ABOVE THE SPECIFIED BOTTOM OF THE WALL ELEVATIONS. WHERE BEDROCK
ENCOUNTERED ABOVE OR WITHIN 1-FOOT OF THE BOTTOM OF THE WALL, BEDROCK TIE IN PROCEDURES SHALL BE COMPLETED AS
SPECIFIED BELOW.
- BEDROCK TIE IN PROCEDURES SHALL INCLUDE THE FOLLOWING:
 - CLEANING OF THE BEDROCK SURFACE TO SOUND ROCK FREE FROM ALL SOIL, DUST, AND DEBRIS.
 - DRILLING AND GROUTING OF #7 HOKK DOWELS AT 10-INCHES ON CENTER PERPENDICULAR TO THE WALL AND 18-INCHES ON CENTER
PARALLEL WITH THE WALL. ADHESIVE SHALL BE HILTI HIT HY-70 OR APPROVED EQUIVALENT. EMBEDMENT DEPTH INTO ROCK SHALL
BE 9-INCHES AND 90 DEGREE HOOK WILL BE SITUATED 9-INCHES ABOVE THE BEDROCK SURFACE. HAND BENDING OF THE BAR TO
PROVIDE THE 9-INCHES CLEARANCE BETWEEN DOWEL BAR AND BEDROCK SURFACE SHALL BE PERFORMED. TIE DOWELS TO
REINFORCING STEEL OF WALL WHERE POSSIBLE.
 - COMPLETE CUSTOM BASE FORM WORK AS REQUIRED TO ACCOMMODATE IRREGULAR BEDROCK SURFACE.



SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

SNAKE BROOK DAM REHABILITATION

MA01119

WAYLAND, MASSACHUSETTS

TOWN OF WAYLAND CONSERVATION COMMISSION

REVISIONS:

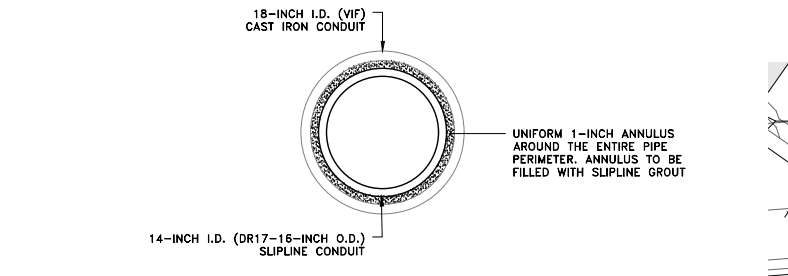
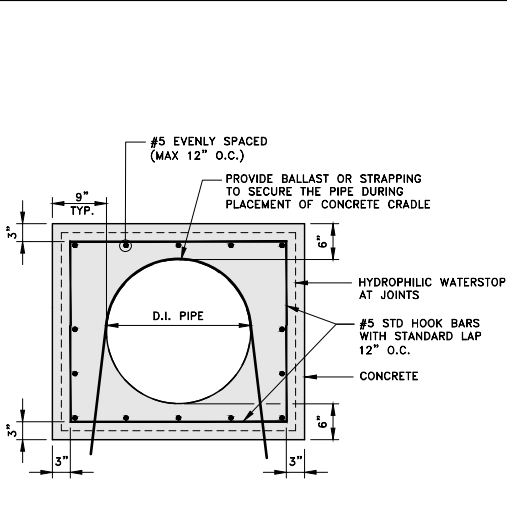
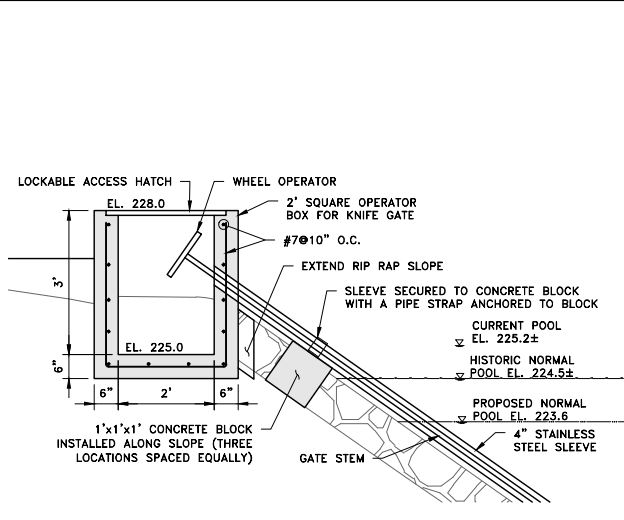
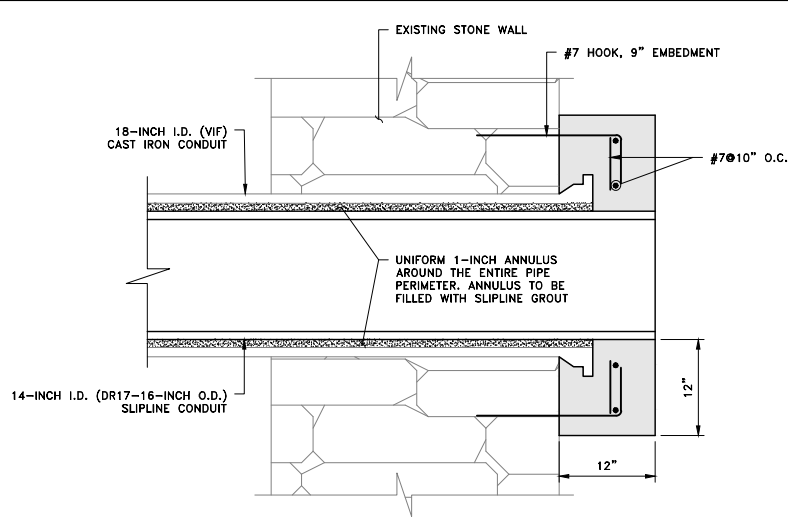
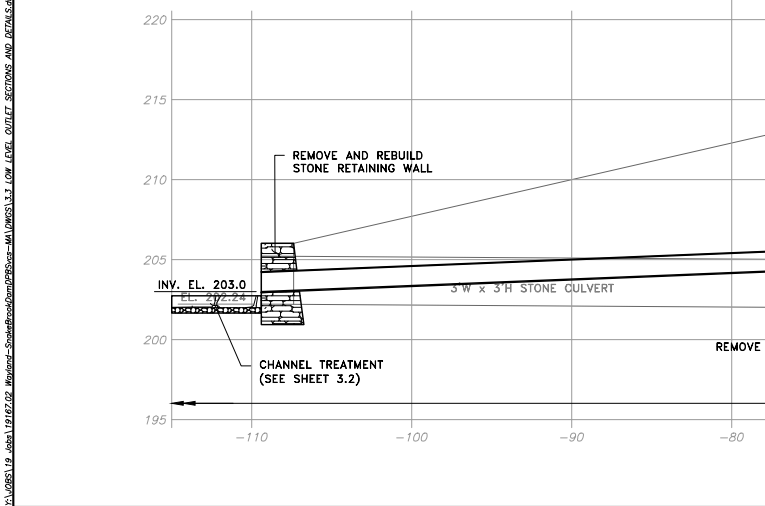
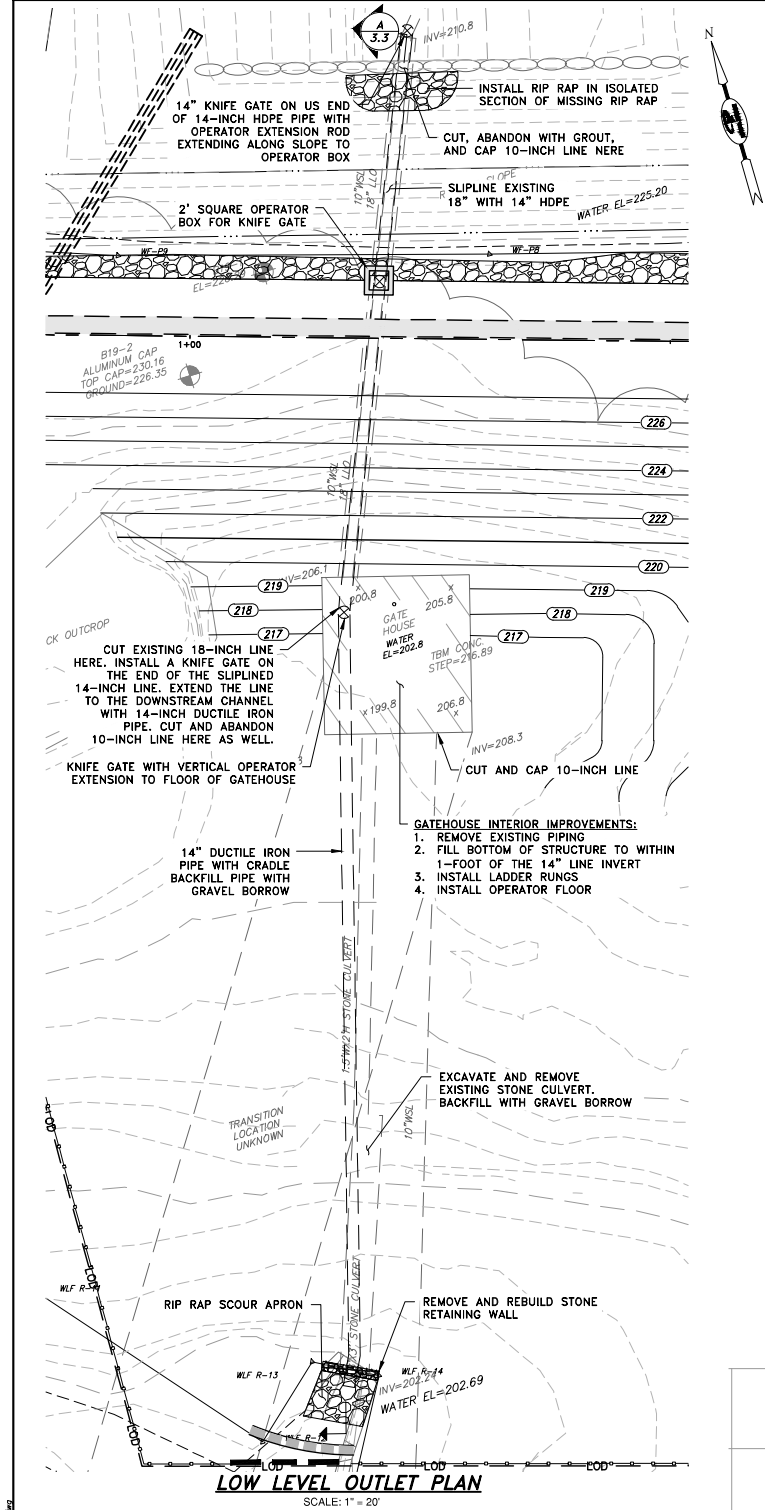
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SPILLWAY
SECTIONS AND DETAILS

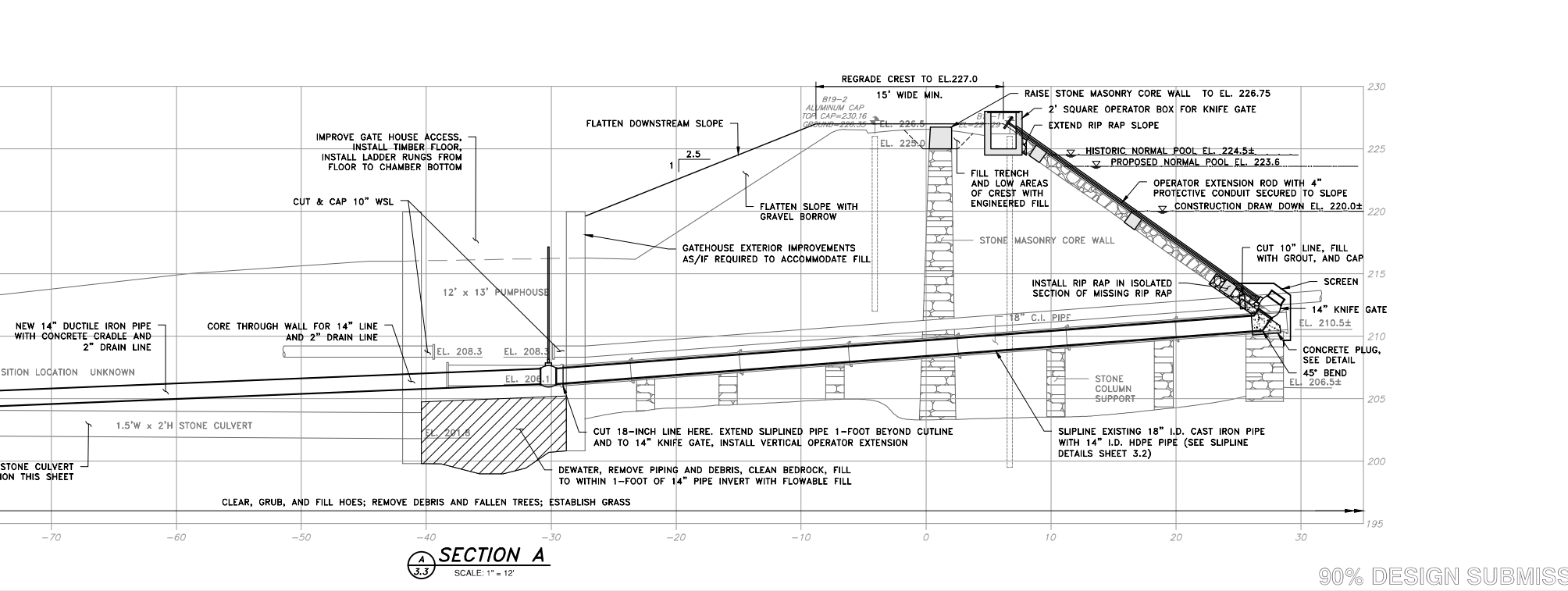
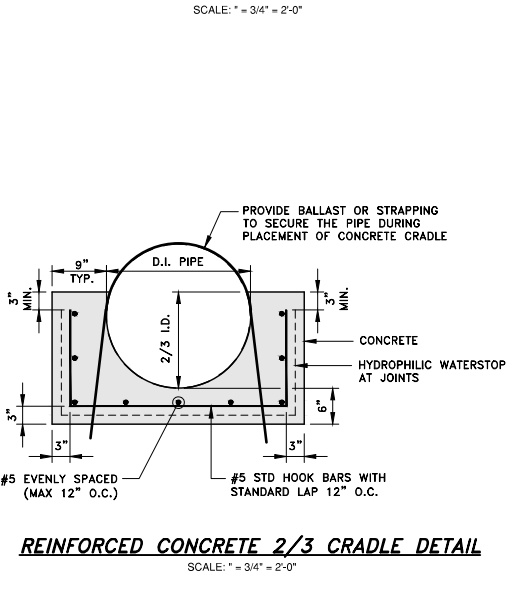
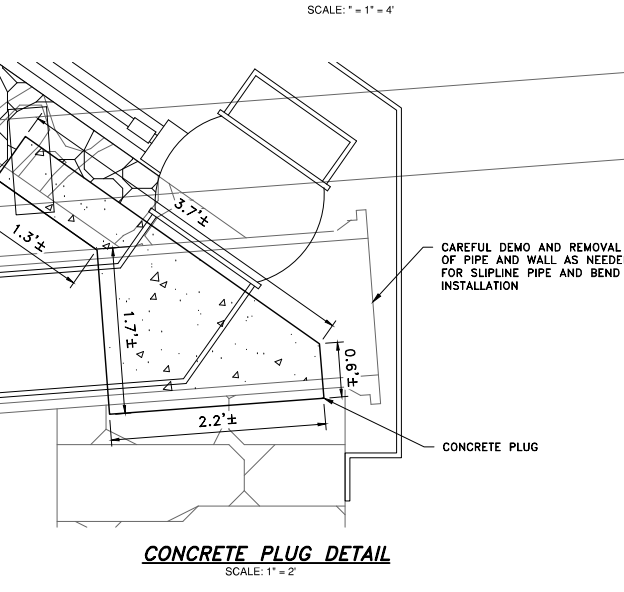
SHEET NO.:

3.2

90% DESIGN SUBMISSION



- SLIPLINE NOTES:**
SCALE: 1"=1'
- PREPARATION**
1. VERIFY THE INSIDE DIAMETER AND CONDITION OF THE 18-INCH CAST IRON HOST CONDUIT. ADJUST APPROACH AS NEEDED.
 2. CLEAN THE HOST CONDUIT OF ALL DEBRIS.
- PIPE INSTALLATION**
1. INSTALL THE 14-INCH SLIPLINE CONDUIT. PIPE JOINTING SHALL COMPLY WITH PIPE MANUFACTURER'S RECOMMENDATIONS. PROVIDE ADDITIONAL MEASURES AS NECESSARY TO ENSURE THE SLIPLINE PIPE IS INSTALLED IN SUCH A WAY SO THAT A UNIFORM ANNULUS IS PROVIDED AROUND THE ENTIRE PIPE PERIMETER.
- GROUT INSTALLATION**
1. INSTALL GROUT LINES, VENT PORTS, AND BULKHEADS AS NECESSARY FOR THE GROUTING OPERATIONS. INCORPORATE MEASURES TO ALLOW FOR THE VERIFICATION OF COMPLETE ANNULUS GROUTING.
 2. GROUT THE ANNULUS AT AN APPROPRIATE PRESSURE TO FILL THE ANNULUS AND NOT CAUSE DAMAGE TO THE HOST OF SLIPLINE CONDUIT. MEASURE GROUT TAKE AND COMPARE TO EXPECTED TAKE AND CONFIRM.
 3. INSTALL A REINFORCED CONCRETE CAP AT BOTH ENDS OF THE SLIPLINED SECTION OF PIPE.



PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508-543-1755

SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

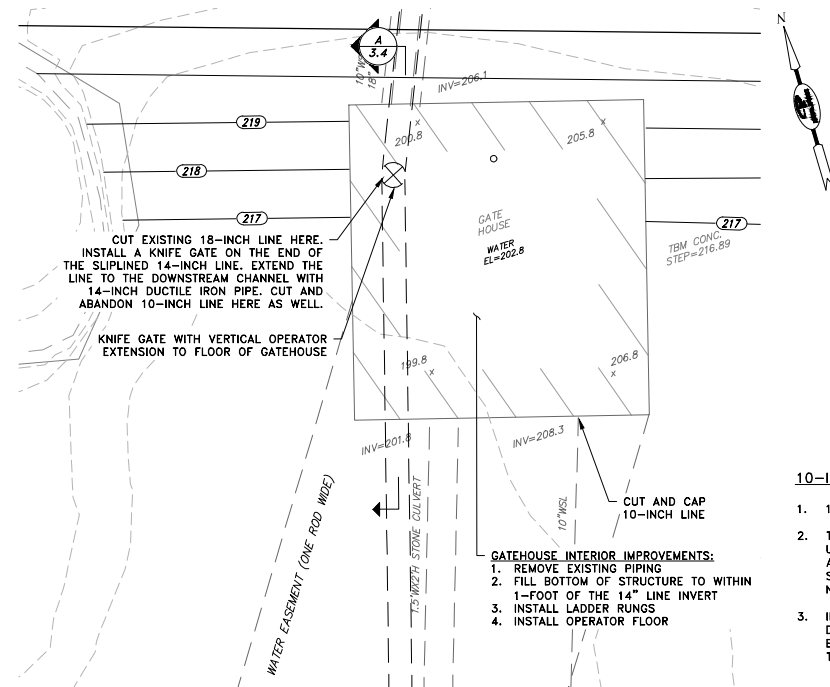
MA01119
WAYLAND, MASSACHUSETTS
TOWN OF WAYLAND CONSERVATION COMMISSION

REVISIONS:	

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DRAWN BY:	LMC
APPROVED BY:	ARO

LOW LEVEL OUTLET
SECTIONS AND DETAILS

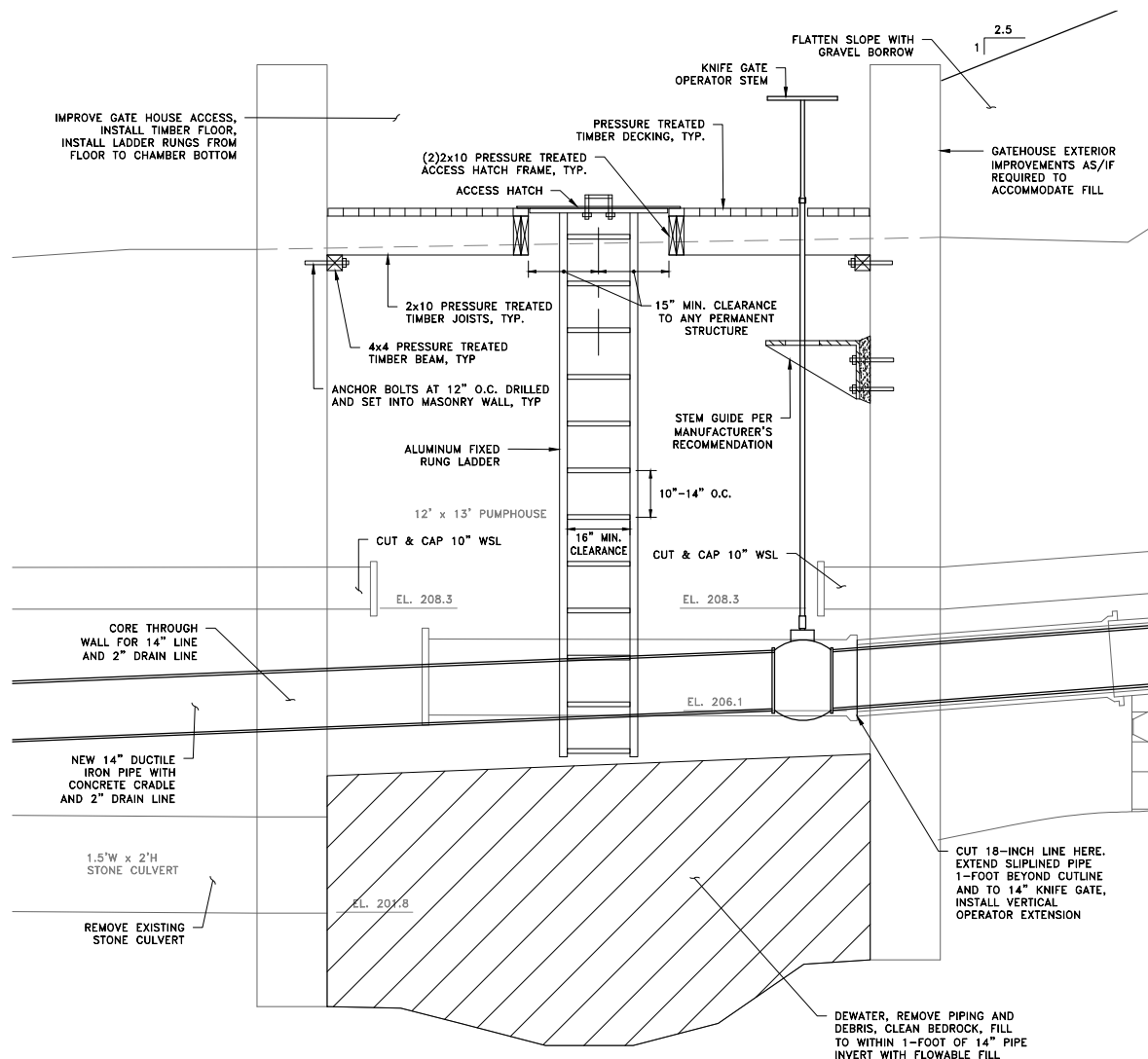
SHEET NO.:
3.3



- 10-INCH LINE ABANDONMENT NOTES:

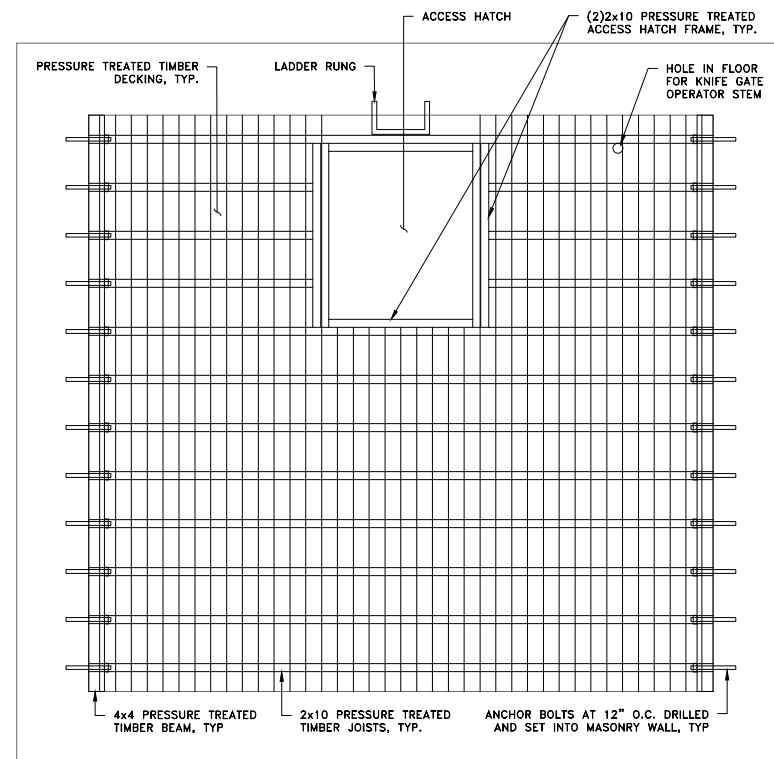
1. 10-INCH LINE SHALL BE CUT AS SHOWN.
2. THE PORTION OF THE LINE THAT EXTENDS FROM UPSTREAM TOE TO THE GATEHOUSE SHALL BE ABANDONED THROUGH GROUTING PROCEDURES SIMILAR TO THOSE DESCRIBED IN THE SLIPLINE NOTES.
3. INSTALL A CONCRETE CAP AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE LINE AS WELL AS THE END OF THE LINE AT THE DOWNSTREAM WALL OF THE GATEHOUSE.

- GATEHOUSE INTERIOR IMPROVEMENTS:
1. REMOVE EXISTING PIPING
 2. FILL BOTTOM OF STRUCTURE TO WITHIN 1-FOOT OF THE 14" LINE INVERT
 3. INSTALL LADDER RUNGS
 4. INSTALL OPERATOR FLOOR



- LADDER NOTES:

1. INDIVIDUAL RUNG SHALL BE CAPABLE OF SUPPORTING A SAFE WORKING LOAD OF 250 LBS APPLIED IN THE MIDDLE OF THE RUNG.
2. RUNGS/STEPS OF THE LADDER SHALL BE CORRUGATED, KNURLED, DIMPLED, COATED WITH SKID-RESISTANT MATERIAL, OR OTHERWISE TREATED TO MINIMIZE SLIPPING.



SCALE ADJUSTMENT
GUIDE

1/2"

1/2 INCH ON
ORIGINAL DRAWING

MA01119

MAO1119
D. MACCAGNOLI

WAYLAND, MASSACHUSETTS

TOWN OF WAYLAND CONSERVATION COMMISSION

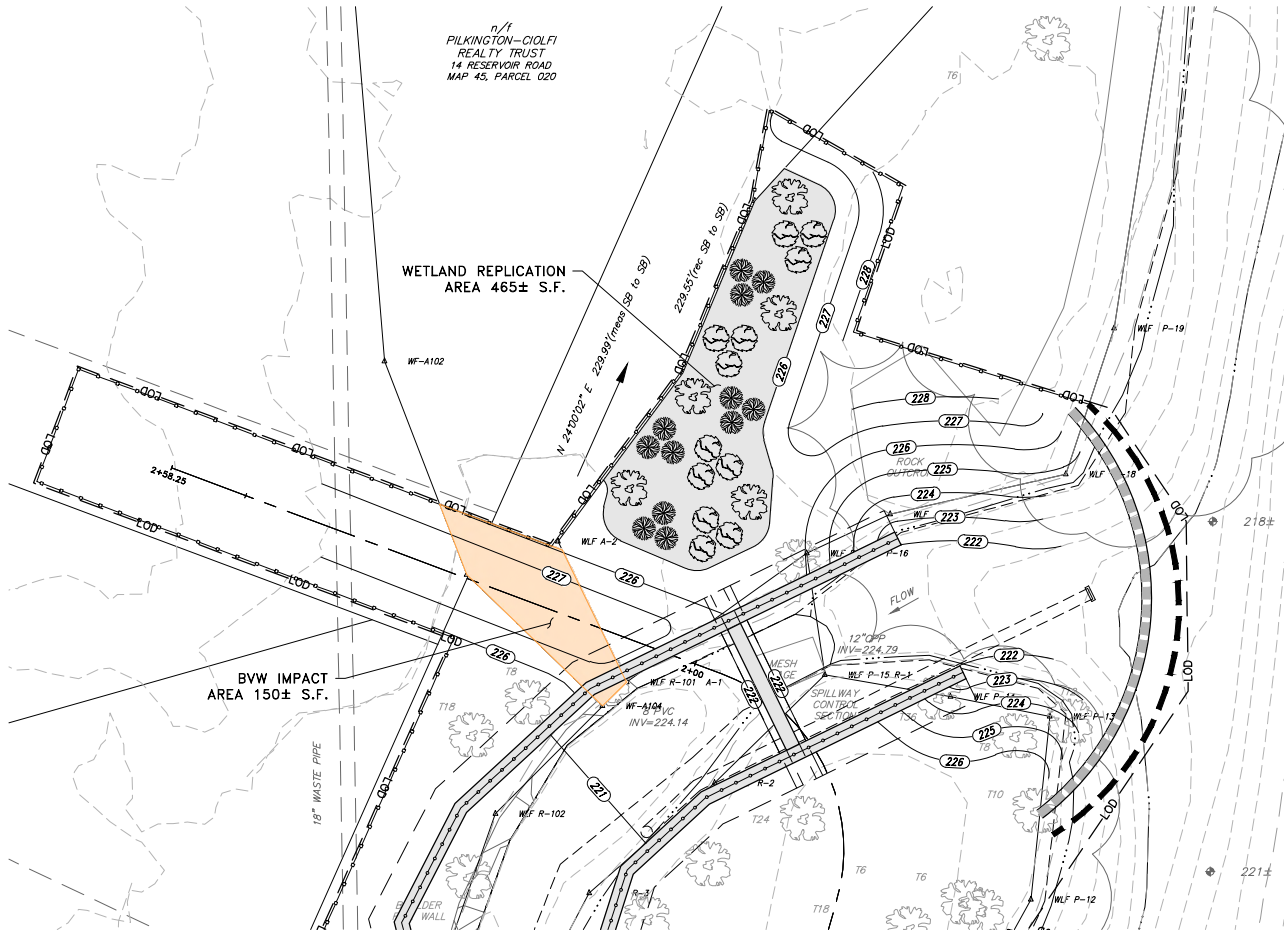
REVISIONS:

PROJECT NO.:	19167.02
DATE:	NOVEMBER 2022
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

GATEHOUSE SECTIONS AND DETAILS

SHEET NO.: _____

3.4



WETLAND REPLICATION PLAN

SCALE: 1" = 20'

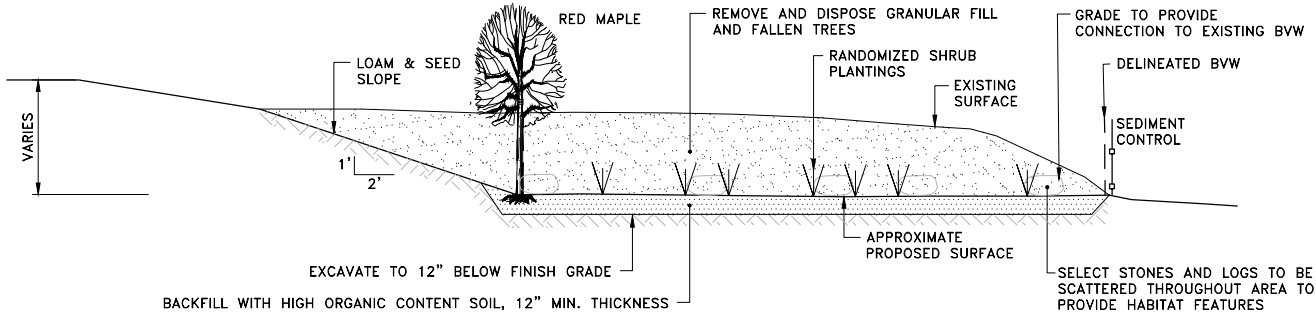
PLANTING TABLE

SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	QUANTITY	SPACING
	RED MAPLE	ACER RUBRUM	4' MIN.	5	12' O.C. ±
	SWEET PEPPERBUSH	CLETHRA ALNIFOLIA	1-3'	12	CLUSTERS OF 3 (6'-8' O.C.)
	HIGHBRUSH BLUEBERRY	VACCINIUM CORYMBOSUM	1-3'	12	CLUSTERS OF 3 (6'-8' O.C.)
	WETLAND SEED MIX**	----	----	----	THROUGHOUT

** NEW ENGLAND WETLAND PLANTS WETMIX OR APPROVED EQUIVALENT.

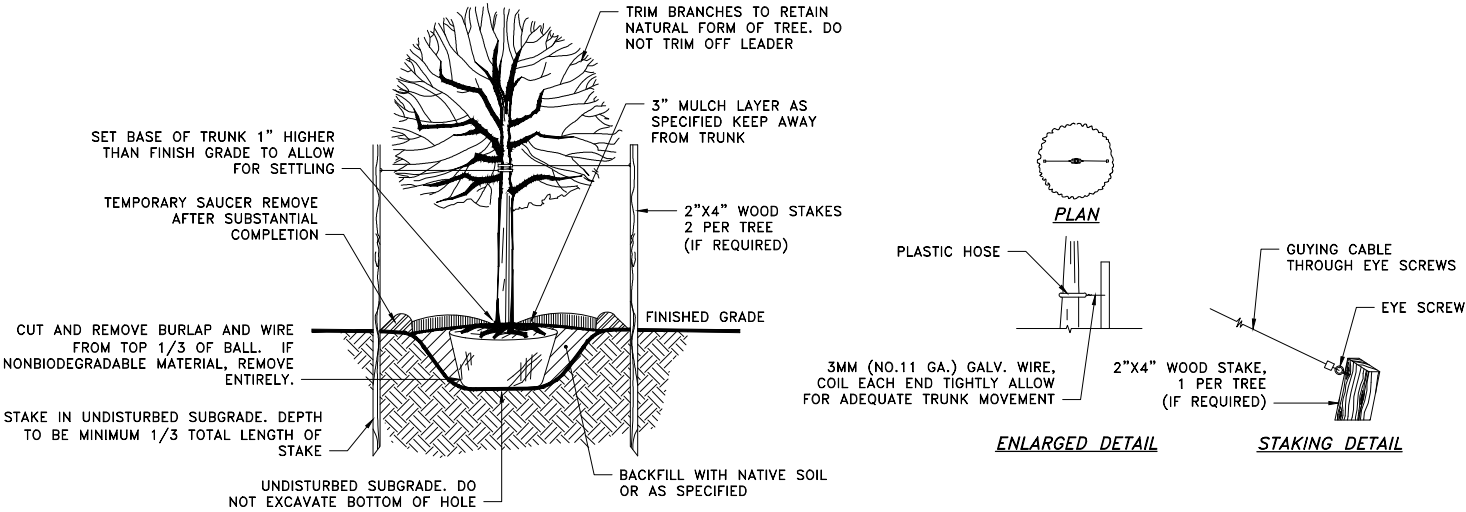
WETLAND REPLICATION NOTES

- APPROXIMATELY 150 SQUARE FEET OF BORDERING VEGETATED WETLANDS WILL BE PERMANENTLY ALTERED IN THIS PROJECT. APPROXIMATELY 465 SQUARE FEET SHALL BE REPLICATED ON-SITE, AS SHOWN ON THE WETLAND REPLICATION PLAN. THIS WILL PROVIDE A REPLACEMENT RATIO OF APPROXIMATELY 3:1.
- THE CONTRACTOR SHALL STAKE OUT THE FOLLOWING AREAS AS INDICATED ON THE WETLAND REPLICATION PLAN:
 - EROSION CONTROL/LIMIT OF WORK
 - REPLICATION AREA
- EROSION CONTROL SHALL BE INSTALLED IN ACCORDANCE WITH THE CONTRACT PLANS AND DOCUMENTS. SEE EROSION AND SEDIMENT CONTROL NOTES.
- ALL STAGES OF CONSTRUCTION SHALL BE OBSERVED BY A WETLAND SPECIALIST.
- FALLEN TREES AND UNDERSTORY VEGETATION WITHIN THE REPLICATION AREA SHALL BE REMOVED. EXISTING TREES MAY BE SELECTED TO REMAIN ON HUMMOCKS IF APPROPRIATE. SELECT INORGANIC MATERIALS SUCH AS ROCKS AND BOULDERS AND SELECT TREES AND LOGS MAY BE STOCKPILED FOR USE IN THE REPLICATION AREA TO PROVIDE WILDLIFE HABITAT.
- EXCAVATE TO APPROPRIATE SUBGRADES APPROXIMATELY 12 INCHES BELOW ELEVATION OF ADJOINING WETLAND EDGE. MATERIAL SHALL BE SPREAD TO CREATE A MOUND AND POOL TOPOGRAPHY FOR THE FINAL GRADE.
- THE WETLAND SPECIALIST SHALL CONFIRM THE ELEVATIONS OF THE REPLICATION AREA PRIOR TO PLACEMENT OF ORGANIC TOPSOIL.
- ORGANIC TOPSOIL SHALL BE IMPORTED IN A SUFFICIENT VOLUME TO COVER THE REPLICATION AREA TO AN AVERAGE DEPTH OF 12 INCHES. TOPSOIL SHALL CONSIST OF A 50/50 MIX OF LOAM AND ORGANIC MATERIAL.
- THE REPLICATION AREA SHALL BE PLANTED WITH INDIGENOUS PLANTS SPECIFIED IN THE PLANTING TABLE. SAPLINGS SHALL BE PLACED 12 FEET ON CENTER AT UPPER PERIMETER AND ALONG SURROUNDING SLOPES. SHRUBS WILL BE ARRANGED IN CLUSTERS OF 3 STAGGERED AT AN AVERAGE SPACING OF 6-8' ON CENTER. PLANTS SHALL BE PLANTED IN A RANDOM ARRANGEMENT TO MIMIC THE NATURAL SURROUNDINGS. FOLLOWING INSTALLATION OF PLANTINGS, A NEW ENGLAND WETLAND SEED MIX SHALL BE ADDED TO PROVIDE HERBACEOUS COVER.
- INORGANIC MATERIALS AND SAVED TREES/LOGS SHALL BE SCATTERED THROUGHOUT THE REPLICATION AREA TO COVER APPROXIMATELY 20% OF THE SURFACE AREA.
- IMMEDIATELY FOLLOWING THE PLANTING OF THE REPLICATION AREA, A SECOND ROW OF EROSION CONTROL SHALL BE INSTALLED BETWEEN THE NEW REPLICATION AREA AND THE UPLAND AREA AS INDICATED ON THE WETLAND REPLICATION PLAN, THIS SHEET. SLOPES BORDERING THE AREA SHALL BE STABILIZED WITH LOAM AND SEED.
- THE REPLICATION AREA SHALL BE VEGETATIVELY STABILIZED BY AT LEAST 75% WITHIN TWO GROWING SEASONS. ALL REPLICATION TASKS SHALL BE DONE IN ACCORDANCE WITH THE WETLAND PROTECTION ACT AND REGULATIONS UNDER 310CMR 10.55 AND THE MASSACHUSETTS INLAND WETLAND REPLICATION GUIDE. EROSION CONTROL BETWEEN THE EXISTING WETLAND AND THE CREATED WETLAND SHALL BE REMOVED ONCE THE 75% STABILIZATION RATE HAS OCCURRED AND HAS BEEN VERIFIED BY THE CONSERVATION COMMISSION.
- PROPOSED GRADES SHOWN ARE APPROXIMATE AND FIELD CONDITIONS ARE TO BE USED IN DETERMINING APPROXIMATE FINISH GRADES.



SCHEMATIC REPLICATION AREA SECTION

SCALE: NOT TO SCALE



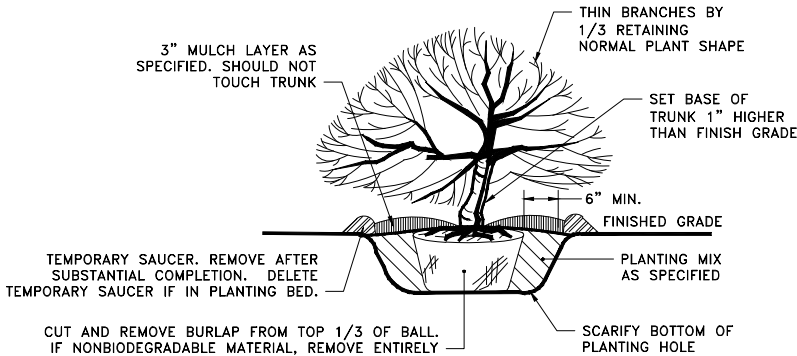
ENLARGED DETAIL

STAKING DETAIL

- NOTES:
- DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
 - WATER THOROUGHLY AFTER INSTALLATION.
 - REMOVE SAUCER AND STAKES TWO YEARS OR LESS AFTER INSTALLATION.
 - PROVIDE DRAINAGE FOR PLANTING PIT IF IN IMPERMEABLE SOIL.

TREE PLANTING

NOT TO SCALE



SHRUB PLANTING

NOT TO SCALE



SCALE ADJUSTMENT
GUIDE
0" 1/2"
BAR IS 1/2 INCH ON
ORIGINAL DRAWING

SNAKE BROOK DAM REHABILITATION

MA01119

WAYLAND, MASSACHUSETTS

TOWN OF WAYLAND CONSERVATION COMMISSION

REVISIONS:

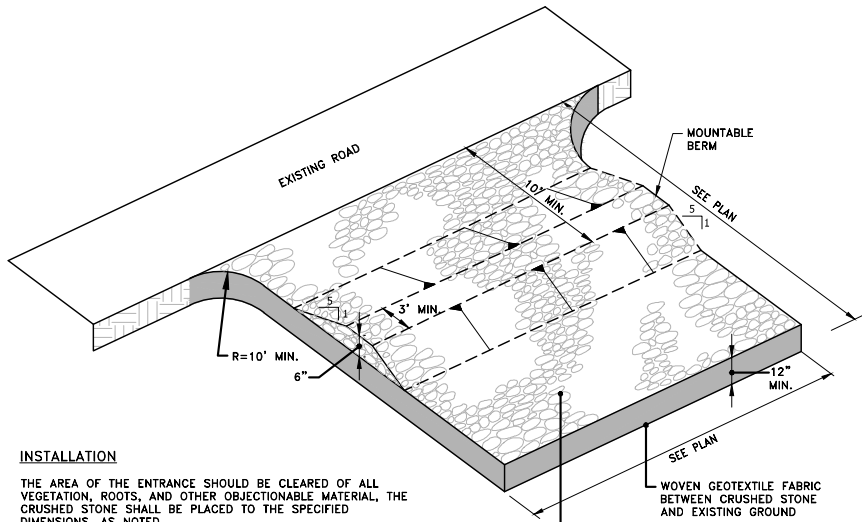
RTC	SEPTEMBER 2021
RTC	OCTOBER 2021

PROJECT NO.:	19167.02
DATE:	NOVEMBER 2022
SCALE:	AS NOTED
DESIGNED BY:	MLP
CHECKED BY:	MED
DRAWN BY:	LMC
APPROVED BY:	ARO

WETLAND
REPLICATION
PLAN

SHEET NO.:

3.5



INSTALLATION

THE AREA OF THE ENTRANCE SHOULD BE CLEARED OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL. THE CRUSHED STONE SHALL BE PLACED TO THE SPECIFIED DIMENSIONS, AS NOTED.

MAINTENANCE

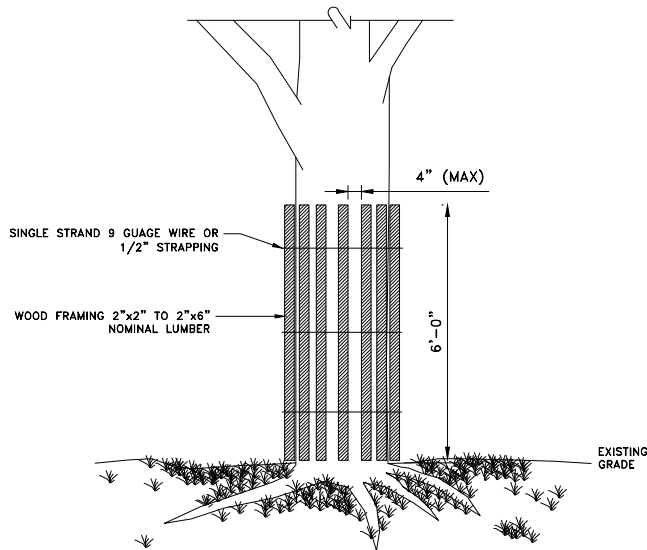
THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENTS ONTO PUBLIC RIGHT-OF-WAYS THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE, OR ADDITIONAL LENGTH, AS CONDITIONS DEMAND, AND REPAIR, AND / OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.

LOCATION

SEE PROJECT PLANS FOR LOCATION OF CONSTRUCTION ENTRANCE.

CONSTRUCTION ENTRANCE PROTECTION STONE STABILIZATION PAD

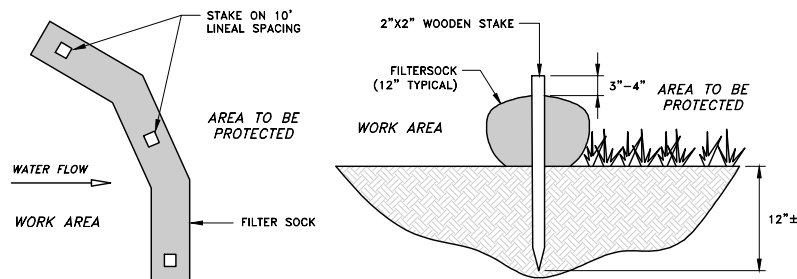
NOT TO SCALE



NOTE: THIS DETAIL SHALL BE USED TO PROTECT THE TREE'S TRUNK IN SITUATIONS WHERE CONSTRUCTION IS IN CLOSE PROXIMITY.

TREE PROTECTION DEVICE

NOT TO SCALE

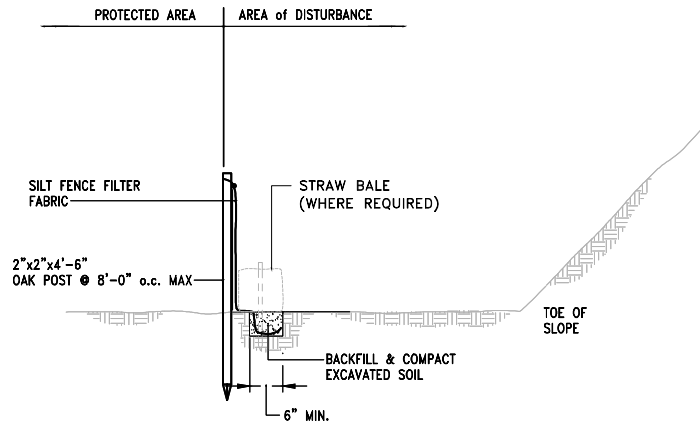


FILTERSOCK NOTES:

1. COMPOST / SOIL / ROCK / SEED FILL TO MEET APPLICATION REQUIREMENTS.
2. COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE AS DETERMINED BY ENGINEER.

FILTERSOCK DETAIL

NOT TO SCALE

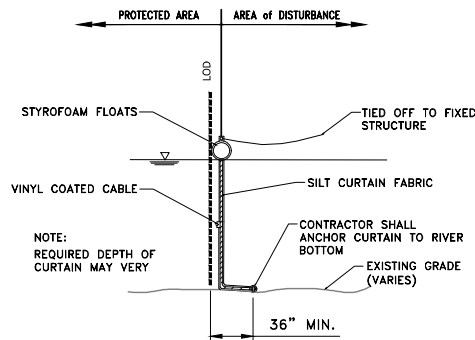


NOTE:

SILT FENCE FABRIC SHALL NOT BE SLIT. STRAW BALE POST SHALL BE DRIVEN THROUGH SILT FENCE FABRIC.

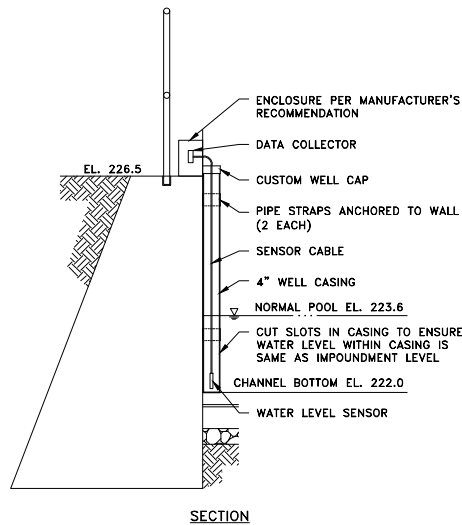
SILT FENCE DETAIL

NOT TO SCALE



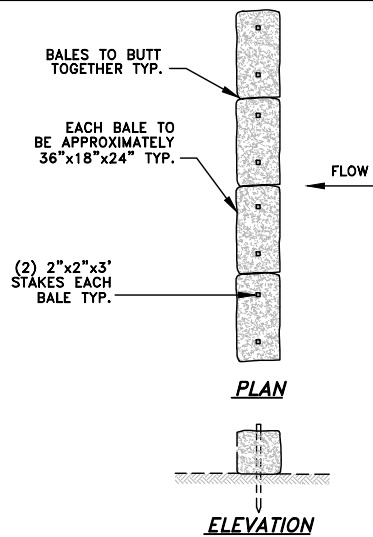
TYPICAL TURBIDITY BARRIER

NOT TO SCALE



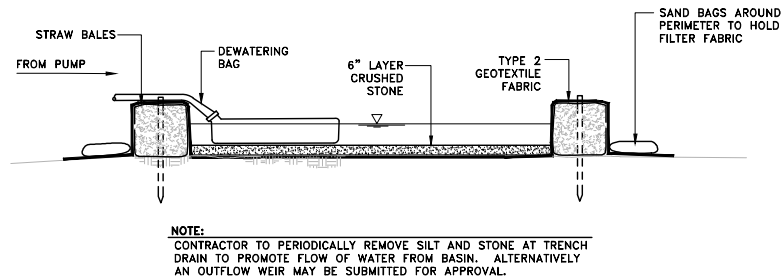
WATER LEVEL METER

SCALE: 1" = 4'



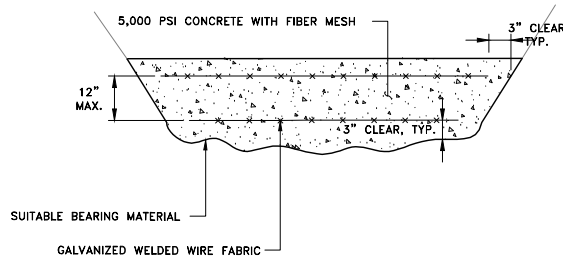
STRAW BALE DETAIL

NOT TO SCALE



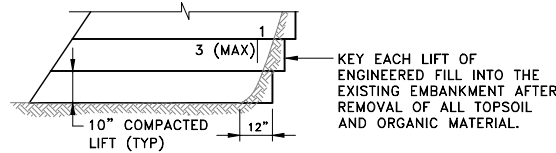
FILTER FABRIC DEWATERING BASIN

NOT TO SCALE



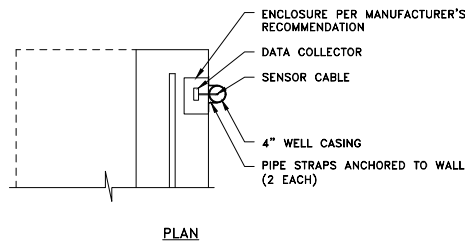
MASS CONCRETE DETAIL

NOT TO SCALE



PLACEMENT OF FILL MATERIALS

NOT TO SCALE



WATER LEVEL METER NOTES:

1. DATA LOGGER: HOBO RX3000
2. COMMUNICATION: CELLULAR WITH PREMIUM 4G DATA PLAN
3. POWER: 15 WATT SOLAR PANEL WITH BATTERY BACKUP
4. ADDED SENSORS: HOBOnet RAINFALL (INCHES) SENSOR
5. WATER LEVEL SENSOR: FRESHWATER SS LEVEL SENSOR, 30', TITANIUM/ACETAL, 2.8m CABLE, WATER LEVEL SENSOR MODULE, AND WELL CAP
6. ADDED NODULES: HOBOnet MANAGER



SCALE ADJUSTMENT GUIDE

0" 1/2"

BAR IS 1/2 INCH ON ORIGINAL DRAWING

SNAKE BROOK DAM REHABILITATION

MA01119

WAYLAND, MASSACHUSETTS

TOWN OF WAYLAND CONSERVATION COMMISSION

REVISIONS:

PROJECT NO.: 19167.02
DATE: NOVEMBER 2022
SCALE: AS NOTED
DESIGNED BY: MLP
CHECKED BY: MED
DRAWN BY: LMC
APPROVED BY: ARO

MISCELLANEOUS DETAILS

SHEET NO.:

4.0

90% DESIGN SUBMISSION

CHAPTER 253 PERMIT



Certified Mail No. 9589 0710 5270 0474 6306 63
Return Receipt Requested

M.G.L. Chapter 253
Dam Safety Permit
Permit No. 49 - 2025 - 450

Applicant

Matthew Dunn, P.E.
Pare Corporation
10 Lincoln Rd., Suite 210
Foxboro, MA 02035

On behalf of:
Town of Wayland
Attn: Linda Hansen, Conservation Administrator
41 Cochituate Road
Wayland, MA 01778

Re: Snake Brook Dam Rehabilitation
National Dam ID: MA01119
Registry Location: Middlesex County South, Deed Book 1493, Page 0134
Owner: Town of Wayland
Dam Location: Wayland

Date: February 18, 2025

Dear Mr. Dunn:

Reference is made to the application dated October 2024 and supplemental information provided by Pare Corporation (Pare). These were submitted for Department of Conservation and Recreation (DCR) Office of Dam Safety (ODS) regulatory review of the above-referenced dam rehabilitation project.

Permission is hereby granted under M.G.L. Chapter 253, as amended, to perform work indicated on the drawings titled “**Snake Brook Dam Rehabilitation**” dated November 2024 and as described in supporting documentation provided by Pare.

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

Department of Conservation and Recreation
180 Beaman Street
West Boylston, MA 01583
508-792-7423 508-792-7805 Fax
www.mass.gov/dcr



Maura T. Healey
Governor

Kimberley Driscoll
Lt. Governor

Rebecca L. Tepper, Secretary
Executive Office of Energy & Environmental Affairs

Brian Arrigo, Commissioner
Department of Conservation & Recreation

Permission is granted subject to the following conditions:

- (a) At least 21 days before the start of construction, the dam owner shall provide the DCR/ODS - Permits Section a completed **DAM SAFETY IMPROVEMENTS – NOTICE OF CONSTRUCTION** (form attached) with a construction schedule and proof of recording of the Ch. 253 Permit at the Registry of Deeds in the county where the dam lies. If the Notice of Construction provided to ODS lacks a construction schedule, ‘proof of recording of the permit, or an explanation of why permit recording is not possible, ODS will return the Notice of Construction to the dam owner indicating the Notice of Construction is incomplete and informing the owner that construction shall not commence until ODS has received a complete Notice of Construction with the required attachments.
- (b) For all features of the project, the Dam Engineer (Pare) shall notify ODS of any design change from the original design submitted with the permit application due to regulatory requirements, changes in field conditions or any other unanticipated occurrence. This notification shall be a formal submittal to ODS which includes all relevant revised plans, computations and data (survey, geotechnical, etc.) supporting the design change(s). This submittal shall be forwarded to ODS by registered mail, return receipt requested, and will require an amendment to the permit. Review time may vary based upon the complexity of the design change(s), however, ODS will generally issue the permit amendment within five (5) business days of receipt of a complete design revision submittal.
- (c) The Dam Engineer must report to ODS any unforeseen incidents that occur at the work site during project work. Unforeseen incidents include, but are not limited to, significant uncontrolled seepage into the work area, significant earth support failures or slope failures. The report must explain in detail what occurred, corrective measures taken to mitigate the occurrence and any impacts the occurrence may have had on the project. If the incident results in a design change, ODS must be provided revised design documents (refer to Condition (b), above).
- (d) No trees or woody vegetation shall be planted on the dam, within 20 feet of the toe of earthen dam embankments or within 20 feet of the dam’s appurtenant features.
- (e) The following shall be prepared by the contractor, approved by the Dam Engineer, and submitted to ODS prior to construction:
 - Cofferdam designs. The cofferdams shall be carefully designed to resist anticipated forces without failing and to ensure that seepage around, under, or through the cofferdams is manageable;
 - A water control and diversion plan describing methods to be employed to allow work to be performed “in the dry” and to manage both the water level in Snake Brook Pond and outflow from Snake Brook Pond while construction is in progress; and

- A flood response plan. While construction is underway, weather forecasts, stream flows and water levels shall be monitored to allow adequate time to respond to rising water levels at the construction site. If high water levels are expected, equipment and materials shall be removed from the work area and personnel evacuated. Sufficient materials and equipment required for flood response shall be maintained in a safe location at, or near, the construction site.
- (f) A sufficient level of construction oversight shall be provided by the Dam Engineer to ensure the work conforms to: the project plans and specifications; the Ch. 253 Permit conditions; and generally-accepted dam construction practices as determined by the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation and/or the U.S. Natural Resources Conservation Service.

Guidance, procedures, checklists, worksheets, and references to aid in construction quality assurance are available in the United States Department of Agriculture Natural Resources Conservation Service National Engineering Handbook Part 645-Construction Inspection.

For access to a .pdf copy of NEH Part 645, please email ODS at dam.safety@mass.gov .

- (g) The Dam Engineer shall invite ODS to the preconstruction meeting, another project meeting at 50% completion and the final inspection meeting. ODS reserves the right to make site visits and inspections at any time during the permit period. ODS requests the following items be addressed at the pre-construction meeting:
- Identification of the
 - resident engineer (Owner's representative overseeing the project);
 - contractor's qualified site superintendent; and
 - Dam Engineer's representative overseeing the project.
 - Provide emergency contact information for the contractor and resident engineer;
 - Presentation of the resident engineer's weekly work schedule and discussion of the level of construction oversight to be provided by the resident engineer;
 - Water control features anticipated and the process for the Dam Engineer to either develop or approve the overall control and diversion of water plan. Flood emergency warning and response procedures must be identified;
 - Level of Dam Engineer construction oversight including: identification of any critical construction items to be overseen by the Dam Engineer; procedures for the Dam Engineer's review and approval of shop drawings and other submittals; documentation of Dam Engineer's approval of any design modifications; procedures for coordinating and scheduling the Dam Engineer's inspection of critical construction elements;
 - Anticipated schedule of construction meetings and required attendees. It is expected that while construction is ongoing, weekly construction meetings will be held and

attended by the Dam Engineer, the resident engineer, the contractor's superintendent and other appropriate participants; and

- Presentation of the initial construction schedule with identification and discussion of major items.

ODS shall be provided a copy of the preconstruction meeting minutes.

- (h) The Dam Engineer shall provide ODS written documentation that he/she has reviewed and approved all pertinent submittals or samples concerning critical project dam features. This documentation may be in the form of a submittal log which may be submitted as part of the "as-built" report, described below.
- (i) Upon completion of work the Applicant shall submit to ODS a **DAM SAFETY CERTIFICATE OF COMPLETION** (form attached). With this certificate of completion submit one bound (utilizing plastic comb bindings) as-built report with 11"x17" record drawings signed and stamped by a registered professional civil engineer with contractor's signature attesting that all work was performed according to the plans and specifications. The as-built report shall include documentation of submittals reviewed and approved by the Dam Engineer, copies of any materials or construction testing reports and color photos of construction phases and appurtenant installations. Photograph numbers, location and direction in which each photo was taken must be identified. An electronic copy (as a .pdf) of the as-built report and record drawings shall be provided to ODS via email, .ftp site or on a USB flash drive.
- (j) Once the project has been completed and the reservoir has returned to its normal elevation, the Dam Engineer shall perform a Phase I Inspection to document the condition of the dam.
- (k) Prior to issuance of a Certificate of Compliance, the Dam Engineer shall prepare and provide ODS an Operation and Maintenance Manual (O&MM) for the dam. The O&MM shall describe routine maintenance tasks and operational procedures for both routine and storm conditions.
- (l) The Certificate of Completion, as-built report, O&MM and Phase I Inspection report shall be provided to ODS within 90 days of substantial completion of work unless ODS agrees to later submission of these documents. Submission of these documents is required prior to ODS issuing a Certificate of Compliance.

Any permit issued by DCR shall be subject to revocation by order of the Commissioner if the permittee fails to conform to 302 CMR 10.00, Dam Safety Rules and Regulations, provisions of this permit, or any other applicable laws and regulations.

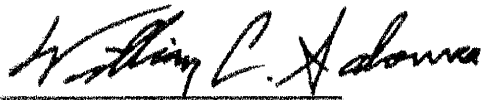
This permit does not release the applicant from the requirements of any other regulatory authority. Such authorizations and/or notifications include, but are not limited to:

Local Conservation Commission;
Massachusetts Department of Environmental Protection (DEP);
Massachusetts Department of Fish and Game (DFG);
Massachusetts Executive Office of Environmental Affairs (EOEA), MEPA Unit; and
U.S. Army Corps of Engineers.

This permit must be recorded by the applicant at the Registry of Deeds in the county where the dam lies. Recording must be done prior to the commencement of construction and a copy of the recorded permit filed with the Office of Dam Safety.

This permit remains valid for two (2) years from the date of issue: **February 18, 2025.**

Permit expiration date: **February 18, 2027.**



William Salomaa, Director
DCR, Office of Dam Safety



David Ouellette, Permit Engineer
DCR, Office of Dam Safety

Attachments: Dam Safety Improvements – Notice of Construction form
Dam Safety Certificate of Completion form

Informational (NOT TO BE RECORDED AT REGISTRY OF DEEDS)

Excerpts from Dam Safety Rules Regulations:

302 CMR 10.09(5): Recording a Chapter 253 Permit.

A permit to construct, drawdown, repair, alter, breach or remove a dam shall be recorded at the Registry of Deeds in the county where the dam lies. Recording must be done prior to the commencement of construction and a copy of the recorded permit filed with the Commissioner.

To: DCR, Office of Dam Safety – Permits Section
180 Beaman Street
West Boylston, MA 01583

DAM SAFETY IMPROVEMENTS - NOTICE OF CONSTRUCTION

Dam Owner/Applicant

Name:
Representative:
Address:
Phone:
Fax:
Email Address:

Project

Project location Town/City:
Dam name:
National Dam ID Number:
State Dam ID Number:
Nature of Dam Safety Improvements:
Chapter 253 Permit date of issue:
Chapter 253 Permit expiration date:
Permit Recorded at _____ Registry of Deeds
Dam Parcel Registry of Deeds Book Number:
Dam Parcel Registry of Deeds Page Number:
Recorded Permit Registry of Deeds Book Number:
Recorded Permit Registry of Deeds Page Number:
Copy of the recorded permit attached Yes ()
Construction start date:
Construction schedule attached Yes ()

Engineer

Company Name:
Representative:
Address:
Phone:
Fax:
Email Address:

Contractor

Company Name:
Representative:
Address:
Phone:
Fax:
Email Address :

Brief description of project, note location and dates of construction:

By Contractor

Print name and title: _____

Signature and date: _____

By Engineer

Print name, title: _____

Signature and date: _____

By Dam Owner/Applicant

Print name and title: _____

Signature and date: _____

To: DCR, Office of Dam Safety – Permits Section
180 Beaman Street
West Boylston, MA 01583

DAM SAFETY CERTIFICATE OF COMPLETION

Dam Owner/Applicant

Name:
Representative:
Address:
Phone:
Fax:
Email Address:

Project

Project location Town/City:
Dam name:
National Dam ID Number:
State Dam ID Number:
Nature of Dam Safety Improvements:
Chapter 253 Permit date of issue:
Chapter 253 Permit expiration date:
Permit Recorded at _____ Registry of Deeds
Dam Parcel Registry of Deeds Book Number:
Dam Parcel Registry of Deeds Page Number:
Recorded Permit Registry of Deeds Book Number:
Recorded Permit Registry of Deeds Page Number:
Project completion date:

Engineer

Company Name:
Representative:
Address:
Phone:
Fax:
Email Address:

Contractor

Company Name:
Representative:
Address:
Phone:
Fax:
Email Address :

Brief description of project and dates of construction:

Statement of project completion in accordance with plans, specifications, dam safety permit conditions and standard construction practices:

By Contractor

Print name and title: _____

Signature and date: _____

By Engineer

Print name, title and PE stamp here: _____

Signature and date: _____

By Dam Owner/Applicant

Print name and title: _____

Signature and date: _____

**Town of Wayland
Snake Brook Dam Rehabilitation**

APPENDIX B – HYDROCAD REPORT

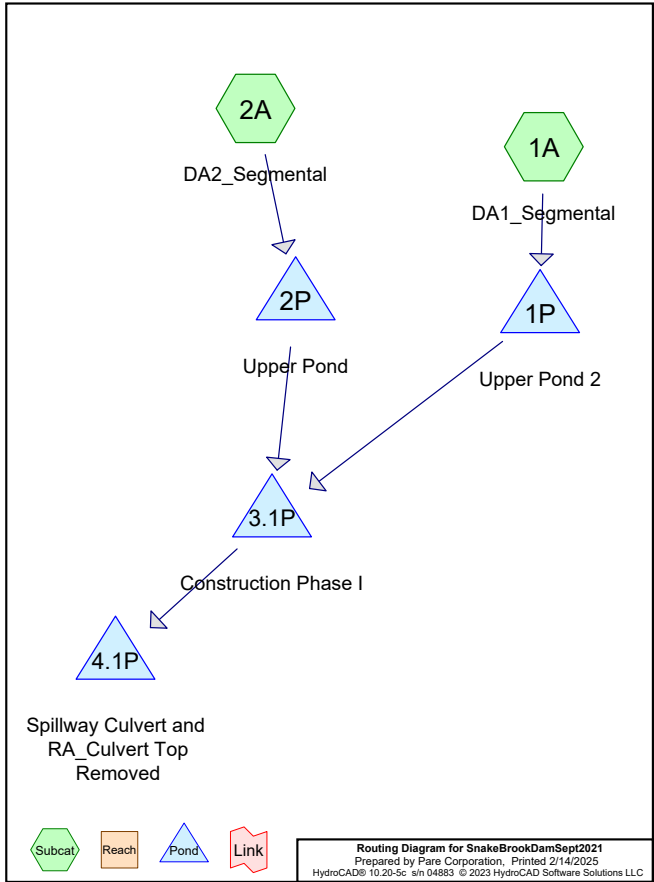
Summary for Subcatchment 1A: DA1_Segmental

Runoff = 125.28 cfs @ 16.29 hrs, Volume= 70.213 af, Depth> 2.94"
Routed to Pond 1P : Upper Pond 2

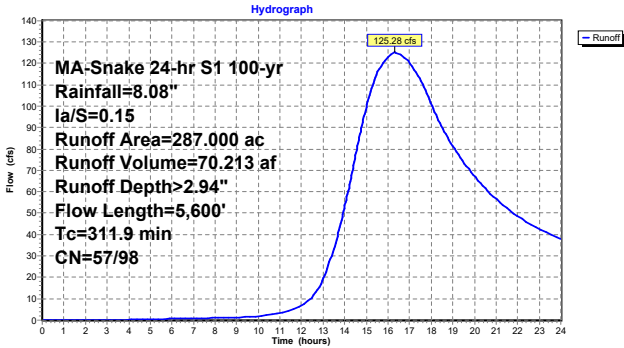
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MA-Snake 24-hr S1 100-yr Rainfall=8.08", Ia/S=0.15

Area (ac)	CN	Description
* 287.000	58	"3% imp"
278.390	57	97.00% Pervious Area
8.610	98	3.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
70.1	100	0.0010	0.02		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.30"
6.0	400	0.0500	1.12		Shallow Concentrated Flow, 270 to 253 Woodland Kv= 5.0 fps
21.5	500	0.0060	0.39		Shallow Concentrated Flow, 253 to 250 Woodland Kv= 5.0 fps
11.8	500	0.0200	0.71		Shallow Concentrated Flow, 250 to 238 Woodland Kv= 5.0 fps
105.4	1,000	0.0010	0.16		Shallow Concentrated Flow, 238 to 237 Woodland Kv= 5.0 fps
95.8	1,700	0.0035	0.30		Shallow Concentrated Flow, 237 to 231 Woodland Kv= 5.0 fps
1.3	1,400		17.94		Lake or Reservoir, Mean Depth= 10.00'
311.9	5,600	Total			



Subcatchment 1A: DA1_Segmental



Summary for Subcatchment 2A: DA2_Segmental

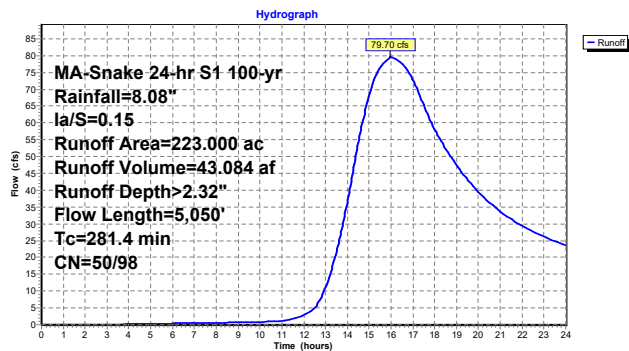
Runoff = 79.70 cfs @ 15.95 hrs, Volume= 43.084 af, Depth> 2.32"
Routed to Pond 2P : Upper Pond

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MA-Snake 24-hr S1 100-yr Rainfall=8.08", Ia/S=0.15

Area (ac)	CN	Description
* 223.000	51	"2% imp"
218.540	50	98.00% Pervious Area
4.460	98	2.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0300	0.09		Sheet Flow, 392 to 389 Woods: Light underbrush n= 0.400 P2= 3.30"
15.8	150	0.0010	0.16		Shallow Concentrated Flow, 389 to 389 Woodland Kv= 5.0 fps
1.3	200	0.2500	2.50		Shallow Concentrated Flow, 389 to 339 Woodland Kv= 5.0 fps
52.7	500	0.0010	0.16		Shallow Concentrated Flow, 338 to 338 Woodland Kv= 5.0 fps
20.8	1,600	0.0660	1.28		Shallow Concentrated Flow, 338 to 233 Woodland Kv= 5.0 fps
172.1	2,000	0.0015	0.19		Shallow Concentrated Flow, 233 to 230 Woodland Kv= 5.0 fps
0.7	500		11.35		Lake or Reservoir, Mean Depth= 4.00'
281.4	5,050	Total			

Subcatchment 2A: DA2_Segmental



Summary for Pond 1P: Upper Pond 2

Inflow Area = 287.000 ac, 3.00% Impervious, Inflow Depth > 3.01" for 100-yr event
Inflow = 126.18 cfs @ 16.29 hrs, Volume= 71.999 af, Incl. 0.90 cfs Base Flow
Outflow = 126.11 cfs @ 16.31 hrs, Volume= 71.225 af, Atten= 0%, Lag= 1.1 min
Primary = 126.11 cfs @ 16.31 hrs, Volume= 71.225 af
Routed to Pond 3.1P : Construction Phase I

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 225.57' Storage= 1.927 af
Peak Elev= 226.83' @ 16.31 hrs Storage= 2.874 af (0.946 af above start)

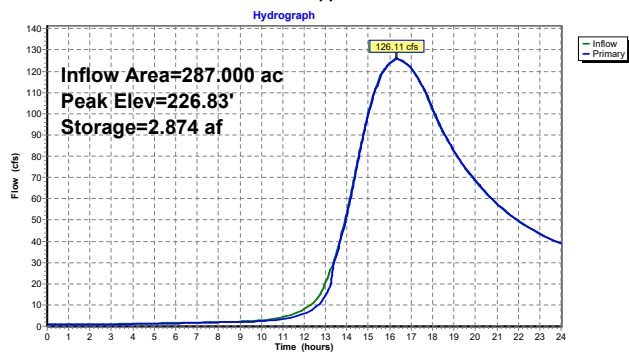
Plug-Flow detention time= 34.2 min calculated for 69.268 af (96% of inflow)
Center-of-Mass det. time= 4.6 min (1,062.1 - 1,057.5)

Volume	Invert	Avail. Storage	Storage Description
#1	223.00'	30.000 af	Ras Terrain with Bathyl Listed below
Elevation (feet)	Cum. Store (acre-feet)		
223.00	0.000		
227.00	3.000		
230.00	30.000		

Device	Routing	Invert	Outlet Devices
#1	Primary	225.40'	Upper Dam 1, C= 3.00 Offset (feet) 50.00 100.00 200.00 202.00 206.00 208.00 270.00 350.00 Elev. (feet) 231.00 226.50 226.50 225.40 225.40 226.50 226.50 231.00

Primary OutFlow Max=126.10 cfs @ 16.31 hrs HW=226.83' TW=224.68' (Dynamic Tailwater)
1=Upper Dam 1 (Weir Controls 126.10 cfs @ 1.84 fps)

Pond 1P: Upper Pond 2



Summary for Pond 2P: Upper Pond

Inflow Area = 223.000 ac, 2.00% Impervious, Inflow Depth > 2.38" for 100-yr event
Inflow = 80.30 cfs @ 15.95 hrs, Volume= 44.275 af, Incl. 0.60 cfs Base Flow
Outflow = 78.89 cfs @ 16.38 hrs, Volume= 37.032 af, Atten= 2%, Lag= 25.8 min
Primary = 78.89 cfs @ 16.38 hrs, Volume= 37.032 af
Routed to Pond 3.1P : Construction Phase I

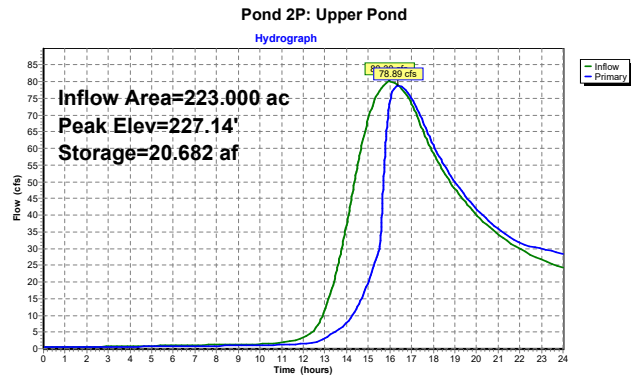
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 225.63' Storage= 12.038 af
Peak Elev= 227.14' @ 16.38 hrs Storage= 20.682 af (8.644 af above start)

Plug-Flow detention time= 271.8 min calculated for 24.983 af (56% of inflow)
Center-of-Mass det. time= 50.7 min (1,104.1 - 1,053.4)

Volume	Invert	Avail. Storage	Storage Description
#1	221.00'	40.000 af	Ras Terrain with Bathyl Listed below
Elevation (feet)	Cum. Store (acre-feet)		
221.00	0.000		
226.00	13.000		
230.00	40.000		

Device	Routing	Invert	Outlet Devices
#1	Primary	225.50'	Upper Dam, C= 3.00 Offset (feet) 0.00 25.00 100.00 102.00 106.00 108.00 310.00 340.00 Elev. (feet) 231.00 227.00 227.00 225.50 225.50 227.00 227.00 231.00

Primary OutFlow Max=78.88 cfs @ 16.38 hrs HW=227.14' TW=224.77' (Dynamic Tailwater)
1=Upper Dam (Weir Controls 78.88 cfs @ 1.53 fps)

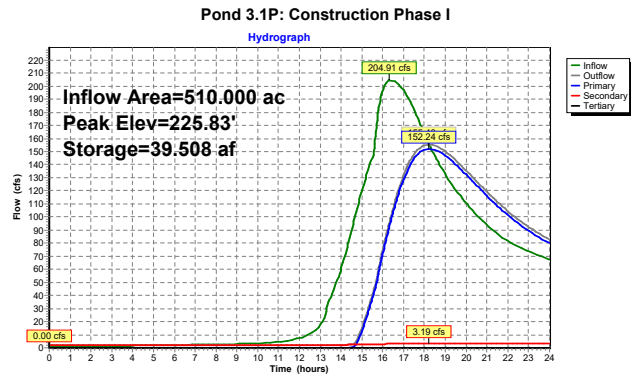


#4 Secondary 218.00' Elev. (feet) 230.00 227.20 226.60 226.55 226.55 227.00 230.00
6-inch Siphon X 2.00 6.000" Diameter, C= 0.600
150.0' Long Tube, Hazen-Williams C= 130
Inlet / Outlet Elev. = 0.00' / 217.00' Starts@218.00' Breaks@217.00'

Primary OutFlow Max=152.23 cfs @ 18.22 hrs HW=225.83' TW=224.38' (Dynamic Tailwater)
1=Spillway Channel Cleared and Cut down (10' at El. 222) Weir Controls 152.23 cfs @ 3.98 fps)

Secondary OutFlow Max=3.19 cfs @ 18.23 hrs HW=225.83' (Free Discharge)
4=6-inch Siphon (Tube Controls 3.19 cfs @ 8.12 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=220.00' (Free Discharge)
2=Dam Crest LT of Spwy (Controls 0.00 cfs)
3=RA OT (Controls 0.00 cfs)



Primary OutFlow Max=152.24 cfs @ 18.22 hrs HW=224.38' (Free Discharge)
1=Culvert (Inlet Controls 74.69 cfs @ 4.64 fps)
2=Spwy Culvert with Roof Removed (Weir Controls 77.55 cfs @ 4.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=221.50' (Free Discharge)
3=Overtopping (Controls 0.00 cfs)

Summary for Pond 3.1P: Construction Phase I

Inflow Area = 510.000 ac, 2.56% Impervious, Inflow Depth > 2.55" for 100-yr event
Inflow = 204.91 cfs @ 16.32 hrs, Volume= 108.257 af
Outflow = 155.43 cfs @ 18.22 hrs, Volume= 86.424 af, Atten= 24%, Lag= 114.0 min
Primary = 152.24 cfs @ 18.22 hrs, Volume= 81.861 af
Routed to Pond 4.1P : Spillway Culvert and RA_Culvert Top Removed
Secondary = 3.19 cfs @ 18.23 hrs, Volume= 4.563 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Starting Elev= 220.00' Storage= 7.964 af
Peak Elev= 225.83' @ 18.23 hrs Storage= 39.508 af (31.544 af above start)

Plug-Flow detention time= 199.3 min calculated for 78.427 af (72% of inflow)
Center-of-Mass det. time= 78.1 min (1,154.6 - 1,076.5)

Volume	Invert	Avail.Storage	Storage Description
#1	206.50'	100.000 af	Ras Terrain with Bathyl Listed below

Elevation (feet)	Cum.Store (acre-feet)
206.50	0.000
210.80	0.065
213.30	0.439
215.20	1.190
217.30	2.884
219.20	5.635
220.50	9.420
222.00	15.900
224.20	28.200
226.50	44.200
227.00	50.000
228.00	58.000
229.00	65.000
230.00	75.000
231.00	85.000
232.00	100.000

Device	Routing	Invert	Outlet Devices (Turned on 2 times)
#1	Primary	222.00'	10.0' long x 10.0' breadth Spillway Channel Cleared and Cut down (10' at El. 222) Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 Dam Crest LT of Spwy X 0.00, C= 2.60 Offset (feet) 10.00 50.00 75.00 100.00 105.00 150.00 180.00 200.00 200.00 Elev. (feet) 233.00 227.30 226.50 226.50 226.30 226.30 227.00 227.00 233.00 RA OT, C= 1.50 Offset (feet) 0.00 0.00 14.00 26.00 29.00 40.00 40.00
#2	Tertiary	226.30'	
#3	Tertiary	226.55'	

Summary for Pond 4.1P: Spillway Culvert and RA_Culvert Top Removed

Inflow Area = 510.000 ac, 2.56% Impervious, Inflow Depth > 1.93" for 100-yr event
Inflow = 152.24 cfs @ 18.22 hrs, Volume= 81.861 af
Outflow = 152.24 cfs @ 18.22 hrs, Volume= 81.849 af, Atten= 0%, Lag= 0.1 min
Primary = 152.24 cfs @ 18.22 hrs, Volume= 81.849 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 224.38' @ 18.22 hrs Storage= 0.019 af

Plug-Flow detention time= 0.1 min calculated for 81.849 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,173.7 - 1,173.6)

Volume	Invert	Avail.Storage	Storage Description
#1	221.50'	0.400 af	Custom Stage Data Listed below

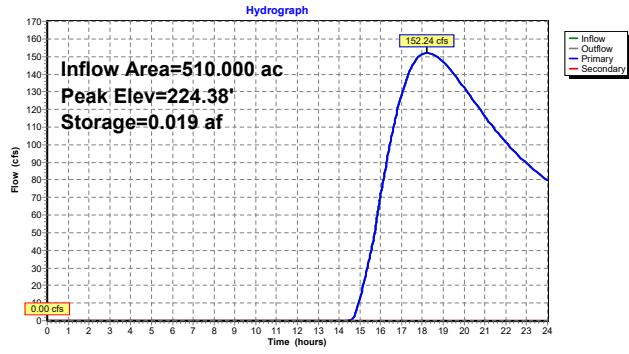
Elevation (feet)	Cum.Store (acre-feet)
221.50	0.000
223.00	0.010
224.50	0.020
225.75	0.050
227.00	0.140
229.00	0.400

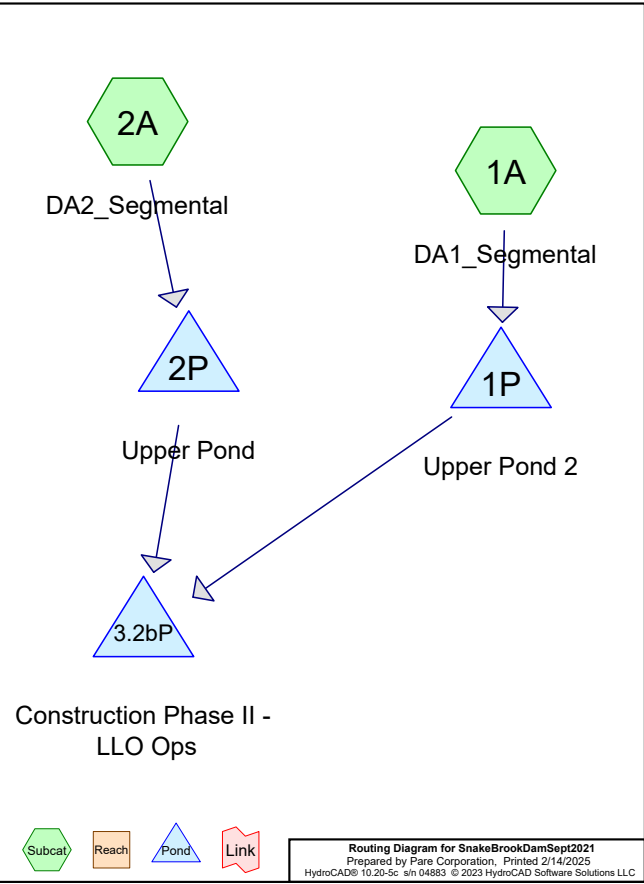
Device	Routing	Invert	Outlet Devices
#1	Primary	221.70'	72.0" W x 48.0" H Box Culvert L= 16.0' Box, 0" wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 221.70' / 220.70' S= 0.0625' /' Cc= 0.900 n= 0.030, Flow Area= 24.00 sf
#2	Primary	221.50'	6.0' long x 10.0' breadth Spwy Culvert with Roof Removed Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64 Overtopping, C= 2.60 Offset (feet) 0.00 0.00 20.00 26.00 33.00 38.00 45.00 68.00 90.00 115.00 130.00 Elev. (feet) 230.00 227.00 226.50 226.00 225.50 225.50 226.00 226.00 227.00 227.50 230.00
#3	Secondary	225.50'	

Primary OutFlow Max=152.24 cfs @ 18.22 hrs HW=224.38' (Free Discharge)
1=Culvert (Inlet Controls 74.69 cfs @ 4.64 fps)
2=Spwy Culvert with Roof Removed (Weir Controls 77.55 cfs @ 4.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=221.50' (Free Discharge)
3=Overtopping (Controls 0.00 cfs)

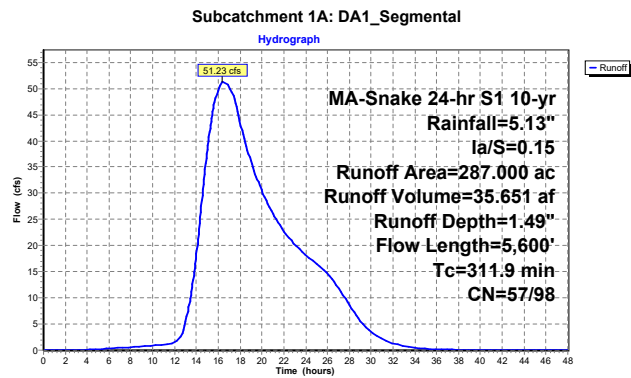
Pond 4.1P: Spillway Culvert and RA_Culvert Top Removed





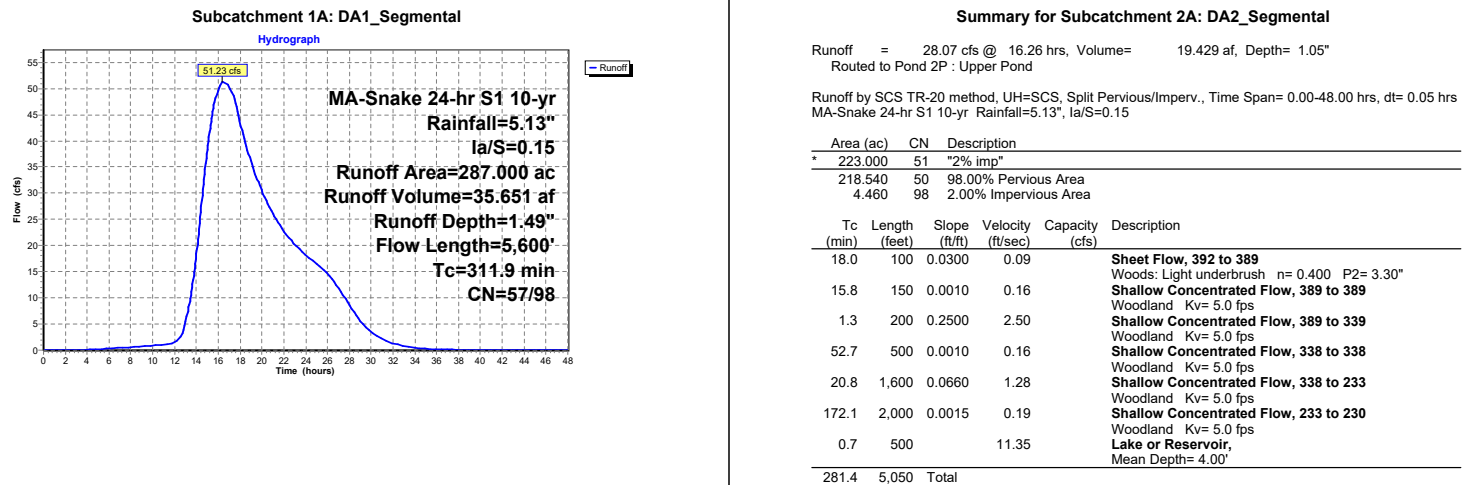
19167.03_SnakeCOW_PhaseII
MA-Snake 24-hr S1 10-yr Rainfall=5.13", Ia/S=0.15
Printed 2/14/2025
Page 3

SnakeBrookDamSept2021
Prepared by Pare Corporation
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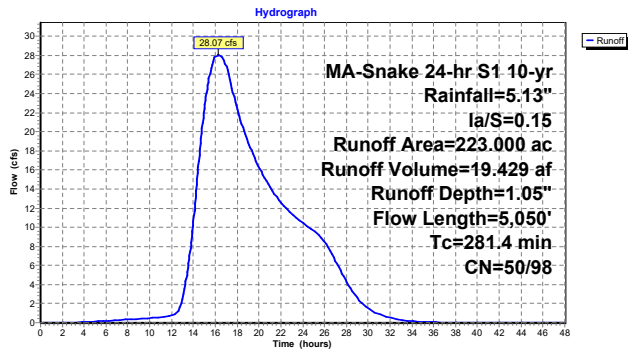


19167.03_SnakeCOW_PhaseII
MA-Snake 24-hr S1 10-yr Rainfall=5.13", Ia/S=0.15
Printed 2/14/2025
Page 4

SnakeBrookDamSept2021
Prepared by Pare Corporation
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Subcatchment 2A: DA2_Segmental



Summary for Pond 1P: Upper Pond 2

Inflow Area = 287.000 ac, 3.00% Impervious, Inflow Depth > 1.64" for 10-yr event
Inflow = 52.13 cfs @ 16.34 hrs, Volume= 39.225 af, Incl. 0.90 cfs Base Flow
Outflow = 52.13 cfs @ 16.40 hrs, Volume= 39.227 af, Atten= 0%, Lag= 3.5 min
Primary = 52.13 cfs @ 16.40 hrs, Volume= 39.227 af
Routed to Pond 3.2bP : Construction Phase II - LLO Ops

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 225.57' Storage= 1.927 af
Peak Elev= 226.65' @ 16.40 hrs Storage= 2.736 af (0.808 af above start)

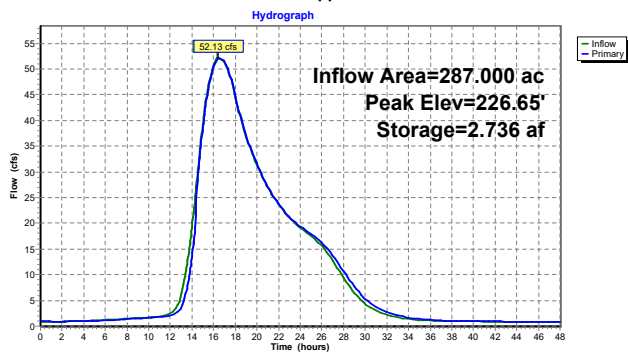
Plug-Flow detention time= 105.2 min calculated for 37.297 af (95% of inflow)
Center-of-Mass det. time= 18.6 min (1,215.8 - 1,197.3)

Volume	Invert	Avail. Storage	Storage Description
#1	223.00'	30.000 af	Ras Terrain with Bathyl Listed below
Elevation (feet)	Cum. Store (acre-feet)		
223.00	0.000		
227.00	3.000		
230.00	30.000		

Device	Routing	Invert	Outlet Devices
#1	Primary	225.40'	Upper Dam 1, C= 3.00 Offset (feet) 50.00 100.00 200.00 202.00 206.00 208.00 270.00 350.00 Elev. (feet) 231.00 226.50 226.50 225.40 225.40 226.50 226.50 231.00

Primary OutFlow Max=52.13 cfs @ 16.40 hrs HW=226.65' TW=221.54' (Dynamic Tailwater)
1=Upper Dam 1 (Weir Controls 52.13 cfs @ 1.51 fps)

Pond 1P: Upper Pond 2



Summary for Pond 2P: Upper Pond

Inflow Area = 223.000 ac, 2.00% Impervious, Inflow Depth > 1.17" for 10-yr event
Inflow = 28.67 cfs @ 16.26 hrs, Volume= 21.811 af, Incl. 0.60 cfs Base Flow
Outflow = 19.02 cfs @ 19.19 hrs, Volume= 21.785 af, Atten= 34%, Lag= 175.4 min
Primary = 19.02 cfs @ 19.19 hrs, Volume= 21.785 af
Routed to Pond 3.2bP : Construction Phase II - LLO Ops

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 225.63' Storage= 12.038 af
Peak Elev= 226.64' @ 19.19 hrs Storage= 17.314 af (5.276 af above start)

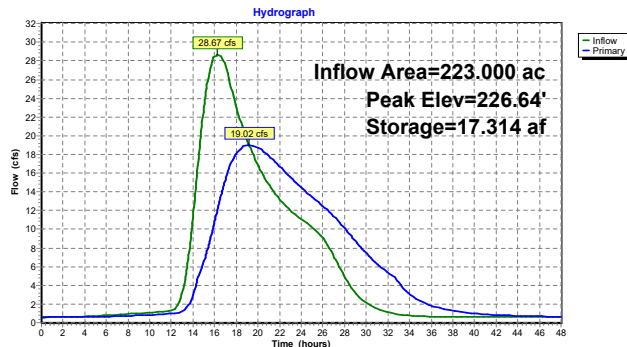
Plug-Flow detention time= 825.2 min calculated for 9.736 af (45% of inflow)
Center-of-Mass det. time= 187.5 min (1,385.4 - 1,197.9)

Volume	Invert	Avail. Storage	Storage Description
#1	221.00'	40.000 af	Ras Terrain with Bathyl Listed below
Elevation (feet)	Cum. Store (acre-feet)		
221.00	0.000		
226.00	13.000		
230.00	40.000		

Device	Routing	Invert	Outlet Devices
#1	Primary	225.50'	Upper Dam, C= 3.00 Offset (feet) 0.00 25.00 100.00 102.00 106.00 108.00 310.00 340.00 Elev. (feet) 231.00 227.00 227.00 225.50 225.50 227.00 227.00 231.00

Primary OutFlow Max=19.02 cfs @ 19.19 hrs HW=226.64' TW=223.43' (Dynamic Tailwater)
1=Upper Dam (Weir Controls 19.02 cfs @ 2.37 fps)

Pond 2P: Upper Pond



Summary for Pond 3.2bP: Construction Phase II - LLO Ops

Inflow Area = 510.000 ac, 2.56% Impervious, Inflow Depth > 1.44" for 10-yr event
Inflow = 66.77 cfs @ 17.03 hrs, Volume= 61.012 af
Outflow = 21.94 cfs @ 27.74 hrs, Volume= 59.633 af, Atten= 67%, Lag= 642.6 min
Primary = 18.89 cfs @ 27.74 hrs, Volume= 50.069 af
Secondary = 3.05 cfs @ 27.74 hrs, Volume= 9.564 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 220.00' Storage= 7.964 af
Peak Elev= 225.13' @ 27.74 hrs Storage= 34.646 af (26.681 af above start)

Plug-Flow detention time= 786.7 min calculated for 51.612 af (85% of inflow)
Center-of-Mass det. time= 512.6 min (1,788.9 - 1,276.4)

Volume	Invert	Avail. Storage	Storage Description
#1	206.50'	100.000 af	Ras Terrain with Bathyl Listed below
Elevation (feet)	Cum. Store (acre-feet)		
206.50	0.000		
210.80	0.065		
213.30	0.439		
215.20	1.190		
217.30	2.884		
219.20	5.635		
220.50	9.420		
222.00	15.900		
224.20	28.200		
226.50	44.200		
227.00	50.000		
228.00	58.000		
229.00	65.000		
230.00	75.000		
231.00	85.000		
232.00	100.000		

Device	Routing	Invert	Outlet Devices (Turned on 2 times)
#1	Tertiary	227.00'	Reconstructed Dam Crest LT of Spwy, C= 2.60 Offset (feet) 10.00 50.00 75.00 100.00 105.00 150.00 180.00 200.00 200.00 Elev. (feet) 233.00 227.30 227.00 227.00 227.00 227.00 227.00 227.00 233.00
#2	Tertiary	226.55'	RA OT X 0.00, C= 1.50 Offset (feet) 0.00 0.00 14.00 26.00 29.00 40.00 40.00 Elev. (feet) 230.00 227.20 226.60 226.55 226.55 227.00 230.00
#3	Secondary	218.00'	6-inch Siphon X 2.00 6.000" Diameter, C= 0.600 150.0' Long Tube, Hazen-Williams C= 130 Inlet / Outlet Elev. = 0.00' / 217.00' Starts@218.00' Breaks@217.00'

#4 Primary 220.00' LLO Timed Operation
Elev. (feet) 220.00 220.10 222.00 222.00 224.00 226.00 227.00
Disch. (cfs) 0.000 15.000 16.600 18.100 19.500 20.200

Primary OutFlow Max=18.89 cfs @ 27.74 hrs HW=225.13' (Free Discharge)
4=LLO Timed Operation (Custom Controls 18.89 cfs)

Secondary OutFlow Max=3.05 cfs @ 27.74 hrs HW=225.13' (Free Discharge)
3=6-inch Siphon (Tube Controls 3.05 cfs @ 7.77 fps)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=220.00' (Free Discharge)
1=Reconstructed Dam Crest LT of Spwy(Controls 0.00 cfs)
2=RA OT (Controls 0.00 cfs)

Pond 3.2bP: Construction Phase II - LLO Ops

