

**FISH PASSAGE IMPROVEMENTS
AT THE OUTLET OF MEDDYBEMPS LAKE**

MEDDYBEMPS, MAINE

**BIDDING AND CONTRACT
REQUIREMENTS AND SPECIFICATIONS**

**STATE OF MAINE
BUREAU OF GENERAL SERVICES**

MARCH 13, 2026



ACADIA CIVIL WORKS
ENGINEERING DESIGN & CONSULTATION

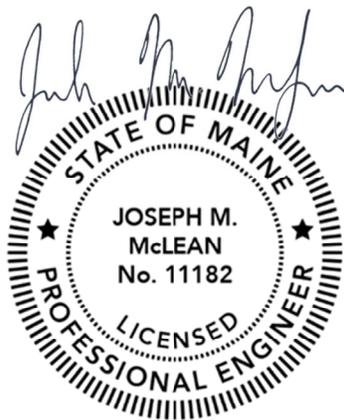
BIDDING, CONTRACT REQUIREMENTS,
AND SPECIFICATOINS

FOR

FISH PASSAGE IMPROVEMENTS
AT THE OUTLET OF MEDDYBEMPS LAKE

MEDDYBEMPS, ME

MARCH 13, 2026



PREPARED FOR:

STATE OF MAINE - BUREAU OF GENERAL SERVICES

PREPARED BY:

ACADIA CIVIL WORKS

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DIVISION 00
CONTRACTING REQUIREMENTS

00 11 13
Notice to Contractors

Fish Passage Improvements at the Outlet of Meddybemps Lake

BGS# 3894

Improvements to Fish Passage at the Outlet of Meddybemps Lake, which consists of remanant mill dam removal, channel form restoration, and construction of a new "nature-like" fishway.

The contract shall designate the Substantial Completion Date on or before *30 October 2026*, and the Contract Final Completion Date on or before *20 November 2026*.

1. Submit bids on a completed Contractor Bid Form (section 00 41 13), provided in the Bid Documents, include bid security when required, and scan each item as an attachment to an email addressed to: BGS.Architect@Maine.gov, so as to be received no later than **1:30:00 p.m. on 8 April 2026**. The email subject line shall be marked "**Bid for Fish Passage Improvements at the Outlet of Meddybemps Lake (BGS 3894)**".

Bid submissions will be opened and read aloud at **2:00 p.m.** on the date noted above at the Bureau of General Services office, accessible as a video conference call. Conference links are available on the BGS website at BGS.Architect@Maine.gov.

Any bid received after the noted time will not be considered a valid bid and will remain unopened. Any bid submitted by any other means will not be considered a valid bid. In certain circumstances, the Bureau of General Services may require the Bidder to surrender a valid paper copy of the bid form or the bid security document. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.

2. Questions and comments on the *bid opening process* shall be addressed to: David Machon, Division of Planning, Design & Construction, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077, BGS.Architect@Maine.gov.
3. Questions and comments regarding the *project* design specifications or drawings shall be directed in writing to the Consultant during the bid period prior to the question and comment deadline of 5:00 p.m. on *1 April 2026*.

Acadia Civil Works
Joseph McLean, PE
jmclean@acadiacivilworks.com

4. Bid security is required on this project.
The Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.
or
 Bid security is not required on this project.

00 11 13
Notice to Contractors

5. Performance and Payment Bonds are required on this project.
If noted above as required, or if any combination of Base Bid and Alternate Bids amounts selected in the award of the contract exceeds \$125,000.00, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BGS website.
- or*
- Performance and Payment Bonds are not required on this project.

6. Filed Sub-bids *are not required* on this project.

7. Pre-qualified General Contractors are utilized on this project.

or

Pre-qualified General Contractors are not utilized on this project.

8. An on-site pre-bid conference (*mandatory* or *optional*) will be conducted for this project. The pre-bid conference is intended for General Contractors. Subcontractors and suppliers are welcome to attend. Contractors who arrive late or leave early for a mandatory meeting may be prohibited from participating in this meeting and bidding.
30 March 2026, 11:00 a.m.
885 Main St, Meddybemps, ME 04657

or

An on-site pre-bid conference will not be conducted for this project.

9. Bid Documents - full sets only - will be available on or about *13 March 13, 2026* and may be obtained *at no cost* from:

The BGS website

<https://www.maine.gov/dafs/bgs/business-opportunities#invitationforbid>

10. Bid Documents may be examined at:

AGC Maine

188 Whitten Road, Augusta, ME 04330

207-622-4741

Construction Summary

734 Chestnut Street, Manchester, NH 03104

603-627-8856

**00 41 13
Contractor Bid Form**

Fish Passage Improvements at the Outlet of Meddybemps Lake

BGS# 3894

Bid Form submitted by: *email only to email address below*

Bid Administrator:

David Machon
Bureau of General Services
111 Sewall Street, Cross State Office Building, 4th floor
77 State House Station
Augusta, Maine 04333-0077

BGS.Architect@Maine.gov

Bidder:

Signature: _____

Printed name and
title: _____

Company name: _____

Mailing address: _____

City, state, zip code: _____

Phone number: _____

Email address: _____

State of
incorporation,
if a corporation: _____

List of all partners,
if a partnership: _____

The Bidder agrees, if the Owner offers to award the contract, to provide any and all bonds and certificates of insurance, as well as Schedule of Values, Project Schedule, and List of Subcontractors and Suppliers if required by the Owner, and to sign the designated Construction Contract within twelve calendar days after the date of notification of such acceptance, except if the twelfth day falls on a State of Maine government holiday or other closure day, or a Saturday, or a Sunday, in which case the aforementioned documents must be received before 12:00 noon on the first available business day following the holiday, other closure day, Saturday, or Sunday.

As a guarantee thereof, the Bidder submits, together with this bid, a bid bond or other acceptable instrument as and if required by the Bid Documents.

00 41 13
Contractor Bid Form

1. The Bidder, having carefully examined the *Fish Passage Improvements at the Outlet of Meddybemps Lake* Project Manual dated *13 March 2026*, prepared by *Acadia Civil Works*, as well as Specifications, Drawings, and any Addenda, the form of contract, and the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the **Base Bid** amount of:

\$ _____ .00

2. Allowances *are not included* on this project.
No Allowances

1 Not Used \$ 0.00

2 Not Used \$ 0.00

3 Not Used \$ 0.00

4 Not Used \$ 0.00

3. Alternate Bids *are included* on this project.
Alternate Bids are as shown below
Any dollar amount line below that is left blank by the Bidder shall be read as a bid of **\$0.00**.

1 Lower Dam Removal and Channel Shaping \$ _____ .00

2 Not Used \$ _____ .00

3 Not Used \$ _____ .00

4 Not Used \$ _____ .00

**00 41 13
Contractor Bid Form**

4. Unit Prices *are included* on this project.

Unit Prices are as shown below

Any dollar amount line below that is left blank by the Bidder shall be read as a bid of **\$0.00**. **Note: ADD and DEDUCT unit prices cannot differ by more than 20%.**

	UNIT	ADD	DEDUCT
1 Landfilling of contaminated materials	<u>tn</u>	\$ _____	\$ _____
2 Not Used	<u>XX</u>	\$ _____	\$ _____
3 Not Used	<u>XX</u>	\$ _____	\$ _____

5. Bid security *is required* on this project.

If noted above as required, or if the Base Bid amount exceeds \$125,000.00, the Bidder shall include with this bid form a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with this completed bid form submitted to the Owner.

6. Filed Sub-bids *are not required* on this project.

If noted above as required, the Bidder shall include with this bid form a list of each Filed Sub-bidder selected by the Bidder on the form provided (section 00 41 13F).

**00 43 13
Contractor Bid Bond**

Bond No.: insert bond number

We, the undersigned, insert company name of Contractor, select type of entity of insert name of municipality in the State of insert name of state as principal, and insert name of surety as Surety, are hereby held and firmly bound unto select title of obligee in the penal sum of five percent of the bid amount, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, signed this insert date, i.e.: 8th day of select month, select year, which is the same date as that of the first specified bid due date, or subsequent bid due date revised by addendum.

The condition of the above obligation is such that whereas the principal has submitted to the Owner, or State of Maine, to a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing, for the construction of insert name of project as designated in the contract documents

Now therefore:

If said bid shall be rejected, or, in the alternate,

If said bid shall be accepted and the principal shall execute and deliver a contract in the form of contract attached hereto, properly completed in accordance with said bid, and shall furnish a bond for the faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

Otherwise, the same shall remain in force and effect- it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time within which the Obligee may accept such bid and said Surety does hereby waive notice of any such extension.

**00 43 13
Contractor Bid Bond**

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this *insert date, i.e.: 8th* day of *select month, select year*, which is the same date as that of the first specified bid due date, or subsequent bid due date revised by addendum.

Contractor

(Signature)

insert name and title

insert company name

*insert address
insert city state zip code*

Surety

(Signature)

insert name and title

insert company name

*insert address
insert city state zip code*

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

**State of Maine
CONSTRUCTION CONTRACT**

Large Construction Project

*This form is used when the Contract value is \$50,000 or greater.
The Project Manual, Specifications and Drawings, and any Addenda are considered part of this Contract.*

Agreement entered into by and between the contracting entity name hereinafter called the **Owner** and Contractor company name hereinafter called the **Contractor**.

BGS Project No.: number assigned by BGS Other Project No.: _____

For the following Project: title of project as shown on bid documents at facility or campus name, municipality, Maine.

The Specifications and the Drawings have been prepared by Consultant firm name, acting as Professional-of-Record and named in the documents as the Consultant Architect or Engineer.

The *Owner* and *Contractor* agree as follows:

ARTICLE 1 COMPENSATION AND PAYMENTS

1.1 The Owner shall pay the Contractor to furnish all labor, equipment, materials and incidentals necessary for the construction of the Work described in the Specifications and shown on the Drawings the Contract Amount as shown below.

Base Bid	\$0.00
<i>Alternate Bid number and name or "no Alternates"</i>	\$0.00
<i>Alternate Bid number and name or "no Alternates"</i>	\$0.00
<i>Alternate Bid number and name or "no Alternates"</i>	\$0.00
<i>Alternate Bid number and name or "no Alternates"</i>	\$0.00
<i>Alternate Bid number and name or "no Alternates"</i>	\$0.00
Total Contract Amount	\$0.00

1.2 The Contractor’s requisition shall contain sufficient detail and supporting information for the Owner to evaluate and support the payment requested.

1.2.1 Payments are due and payable twenty-five working days from the date of receipt of a Contractor requisition which is approved by the Owner.

1.2.2 Provisions for late payments are governed by 5 M.R.S. Chapter 144, *Payment of Invoices Received from Business Concerns*, and interest shall be calculated at 1% per month.

ARTICLE 2 COMMENCEMENT AND COMPLETION DATES

2.1 The Work of this Contract shall commence no sooner than the date this document is executed by the approval authority, or a subsequent date designated in the contract documents.

2.2 The Substantial Completion Date shall be _____.

2.3 The Work of this Contract shall be completed on or before the Contract Final Completion Date of _____.

2.4 The Contract Expiration Date shall be _____. (This date is the Owner's deadline for internal management of contract accounts. The Contract Expiration Date does not directly relate to any contract obligation of the Contractor.)

ARTICLE 3 INELIGIBLE BIDDER

3.1 By signing this contract the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Bureau of General Services may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.

3.2 By signing this contract the Contractor attests that it is not presently indicted for or otherwise criminally or civilly charged by a Federal, State or local government entity with commission of any of the following offenses and has not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction, or contract under a public transaction, violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

3.3 The Contractor shall not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs or State of Maine projects.

ARTICLE 4 CONTRACTOR'S RESPONSIBILITIES

4.1 On this project, the Contractor shall furnish the Owner the appropriate contract bonds in the amount of 100% of the Contract Sum. Contract bonds are mandated if the Contract Sum exceeds \$125,000, or if bonds are specifically required by the Contract Documents.

4.2 The Contractor shall comply with all laws, codes and regulations applicable to the Work.

4.3 The Contractor shall acquire all permits and third-party approvals applicable to the Work not specifically identified as provided by the Owner. Costs for Contractor-provided permits and third-party approvals shall be included in the Contract Sum identified in Section 1.1 above.

4.4 The Contractor shall remain an independent agent for the duration of this Contract, shall not become an employee of the State of Maine, and shall assure that no State employee will be compensated by, or otherwise benefit from, this Contract.

4.5 The Contractor shall be responsible for any design cost, construction cost, or other cost incurred on the Project to the extent caused by the negligent acts, errors or omissions of the Contractor or their Subcontractors in the performance of Work under this Contract.

ARTICLE 5 OWNER'S RESPONSIBILITIES

5.1 The Owner shall provide full information about the objectives, schedule, constraints and existing conditions of the project. The Owner has established a budget with reasonable contingencies that meets the project requirements.

5.2 By signing this contract, the Owner attests that all State of Maine procurement requirements for this contract have been met, including the solicitation of competitive bids.

ARTICLE 6 INSTRUMENTS OF SERVICE

6.1 The Contractor's use of the drawings, specifications and other documents known as the Consultant's Instruments of Service is limited to the execution of the Contractor's scope of work of this project unless the Contractor receives the written consent of the Owner and Consultant for use elsewhere.

ARTICLE 7 MISCELLANEOUS PROVISIONS

7.1 This Contract shall be governed by the laws of the State of Maine.

7.2 The Owner and Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to this Contract. Neither party to this Contract shall assign the Contract as a whole without written consent of the other party, which consent the Owner may withhold without cause.

7.3 Notwithstanding any other provision of this Agreement, if the Owner does not receive sufficient funds to fund this Agreement or funds are de-appropriated, or if the Owner does not receive legal authority from the Maine State Legislature or Maine Courts to expend funds intended for this Agreement, then the Owner is not obligated to make payment under this Agreement; provided, however, the Owner shall be obligated to pay for services satisfactorily performed prior to any such non-appropriation in accordance with the termination provisions of this Agreement. The Owner shall timely notify the Contractor of any non-appropriation and the effective date of the non-appropriation.

ARTICLE 8 CONTRACT DOCUMENTS

8.1 The Project Manual, Specifications and Drawings, and any Addenda, together with this agreement, form the contract. Each element is as fully a part of the Contract as if hereto attached or herein repeated.

8.2 Specifications: **indicate date of issuance of project manual**

8.3 Drawings: **note here or attach each sheet number and title**

8.4 Addenda: **note each addenda number and date, or "none"**

BGS Project No.: _____

The Contract is effective as of the date executed by the approval authority.

OWNER

CONTRACTOR

Signature *Date*
name and title

Signature *Date*
name and title

name of contracting entity
address

name of contractor company
address

telephone
email address

telephone
email address
Vendor Number

Indicate the names of the review and approval individuals appropriate to the approval authority.

select proper approval authority			
Reviewed by:		Approved by:	
_____ <i>Signature</i>	_____ <i>Date</i>	_____ <i>Signature</i>	_____ <i>Date</i>
<i>insert name</i>		<i>John Kenney, P.E.</i>	
<i>Project Manager/ Contract Administrator</i>		<i>Director, Planning Design and Construction Division (PDCD)</i>	

00 61 13.13
Contractor Performance Bond

Bond No.: insert bond number

We, the undersigned, insert company name of Contractor, select type of entity of insert name of municipality in the State of insert name of state as principal, and insert name of surety as Surety, are hereby held and firmly bound unto select title of obligee in the penal sum of the Contract Price \$ insert the Contract Price in numbers for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly and faithfully perform the contract entered into this insert date, i.e.: 8th day of select month, select year, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of insert name of project as designated in the contract documents, then this obligation shall be null and void.

Otherwise, the same shall remain in force and effect- it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

00 61 13.13
Contractor Performance Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this *insert date, i.e.: 8th* day of *select month, select year*, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Contractor

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

00 61 13.16
Contractor Payment Bond

Bond No.: insert bond number

We, the undersigned, insert company name of Contractor, select type of entity of insert name of municipality in the State of insert name of state as principal, and insert name of surety as Surety, are hereby held and firmly bound unto select title of obligee in the penal sum of the Contract Price \$ insert the Contract Price in numbers for the use and benefit of claimants, defined as an entity having a contract with the principal or with a subcontractor of the principal for labor, materials, or both labor and materials, used or reasonably required for use in the performance of the contract, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly satisfy all claims and demands incurred for all labor and materials, used or required by the principal in connection with the work described in the contract entered into this insert date, i.e.: 8th day of select month, select year, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of insert name of project as designated in the contract documents, and shall fully reimburse the obligee for all outlay and expense with said obligee may incur in making good any default of said principal, then this obligation shall be null and void.

Otherwise, the same shall remain in force and effect- it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

**00 61 13.16
Contractor Payment Bond**

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this *insert date, i.e.: 8th* day of *select month, select year*, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Contractor

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address

insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

**State of Maine
CONSTRUCTION CONTRACT
Application for Payment**

Enter Project name
Enter location / school / campus

Application Number: **1**

Enter Contractor Company name
address
city state zip code

Period Start Date: **19-May-2025**
Period End Date: **30-Jun-2025**
BGS Project No.: **BGS #**
Other Project No.: **Other # or n/a**

1	Original Contract Amount		\$0
2	Net of Change Orders to Date (from table below)		\$0
3	Contract Sum to Date (line 1 plus or minus line 2)		\$0
4	Total Completed and Stored to Date (column G on Continuation Sheet)		\$0
5a	5% Retainage of Completed Work (columns D + E x 5%)	\$0	
5b	5% Retainage of Stored Materials (column F x 5%)	\$0	
5c	Total Retainage (column I)		\$0
6	Total Earned Less Retainage (line 4 minus line 5c)		\$0
7	Less Previous Approved Applications for Payment (line 6 from previous Application)		\$0
8	Current Payment Due (line 6 minus line 7)		\$0
9	Balance to Finish, Including Retainage (line 3 minus line 6)	\$0	

Change Order Summary	Additions	Deductions
Total Changes Approved in Previous Months	\$0	\$0
Total Changes Approved this Month	\$0	\$0
Subtotals	\$0	\$0
Net of Change Orders to Date		\$0

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information, and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which the previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

Contractor

Type company name here
Type person's name, title here

signature date

In accordance with the Contract Documents, based on on-site observations and the data comprising this Application, the Consultant certifies to the Owner that to the best of the Consultant's knowledge, information, and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the Amount Certified.

Amount Certified _____

Consultant (Architect or Engineer)

Type firm name here
Type person's name, title here

signature date

Owner

Type contracting entity name here
Type person's name, title here

signature date

Owner's Rep / other - clear this text if not used

Type entity name here
Type person's name, title here

signature date

Bureau of General Services / Other - clear this text if not used

Type entity name here
Type person's name, title here

signature date

Bureau of General Services

Type entity name here
Type person's name, title here

signature date

**State of Maine
CONSTRUCTION CONTRACT
Construction Change Directive**

Project name
location / school / campus

C. C. D. Number: **1**
CP (Change Proposal) Number **1**
Issue Date of this Document: **31-Oct-2021**

Contractor Company name
address
city state zip code

BGS Project No.: **n**
Other Project No.: **x**

CCD Item	Type name of CCD item here		
Description of Work	Type brief description here of work scope here.		
Reason or Necessity of Work	Type brief justification for change here.		
Method of Compensation	Select from drop down box...	Projected Total Cost	\$0
Supporting Documentation	is attached	Projected Calendar Days*	0

* Calendar Days refers to Contract Final Completion Date only.

Fully describe the scope of work of the CCD item in the table above and on attached drawings and specifications as necessary.

Indicate the reason for the work, and the estimated schedule and cost impacts.

This CCD records the order to do the work. The documented actual final time and cost changes are subject to approval in a subsequent Change Order process.

Consultant (Architect or Engineer) Type firm name here
Type person's name, title here

signature date

Contractor Type company name here
Type person's name, title here

signature date

Owner Type contracting entity name here
Type person's name, title here

signature date

Owner's Rep Type entity name here
Type person's name, title here

signature date

Bureau of General Services Division of Planning, Design & Construction
Type person's name, title here

signature date

**State of Maine
CONSTRUCTION CONTRACT
Change Order**

Project name
location / school / campus

Change Order: **1**

Issue Date of this Document: **21-Aug-2025**

Contractor Company name
address
city state zip code

BGS Project No.: **n**
Other Project No.: **x**

Cost Change

Show Deduct as a negative number, e.g.: "-\$850".

	Add	Deduct	Total
Net Amount of this Change Order	\$0	\$0	
Net Amount of Previous Change Orders	\$0	\$0	
Net of Change Orders to Date	\$0	\$0	\$0
Original Contract Amount			\$0
Revised Contract Amount			\$0

Time Change

Show Deduct as a negative number, e.g.: "-8".

	Add	Deduct	Total
Net Calendar Days Adjusted by this Change Order	0	0	
Net Calendar Days Adjusted by Previous Change Orders	0	0	
Net of Change Orders to Date	0	0	0
Original Contract Final Completion Date			30-Apr-2027
Revised Contract Final Completion Date*			30-Apr-2027

Consultant (Architect or Engineer)

Type firm name here
Type person's name, title here

signature date

Contractor

Type company name here
Type person's name, title here

signature date

Owner

Type contracting entity name here
Type person's name, title here

signature date

Owner' Representative / Delete if not used

Type entity name here
Type person's name, title here

signature date

Project Manager / Delete if not used

Type entity name here
Type person's name, title here

signature date

Bureau of General Services

Division of Planning, Design & Construction
Type person's name, title here

signature date

Attach the "List of Change Order Items" sheet, plus all supporting documentation for each Change Order Item.

Substantial Completion Date: the deadline for first beneficial use by Owner, as certified by Consultant.

* **Contract Final Completion Date** : the Contractor's final completion deadline for contract work.

Contract Expiration Date: the Owner's deadline for internal management of contract accounts;

Contract Expiration Date does not directly relate to any contract obligation of the Contractor.

4-May-2027
30-Apr-2027
31-Dec-2027

List of Change Order Items

Project name

C. O. Number: 1

Contractor Company name

Item No.	CP No.	Item Name	Reason Code	Calendar Days*	Cost
1	1	Enter Item Name		0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
				0	\$0
Totals				0	\$0

Reason Codes

- EO Error or omission of Consultant
- UC Unforeseen job site condition
- OC Owner-generated change
- RC Regulatory authority-generated change
- CC Contractor-generated change

* Calendar Days shows Contract Final Completion Date impact only.

Attach this sheet to the BGS "Change Order" cover sheet (with cost and time summaries, and signatures). Attach a "Details" sheet, and other supporting documentation, for each Change Order Item listed above.

Details of Change Order Item

Project name
location / school / campus

Change Order 1
Item Number 1
CP (Change Proposal) Number 1
Issue Date of this Document: 21-Aug-2025
BGS Project No.: n
Other Project No.: x

Contractor Company name
address
city state zip code

Item Name	Add item name from List of Items sheet			
Description of Work	Briefly describe scope of work			
Reason or Necessity of Work	Briefly describe reason or necessity for work change			
Cost Breakdown	Work by Subcontractor only	Work by Sub and Contractor	Work by Contractor only	
Subcontractor base cost	\$0	\$0		
Subcontractor markup	\$0	\$0		
Contractor base cost		\$0	\$0	
Contractor markup	\$0	\$0	\$0	
Subtotal	\$0	\$0	\$0	
Compensation	lump sum		Total Cost	\$0
Initiated by	Contractor		Calendar Days*	0
	CC	Supporting Documentation		is not needed

EO
Error or omission of Consultant
UC
Unforeseen job site condition
OC
Owner-generated change
RC
Regulatory authority-generated change
CC
Contractor-generated change

* Calendar Days shows Contract Final Completion Date impact only.

Consultant (Architect or Engineer)

Type firm name here
Type person's name, title here

signature date

Contractor

Type company name here
Type person's name, title here

signature date

Owner

Type contracting entity name here
Type person's name, title here

signature date

Owner' Representative / Delete if not used

Type entity name here
Type person's name, title here

signature date

Project Manager / Delete if not used

Type entity name here
Type person's name, title here

signature date

Bureau of General Services

Division of Planning, Design & Construction
Type person's name, title here

signature date

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General Conditions

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1. Preconstruction Conference

- 1.1 The Contractor shall, upon acceptance of a contract and prior to commencing work, schedule a preconstruction conference with the Owner and Consultant. The purpose of this conference is as follows.
- 1.1.1 Introduce all parties who have a significant role in the Project, including:
- Owner (State agency or other contracting entity)
 - Owner's Representative
 - Consultant (Architect or Engineer)
 - Subconsultants
 - Clerk-of-the-works
 - Contractor (GC)
 - Superintendent
 - Subcontractors
 - Other State agencies
 - Construction testing company
 - Commissioning agent
 - Special Inspections agent
 - Bureau of General Services (BGS);
- 1.1.2 Review the responsibilities of each party;
- 1.1.3 Review any previously-identified special provisions of the Project;
- 1.1.4 Review the Schedule of the Work calendar submitted by the Contractor to be approved by the Owner and Consultant;
- 1.1.5 Review the Schedule of Values form submitted by the Contractor to be approved by the Owner and Consultant;
- 1.1.6 Establish routines for Shop Drawing approval, contract changes, requisitions, et cetera;
- 1.1.7 discuss jobsite issues;
- 1.1.8 Discuss Project close-out procedures;
- 1.1.9 Provide an opportunity for clarification of Contract Documents before work begins; and
- 1.1.10 Schedule regular meetings at appropriate intervals for the review of the progress of the Work.

2. Intent and Correlation of Contract Documents

- 2.1 The intent of the Contract Documents is to describe the complete Project. The Contract Documents consist of various components; each component complements the others. What is shown as a requirement by any one component shall be inferred as a requirement on all corresponding components.
- 2.2 The Contractor shall furnish all labor, equipment and materials, tools, transportation, insurance, services, supplies, operations and methods necessary for, and reasonably incidental to, the construction and completion of the Project. Any work that deviates from the Contract Documents which appears to be required by the exigencies of construction or by inconsistencies in the Contract Documents, will be determined by the Consultant and authorized in writing by the Consultant, Owner and the Bureau prior to execution. The Contractor shall be responsible for requesting clarifying information where the intent of the Contract Documents is uncertain.
- 2.3 The Contractor shall not utilize any apparent error or omission in the Contract Documents to the disadvantage of the Owner. The Contractor shall promptly notify the Consultant in writing of

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General Conditions

such errors or omissions. The Consultant shall make any corrections or clarifications necessary in such a situation to document the true intent of the Contract Documents.

3. Additional Drawings and Specifications

- 3.1 Upon the written request of the Contractor, the Owner shall provide, at no expense to the Contractor, up to five sets of printed Drawings and Specifications for the execution of the Work.
- 3.2 The Consultant shall promptly furnish to the Contractor revised Drawings and Specifications, for the area of the documents where those revisions apply, when corrections or clarifications are made by the Consultant. All such information shall be consistent with, and reasonably inferred from, the Contract Documents. The Contractor shall do no work without the proper Drawings and Specifications.

4. Ownership of Contract Documents

- 4.1 The designs represented on the Contract Documents are the property of the Consultant. The Drawings and Specifications shall not be used on other work without consent of the Consultant.

5. Permits, Laws, and Regulations

- 5.1 The Owner is responsible for obtaining any zoning approvals or other similar local project approvals necessary to complete the Work, unless otherwise specified in the Contract Documents.
- 5.2 The Owner is responsible for obtaining Maine Department of Environmental Protection, Maine Department of Transportation, or other similar state government project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.
- 5.3 The Owner is responsible for obtaining any federal agency project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.
- 5.4 The Owner is responsible for obtaining all easements for permanent structures or permanent changes in existing facilities.
- 5.5 The Contractor is responsible for obtaining and paying for all permits and licenses necessary for the implementation of the Work. The Contractor shall notify the Owner of any delays, variance or restrictions that may result from the issuing of permits and licenses.
- 5.6 The Contractor shall comply with all ordinances, laws, rules and regulations and make all required notices bearing on the implementation of the Work. In the event the Contractor observes disagreement between the Drawings and Specifications and any ordinances, laws, rules and regulations, the Contractor shall promptly notify the Consultant in writing. Any necessary changes shall be made as provided in the contract for changes in the work. The Contractor shall not perform any work knowing it to be contrary to such ordinances, laws, rules and regulations.
- 5.7 The Contractor shall comply with local, state and federal regulations regarding construction safety and all other aspects of the Work.

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- 5.8 The Contractor shall comply with the Maine Code of Fair Practices and Affirmative Action, 5 M.R.S. §784 (2).
6. Taxes
- 6.1 The Owner is exempt from the payment of Maine State sales and use taxes as provided in 36 M.R.S. §1760 (1). The Contractor and Subcontractors shall not include taxes on exempt items in the construction contract.
- 6.2 Section 1760 further provides in subsection 61 that sales to a construction contractor or its subcontractor of tangible personal property that is to be physically incorporated in, and become a permanent part of, real property for sale to or owned by the Owner, are exempt from Maine State sales and use taxes. Tangible personal property is defined in 36 M.R.S. §1752 (17).
- 6.3 The Contractor may contact Maine Revenue Services, 24 State House Station, Augusta, Maine 04333 for guidance on tax exempt regulations authorized by 36 M.R.S. §1760 and detailed in Rule 302 (18-125 CMR 302).
7. Labor and Wages
- 7.1 The Contractor shall conform to the labor laws of the State of Maine, and all other laws, ordinances, and legal requirements affecting the work in Maine.
- 7.2 The Consultant shall include a wage determination document prepared by the Maine Department of Labor in the Contract Documents for state-funded contracts in excess of \$50,000. The document shows the minimum wages required to be paid to each category of labor employed on the project.
- 7.3 On projects requiring a Maine wage determination, the Contractor shall submit monthly payroll records to the Owner ("the contracting agency") showing the name and occupation of all workers and all independent contractors employed on the project. The monthly submission must also include the Contractor's company name, the title of the project, hours worked, hourly rate or other method of remuneration, and the actual wages or other compensation paid to each person.
- 7.4 The Contractor shall not reveal, in the payroll records submitted to the Owner, personal information regarding workers and independent contractors, other than the information described above. Such information shall not include Social Security number, employee identification number, or employee address or phone number, for example.
- 7.5 The Contractor shall conform to Maine statute (39-A M.R.S. §105-A (6)) by providing to the Workers' Compensation Board a list of all subcontractors and independent contractors on the job site and a record of the entity to whom that subcontractor or independent contractor is directly contracted and by whom that subcontractor or independent contractor is insured for workers' compensation purposes.
- 7.6 The Contractor shall enforce strict discipline and good order among their employees at all times, and shall not employ any person unfit or unskilled to do the work assigned to them.

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- 7.7 The Contractor shall promptly pay all employees when their compensation is due, shall promptly pay all others who have billed and are due for materials, supplies and services used in the Work, and shall promptly pay all others who have billed and are due for insurance, workers compensation coverage, federal and state unemployment compensation, and Social Security charges pertaining to this Project. Before final payments are made, the Contractor shall furnish to the Owner affidavits that all such payments described above have been made.
- 7.8 The Contractor may contact the Maine Department of Labor, 54 State House Station, Augusta, Maine 04333 for guidance on labor issues.
- 7.9 The Contractor may contact the Maine Workers' Compensation Board, 27 State House Station, Augusta, Maine 04333 for guidance on workers' compensation issues.

8. Indemnification

- 8.1 The Contractor shall indemnify and hold harmless the Owner and its officers and employees from and against any and all damages, liabilities, and costs, including reasonable attorney's fees, and defense costs, for any and all injuries to persons or property, including claims for violation of intellectual property rights, to the extent caused by the negligent acts or omissions of the Contractor, its employees, agents, officers or subcontractors in the performance of work under this Agreement. The Contractor shall not be liable for claims to the extent caused by the negligent acts or omissions of the Owner or for actions taken in reasonable reliance on written instructions of the Owner.
- 8.2 The Contractor shall notify the Owner promptly of all claims arising out of the performance of work under this Agreement by the Contractor, its employees or agents, officers or subcontractors.
- 8.3 This indemnity provision shall survive the termination of the Agreement, completion of the project or the expiration of the term of the Agreement.

9. Insurance Requirements

- 9.1 The Contractor shall provide, with each original of the signed Contract, an insurance certificate or certificates acceptable to the Owner and BGS. The Contractor shall submit insurance certificates to the Owner and BGS at the commencement of this Contract and at policy renewal or revision dates. The certificates shall identify the project name and BGS project number, and shall name the Owner as certificate holder and as additional insured for general liability and automobile liability coverages. The submitted forms shall contain a provision that coverage afforded under the insurance policies will not be canceled or materially changed unless at least ten days prior written notice by registered letter has been given to the Owner and BGS.
- 9.2 The Owner does not warrant or represent that the insurance required herein constitutes an insurance portfolio which adequately addresses all risks faced by the Contractor or its Subcontractors. The Contractor is responsible for the existence, extent and adequacy of insurance prior to commencement of work. The Contractor shall not allow any Subcontractor to commence work until all similar insurance required of the Subcontractor has been confirmed by the Contractor.

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- 9.3 The Contractor shall procure and maintain primary insurance for the duration of the Project and, if written on a Claims-Made basis, shall also procure and maintain Extended Reporting Period (ERP) insurance for the period of time that any claims could be brought. The Contractor shall ensure that all Subcontractors they engage or employ will procure and maintain similar insurance in form and amount acceptable to the Owner and BGS. At a minimum, the insurance shall be of the types and limits set forth herein protecting the Contractor from claims which may result from the Contractor’s execution of the Work, whether such execution be by the Contractor or by those employed by the Contractor or by those for whose acts they may be liable. All required insurance coverages shall be placed with carriers authorized to conduct business in the State of Maine by the Maine Bureau of Insurance.
- 9.3.1 The Contractor shall have Workers’ Compensation insurance for all employees on the Project site in accordance with the requirements of the Workers’ Compensation law of the State of Maine. Minimum acceptable limits for Employer’s Liability are:
- Bodily Injury by Accident.....\$500,000
 - Bodily Injury by Disease.....\$500,000 Each Employee
 - Bodily Injury by Disease.....\$500,000 Policy Limit
- 9.3.2 The Contractor shall have Commercial General Liability insurance providing coverage for bodily injury and property damage liability for all hazards of the Project including premise and operations, products and completed operations, contractual, and personal injury liabilities. The policy shall include collapse and underground coverage as well as explosion coverage if explosion hazards exist. Aggregate limits shall apply on a location or project basis. Minimum acceptable limits are:
- General aggregate limit.....\$2,000,000
 - Products and completed operations aggregate\$1,000,000
 - Each occurrence limit.....\$1,000,000
 - Personal injury aggregate.....\$1,000,000
- 9.3.3 The Contractor shall have Automobile Liability insurance against claims for bodily injury, death or property damage resulting from the maintenance, ownership or use of all owned, non-owned and hired automobiles, trucks and trailers. Minimum acceptable limit is:
- Any one accident or loss\$500,000
- 9.3.4 For the portion of a project which is new construction, the Contractor shall procure and maintain Builder’s Risk insurance naming the Owner, Contractor, and any Subcontractor as insureds as their interest may appear. Covered causes of loss form shall be all Risks of Direct Physical Loss, endorsed to include flood, earthquake, transit and sprinkler leakage where sprinkler coverage is applicable. Unless specifically authorized in writing by the Owner, the limit of insurance shall not be less than the initial contract amount, for the portion of the project which is new construction, and coverage shall apply during the entire contract period and until the work is accepted by the Owner.
- 9.3.5 The Contractor shall have Owner’s Protective Liability insurance for contract values \$50,000 and above, naming the Owner as the Named Insured. Minimum acceptable limits are:
- General aggregate limit.....\$2,000,000
 - Each occurrence limit.....\$1,000,000

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10. Contract Bonds

- 10.1 When noted as required in the Bid Documents, the Contractor shall provide to the Owner a Performance Bond and a Payment Bond, or "contract bonds", upon execution of the contract. Each bond value shall be for the full amount of the contract and issued by a surety company authorized to do business in the State of Maine as approved by the Owner. The bonds shall be executed on the forms furnished in the Bid Documents. The bonds shall allow for any subsequent additions or deductions of the contract.
- 10.2 The contract bonds shall continue in effect for one year after final acceptance of the contract to protect the Owner's interest in connection with the one year guarantee of workmanship and materials and to assure settlement of claims for the payment of all bills for labor, materials and equipment by the Contractor.

11. Patents and Royalties

- 11.1 The Contractor shall, for all time, secure for the Owner the free and undisputed right to the use of any patented articles or methods used in the Work. The expense of defending any suits for infringement or alleged infringement of such patents shall be borne by the Contractor. Awards made regarding patent suits shall be paid by the Contractor. The Contractor shall hold the Owner harmless regarding patent suits that may arise due to installations made by the Contractor, and to any awards made as a result of such suits.
- 11.2 Any royalty payments related to the work done by the Contractor for the Project shall be borne by the Contractor. The Contractor shall hold the Owner harmless regarding any royalty payments that may arise due to installations made by the Contractor.

12. Surveys, Layout of Work

- 12.1 The Owner shall furnish all property surveys unless otherwise specified.
- 12.2 The Contractor is responsible for correctly staking out the Work on the site. The Contractor shall employ a competent surveyor to position all construction on the site. The surveyor shall run the axis lines, establish correct datum points and check each line and point on the site to insure their accuracy. All such lines and points shall be carefully preserved throughout the construction.
- 12.3 The Contractor shall lay out all work from dimensions given on the Drawings. The Contractor shall take measurements and verify dimensions of any existing work that affects the Work or to which the Work is to be fitted. The Contractor is solely responsible for the accuracy of all measurements. The Contractor shall verify all grades, lines, levels, elevations and dimensions shown on the Drawings and report any errors or inconsistencies to the Consultant prior to commencing work.

13. Record of Documents

- 13.1 The Contractor shall maintain one complete set of Contract Documents on the jobsite, in good order and current status, for access by the Owner and Consultant.
- 13.2 The Contractor shall maintain, continuously updated, complete records of Requests for Information, Architectural Supplemental Instructions (or equivalent), Information Bulletins,

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supplemental sketches, Change Order Proposals, Change Orders, Shop Drawings, testing reports, et cetera, for access by the Owner and Consultant.

14. Allowances

14.1 The Contract Price shall include all allowances described in the Contract Documents. The Contractor shall include all overhead and profit necessary to implement each allowance in their Contract Price.

14.2 The Contractor shall not be required to employ parties for allowance work against whom the Contractor has a reasonable objection. In such a case, the Contractor shall notify the Owner in writing of their position and shall propose an alternative party to complete the work of the allowance.

15. Shop Drawings

15.1 The Contractor shall administer Shop Drawings prepared by the Contractor, Subcontractors, suppliers or others to conform to the approved Schedule of the Work. The Contractor shall verify all field measurements, check and authorize all Shop Drawings and schedules required by the Work. The Contractor is the responsible party and contact for the Contractor's work as well as that of Subcontractors, suppliers or others who provide Shop Drawings.

15.2 The Consultant shall review and acknowledge Shop Drawings, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents.

15.3 The Contractor shall provide monthly updated logs containing: requests for information, information bulletins, supplemental instructions, supplemental sketches, change order proposals, change orders, submittals, testing and deficiencies.

15.4 The Contractor shall make any corrections required by the Consultant, and shall submit a quantity of corrected copies as may be needed. The acceptance of Shop Drawings or schedules by the Consultant shall not relieve the Contractor from responsibility for deviations from Drawings and Specifications, unless the Contractor has called such deviations to the attention of the Consultant at the time of submission and secured the Consultant's written approval. The acceptance of Shop Drawings or schedules by the Consultant does not relieve the Contractor from responsibility for errors in Shop Drawings or schedules.

16. Samples

16.1 The Contractor shall furnish for approval, with reasonable promptness, all samples as directed by the Consultant. The Consultant shall review and approve such samples, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents. The subsequent work shall be in accord with the approved samples.

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17. Substitutions

- 17.1 The Contractor shall furnish items and materials described in the Contract Documents. If the item or material specified describes a proprietary product, or uses the name of a manufacturer, the term “or approved equal” shall be implied, if it is not included in the text. The specific item or material specified establishes a minimum standard for the general design, level of quality, type, function, durability, efficiency, reliability, compatibility, warranty coverage, installation factors and required maintenance. The Drawing or written Specification shall not be construed to exclude other manufacturers products of comparable design, quality, and efficiency.
- 17.2 The Contractor may submit detailed information about a proposed substitution to the Consultant for consideration. Particular models of items and particular materials which the Contractor asserts to be equal to the items and materials identified in the Contract Documents shall be allowed only with written approval by the Consultant. The request for substitution shall include a cost comparison and a reason or reasons for the substitution.
- 17.3 The Consultant may request additional information about the proposed substitution. The approval or rejection of a proposed substitution may be based on timeliness of the request, source of the information, the considerations of minimum standards described above, or other considerations. The Consultant should briefly state the rationale for the decision. The decision shall be considered final.
- 17.4 The duration of a substitution review process can not be the basis for a claim for delay in the Schedule of the Work.

18. Assignment of Contract

- 18.1 The Contractor shall not assign or sublet the contract as a whole without the written consent of the Owner. The Contractor shall not assign any money due to the Contractor without the written consent of the Owner.

19. Separate Contracts

- 19.1 The Owner reserves the right to create other contracts in connection with this Project using similar General Conditions. The Contractor shall allow the Owner's other contractors reasonable opportunity for the delivery and storage of materials and the execution of their work. The Contractor shall coordinate and properly connect the Work of all contractors.
- 19.2 The Contractor shall promptly report to the Consultant and Owner any apparent deficiencies in work of the Owner's other contractors that impacts the proper execution or results of the Contractor. The Contractor’s failure to observe or report any deficiencies constitutes an acceptance of the Owner's other contractors work as suitable for the interface of the Contractor’s work, except for latent deficiencies in the Owner's other contractors work.
- 19.3 Similarly, the Contractor shall promptly report to the Consultant and Owner any apparent deficiencies in their own work that would impact the proper execution or results of the Owner's other contractors.

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- 19.4 The Contractor shall report to the Consultant and Owner any conflicts or claims for damages with the Owner's other contractors and settle such conflicts or claims for damages by mutual agreement or arbitration, if necessary, at no expense to the Owner.
- 19.5 In the event the Owner's other contractors sue the Owner regarding any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor's expense. The Contractor shall pay or satisfy any judgment that may arise against the Owner, and pay all other costs incurred.
20. Subcontracts
- 20.1 The Contractor shall not subcontract any part of this contract without the written permission of the Owner.
- 20.2 The Contractor shall submit a complete list of named Subcontractors and material suppliers to the Consultant and Owner for approval by the Owner prior to commencing work. The Subcontractors named shall be reputable companies of recognized standing with a record of satisfactory work.
- 20.3 The Contractor shall not employ any Subcontractor or use any material until they have been approved, or where there is reason to believe the resulting work will not comply with the Contract Documents.
- 20.4 The Contractor, not the Owner, is as fully responsible for the acts and omissions of Subcontractors and of persons employed by them, as the Contractor is for the acts and omissions of persons directly or indirectly employed by the Contractor.
- 20.5 Neither the Contract Documents nor any Contractor-Subcontractor contract shall indicate, infer or create any direct contractual relationship between any Subcontractor and the Owner.
21. Contractor-Subcontractor Relationship
- 21.1 The Contractor shall be bound to the Subcontractor by all the obligations in the Contract Documents that bind the Contractor to the Owner.
- 21.2 The Contractor shall pay the Subcontractor, in proportion to the dollar value of the work completed and requisitioned by the Subcontractor, the approved dollar amount allowed to the Contractor no more than seven days after receipt of payment from the Owner.
- 21.3 The Contractor shall pay the Subcontractor accordingly if the Contract Documents or the subcontract provide for earlier or larger payments than described in the provision above.
- 21.4 The Contractor shall pay the Subcontractor for completed and requisitioned subcontract work, less retainage, no more than seven days after receipt of payment from the Owner for the Contractor's approved Requisition for Payment, even if the Consultant fails to certify a portion of the Requisition for Payment for a cause not the fault of the Subcontractor.
- 21.5 The Contractor shall not make a claim for liquidated damages or penalty for delay in any amount in excess of amounts that are specified by the subcontract.

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- 21.6 The Contractor shall not make a claim for services rendered or materials furnished by the Subcontractor unless written notice is given by the Contractor to the Subcontractor within ten calendar days of the day in which the claim originated.
- 21.7 The Contractor shall give the Subcontractor an opportunity to present and to submit evidence in any progress conference or disputes involving subcontract work.
- 21.8 The Contractor shall pay the Subcontractor a just share of any fire insurance payment received by the Contractor.
- 21.9 The Subcontractor shall be bound to the Contractor by the terms of the Contract Documents and assumes toward the Contractor all the obligations and responsibilities that the Contractor, by those documents, assumes toward the Owner.
- 21.10 The Subcontractor shall submit applications for payment to the Contractor in such reasonable time as to enable the Contractor to apply for payment as specified.
- 21.11 The Subcontractor shall make any claims for extra cost, extensions of time or damages, to the Contractor in the manner provided in these General Conditions for like claims by the Contractor to the Owner, except that the time for the Subcontractor to make claims for extra cost is seven calendar days after the receipt of Consultant's instructions.

22. Supervision of the Work

- 22.1 During all stages of the Work the Contractor shall have a competent superintendent, with any necessary assistant superintendents, overseeing the project. The superintendent shall not be reassigned without the consent of the Owner unless a superintendent ceases to be employed by the Contractor due to unsatisfactory performance.
- 22.2 The superintendent represents the Contractor on the jobsite. Directives given by the Consultant or Owner to the superintendent shall be as binding as if given directly to the Contractor's main office. All important directives shall be confirmed in writing to the Contractor. The Consultant and Owner are not responsible for the acts or omissions of the superintendent or assistant superintendents.
- 22.3 The Contractor shall provide supervision of the Work equal to the industry's highest standard of care. The superintendent shall carefully study and compare all Contract Documents and promptly report any error, inconsistency or omission discovered to the Consultant. The Contractor may not necessarily be held liable for damages resulting directly from any error, inconsistency or omission in the Contract Documents or other instructions by the Consultant that was not revealed by the superintendent in a timely way.

23. Observation of the Work

- 23.1 The Contractor shall allow the Owner, the Consultant and the Bureau continuous access to the site for the purpose of observation of the progress of the work. All necessary safeguards and accommodations for such observations shall be provided by the Contractor.

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- 23.2 The Contractor shall coordinate all required testing, approval or demonstration of the Work. The Contractor shall give sufficient notice to the appropriate parties of readiness for testing, inspection or examination.
- 23.3 The Contractor shall schedule inspections and obtain all required certificates of inspection for inspections by a party other than the Consultant.
- 23.4 The Consultant shall make all scheduled observations promptly, prior to the work being concealed or buried by the Contractor. If approval of the Work is required of the Consultant, the Contractor shall notify the Consultant of the construction schedule in this regard. Work concealed or buried prior to the Consultant's approval may need to be uncovered at the Contractor's expense.
- 23.5 The Consultant may order reexamination of questioned work, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to conform to the Contract Documents, the Owner shall pay the expense of the reexamination and remedial work. If the work is found to not conform to the Contract Documents, the Contractor shall pay the expense, unless the defect in the work was caused by the Owner's Contractor, whose responsibility the reexamination expense becomes.
- 23.6 The Bureau shall periodically observe the Work during the course of construction and make recommendations to the Contractor or Consultant as necessary. Such recommendations shall be considered and implemented through the usual means for changes to the Work.

24. Consultant's Status

- 24.1 The Consultant represents the Owner during the construction period, and observes the work in progress on behalf of the Owner. The Consultant has authority to act on behalf of the Owner only to the extent expressly provided by the Contract Documents or otherwise demonstrated to the Contractor. The Consultant has authority to stop the work whenever such an action is necessary, in the Consultant's reasonable opinion, to ensure the proper execution of the contract.
- 24.2 The Consultant is the interpreter of the conditions of the contract and the judge of its performance. The Consultant shall favor neither the Owner nor the Contractor, but shall use the Consultant's powers under the contract to enforce faithful performance by both parties.
- 24.3 In the event of the termination of the Consultant's employment on the project prior to completion of the work, the Owner shall appoint a capable and reputable replacement. The status of the new Consultant relative to this contract shall be that of the former Consultant.

25. Management of the Premises

- 25.1 The Contractor shall place equipment and materials, and conduct activities on the premises in a manner that does not unreasonably hinder site circulation, environmental stability, or any long term effect. Likewise, the Consultant's directions shall not cause the use of premises to be impeded for the Contractor or Owner.

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- 25.2 The Contractor shall not use the premises for any purpose other than that which is directly related to the scope of work. The Owner shall not use the premises for any purpose incompatible with the proposed work simultaneous to the work of the Contractor.
- 25.3 The Contractor shall enforce the Consultant's instructions regarding information posted on the premises such as signage and advertisements, as well as activities conducted on the premises such as fires, and smoking.
- 25.4 The Owner may occupy any part of the Project that is completed with the written consent of the Contractor, and without prejudice to any of the rights of the Owner or Contractor. Such use or occupancy shall not, in and of itself, be construed as a final acceptance of any work or materials.
26. Safety and Security of the Premises
- 26.1 The Contractor shall designate, and make known to the Consultant and the Owner, a safety officer whose duty is the prevention of accidents on the site.
- 26.2 The Contractor shall continuously maintain security on the premises and protect from unreasonable occasion of injury all people authorized to be on the job site. The Contractor shall also effectively protect the property and adjacent properties from damage or loss.
- 26.3 The Contractor shall take all necessary precautions to ensure the safety of workers and others on and adjacent to the site, abiding by applicable local, state and federal safety regulations. The Contractor shall erect and continuously maintain safeguards for the protection of workers and others, and shall post signs and other warnings regarding hazards associated with the construction process, such as protruding fasteners, moving equipment, trenches and holes, scaffolding, window, door or stair openings, and falling materials.
- 26.4 The Contractor shall restore the premises to conditions that existed prior to the start of the project at areas not intended to be altered according to the Contract Documents.
- 26.5 The Contractor shall protect existing utilities and exercise care working in the vicinity of utilities shown in the Drawings and Specifications or otherwise located by the Contractor.
- 26.6 The Contractor shall protect from damage existing trees and other significant plantings and landscape features of the site which will remain a permanent part of the site. If necessary or indicated in the Contract Documents, tree trunks shall be boxed and barriers erected to prevent damage to tree branches or roots.
- 26.7 The Contractor shall repair or replace damage to the Work caused by the Contractor's or Subcontractor's forces, including that which is reasonably protected, at the expense of the responsible party.
- 26.8 The Contractor shall not load, or allow to be loaded, any part of the Project with a force which imperils personal or structural safety. The Consultant may consult with the Contractor on such means and methods of construction, however, the ultimate responsibility lies with the Contractor.
- 26.9 The Contractor shall not jeopardize any work in place with subsequent construction activities such as blasting, drilling, excavating, cutting, patching or altering work. The Consultant must

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approve altering any structural components of the project. The Contractor shall supervise all construction activities carried out by others on site to ensure that the work is neatly done and in a manner that will not endanger the structure or the component parts.

- 26.10 The Contractor may act with their sole discretion in emergency situations that potentially effect health, life or serious damage to the premises or adjacent properties, to prevent such potential loss or injury. The Contractor may negotiate with the Owner for compensation for expenses due to such emergency work.
- 26.11 The Contractor and Subcontractors shall have no responsibility for the identification, discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials in any form at the project site. The Contractor shall avoid disruption of any hazardous materials or toxic substances at the project site and promptly notify the Owner in writing on the occasion of such a discovery.
- 26.12 The Contractor shall keep the premises free of any unsafe accumulation of waste materials caused by the work. The Contractor shall regularly keep the spaces "broom clean". See the Close-out of the Work provisions of this section regarding cleaning at the completion of the project.

27. Changes in the Work

- 27.1 The Contractor shall not proceed with extra work without an approved Change Order or Construction Change Directive. A Change Order which has been properly signed by all parties shall become a part of the contract.
- 27.2 A Change Order is the usual document for directing changes in the Work. In certain circumstances, however, the Owner may utilize a Construction Change Directive to direct the Contractor to perform changes in the Work that are generally consistent with the scope of the project. The Owner shall use a Construction Change Directive only when the normal process for approving changes to the Work has failed to the detriment of the Project, or when agreement on the terms of a Change Order cannot be met, or when an urgent situation requires, in the Owner's judgment, prompt action by the Contractor.
- 27.3 The Consultant shall prepare the Construction Change Directive representing a complete scope of work, with proposed Contract Price and Contract Time revisions, if any, clearly stated.
- 27.4 The Contractor shall promptly carry out a Construction Change Directive which has been signed by the Owner and the Consultant. Work thus completed by the Contractor constitutes the basis for a Change Order. Changes in the Contract Price and Contract Time shall be as defined in the Construction Change Directive unless subsequently negotiated with some other terms.
- 27.5 The method of determining the dollar value of extra work shall be by:
- .1 an estimate of the Contractor accepted by Owner as a lump sum, or
 - .2 unit prices named in the contract or subsequently agreed upon, or
 - .3 cost plus a designated percentage, or
 - .4 cost plus a fixed fee.

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- 27.6 The Contractor shall determine the dollar value of the extra work for both the lump sum and cost plus designated percentage methods so as not to exceed the following rates. The rates include all overhead and profit expenses.
- .1 Contractor - for any work performed by the Contractor's own forces, up to 20% of the cost;
 - .2 Subcontractor - for work performed by Subcontractor's own forces, up to 20% of the cost;
 - .3 Contractor - for work performed by Contractor's Subcontractor, up to 10% of the amount due the Subcontractor.
- 27.7 The Contractor shall keep and provide records as needed or directed for the cost plus designated percentage method. The Consultant shall review and certify the appropriate amount which includes the Contractor's overhead and profit. The Owner shall make payments based on the Consultant's certificate.
- 27.8 Cost reflected in Change Orders shall be limited to the following: cost of materials, cost of delivery, cost of labor (including Social Security, pension, Workers' Compensation insurance, and unemployment insurance), and cost of rental of power tools and equipment. Labor cost may include a pro-ratio share of a foreman's time only in the case of an extension of contract time granted due to the Change Order.
- 27.9 Overhead reflected in Change Orders shall be limited to the following: bond premium, supervision, wages of clerks, time keepers, and watchmen, small tools, incidental expenses, general office expenses, and all other overhead expenses directly related to the Change Order.
- 27.10 The Contractor shall provide credit to the Owner for labor, materials, equipment and other costs but not overhead and profit expenses for those Change Order items that result in a net value of credit to the contract.
- 27.11 The Owner may change the scope of work of the Project without invalidating the contract. The Owner shall notify the Contractor of a change of the scope of work for the Owner's Contractors, which may affect the work of this Contractor, without invalidating the contract. Change Orders for extension of the time caused by such changes shall be developed at the time of directing the change in scope of work.
- 27.12 The Consultant may order minor changes in the Work, not involving extra cost, which is consistent with the intent of the design or project.
- 27.13 The Contractor shall immediately give written notification to the Consultant of latent conditions discovered at the site which materially differ from those represented in the Drawings or Specifications, and which may eventually result in a change in the scope of work. The Contractor shall suspend work until receiving direction from the Consultant. The Consultant shall promptly investigate the conditions and respond to the Contractor's notice with direction that avoids any unnecessary delay of the Work. The Consultant shall determine if the discovered conditions warrant a Change Order.
- 27.14 The Contractor shall, within ten calendar days of receipt of the information, give written notification to the Consultant if the Contractor claims that instructions by the Consultant will constitute extra cost not accounted for by Change Order or otherwise under the contract. The Consultant shall promptly respond to the Contractor's notice with direction that avoids any

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unnecessary delay of the Work. The Consultant shall determine if the Contractor's claim warrants a Change Order.

28. Correction of the Work

- 28.1 The Contractor shall promptly remove from the premises all work the Consultant declares is non-conforming to the contract. The Contractor shall replace the work properly at no expense to the Owner. The Contractor is also responsible for the expenses of others whose work was damaged or destroyed by such remedial work.
- 28.2 The Owner may elect to remove non-conforming work if it is not removed by the Contractor within a reasonable time, that time defined in a written notice from the Consultant. The Owner may elect to store removed non-conforming work not removed by the Contractor at the Contractor's expense. The Owner may, with ten days written notice, dispose of materials which the Contractor does not remove. The Owner may sell the materials and apply the net proceeds, after deducting all expenses, to the costs that should have been borne by the Contractor.
- 28.3 The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any related damage to other work which appears within a period of one year from the date of substantial completion, and in accord with the terms of any guarantees provided in the contract. The Owner shall promptly give notice of observed defects to the Contractor and Consultant. The Consultant shall determine the status of all claimed defects. The Contractor shall perform all remedial work without unjustifiable delay in either the initial response or the corrective action.
- 28.4 The Consultant may authorize, after a reasonable notification to the Contractor, an equitable deduction from the contract amount in lieu of the Contractor correcting non-conforming or defective work.

29. Owner's Right to do Work

- 29.1 The Owner may, using other contractors, correct deficiencies attributable to the Contractor, or complete unfinished work. Such action shall take place only after giving the Contractor three days written notice, and provided the Consultant approves of the proposed course of action as an appropriate remedy. The Owner may then deduct the cost of the remedial work from the amount due the Contractor.
- 29.2 The Owner may act with their sole discretion when the Contractor is unable to take action in emergency situations that potentially effect health, life or serious damage to the premises or adjacent properties, to prevent such potential loss or injury. The Owner shall inform the Contractor of the emergency work performed, particularly where it may affect the work of the Contractor.

30. Termination of Contract and Stop Work Action

- 30.1 The Owner may, owing to a certificate of the Consultant indicating that sufficient cause exists to justify such action, without prejudice to any other right or remedy and after giving the Contractor and the Contractor's surety seven days written notice, terminate the employment of the

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Contractor. At that time the Owner may take possession of the premises and of all materials, tools and appliances on the premises and finish the work by whatever method the Owner may deem expedient. Cause for such action by the Owner includes:

- .1 the contractor is adjudged bankrupt, or makes a general assignment for the benefit of its creditors, or
- .2 a receiver is appointed due to the Contractor's insolvency, or
- .3 the Contractor persistently or repeatedly refuses or fails to provide enough properly skilled workers or proper materials, or
- .4 the Contractor fails to make prompt payment to Subcontractors or suppliers of materials or labor, or
- .5 the Contractor persistently disregards laws, ordinances or the instructions of the Consultant, or is otherwise found guilty of a substantial violation of a provision of the Contract Documents.

- 30.2 The Contractor is not entitled, as a consequence of the termination of the employment of the Contractor as described above, to receive any further payment until the Work is finished. If the unpaid balance of the contract amount exceeds the expense of finishing the Work, including compensation for additional architectural, managerial and administrative services, such balance shall be paid to the Contractor. If the expense of finishing the Work exceeds the unpaid balance, the Contractor shall pay the difference to the Owner. The Consultant shall certify the expense incurred by the Contractor's default. This obligation for payment shall continue to exist after termination of the contract.
- 30.3 The Contractor may, if the Work is stopped by order of any court or other public authority for a period of thirty consecutive days, and through no act or fault of the Contractor or of anyone employed by the Contractor, with seven days written notice to the Owner and the Consultant, terminate this contract. The Contractor may then recover from the Owner payment for all work executed, any proven loss and reasonable profit and damage.
- 30.4 The Contractor may, if the Consultant fails to issue a certificate for payment within seven days after the Contractor's formal request for payment, through no fault of the Contractor, or if the Owner fails to pay to the Contractor within 30 days after submission of any sum certified by the Consultant, with seven days written notice to the Owner and the Consultant, stop the Work or terminate this Contract.

31. Delays and Extension of Time

- 31.1 The completion date of the contract shall be extended if the work is delayed by changes ordered in the work which have approved time extensions, or by an act or neglect of the Owner, the Consultant, or the Owner's Contractor, or by strikes, lockouts, fire, flooding, unusual delay in transportation, unavoidable casualties, or by other causes beyond the Contractor's control. The Consultant shall determine the status of all claimed causes.
- 31.2 The contract shall not be extended for delay occurring more than seven calendar days before the Contractor's claim made in writing to the Consultant. In case of a continuing cause of delay, only one claim is necessary.
- 31.3 The contract shall not be extended due to failure of the Consultant to furnish drawings if no schedule or agreement is made between the Contractor and the Consultant indicating the dates

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which drawings shall be furnished and fourteen calendar days has passed after said date for such drawings.

- 31.4 This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Document.

32. Payments to the Contractor

- 32.1 As noted under *Preconstruction Conference* in this section, the Contractor shall submit a Schedule of Values form, before the first application for payment, for approval by the Owner and Consultant. The Consultant may direct the Contractor to provide evidence that supports the correctness of the form. The approved Schedule of Values shall be used as a basis for payments.
- 32.2 The Contractor shall submit an application for each payment (“Requisition for Payment”) on a form approved by the Owner and Consultant. The Consultant may require receipts or other documents showing the Contractor's payments for materials and labor, including payments to Subcontractors.
- 32.3 The Contractor shall submit Requisitions for Payment as the work progresses not more frequently than once each month, unless the Owner approves a more frequent interval due to unusual circumstances. The Requisition for Payment is based on the proportionate quantities of the various classes of work completed or incorporated in the Work, in agreement with the actual progress of the Work and the dollar value indicated in the Schedule of Values.
- 32.4 The Consultant shall verify and certify each Requisition for Payment which appears to be complete and correct prior to payment being made by the Owner. The Consultant may certify an appropriate amount for materials not incorporated in the Work which have been delivered and suitably stored at the site. The Contractor shall submit bills of sale, insurance certificates, or other such documents that will adequately protect the Owner’s interests prior to payments being certified.
- 32.5 In the event any materials delivered but not yet incorporated in the Work have been included in a certified Requisition for Payment with payment made, and said materials thereafter are damaged, deteriorated or destroyed, or for any reason whatsoever become unsuitable or unavailable for use in the Work, the full amount previously allowed shall be deducted from subsequent payments unless the Contractor satisfactorily replaces said material.
- 32.6 The Contractor may request certification of an appropriate dollar amount for materials not incorporated in the Work which have been delivered and suitably stored away from the site. The Contractor shall submit bills of sale, insurance certificates, right-of-entry documents or other such documents that will adequately protect the Owner’s interests. The Consultant shall determine if the Contractor's documentation for the materials is complete and specifically designated for the Project. The Owner may allow certification of such payments.
- 32.7 Subcontractors may request, and shall receive from the Consultant, copies of approved Requisitions for Payment showing the amounts certified in the Schedule of Values.
- 32.8 Certified Requisitions for Payment, payments made to the Contractor, or partial or entire occupancy of the project by the Owner shall not constitute an acceptance of any work that does

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not conform to the Contract Documents. The making and acceptance of the final payment constitutes a waiver of all claims by the Owner, other than those arising from unsettled liens, from faulty work or materials appearing within one year from final payment or from requirements of the Drawings and Specifications, and of all claims by the Contractor, except those previously made and still unsettled.

33. Payments Withheld

- 33.1 The Owner shall retain five percent of each payment due the Contractor as part security for the fulfillment of the contract by the Contractor. The Owner may make payment of a portion of this “retainage” to the Contractor temporarily or permanently during the progress of the Work. The Owner may thereafter withhold further payments until the full amount of the five percent is reestablished. The Contractor may deposit with the Maine State Treasurer certain securities in place of retainage amounts due according to Maine Statute (5 M.R.S. §1746).
- 33.2 The Consultant may withhold or nullify the whole or a portion of any Requisitions for Payment submitted by the Contractor in the amount that may be necessary, in his reasonable opinion, to protect the Owner from loss due to any of the following:
- .1 defective work not remedied;
 - .2 claims filed or reasonable evidence indicating probable filing of claims;
 - .3 failure to make payments properly to Subcontractors or suppliers;
 - .4 a reasonable doubt that the contract can be completed for the balance then unpaid;
 - .5 liability for damage to another contractor.

The Owner shall make payment to the Contractor, in the amount withheld, when the above circumstances are removed.

34. Liens

- 34.1 The Contractor shall deliver to the Owner a complete release of all liens arising out of this contract before the final payment or any part of the retainage payment is released. The Contractor shall provide with the release of liens an affidavit asserting each release includes all labor and materials for which a lien could be filed. Alternately, the Contractor, in the event any Subcontractor or supplier refuses to furnish a release of lien in full, may furnish a bond satisfactory to the Owner, to indemnify the Owner against any lien.
- 34.2 In the event any lien remains unsatisfied after all payments to the Contractor are made by the Owner, the Contractor shall refund to the Owner all money that the latter may be compelled to pay in discharging such lien, including all cost and reasonable attorney’s fees.

35. Workmanship

- 35.1 The Contractor shall provide materials, equipment, and installed work equal to or better than the quality specified in the Contract Documents and approved in submittal and sample. The installation methods shall be of the highest standards, and the best obtainable from the respective trades. The Consultant’s decision on the quality of work shall be final.

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- 35.2 The Contractor shall know local labor conditions for skilled and unskilled labor in order to apply the labor appropriately to the Work. All labor shall be performed by individuals well skilled in their respective trades.
- 35.3 The Contractor shall perform all cutting, fitting, patching and placing of work in such a manner to allow subsequent work to fit properly, whether that be by the Contractor, the Owner's Contractors or others. The Owner and Consultant may advise the Contractor regarding such subsequent work. Notwithstanding the notification or knowledge of such subsequent work, the Contractor may be directed to comply with this standard of compatible construction by the Consultant at the Contractor's expense.
- 35.4 The Contractor shall request clarification or revision of any design work by the Consultant, prior to commencing that work, in a circumstance where the Contractor believes the work cannot feasibly be completed at the highest quality, or as indicated in the Contract Documents. The Consultant shall respond to such requests in a timely way, providing clarifying information, a feasible revision, or instruction allowing a reduced quality of work. The Contractor shall follow the direction of the Consultant regarding the required request for information.
- 35.5 The Contractor shall guarantee the Work against any defects in workmanship and materials for a period of one year commencing with the date of the Certificate of Substantial Completion, unless specified otherwise for specific elements of the project. The Work may also be subdivided in mutually agreed upon components, each defined by a separate Certificate of Substantial Completion.
36. Close-out of the Work
- 36.1 The Contractor shall remove from the premises all waste materials caused by the work. The Contractor shall make the spaces "broom clean" unless a more thorough cleaning is specified. The Contractor shall clean all windows and glass immediately prior to the final inspection, unless otherwise directed.
- 36.2 The Owner may conduct the cleaning of the premises where the Contractor, duly notified by the Consultant, fails to adequately complete the task. The expense of this cleaning may be deducted from the sum due to the Contractor.
- 36.3 The Contractor shall participate in all final inspections and acknowledge the documentation of unsatisfactory work, customarily called the "punch list", to be corrected by the Contractor. The Consultant shall document the successful completion of the Work in a dated Certificate of Substantial Completion, to be signed by Owner, Consultant, and Contractor.
- 36.4 The Contractor shall not call for final inspection of any portion of the Work that is not completely and permanently installed. The Contractor may be found liable for the expenses of individuals called to final inspection meetings prematurely.
- 36.5 The Contractor and all major Subcontractors shall participate in the end-of-warranty-period conference, typically scheduled close to one year after the Substantial Completion date.

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37. Date of Completion and Liquidated Damages

- 37.1 The Contractor may make a written request to the Owner for an extension or reduction of time, if necessary. The request shall include the reasons the Contractor believes justifies the proposed completion date. The Owner may grant the revision of the contract completion date if the Work was delayed due to conditions beyond the control and the responsibility of the Contractor. The Contractor shall not conduct unauthorized accelerated work or file delay claims to recover alleged damages for unauthorized early completion.

- 37.2 The Contractor shall vigorously pursue the completion of the Work and notify the Owner of any factors that have, may, or will affect the approved Schedule of the Work. The Contractor may be found responsible for expenses of the Owner or Consultant if the Contractor fails to make notification of project delays.

- 37.3 The Project is planned to be done in an orderly fashion which allows for an iterative submittal review process, construction administration including minor changes in the Work and some bad weather. The Contractor shall not file delay claims to recover alleged damages on work the Consultant determines has followed the expected rate of progress.

- 37.4 The Consultant shall prepare the Certificate of Substantial Completion which, when signed by the Owner and the Contractor, documents the date of Substantial Completion of the Work or a designated portion of the Work. The Owner shall not consider the issuance of a Certificate of Occupancy by an outside authority a prerequisite for Substantial Completion if the Certificate of Occupancy cannot be obtained due to factors beyond the Contractor’s control.

- 37.5 Liquidated Damages may be deducted from the sum due to the Contractor for each calendar day that the Work remains uncompleted after the completion date specified in the Contract or an approved amended completion date. The dollar amount per day shall be calculated using the Schedule of Liquidated Damages table shown below.

If the original contract amount is:	The per day Liquidated Damages shall be:
Less than \$100,000	\$250
\$100,000 to less than \$2,000,000	\$750
\$2,000,000 to less than \$10,000,000	\$1,500
\$10,000,000 and greater	\$1,500 plus \$250 for each \$2,000,000 over \$10,000,000

38. Dispute Resolution

38.1 Mediation

- 38.1.1 A dispute between the parties which arises under this Contract which cannot be resolved through informal negotiation, shall be submitted to a neutral mediator jointly selected by the parties.

- 38.1.2 Either party may file suit before or during mediation if the party, in good faith, deems it to be necessary to avoid losing the right to sue due to a statute of limitations. If suit is filed before good faith mediation efforts are completed, the party filing suit shall agree to stay all proceedings in the lawsuit pending completion of the mediation process, provided such stay is without prejudice.

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- 38.1.3 In any mediation between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.
- 38.2 Arbitration
- 38.2.1 If the dispute is not resolved through mediation, the dispute shall be settled by arbitration. The arbitration shall be conducted before a panel of three arbitrators. Each party shall select one arbitrator; the third arbitrator shall be appointed by the arbitrators selected by the parties. The arbitration shall be conducted in accordance with the Maine Uniform Arbitration Act (MUAA), except as otherwise provided in this section.
- 38.2.2 The decision of the arbitrators shall be final and binding upon all parties. The decision may be entered in court as provided in the MUAA.
- 38.2.3 The costs of the arbitration, including the arbitrators' fees shall be borne equally by the parties to the arbitration, unless the arbitrator orders otherwise.
- 38.2.4 In any arbitration between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.

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Wage Determination Schedule

PART 1- GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.

1.2 Summary

- A. This Section includes the wage determination requirements for Contractors as issued by the State of Maine Department of Labor Bureau of Labor Standards or the United States Department of Labor.

1.3 Requirements

- A. Conform to the wage determination schedule for this project which is shown on the following page.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

**State of Maine
Department of Labor
Bureau of Labor Standards
Augusta, Maine 04333-0045
Telephone (207) 623-7906**

Wage Determination - In accordance with 26 MRS §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid to laborers and workers employed on the below titled project.

2026 Fair Minimum Wage Rates – Highway & Earth Washington County

<u>Occupational Title</u>	<u>Minimum Wage</u>	<u>Minimum Benefit</u>	<u>Total</u>
Brickmasons and Blockmasons	\$43.02	\$7.64	\$50.66
Bulldozer Operator	\$29.19	\$5.62	\$34.81
Carpenter	\$33.75	\$3.55	\$37.30
Cement Masons and Concrete Finisher	\$24.42	\$2.52	\$26.94
Construction and Maintenance Painters	\$37.24	\$16.63	\$53.87
Construction Laborer	\$23.02	\$0.30	\$23.32
Conveyor Operators and Tenders	\$30.17	\$13.77	\$43.94
Crane and Tower Operators	\$40.43	\$8.63	\$49.06
Crushing Grinding and Polishing Machine Operators	\$26.15	\$3.24	\$29.39
Earth Drillers - Except Oil and Gas	\$25.04	\$3.77	\$28.81
Electrical Power - Line Installer and Repairers	\$48.12	\$15.63	\$63.75
Electricians	\$50.10	\$5.18	\$55.28
Elevator Installers and Repairers	\$67.34	\$39.76	\$107.10
Excavator Operator	\$29.33	\$3.87	\$33.20
Fence Erectors	\$31.01	\$3.35	\$34.36
Flaggers	\$21.10	\$1.06	\$22.16
Floor Layers - Except Carpet/Wood/Hard Tiles	\$29.00	\$8.65	\$37.65
Glaziers	\$39.32	\$19.22	\$58.54
Hazardous Materials Removal Workers	\$24.12	\$1.60	\$25.72
Heating and Air Conditioning and Refrigeration Mechanics and Installers	\$35.68	\$5.93	\$41.61
Heavy and Tractor - Trailer Truck Drivers	\$27.98	\$3.26	\$31.24
Highway Maintenance Workers	\$19.41	\$4.56	\$23.98
Industrial Machinery Mechanics	\$29.97	\$6.74	\$36.71
Industrial Truck and Tractor Operators	\$24.61	\$4.21	\$28.82
Insulation Worker - Mechanical	\$27.35	\$6.05	\$33.40
Light Truck or Delivery Services Drivers	\$26.79	\$5.14	\$31.93
Loading Machine and Dragline Operators	\$26.61	\$3.68	\$30.29
Millwrights	\$35.99	\$10.52	\$46.51
Mobile Heavy Equipment Mechanics - Except Engines	\$22.30	\$8.71	\$31.01
Operating Engineers and Other Equipment Operators	\$24.65	\$5.07	\$29.72
Paving Surfacing and Tamping Equipment Operators	\$30.17	\$13.85	\$44.02
Pile-Driver Operators	\$37.15	\$3.12	\$40.27
Pipe/Steam/Sprinkler Fitter	\$32.33	\$7.56	\$39.89
Pipelayers	\$28.75	\$3.64	\$32.39
Plumbers	\$34.11	\$7.80	\$41.91
Radio Cellular and Tower Equipment Installers	\$34.72	\$5.63	\$40.35
Reinforcing Iron and Rebar Workers	\$32.94	\$20.82	\$53.76
Riggers	\$31.25	\$7.68	\$38.93
Roofers	\$25.50	\$3.49	\$28.99
Sheet Metal Workers	\$28.77	\$7.00	\$35.77
Structural Iron and Steel Workers	\$30.98	\$7.12	\$38.10
Tapers	\$29.16	\$5.64	\$34.80
Telecommunications Equipment Installers and Repairers - Except Line Installers	\$37.09	\$10.21	\$47.30
Telecommunications Line Installers and Repairers	\$28.49	\$5.29	\$33.78
Tile and Marble Setters	\$28.91	\$5.46	\$34.37

Welders are classified as the trade to which welding is incidental (e.g. welding structural steel is Structural Iron and Steel Worker)

Apprentices – The minimum wage rates for registered apprentices are the rates recognized in the sponsorship agreement for registered apprentices working in the pertinent classification.

For any other specific trade on this project not listed above, contact the Bureau of Labor Standards for further clarification.

Title 26 §1310 requires that a clearly legible statement of all fair minimum wage and benefits rates to be paid the several classes of laborers, workers and mechanics employed on the construction on the public work must be kept posted in a prominent and easily accessible place at the site by each contractor and subcontractor subject to sections 1304 to 1313.

Appeal – Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates.

A true copy

Attest: 
Scott R. Cotnoir
Wage & Hour Director
Bureau of Labor Standards

Supersedes 01-01-2025
Effective 01-10-2026

DIVISION 01
GENERAL REQUIREMENTS

01 10 00 - WORK SUMMARY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Project Identification: Fish Passage Improvements at the Outlet of Meddybemps Lake.
- B. Project Summary: Construction of a new “nature-like” rock pool and weir fishway at the outlet of Meddybemps Lake, as well as removal of a remnant dam and associated reshaping of the river channel. Specific Project Requirements:
 - 1. Site Access: Access to the project site will be available shown on the plans. The contractor shall be cautious during the construction of temporary access and shall restore all unimproved areas of the site to existing conditions following construction of the Project.
 - 2. Restoration of Disturbed Areas: The Contractor is responsible for the restoration of all areas disturbed by the work to an equal or better condition than that encountered prior to construction.
 - 3. Maintenance of Flows: Discharge from Meddybemps Lake and in the Denny’s River may not be obstructed. The Contractor will be required to maintain a bypass for flow during construction.

1.2 EXISTING INFRASTRUCTURE

- A. The location and layout of existing facilities and infrastructure are as shown in the attached plans, based on available information. No confirmation of these locations was performed by additional studies conducted by the Owner or Engineer. The plans do not show the exact location and depth of infrastructure, nor do they show all utilities that may be encountered.
- B. Notify the Engineer of existing conditions differing from those indicated on the drawings. Do not remove or alter existing structural components of the Dam or existing facilities without prior written approval.

1.3 TWENTY-FOUR (24) HOUR EMERGENCY SERVICE

- A. The Contractor shall maintain a 24-hour, 7-day a week telephone service and a local contact to handle emergency requirements. The Contractor’s emergency personnel shall be able to respond to emergency calls within thirty (30) minutes. At a minimum the response shall be making successful voice contact and making appropriate arrangements to address whatever emergency arises. A list of personnel and their telephone numbers shall be submitted to the Engineer. This requirement shall apply during the duration of the project.

1.4 COORDINATION

- A. Contractor is required to work in close proximity to existing dams. The Contractor, under this Contract, will be responsible for coordinating construction activities with the Dam Owners to ensure that necessary minimum flow discharge from the dam and safe working conditions are maintained.
- B. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or his subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

- C. Contractor's Use of Premises
 - 1. Contractor shall assume full responsibility for security of all of their subcontractors, materials and equipment stored on the site.
 - 2. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.5 PERMITS

- A. Unless specifically provided for in the remainder of this section, the Contractor is responsible for obtaining and paying for all permits.
- B. Maine DEP: The Owner has acquired a Natural Resources Protection Act permit from the Maine Department of Environmental Protection for the project activity. The permit is included in these Contract Documents as Appendix C.
- C. US Army Corps of Engineers: The Owner has acquired a Permit for the project activity from the United States Army Corps of Engineers. The permit is included in these Contract Documents as Appendix D.
- D. Town of Meddybemps: The Owner has acquired approval from the Town of Meddybemps. The approval is included in these Contract Documents as Appendix E.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

01 31 19 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work described elsewhere: The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

- A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

- A. Project meetings will be held weekly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. To the maximum extent practicable, meetings will be held at the job site.

3.3 PROJECT MEETINGS

- A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved. The Engineer will advise other interested parties and request their attendance.
- B. Minimum agenda:
 - 1. Review progress of the Work since last meeting, including status of submittals for approval.
 - 2. Review schedule of work to be accomplished prior to next meeting.
 - 3. Discuss monthly partial payment request (if applicable).

4. Review status of Change Order requests (if applicable).
5. Identify problems which may impede planned progress.
6. Develop corrective measures and procedures to regain planned schedule.
7. Complete other current business.

END OF SECTION

01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.

- B. Content of Schedules:
 - 1. Provide complete sequence of construction by activity:
 - a. Shop Drawings, Project Data and Samples:
 - 1) Submittal dates.
 - 2) Dates reviewed copies will be required.
 - b. Decision dates for:
 - 1) Products specified by allowances.
 - 2) Selection of finishes.
 - c. Estimated product procurement and delivery dates.
 - d. Dates for beginning and completion of each element of construction.
 - 2. Identify work of separate phases and logically grouped activities. If work includes lump sum bid items, include a separate line in the schedule for each item in the schedule of values. If work included unit price items, provide a separate line in the schedule for each unit price item.
 - 3. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.

- C. Updating:
 - 1. Show all changes occurring since previous submission.
 - 2. Indicate progress of each activity, show completion dates.
 - 3. Include:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.
 - c. Revised projections due to changes.
 - d. Other identifiable changes.
 - 4. Provide narrative report, including:
 - a. Discussion of problem areas, including current and anticipated delay factors.
 - b. Corrective action taken, or proposed.
 - c. Description of revisions that may affect schedules.

1.2 SUBMITTALS

- A. Submit updated schedules to the Engineer on a weekly basis prior to each Project Meeting (see Specification Section 01 31 19).

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

01 33 00 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: Where required in other Sections of the Contract Documents, submit project information to the Engineer.
- B. Submittal: The term Submittal may be used in this Section to refer to material testing data, shop drawings, manufacturers' certificates, project data, samples, schedules, or any other items required to be submitted to the Engineer for review by the Contract Documents.

1.2 GENERAL REQUIREMENTS

- A. The Contractor shall be responsible for the prompt and timely submittal of all items for review so that there shall be no delay to the work due to the absence of such drawings.
- B. No material or equipment shall be purchased or fabricated for use on the Project until the required submittals have been provided and reviewed for conformance with the Contract Documents.
- C. Until the necessary review has been completed, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.
- D. All submittals shall be submitted to the Engineer by the Contractor. The Contractor is responsible for obtaining and compiling information for submittal from subcontractors and/or suppliers and returning reviewed submittals to them. Prior to providing submittals to the Engineer, the Contractor shall check thoroughly all such submittals to ensure that the subject matter thereof conforms to the Contract Documents in all respects.
- E. If a shop drawing shows any deviation from the Contract Documents, the Contractor shall make specific mention of the deviations the transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.
- F. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion. Resubmittals for the sole purpose of providing written responses to review comments will not be considered a

resubmittal counting towards the two submission limit.

1.3 SUBMISSION FORMAT

- A. All submittals shall be provided in accordance with the Electronic Documents Protocol (EDP) described in General Condition 2.06 and Supplemental Condition SC-2.06.
- B. Each individual item submitted for review shall be contained in an individual PDF file. Multiple submittal items may not be combined into a single PDF file.
- C. Each submittal item shall be assigned a unique number consisting of the Specification Section number followed by a dash and then a sequential number beginning with 01 (e.g., 013200-01) for purposes of easy identification and file organization.
- D. Any items requiring resubmittal shall maintain the same number, but will be amended by a letter (alphabetic) suffix (e.g., 013200-01A).
- E. The PDF file containing the submittal shall begin with the submittal item number and may also contain a brief description after the number (e.g. 310500-02 SubbaseGravel.pdf).
- F. The first page of the PDF file submittal shall be a complete and executed Contractor Submittal Certification Form (provided at the end of this Specification Section).
- G. E-mail transmissions of submittals shall include a list in the body of the e-mail itemizing each submittal (pdf) attached and transmitted. Submittals provided via a large file exchange (LFE) method shall include a separate single transmittal form listing the submittals provided during in that transmission.
- H. Electronic PDF submittals that are not transmitted in accordance with the requirements stated above may not be reviewed by the Engineer.

1.4 ENGINEER'S REVIEW

- A. The review of submittals hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
- B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
 - 1. **No Exceptions Taken:** The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
 - 2. **Make Corrections Indicated:** The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Resubmittal is not required unless it is specifically called for; however, Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.

3. **Conditional to Remarks:** The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed.
4. **Revise and Resubmit:** The shop drawing does not comply with the Contract Document requirement as submitted, but may with changes indicated and/or submission of additional information. The entire package must be resubmitted with the necessary information and a cover letter which indicates how each review comment has been addressed and where to find the information in the resubmittal.
5. **Rejected:** The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
6. **For Information Only:** The shop drawing review was informational only. No comments are provided.

1.5 RESUBMISSION REQUIREMENTS

- A. Revise initial submittals as required and resubmit as necessary based upon the action code and comments provided by the Engineer.
- B. Indicate on submittals any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer.

CONTRACTOR SUBMITTAL CERTIFICATION FORM

PROJECT: _____

CONTRACTOR: _____ CONTRACTOR'S PROJ. NO: _____

ENGINEER: _____ ENGINEER'S PROJ. NO: _____

SUBMITTAL NUMBER: _____

DESCRIPTION: _____

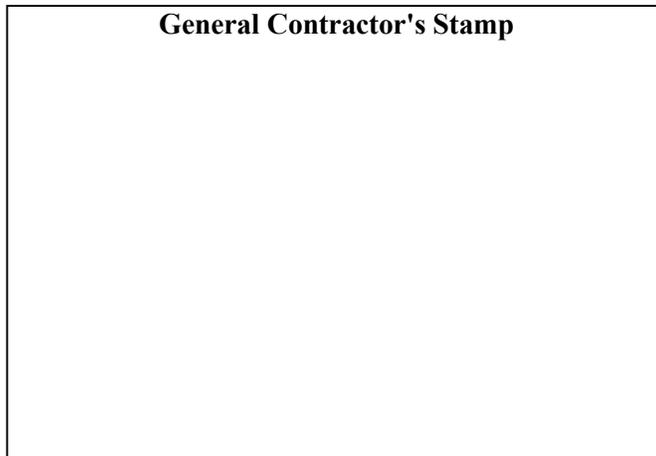
MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

- NO DEVIATIONS
- or
- A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

By: _____

Date: _____



01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 QUALITY CONTROL

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Tolerances: Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

1.2 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.3 MANUFACTURERS' INSTRUCTIONS

- A. Comply with manufacturers' instructions in full detail, including each step in sequence. Should instructions conflict with the Contract Documents, request clarification from the Engineer before proceeding.

1.4 MANUFACTURERS' CERTIFICATES

- A. When required by individual an Specifications Section, submit a manufacturer's certificate that demonstrates products meet or exceed specified requirements.

1.5 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to Engineer listing observations and recommendations.

1.6 INDEPENDENT TESTING LABORATORY SERVICES

- A. Owner will employ an Independent Testing Laboratory to perform inspections, tests, and other services related to quality control at the discretion of the Owner and Engineer.
- B. Services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be

mailed within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or e-mail results to Engineer, Resident Project Representative and Contractor within 24 hours.

- D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
- E. Contractor shall coordinate all testing work at the site and shall notify Engineer and Independent Testing Laboratory at least 24 hours prior to performing work requiring testing services. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.
- F. Payment for Independent Testing Laboratory services shall be as follows:
 - 1. Submittals: The Owner's employ of an Independent Testing Laboratory does not remove the responsibility of the Contractor to provide submittals as required by the Contract Documents. Any testing, certifications, or other information required for submission to the Engineer by the Contract Documents remains the responsibility of the Contractor. The Contractor may employ the Independent Testing Laboratory separately for this purpose, however the Owner will not provide payment for these services.
 - 2. Initial Testing directed by Owner or Engineer: Owner will pay for initial tests.
 - 3. Retesting: Costs of retesting due to non-compliance will be paid by Owner, however will require reimbursement from the Contractor. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.
 - 4. Contractor's Convenience Testing: Owner will only pay for on-site tests required by the Contract Documents and as directed by the Engineer. Inspections and tests performed for Contractor's convenience will be paid for by Contractor.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 SOILS AND AGGREGATES

A. GENERAL

- 1. Line and Grade:
 - a. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same to properly perform the work.

2. Testing Methods:
 - a. Gradation Analysis: Where a gradation is specified the testing shall be in accordance with ASTM C-117-90 and ASTM C-136-93 (or latest revision)
 - b. Compaction Control:
 - i. Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D-1557-91 (Modified Proctor), or latest revision, unless otherwise indicated.
 - ii. The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D 1556-90, (or latest revision) or Nuclear method Designation D2922.
 - iii. Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D-698-91 (Standard Proctor).
 - iv. An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.

B. TESTS

1. Field density tests on embankment materials shall be as follows:
 - a. Tests shall be taken on every 200 cubic yards of embankment or common fill construction.
2. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.
3. Structure Backfill: Take at least one (1) field density tests per lift per structure at locations and elevations as designated by the Engineer or RPR.
4. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer or RPR.
5. Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.
 - a. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction.
 - b. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

END OF SECTION

01 57 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 TEMPORARY SERVICES

- A. The Contractor is responsible to provide any temporary services needed to complete the work, which may include the following:
1. Water (potable and non-potable)
 2. Temporary lighting and electrical services.
 3. Telephone, internet and/or any other required communications service

1.2 SECURITY AND PROTECTION

- A. The Contractor is responsible to provide reasonable security and protection of the site during the course of work, this includes (but is not limited to) the following;
1. Fire extinguishers and fire related protective equipment
 2. Site enclosures, including fence barricades, warning signage, and lighting where appropriate for safety and security of the work, personnel, and general public.

1.3 TEMPORARY FACILITIES

- A. The Contractor is responsible for provision of any temporary facilities required for personnel at the site during the course of the Project. This includes, but is not limited to, the following:
1. Temporary field offices
 2. Sanitary and Restroom facilities for staff and on-site personnel
 3. Storage facilities for tools, materials, and/or equipment

1.4 ENVIRONMENTAL CONTROLS

- A. The Contractor is responsible for good housekeeping measures and temporary controls during the course of the Project to protect the environment and limit off-site impacts of the project. This includes, but is not limited to, the following:
1. Control of dust and airborne debris generated, disturbed, and/or mobilized by the Work.
 2. The Contractor shall provide appropriate control, handling, and storage of hazardous materials in accordance with all local, state, and federal laws and in conformance with permits applicable to the project.
 - a. Store volatile wastes in covered metal containers and remove from the premises daily.
 - b. Prevent the accumulation of wastes which may create hazardous conditions.
 - c. Provide adequate ventilation during the use of volatile of noxious substance.
 3. Provide controls for Erosion and Sedimentation at the site and protection of any adjacent wetlands or water resources as further described on the Project Plans and in conformance with the requirements of the Maine Department of Environmental Protection and the U.S. Army Corps of Engineers.

1.5 SUBMITTALS

- A. The Contractor shall provide a submittal to the Engineer containing all substantive temporary controls and facilities.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

01 74 00 - CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall be responsible to maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
2. At completion of work, remove waste materials, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for use.

1.2 QUALITY ASSURANCE

- ##### A. Requirements of Regulatory Agencies:
- Conduct cleaning and disposal operations in accordance with all applicable local and state laws, ordinances, and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- ##### A. Only use cleaning products and equipment recommended by manufacturer of product to be cleaned. Similarly, only use cleaning products and equipment as directed on product instructions and by equipment manufacturer.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Cleaning During Construction:

1. Execute cleaning operations to ensure that buildings, grounds, and properties are maintained free from accumulations of waste materials and rubbish.
2. Entirely remove and dispose of material or debris during the progress of the work that has washed into or has been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations.
3. At reasonable intervals during the progress of work, clean the site and dispose of waste materials, debris, and rubbish.

B. Disposal:

1. Do not burn or bury rubbish and waste materials on projectsite.
2. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.

C. Final Cleaning:

1. Employ experienced workmen, or professional cleaners, for final cleaning.
2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from all sight-exposed interior and exterior finished surfaces.
3. Repair, patch and touch up marred surfaces to specified finishes.
4. Broom clean paved surfaces.
5. Rake clean non-paved surfaces of the project site.
6. Restore to their original condition those portions of the site not designated for alterations by the Contract Documents.

END OF SECTION

01 78 39 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General requirements for submittals are included in the Section 01 33 00, Submittal Procedures.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for Project Record Documents to be prepared and submitted by the Contractor, which include but are not limited to:
 1. Record Documents
 2. Record Drawings
 3. Record Specifications

1.03 REFERENCE STANDARDS

- A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
- B. All reference amendments adopted prior to the Effective Date of this Agreement shall be applicable to this Project.

PART 2 - PRODUCTS

2.01 REQUIREMENTS FOR RECORD DOCUMENTS

- A. During progress of the Work, Contractor shall maintain a set of Record Documents and Shop Drawings at the Site. Contractor must update these documents weekly, at a minimum, with mark-ups of actual installations that vary from the Work as originally shown. Contractor shall include all Drawings issued as addenda, clarifications, or Change Orders.
- B. Contractor shall maintain and have available for review in conjunction with project progress meetings, a current set of the marked-up Record Documents and Shop Drawings. Availability for review and acceptability of both the format and content are prerequisites for certification and acceptance of the Application for Payment by the Owner and Engineer.
- C. Contractor shall not use Record Documents for construction purposes. Contractor must protect Record Documents from deterioration and loss in a secure location.

2.02 RECORD DRAWINGS

- A. Contractor must mark-up Drawings that are most compatible for showing actual physical condition, fully and accurately and must reference all other appearances of this Work to the updated sheet.
 1. Contractor must mark-up, in a legible and professional manner to distinguish between changes for different categories of Work at the same general location.
 2. Contractor must mark-up important additional information, which was either shown schematically only or omitted from the Construction Documents. Contractor must give particular attention to information on concealed work that would be difficult to identify or measure and record at a later date.
 3. If Supplemental Drawings are used, Contractor must follow the requirements below for Supplemental Drawings.

4. In association with Contractor's request for Substantial Completion inspection, Contractor must submit one (1) copy of the marked-up record drawings to Engineer.

2.03 SUPPLEMENTAL DOCUMENTS

- A. The use of Shop Drawings and/or fabrication drawings as supplements to the final record drawings is required for all items in which the larger scale employed on the Shop Drawings is needed to show the work in sufficient detail for Owner's future use. When marked-up Shop Drawings are included in the Record Documents, Contractor must mark-up and cross-reference on the Contract Drawings at the corresponding location.
- B. During maintenance and updating of the Record Drawings, the applicable Supplemental Documents must be placed in the set directly behind the Drawing that it supplements, with appropriate reference notes on both the applicable Record Drawing and all other affected drawings.
- C. The Supplemental Document must be identified as a Record Document and must be numbered with an extension to the Drawing it supplements in a manner acceptable to the Owner.

2.04 RECORD SPECIFICATIONS

- A. It is mandatory that all changes to specified materials, installation, warranty, etc. be clearly and fully marked within the applicable Specification section in a manner acceptable to the Engineer and the Owner. Contractor shall review with the Owner and document an acceptable procedure early in the construction phase.
- B. Contractor must give particular attention to substitutions, selection of options, and similar information on work where the exact products used are not clearly identified or readily discernible in the original Specifications. When applicable, Contractor must cross-reference related Record Drawing information and product data.
- C. Contractor must neatly transcribe and post all marked-up information to a "clean" copy of the Specifications, ensuring that similar types of information are annotated in like fashion throughout the Specifications.
- D. In association with Contractor's request for Substantial Completion inspection, Contractor must submit the marked-up Site copy of the Record Specifications to the Engineer for review.

PART 3 - EXECUTION

3.01 SUBMISSION

- A. Prior to requesting Substantial Completion, Contractor shall submit all Record Documents to the Engineer.
 1. Contractor is responsible for each Subcontractor submission and coordination of Record Documents.
 2. Contractor shall submit to the Engineer, a PDF indexed with scanned copies of each Record Drawing.

END OF SECTION

DIVISION 02
EXISTING CONDITIONS

02 41 00 DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall furnish all labor, materials, tools, equipment and apparatus necessary and shall do all work required to complete the demolition, removal, and alterations of existing facilities as indicated on the Drawings, as herein specified, and/or as directed by the Engineer.
2. Demolition and alteration work within occupied areas shall be accomplished with minimum interference to the occupants which may (if applicable) be in continuous operation during construction.
3. All equipment, piping, and other materials that are not to be relocated or to be returned to the Owner shall become the property of the Contractor and shall be disposed of off-site and at the Contractor's expense.
4. All demolition or removal of existing structures, utilities, equipment, and appurtenances shall be accomplished without damaging the integrity of existing structures, equipment, and appurtenances to remain, to be salvaged for relocation or stored for future use.
5. Such items that are damaged shall be either repaired or replaced at the Contractor's expense to a condition at least equal to that which existed prior to the start of his work.
6. Unless otherwise indicated, all items labeled to be "removed", "demolished" or "remove/demolish" shall be removed and disposed of off-site in accordance with all Local, State and Federal Regulations.

1.2 JOB CONDITIONS

A. Condition of Structures:

1. The Owner assumes no responsibility for the actual condition of structures to be demolished.
2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner as far as practicable. However, variations within the structures may occur due to Owner's removal and salvage operations prior to the start of demolition work (where applicable).

1.3 UTILITIES

A. Utility Locations:

1. Utility locations shown on the plans are approximate only, based on information supplied by the utility companies.
2. The Contractor is responsible for verifying the presence/absence of utilities in the area of demolition prior to performing demolition activities.

B. Coordination with Utilities:

1. The Contractor shall make all necessary arrangements and perform any necessary work to the satisfaction of affected utility companies and governmental divisions involved with the discontinuance or interruption of affected public utilities and services.

1.4 SUBMITTALS

- A. Submit proposed methods and operations of demolition to the Engineer for review prior to the start of work. Include in the submittal the coordination for shut-off, capping and continuation of utility services as required.

1.5 PROTECTIONS

- A. Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, other facilities and persons.
- B. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

1.6 DAMAGES

- A. The Contractor shall promptly repair damages caused by demolition operations to adjacent facilities at no cost to the Owner.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 PERFORMANCE

- A. Remove and dispose of non-salvageable material in accordance with all applicable local and state laws, ordinances and code requirements.
- B. Dispose of material regularly as it accumulates.
- C. Carefully remove, store and protect from damage all materials to be salvaged. Salvaged items shall be stored on site for the Owner in an acceptable location and manner.
- D. Structures and Adjacent Property:
 - 1. Protect all structures and property adjacent to equipment to be removed from damage by erecting suitable barriers or by other suitable means.
 - 2. Leave such structures in a permanently safe and satisfactory condition.
- E. Maintaining Traffic:
 - 1. Ensure minimum interference with roads, streets, driveways, sidewalks and adjacent facilities.
 - 2. Do not close or obstruct streets, sidewalks, alleys or passageways without permission from authorities having jurisdiction.
- H. Demolition Sequence:
 - 1. The demolition sequence is to conform to the reviewed and approved project schedule, and restrictions outlined in Section 01 32 00 - Construction Progress Documentation.

END OF SECTION

DIVISION 03

CONCRETE

03 10 00 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 REFERENCES

- A. ACI 347-04 - Guide to Formwork for Concrete
- B. ASTM C881/C881M-10 - Specification for Epoxy-Resin-Base Bonding Systems for Concrete

1.2 SUBMITTALS

- A. Submit layout drawings showing the location and extent of all joint waterstops, the type and size of all waterstops to be used and splice type and locations for each joint. Submit these layout drawings for review prior to the submittal of the reinforcing shop drawings and the start of concrete work.
- B. Submit product data and material safety data sheets for concrete accessories.
- C. Submit product data and material safety data sheets for form release agent.
- D. Submit product data for form ties.
- E. Provide a layout plan for all conduit and/or other inclusions.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Plywood: APA, B-B Plyform Class I exterior.
- B. Lumber: Southern pine, No. 2 grade or equal.
- C. Steel: Minimum 16 ga. sheet, well matched, tight fitting, stiffened to resist loads without excess deflection.
- D. Form Liner: Plywood conforming to PS-1, Grade B-B exterior (concrete form) not less than 1/4 inch thick.
- E. Chamfer Corners: Chamfer, Wood Strip Type; 3/4" x 3/4" minimum, maximum possible length.
- F. Form Ties:
 - 1. Liquid retaining structures, as well as exterior walls of below grade structures shall have a factory fabricated assembly providing at least 1.5 inch break back dimension with at least a 1 inch diameter tapered wood or plastic cones to leave a uniform hole for patching. All ties require a tightly fitted waterstop washer at the midpoint.
 - 2. Non-liquid containing structures shall have snap-off type, galvanized metal, adjustable lengths designed to break back at least 1 inch from finished surface or ties as indicated in Part F.1.
- G. Form release agent: Non-staining colorless, compatible with finishes, and non-toxic for potable water and NSF 61 certified.
 - 1. Super-X Emulsive by A.H. Harris & Sons, Inc., or equivalent.
 - 2. StarSeal EF Bio-Release by Vexcon,
 - 3. Q-2 Form Release by Unitex,
 - 4. Seacord RA II by Concord Chemical, Farm Fresh by Unitex,
- H. Conform to ACI 301 and ACI 347

2.2 ACCESSORIES

- A. Expansion Joint Fillers (Expansion joints and slab perimeter joints):
 - 1. For joints less than 1/2" thick: J-Joint polyethylene foam with tear off strip for sealant

- or equivalent; joint filler to be slab thickness in depth less 0.5 inch for sealant. Foamastic by Hohmann & Barnard Co., Stripoff by AH Harris, or equivalent
- 2. For joints ½" thick or greater: Self expanding cork by W.R. Meadows or W.R. Grace or equivalent, size as indicated on the Drawings.
- B. PVC water-stops shall be extruded polyvinylchloride with virgin resin and shall be either the flat ribbed type or wire reinforced flat ribbed type:
 - 1. Flat Ribbed Type Waterstop:
 - a. Construction and Control Joints: 0.375 inch thick by 9 inches wide. Type *R938* by Vinylex Corporation, Style 786 by Greenstreak Plastics Products, Type FR-9380 by Paul Murphy Plastics Company or equivalent.
- C. Surface applied waterstops (expanding bentonite type):
 - 1. Volclay Waterstop-RX by Cetco Buildings Material Group
 - a. RX 102 - 3/8" x ¾" for concrete less than 8" thick
 - b. RX 101 - ¾" x 1" for concrete 8 inches thick and greater
 - 2. Swellseal by de neef Construction Chemicals Inc.
 - a. Swellseal 2010 - 3/8" x ¾" for concrete less than 8" thick
 - b. Swellseal Joint - 5/16" x 1" for concrete 8 inches thick and greater
 - 3. Swellstop by Greenstreak Plastics Products or equivalent.
 - a. Style 596 - 3/8" x 1" for concrete less than 8" thick
 - b. Style 594 - ¾" x 1" for concrete 8 inches thick and greater
- D. Dovetail anchor slots: 1 inch by 0.625 inch by 1 inch, 24 gage, stainless steel, 10 foot lengths, foam filled by Heckman Building Products, Hohmann & Barnard or equivalent.
- E. Epoxy bonding adhesive: Epoxy resin/portland cement moisture resistant bonding agent: Armatec 110 EpoCem by Sika Corporation, Corr-Bond by Euclid Chemical Company, Epobond by I&M Construction Chemicals, Inc. or equivalent.
- F. Structural inserts: of type and size shown on the drawings; Richmond Screw Anchor or Heckman Building Products, Hohman and Barnard, Dayton Sure-Grip or equivalent.
- G. Bond Breaker: Thompson's Water Seal or equivalent, or form oil.
- H. Epoxy dowel anchors: High strength epoxy based, two component, 100% solids resin meeting the requirements of ASTM C881, Type IV or V, Grade 2 or 3 and Class A, B or C (as recommended by the manufacturer). HIT RE 500 SD Epoxy Adhesive by Hilti, Epoxy-Tie Set by Simpson Strong-Tie, Euco #620 Epoxy System by Euclid Chemical Company or equivalent.

2.3 STORAGE OF MATERIALS

- A. Protect materials from ground and the elements.
- B. Store all embedded items on skids.
- C. Remove defective materials from site. Do not store on site.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Conform to ACI 301 and ACI 347
- B. Verify lines, levels and measurements before proceeding.
- C. Erect plumb and straight. Maintain rigid. Brace sufficiently.
- D. Allow no concrete leakage. Provide continuous, straight, smooth exposed surfaces.
- E. Treat forms with form release agent prior to erecting forms.
- F. Protect reinforcing from contact with form release agent.
- G. Earth forms not permitted.
- H. Camber formwork as necessary.
- I. Chamfer all exposed outside corners and edges 0.75 inch unless otherwise noted.

- J. Clean out inside of forms of all foreign materials prior to concrete placement.
- K. Install reinforcing steel spacers as required.
- L. Maintain specified tolerances.
- M. Maintain forms and shores supporting the cast concrete for the time periods indicated:
 - 1. Walls and Vertical Surfaces (non-water retaining) *36 Hours
 - 2. Walls and Vertical Surfaces (water retaining) *48 Hours

* These periods represent cumulative number of days or hours during which the temperature of the air surrounding the concrete is above 50°F and the concrete has been damp and no loss of moisture has occurred.
- N. Reshore as required.
- O. Form pressures increase with the use of concrete with High Range Water Reducers. Design forms accordingly.
- P. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form release agent as specified for new formwork.
- Q. All concrete formwork, including reinforcing steel and embedment items, shall have a temperature greater than or equal to 35°F at the time of concrete placement.

3.2 EMBEDDED ITEMS

- A. Contractor shall coordinate the installation and securing of all embedded items such as anchor rods, waterstops, pipes, reinforcing steel dowels and all other required embedded items indicated in the Contract Documents.
- B. Pipes or Conduits for embedment within a slab, wall or beam, other than those merely passing through, shall satisfy the following:
 - 1. Shall not be larger in outside diameter than one-third (1/3) the thickness of the slab, wall or beam.
 - 2. Shall not be spaced closer than 3 diameters on center.
 - 3. Shall not impair significantly the strength of the concrete.
 - 4. Shall not be embedded in structural concrete slabs less than 6 inches
 - 5. Only two conduits or pipes shall cross at any point. The sum of the outside diameter of the crossing pipes or conduits shall not exceed one-third (1/3) of the thickness of the concrete thickness.
 - 6. Conduit shall not be located between the bottom of reinforcing steel and bottom of concrete slab or beam.
 - 7. Aluminum conduit shall not be embedded in concrete.
 - 8. Conduit shall be installed such that there will be NO cutting, bending, and/or displacement of reinforcing from its proper location.
 - 9. Conduit and/or pipes shall not pass through a Waterstop in slabs, beams or walls.

3.3 WATERSTOPS

- A. Waterstops shall be continuous around all corners and intersections. Use prefabricated vinyl corners, tees and crosses. Bending waterstop around corners will not be acceptable.
- B. Splice vinyl waterstops as recommended by manufacturer; develop 80% tensile strength in splice; form continuous seal at joint intersections; terminate with 2" concrete cover where designed to discontinue.
- C. Secure waterstops on both sides at 12" on center maximum spacing; dumbbell type with manufactured clips; place center of waterstop at joint.
- D. Joints: hold vinyl waterstop rigid with split bulkhead forms.
- E. Surfaces to receive surface-applied waterstop shall be cleaned of all debris. Apply primer in accordance with manufacturer's recommendations and install surface- applied

- waterstop. Protect from contact with water.
- F. Place concrete uniformly to avoid displacing waterstop.
- G. Thoroughly vibrate concrete around waterstop to avoid honeycombing and voids in concrete and to insure complete contact between waterstop and concrete.
- H. Notify Engineer 24 hours prior to installing waterstops.
- I. Place great importance on the successful installation of joint waterstops.

3.4 JOINTS

- A. Preformed embedded control joint strips may be used in lieu of saw cutting.
- B. Provide joints only where shown on the drawings or as otherwise approved after written request.
- C. Install PVC waterstops in construction, control and expansion joints in all liquid containing structures and below grade walls adjacent to habitable spaces or equipment spaces, unless otherwise shown on the Drawings. The waterstop shall extend the entire length of the joint and shall be positioned across the center of the joint.
- D. Install surface applied waterstops in all joints at containment curbs.
- E. Apply bondbreaker to surface of control joints.
- F. Install keyways as indicated. Provide a minimum 2" clearance between edge of keyway and reinforcing steel.

END OF SECTION

03 20 00 – CONCRETE REINFORCING

PART 1 - GENERAL

1.1 REFERENCES

- A. ASTM A82M-07 - Specification for Steel Wire, Plain, for Concrete Reinforcement
- B. ASTM A185M-07 - Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
- C. ASTM A615/A615M-09b - Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement
- D. ASTM A675/A675M-03e1 (2009) - Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties
- E. ASTM A775/-A775M-07b - Specification for Epoxy-Coated Reinforcing Steel Bars
- F. Concrete Reinforcing Steel Institute - Manual of Standard Practice
- G. Concrete Reinforcing Steel Institute - Placing Reinforcing Bars

1.2 SUBMITTALS

- A. Submit shop drawings for concrete and masonry reinforcement prior to fabrication, showing bar bends, details and placement and certified copies of Mill Test Reports for the reinforcing steel materials analysis.

PART 2 - PRODUCTS

2.1 REINFORCING STEEL

- A. Bars: ASTM A615 Grade 60; deformed new materials.
- B. Welded wire fabric: ASTM A185
- C. Tie wire: ASTM A82, annealed, Epoxy coated for Epoxy-coated reinforcing.
- D. Bolsters, chairs and supports: plastic coated, stainless steel, or epoxy coated.

2.2 FABRICATION OF REINFORCING STEEL

- A. Conform to CRSI Code of Standard Practice-Fabrication.
- B. Cold bend bars.
- C. Bend bars around revolving collar of recommended size.

2.3 DOWEL BAR SPLICERS

- A. Dowel bar splicers shall be used only at joints as shown on the Contract Drawings or only after review with no exceptions taken by the Engineer.
- B. Thread bars in shop only.
- C. Provide plastic plugs in female end at form.
- D. Develop 125% of yield strength of specified bar size across joint.
- E. Forged from deformed steel bars conforming to ASTM A615 Grade 60 or ASTM A706 material.
- F. Acceptable Manufacturers: Lenton Form Saver by Erico; Dayton Superior D-368 Form Saver and D-370 Threaded Bar or equivalent.
- G. Submit product data with strength tests.

2.4 MECHANICAL BAR SPLICERS

- A. Mechanical bar splicers shall be used as shown on the Contract Drawings or only after

- review with no exceptions taken by the Engineer.
- B. Develop 125% of yield strength of bar across mechanical splice.
 - C. Use metal filled sleeve type: Dayton Superior DB-SAE Straight Dowel Splicer Systems, Type D-101-A, Lenton Lock B Series Mechanical Bar Splicing System by Erico or equivalent.

2.5 STORAGE OF MATERIALS

- A. Protect materials from ground and the elements.
- B. Store reinforcement on skids.

PART 3 - EXECUTION

3.1 STANDARD REINFORCEMENT

- A. Conform to the CRSI Code of Standard Practice - Field Erection for surface condition, bending, spacing and placement tolerance.
- B. Weld no reinforcement unless no exceptions are taken by Engineer in writing.
- C. Splicing reinforcement: conform to ACI 318 and ACI 350; welded wire fabric to be lapped 1½ courses or 12 inches; tie fabric at 24 inches on center maximum spacing. Provide bar supports: on grade use concrete brick; elsewhere use manufactured wire supports.
- D. Do not bend reinforcing partially embedded in the concrete.
- E. Field cutting of the reinforcement will not be allowed.
- F. Mechanical connections shall be installed in accordance with splice device manufacturer's recommendations and as shown on the Drawings. Additional mechanical connections proposed by the General Contractor shall only be installed only after being reviewed with no exceptions taken by the Engineer.
- G. All parts of mechanical connections on epoxy coated reinforcing bars, including steel splice sleeves, bolts and nuts shall be coated with the same material used for repair of epoxy coating damage.

3.2 DRILLING AND ADHERING DOWELS

- A. Use rotary drills and cores (non-percussive) and drill holes into concrete to the depth indicated. Hole size shall be as indicated on the Contract Drawings or as recommended by the epoxy or grout manufacturer.
- B. Scour the dowel hole by thoroughly roughening the sides with a coarse, wire flue brush or use the appropriate drill bits to provide a roughened surface appropriate for the dust and epoxy system utilized.
- C. Clean hole of debris with a power vacuum.
- D. Fill hole with high strength epoxy or non-shrink grout as indicated; insert dowel with twisting motion; add grout or epoxy as needed.
- E. Maintain dowel stationary until grout or epoxy cures.
- F. If existing reinforcing steel is encountered while drilling, offset the drill hole by a maximum of 2-inches. The new relocated hole shall be in the same line as the line of drilled holes. All offset holes shall be a minimum of 4-inches from a free concrete edge. Maintain the original spacing locations of the remaining dowels as indicated on the Contract Drawings.

END OF SECTION

03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 REFERENCES

- A. ACI 211.1-91 (2009) - Standard Practice for Selecting Proportions for Normal Heavyweight, and Mass Concrete
- B. ACI 301-10 - Standard Specifications for Structural Concrete
- C. ACI 302.1R-04 - Guide for Concrete Floor and Slab Construction
- D. ACI 304.2R-96 (2008) - Placing Concrete by Pumping Methods
- E. ACI 305R-10 - Hot Weather Concreting
- F. ACI 306.1-90 (2002) - Standard Specification for Cold Weather Concreting
- G. ACI 309R-05 - Guide for Consolidation of Concrete
- H. ACI 318-08 - Building Code Requirements for Structural Concrete and Commentary
- I. ASTM C33-11 - Specification for Concrete Aggregates
- J. ASTM C94/C94M-11 - Specification for Ready Mixed Concrete
- K. ASTM C150-09 - Specification for Portland Cement
- L. ASTM C260-10a - Specification for Air Entraining Admixtures for Concrete

- M. ASTM C494/C494M-10a - Specification for Chemical Admixtures for Concrete
- N. ASTM C595-10 - Specification for Blended Hydraulic Cements
- O. ASTM C881/C881M-10 - Specification for Epoxy-Resin-Base Bonding Systems for Concrete
- P. ASTM C989-10 - Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
- Q. ASTM C1240-10a - Specification for Silica Fume Used in Cementitious Mixtures
- R. ASTM C1602-06 - Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete

1.2 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301, ACI 318 and ACI 350R as modified here-in.
- B. Maintain copies of ACI 301 and ACI 318 on site.

1.3 SUBMITTALS

- A. Submit Concrete Mix designs including field performance test results which meet the criteria specified in Parts 2.5.B or 2.6.B.1.
- B. Submit sieve analysis and soundness tests for fine and coarse aggregates taken within the last three (3) months.
- C. Submit Cement Manufacturer's Certificates of conformance with ASTM C150 taken during the last 3 months.
- D. Submit product data and material safety data sheets for concrete admixtures.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Portland cement: ASTM C150; Type II. Tricalcium Aluminate (C₃A) content in cement less than 8%. Cement shall be furnished from one source during the project.
- B. Aggregates:
 - 1. Fine aggregate shall consist of washed inert natural sand, free from mineral or other coatings, soft particles, clay, loam or other deleterious materials conforming to the requirements of ASTM Specification C-33, and the following

requirements:

SIEVE NO.	PERCENT PASSING
4	95 to 100
8	80 to 100
16	50 to 85
30	24 to 60
50	5 to 30
100	0 to 10

Fineness Modulus 2.6 to 3.0

2. Coarse aggregate shall consist of a well graded crushed stone or a washed gravel conforming to the requirements of ASTM Specification C-33 and the following requirements:

PERCENT PASSING			
SIEVE	NO. 67 (3/4")	NO. 57 (1")	NO. 8 (3/8")
1-1/2 inch	--	100	--
1 inch	100	95-100	--
3/4 inch	90-100	--	--
1/2 inch	--	25-60	100
3/8 inch	20-55	--	85-100
No. 4	0-10	0-10	10-30
No. 8	0-5	0-5	0-10
No. 16	--	--	0-5
No. 50	--	--	--

Limits of deleterious substances and physical property requirements shall be listed in ASTM C33, Table 3, for severe weathering regions.

2.3 ADMIXTURES

- A. Water: potable from municipal water supply or shall meet the requirements of ASTM C1602.
- B. Admixtures: All from one common manufacturer.
- C. Low Range Water Reducer: Pozzolith 210 by Master Builders; WRDA with HYCOL by Grace Construction Products Division; or equivalent meeting ASTM C494 Type A.
- D. High Range Water Reducer (superplasticiser): Rheobuild 1000 or Glenium 3000 NS by Master Builders; Daracem 100 or ADVA 140M by W.R. Grace; or equivalent meeting ASTM C494 type F.
- E. Air entraining agent: Micro-Air by Master Builders, DAREX II AEA by Grace Construction Products; or equivalent meeting ASTM C260.
- F. Non-corrosive non-chloride accelerator: Pozzutec 20+ by Master Builders; Polarset by W. R. Grace; or equivalent meeting ASTM C494 type C or E.
- G. Not permitted: Calcium chloride, thiocyanates or admixtures containing chloride ions.

2.4 CONCRETE CLASS

- A. Reinforced concrete sections greater than 10" thick: Class A
- B. Reinforced concrete sections equal to or less than 10" thick: Class B

2.5 CONCRETE

- A. Concrete proportioning shall conform to ACI 318, Chapter 5 except as modified in the table below:

Class	Strength (f'_c)	Coarse Aggregate	% Air \pm (1.5%)	Cem.Fac (LB/CY)	Max W/C Ratio	Min.-Max. Slump	
						w/o HRWR	w/ HRWR
A	4000 PSI	No. 57 (1")	6	564-620	0.42	1-3	4-8
B	4000 PSI	No. 67 (3/4")	6	564-620	0.42	1-3	4-8

- B. An alternate concrete mix design using blended hydraulic cements may be proposed. Any alternate mix design proposed shall include a minimum of 30 compressive strength test results from the past 12 months exhibiting a consistent strength and standard deviation. The proposed mix shall contain cementitious materials in the following proportions
1. Portland Cement - No less than 75% of the total by weight.
 2. Ground Granulated Blast Furnace Slag - No greater than 25% of the total by weight.
 3. Fly Ash - No greater than 15% of the total by weight.
- C. The maximum slump as indicated in the above table will be as measured at the batch plant.
- D. Concrete pumping shall conform to ACI 304 unless otherwise indicated herein
- E. High range water reducer shall be added either at the concrete batch plant or on site for Class A and Class B mixes to obtain the slumps as indicated above.
- F. No additional mix water shall be added to the concrete on site which will increase the water-cement ratio of the mix. If additional water is to be added on site, it shall be held back from the specified quantity in the mix design during batching and shall be added on-site for the sole purpose of providing the initial slump as specified prior to adding the high range water reducer. The amount of water held back from the mix shall be clearly indicated on the concrete mix delivery slip. The Resident Project Representative shall be notified prior to adding the water on site. The addition of a greater quantity of water than that indicated shall be cause for non-compliance and potential rejection of the concrete truck.
- G. Concrete shall be furnished from one supplier and batch plant during the project.

2.6 SELECTION OF CONCRETE PROPORTIONS

- A. The Concrete producer shall select the concrete mix proportions on the basis of past field performance or the use of trial mixes. The changes in materials and proportions within the population of background tests shall not have been more closely restricted than they will be for the proposed work. The test record shall represent only a single record of consecutive tests that span a period of not less than 45 calendar days. The concrete mix proportions shall produce an average strength at least as great as the required average strength (f'_{cr}).
- B. Field Experience
1. Concrete mix proportions shall be established on the basis of field test data with similar materials to be used for the project. Past field experience will be considered

- suitable if it consists of data from one group of at least 30 consecutive compressive strength tests. To be acceptable, the test data shall be based on similar mix proportions and design strength to those for the project.
2. The Standard Deviation (s) shall be computed from such test data and the required average strength (f'_{cr}) to be used for the selection of the concrete proportions shall exceed the specified strength (f'_c) in accordance with the following formulae:
 - a. When the standard deviation (s) is less than 500 psi: $f'_{cr} = f'_c + 1.34s$
 - b. When the standard deviation (s) is greater than or equal to 500 psi: $f'_{cr} = f'_c + 2.33s - 500$
 3. When a Concrete producer does not have test data meeting the requirements listed in Section 2.6.B.1, but does have data based on a single group of 15 to 29 consecutive tests, a standard deviation shall be established as the product of the calculated standard deviation and modification factor indicated below. To be acceptable, the test data shall be based on similar mix proportions to those for the project.

MODIFICATION FACTOR

NO. OF TESTS	FOR STANDARD DEVIATION
15	1.16
20	1.08
25	1.03
30 or more	1.00

4. When a Concrete producer does not have test data meeting the requirements listed in Section 2.6.B.3, but does have data based on a two groups of consecutive tests totaling at least 30. To be acceptable, none of the two groups shall consist of less than 10 tests with similar mix proportions to those for the project. The group containing 15 or more test results which have different mix proportions from those for the project shall be within 1,000 psi of the specified strength. A standard deviation shall be established as the product of the calculated standard deviation based upon the group containing 15 or more test results and modification factor indicated above.
 5. Document that the calculated average strength for the proposed concrete proportions, using past field performance data for the proposed concrete proportions consisting of at least 10 consecutive test records, is at least greater than or equal to the required average strength (f'_{cr}). If the past field performance data consists of two groups of strength tests for two different mixes, plot the average strength versus the water cement ratio of the two mixes. Interpolate between the corresponding mixture proportions to determine the mixture proportions for the required average strength (f'_{cr}).
- C. Laboratory Trial Batches
1. When an acceptable record of field test results is not available, concrete proportions established from trial mixtures meeting the following restrictions shall be permitted:
 - a. Combination of materials shall be that for proposed work.
 - b. The required average compressive strength (f'_{cr}) shall be 4,600 PSI.

- c. Trial mixtures having proportions and consistencies required for proposed work shall be made using at least three (3) different water- cementitious materials ratios which will be less than or equal to 0.42 and will produce a range of strengths encompassing the required average strength (f'_{cr}).
 - d. The maximum cement factor as listed in Section 2.5.A shall not be exceeded.
 - e. Trial mixtures shall be designed to produce a slump within + or - 0.75 in. of maximum permitted, and for air entrained concrete, within + or - 0.5 percent of maximum air content.
 - f. For each water-cementitious materials ratio, at least three (3) test cylinders for each test age shall be made and cured in accordance with ASTM C 192. Cylinders shall be tested at 7, 21 and 28 days.
 - g. Maximum water-cementitious materials ratio for concrete to be used in proposed work shall be selected by the curve to produce the average strength required (f'_{cr}).
 - h. In lieu of establishing the concrete proportions based on laboratory trial mixes, the concrete proportions shall be selected to provide an average required strength $f'_{cr} = f'_c + 1,200$ psi.
- D. Adjustments to Required Average Strength (f'_{cr}).
- 1. Adjustments in the Required Average Strength (f'_{cr}) may be made during the progress of the work on the following basis:
 - a. When a minimum of fifteen 28-day tests from this project are available, the average strength and standard deviation shall be computed. Should these determinations indicate an excessive compressive strength with a low standard deviation as determined by the Engineer, modification of the concrete mix may be made to achieve a lower average strength based upon a new standard deviation. In the event such determination should indicate a lower average strength or higher Standard Deviation than anticipated, the Engineer will require corrective measures to be taken immediately which may include one or more of the following but not limited to:
 - (1) An increase in the cementitious material
 - (2) Changes in mixture proportions
 - (3) Reductions in or better control of levels of slump supplied
 - (4) A reduction in the delivery time
 - (5) Closer control of air content.
 - (6) Decrease in the water-cement ratio.
 - (7) An improvement in the quality of the testing, including strict compliance with standard test procedures.
 - (8) Procedural changes as deemed necessary by the Engineer.

2.7 STORAGE OF MATERIALS

- A. Protect materials from ground and the elements.
- B. Maintain cement in dry condition.
- C. Remove defective materials from site. Do not store on site.

PART 3 - EXECUTION

3.1 PLACING CONCRETE

- A. Notify Engineer and Independent Testing Laboratory 24 hours minimum prior to each placement.
- B. Assure placement and proper location of all embedded items.
- C. Place no concrete on frozen ground.
- D. Place concrete from mixing truck to final location quickly and without segregation.
- E. Place all concrete from the delivery truck within 90 minutes of batching of the truck.
- F. Freefall from concrete truck discharge chute, pump hose and hopper hose: 4 feet maximum.
- G. Place continuously and against plastic concrete only.
- H. Do not place partially hardened concrete.
- I. Consolidate concrete by vibrating. Penetrate preceding lift 4 inches to blend layers. Do not use vibrator to move fresh concrete laterally. Insert vibrator at approximately 18 inch intervals. Consolidate concrete without segregation. Conform to ACI 309.
- J. Conform to ACI 306R for placing, curing and maintaining concrete in cold weather when environmental conditions exist as defined in Section 03346.
 - 1. Temperature limitations on concrete when delivered to site:

		Concrete Thickness			
Item	Air Temperature	Less than 12 in.	12-36 in.	36-72 in.	Greater than 72 in.
Minimum concrete temperature as placed and maintained					
1	--	55 F	50 F	45 F	40 F
Minimum concrete temperature as mixed for indicated air temperature					
2	Above 30 F	60 F	55 F	50 F	45 F
3	0 to 30 F	65 F	60 F	55 F	50 F
4	Below 0 F	70 F	65 F	60 F	55 F

- K. Conform to ACI 305R for placing, curing and maintaining concrete in hot weather when environmental conditions exist as defined in Section 03 39 00.
 - 1. Temperature of concrete placed shall not exceed 90 F.
- L. Provide concrete Delivery Slip prepared at batch plant with each truck load of concrete showing ticket number, date, truck number, mix strength, maximum stone size, weight of coarse aggregate, weight of fine aggregate, cement weight, volume of concrete, gallons of water added at plant, time water added at plant, quantities of all admixtures used and gallons of water withheld at the plant.
- M. High Range Water Reducing admixtures shall be used for all concrete to be pumped or with a specified water/cement ratio below 0.50. Maximum slump 8 inches with admixture.
- N. Use non-corrosive, non-chloride accelerator when placing concrete in air temperatures below 50 F.
- O. Thoroughly moisten subgrade materials prior to placing slabs on grade.
- P. When placing new concrete directly against existing concrete, apply epoxy bonding agent to the existing concrete to bond to new concrete.
- Q. Contractor shall coordinate concrete truck wash-out area with Owner.

3.2 JOINTS

- A. Provide joints only where shown on the drawings or as otherwise approved after written request.
- B. Thoroughly clean the surface of the concrete at construction and control joints and remove laitance prior to placing adjoining concrete. Do not place concrete against the hardened side of a joint for at least 48 hours.

3.3 TOLERANCES

- A. Maximum allowable deviations from dimensions, elevations, slopes and positions for finished concrete surfaces as indicated below:
 - 1. Variation from plumb:
 - a. In the lines and surfaces of columns, piers, walls, and in arises:
 - i. In any 10 feet of length - 1/4 in
 - ii. Maximum for the entire length - 1 in
 - b. For exposed corner of columns, control-joint grooves, and other conspicuous lines:
 - i. In any 20 feet of length - 1/4 in
 - ii. Maximum for the entire length: 1/2 in
 - 2. Top elevation of slabs - $\pm 1/4$ in
 - a. In any bay - 1/2 in
 - b. In any 20 feet of length - 1/2 in
 - c. Maximum for the entire length - 1 in
 - 3. Variation in the sizes and location of sleeves, floor openings, and wall openings - $\pm 1/4$ in
 - 4. Variation of cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:
 - a. Minus - 1/4 in
 - b. Plus - 1/2 in
 - 5. Footings:
 - a. Variations in dimensions in plan:
 - i. Minus - 1/2 in
 - ii. Plus - 2 in
 - b. Misplacement or eccentricity: % of the footing width in the direction of misplacement but not more than - 2 in
 - c. Thickness:
 - i. Decrease in specified thickness - 5%
 - ii. Increase in specified thickness: No limit
 - d. Elevation of top - $\pm 1/4$ in
 - 6. Variation in steps:
 - a. In a flight of stairs:
 - i. Rise - $\pm 1/8$ in
 - ii. Tread - $\pm 1/4$ in
 - b. In consecutive steps:
 - i. Rise - $\pm 1/16$ in
 - ii. Tread - $\pm 1/8$ in
- B. Maximum allowable deviations from dimensions, elevations, slopes, and positions for reinforcing steel as indicated below:
 - 1. Spacing - ± 1 "

2. Clear Cover (Formed Surface) - $\pm 3/8"$
3. Clear Cover (Slab-On-Grade) - $\pm 3/4"$

3.4 FAILURE TO MEET STRENGTH REQUIREMENTS

- A. The strength of the concrete in place will be considered substandard if any one of the following results occur: (Note: A test is defined as the average of two 6"Ø X 12" cylinders or three 4"Ø X 8" cylinders)
 1. The arithmetic average of 28-day cylinder tests for any three (3) consecutive test results are less than the specified strength ($f'c$).
 2. More than 10 percent of the 28-day cylinder tests have strengths less than the specified strength ($f'c$).
 3. A compressive strength test result falls below the specified strength ($f'c$) by more than 500 psi.
- B. Concrete which fails to meet the strength requirements as outlined above will be reviewed by the Engineer. The Engineer will determine whether the substandard concrete will be accepted, rejected or additional tests performed.
- C. When Substandard concrete occurs as defined in the above paragraphs A.1 and A.2, the Engineer will require corrective measures to be taken immediately, as listed in Section 2.6.D, in order to increase the average of subsequent strength tests.
- D. When substandard concrete occurs as defined in the above paragraph A.3, the Engineer may require cores drilled in the area of question. If the core tests are inconclusive or impractical to obtain, load tests may be required and their results evaluated in accordance with ACI 318 Chapter 20. If the average of the three cores is less than 85% of the specified 28-day strength or if one core is less than 75% of the specified 28-day strength, then that portion of the structure shall be strengthened by a method proposed by the Contractor and no exceptions taken by the Engineer or replaced by the Contractor at no additional cost to the Owner.

3.5 DEFECTIVE CONCRETE

- A. Defective concrete is defined as concrete in place which does not conform to strength, shapes, alignments, appearances and/or elevation as shown on the drawings and/or presents faulty surface areas.
- B. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the Drawings will be considered defective.
- C. Concrete which differs from the required dimensions or locations in such a manner as to reduce the strength will be considered defective.
- D. Concrete surfaces not finished or cured in accordance with Section 03 35 00 and 03 39 00 shall be classified as defective concrete.
- E. Formed surfaces larger or smaller than dimensional tolerances specified in this Division may be rejected. If the Engineer permits the Contractor to correct the error, such correction shall be as directed and in such a manner as to maintain the strength, function and appearance of the structure.
- F. Concrete members cast in the wrong location may be rejected and shall be removed at no additional cost to the Owner if the strength, appearance or function of the structure is adversely affected.
- G. Inaccurately formed surfaces exposed to view may be rejected and shall be repaired or removed and replaced at no additional cost to the Owner.
- H. Concrete exposed to view with defects which adversely affect the appearance of the specified finish shall be repaired. If, in the opinion of the Engineer, the defects cannot

be repaired, the concrete may be accepted or rejected in accordance with the decision of the Engineer.

3.6 PROTECTION FROM COLD

- A. Concrete structures shall be covered, insulated and heated as required to prevent frost penetration beneath the structures until acceptance by the Owner.
- B. All material and equipment required for cold weather placement and curing protection shall be available at the project site before commencing concrete placement.
- C. All snow, ice and frost shall be removed from the surfaces, including reinforcement and the subgrade, against which the concrete is to be placed. The temperature of any surface that will come into contact with fresh concrete shall be at least 35° F and shall be maintained at a temperature of 35° F or above during the placement of concrete.
- D. Any enclosure for protection shall be in place before depositing any concrete. Heating within the enclosure will maintain the temperatures specified continuously and with a reasonable degree of uniformity in all parts of the enclosures. All exposed surfaces of concrete within the enclosure shall be kept sufficiently moist to prevent any drying of the surface concrete. Heating appliances shall not be placed in such a manner as to endanger the enclosure, forms or supports, or expose any area of concrete to drying out or to excessive temperatures.

END OF SECTION

03 35 00 - CONCRETE FINISHING

PART 1 - GENERAL

1.1 REFERENCES

- A. ACI 301-10 - Standard Specifications for Structural Concrete
- B. ACI 302.1R-04 - Guide for Concrete Floor and Slab Construction

1.2 SUBMITTALS

- A. Submit product data and material safety data sheets for repair materials. Indicate the intended use and location for all products.
- B. Submit qualifications of flatwork finisher.

1.3 SAMPLES

- A. For each type of wall finish used on the project, the first 100 square feet of finished area shall be observed by the Engineer for acceptance. Sample areas shall be provided until no exceptions are taken with the wall finish. The accepted sample area shall serve as a guide for the remainder of the project.

1.4 QUALITY ASSURANCE

- A. All finishing and repair materials shall meet all Federal and State regulations pertaining to Volatile Organic Compounds (VOC) Compliance.
- B. Contractor performing flatwork finishing of concrete slabs shall provide at least one (1) flatwork finisher certified as an ACI Concrete Flatwork finisher

PART 2 - PRODUCTS

2.1 FINISHING MATERIALS

- A. Slab Sealer: Silane or Siloxane based 96% chloride ion screen, Euco-Guard-100 by Euclid Chemical, SikaGard 701W by Sika Corporation, Starseal EF Weather Seal Plus by Vexcon, or equivalent. Do not apply to surfaces cured with curing compounds, except for that specified in paragraph 2.1.B.
- B. Bonding Admixture: Latex, non-rewettable type SBR Latex or Flex-con by Euclid Chemical, Daraweld C by W.R. Grace or equivalent.
- C. Grout Paint: mix 1 part Portland Cement, 1.5 part fine sand, 50:50 mixture of bonding admixture to consistency of thick paint.
- D. Patching Mortar: 1 part of a mixture of white and grey portland cement to 2.5 parts of damp loose sand. Cement type to match substrate.

2.2 REPAIR MATERIALS

- A. Epoxy Adhesive: Armatec 110 Epocem by Sika Corporation, Corr-Bond by Euclid Chemical Company, Epobond by L&M Chemical, or equivalent.
- B. Repair materials shall be as indicated in the following table:

REPAIR MATERIALS				
Company	Random Cracks (dry)	Random Cracks (wet)	Excessive Cracking	Spalls, Honeycomb Areas and Holes
Sika	Sidadur 35 Hi-Mod LV	SikaFix HH	Sikadur 55 SLV	SikaTop 122 or 123 Plus
Euclid	Eucopoxy Injection Resin	-	Euco Qwickstitch	Eucocrete
Simpson Strong-Tie	Crack-Pac	Crack-Pac Flex H2O		
BASF	Epoxeal GS Structural	Concresive 1210 IUG	HBA Repair Mortar	
Emecole	Emecole 121	Emecole 105		

NOTES:

1. All repair materials shall be installed in accordance with the manufacturer's recommendations.
2. All cracks that are wet (either damp or leaking) at the time of repair shall be repaired with a material that is specifically intended for wet repair as recommended by the manufacturer.
3. All spall repair material shall be bonded to the concrete with an epoxy adhesive material.
4. All repair materials in contact with potable water shall be NSF Standard 61 approved.

PART 3 - EXECUTION

3.1 FINISHES

- A. Repair all holes and defects and allow to set prior to finishing concrete.
- B. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.
- C. Finish concrete surfaces as scheduled.

3.2 FINISHING SLABS AND FLATWORK

- A. Screed to bring concrete surface to proper contour and elevation.
- B. Highway straightedge, bull float or darby float the concrete surface immediately after screeding.
- C. Allow bleed water to evaporate or remove.
- D. After completion of the above listed procedures, provide one of the concrete finishes listed below as indicated in the Schedule of Finishes:
 1. (LBF) Light Broom Finish: wood float finish as in E above; while plastic draw a soft-bristled broom, over the concrete in long even strokes with downward pressure. Broom transverse to traffic or at right angles to the slope of the slab.
- E. Finish to receive concrete fill: do not bull float; remove water scum, laitance and loose

aggregate from surface after concrete has started to harden with stiff bristle brush to partially expose coarse aggregate. Clean surface with brooms, water jets or air jets. Maintain wet for 12 hours immediately before placing fill concrete. As fill concrete is placed and just ahead of placement, broom in grout paint to the damp concrete surface. Do not allow grout paint to set prior to placement of concrete fill.

- F. Flatness and Levelness: All concrete slabs with a steel trowel finish shall be finished to achieve the following "Face Floor Profile Numbers" for composite flatness (F_F) and composite levelness (F_L) in accordance with Section 8.15 of ACI 302.1:
1. Specified Overall Value: $F_F 20/F_L 15$.
 2. Minimum Local Value: $F_F 15/F_L 10$.

3.4 FINISHING VERTICAL SURFACES

- A. (RFF) Rough Form Finish: Repair structural defects only and patch tie holes as specified in the paragraph titled "STRUCTURAL DEFECTS" in this Section. Fins exceeding 1/4 in. in height to be removed by grinding and/or rubbing.
- B. (SFF) Smooth Form Finish: The concrete surface shall be of uniform color, texture and free of all irregularities. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to the minimum. 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. Remove fins and other surface projections flush by grinding and/or rubbing. Repair surface and structural defects as specified in the paragraphs titled "SURFACE DEFECTS" and "STRUCTURAL DEFECTS" in this Section.

3.5 MISCELLANEOUS CONCRETE SURFACE

- A. Top of walls:
- a. Exposed to view - Provide a steel trowel finish as defined above
 - b. Not exposed to view - Provide a rough form finish as defined above.

3.6 SLAB SEALER

- A. Cure concrete for 30 days.
- B. Clean surface of oil, grease, dirt, and foreign materials as recommended by the manufacturer.
- C. Apply when slab temperature is between 40°F and 80°F.
- D. Apply in strict conformance to manufacturers' recommendations.
- E. Maximum coverage: 125 square feet per gallon.

3.7 SCHEDULE OF FINISHES

- A. Provide finishes on concrete surfaces according to the following schedule:
- a. Exposed Wall surfaces that are not covered by backfill, including fishway notches: SFF
 - b. Exterior unexposed below grade wall surfaces (non-liquid retaining): RFF
 - c. Fishway Floor: LBF
 - d. Top of Wall, and Horizontal Surfaces on Weir Notch: SFF

3.8 SURFACE DEFECTS

- A. As soon as the forms have been stripped and the concrete surfaces exposed, repair all surface defects. Surface defects include all form tie holes and surface blemishes including air voids and bug holes (areas on the surface of the concrete with an accumulation of entrapped air voids) with a nominal diameter or depth greater than 1/4 inch and less than 1 inch, visible construction joints, fins, burs, non-uniform

- concrete color and appearance and other defects. All concrete repair work shall result in a concrete surface of uniform color and texture, and shall be free of all irregularities.
- B. Cut out and remove honeycombed areas and rock pockets down to solid concrete, but in no case to a depth less than 1 inch, by means of hand chisels or pneumatic chipping hammers. Saw cut the edges perpendicular to the surface. No feather-edges shall be allowed.
 - C. Remove all loose aggregate paste and debris and scrub clean; thoroughly wet area to be repaired; brush and scrub grout paint into the substrate of the area to be repaired.
 - D. Apply a stiff consistency of patching mortar to the area with a trowel; apply prior to the set of grout paint (but after it has cast its water sheen); leave patched surface slightly higher than surrounding surface; do not finish for 1 hour minimum. Cure in same manner as adjacent concrete.
 - E. Mix patching mortar using as little water as possible; allow to stand with frequent manipulation of trowel to achieve stiffest consistency; blend white and gray Portland cement to achieve color match with surrounding concrete.
 - F. Form Tie Holes: After cleaned and thoroughly dampened, apply grout paint and fill tie holes solid with patching mortar.
 - G. Concrete with an overall non-uniform color or appearance as determined by the Engineer shall be repaired with a complete cementitious overlay.
 - H. Finished Flatwork exceeding specified tolerances:
 - 1. High areas shall be repaired by grinding after the concrete has cured 14 days.
 - 2. Low areas shall be repaired by cutting out low areas and replaced with concrete. Finish repair area to match adjacent concrete.

3.9 STRUCTURAL DEFECTS

- A. Remove and replace or repair all structural defects in newly placed concrete. Structural defects include:
 - 1. Random Cracks
 - 2. Excessive cracking
 - 3. Spalls, which are defined as concrete that has chipped, flaked, scaled or broken off from the surface of the concrete.
 - 4. Honeycombed areas, which are defined as areas where voids are left in the concrete due to inadequate vibration and consolidation resulting in a failure of the mortar to effectively fill the spaces among coarse aggregate particles.
 - 5. Holes in the concrete surface with a nominal diameter or depth greater than 1 inch that develop during the initial curing of newly placed concrete or thereafter until accepted by the Owner
 - 6. The Contractor shall propose a specific repair method, suitable for the situation, and the Engineer will review the method prior to the repair.
- B. Repair all structural defects in existing concrete that are identified by the Engineer during construction. These repairs are identified either on the Structural Drawings or in the Bid Form.
- C. Unless otherwise indicated, all concrete defects shall be repaired in accordance with the manufacturer's recommendations.
- D. Random Cracks:
 - 1. Random shrinkage or structural cracks shall be repaired utilizing a low viscosity, 100% solids, two (2) component epoxy resin system.
 - 2. Crack or void must be dry at time of application. Remove all dust, debris or disintegrated material from cracks or voids by the use of oil-free compressed air or vacuuming. Cracks saturated with oil or grease must be chipped out to

- unsaturated concrete. "Vee" out cracks in horizontal surfaces slightly.
3. Where cracks extend through members and are accessible, seal bottom of crack which is to receive the epoxy. Apply epoxy in strict accordance with manufacturer's recommendations.
 4. Patching of vertical wall or overhead cracks shall be accomplished in the same manner using a similar epoxy material of higher viscosity as recommended by the manufacturer.
 5. Materials shall be as indicated in Part 2.3
- D. Excessive Cracking:
1. Floor slabs containing an excessive amount of cracks as defined herein, and which will remain exposed, shall receive an epoxy mortar topping after sealing of cracks in accordance with the above paragraph.
 2. Excessive cracking shall be defined as areas containing cracks averaging 1/64th-inch wide or greater, and in excess of 15 linear feet of cracks per 100 square feet of slab. In the event that excessive cracking occurs in isolated areas of a given floor, topping shall only be applied in the area of the cracks bounded by construction, expansion, or control joints.
 3. Materials shall be as indicated in Part 2.3
- E. Spalls, Honeycomb Areas and Holes:
1. All weakened, damaged or disintegrated concrete shall be removed to sound concrete by means of hand chisels or pneumatic chipping hammers. Saw cut a 1 inch minimum square groove around the edges of the defective area perpendicular to the surfaces. If defective areas extend around reinforcing steel, chip to provide a clear space at least 1 inch wide all around the steel.
 2. Repair material shall include peastone for spalls of greater depth as required by the manufacturer. For spalled areas involving depths generally in excess of three (3) inches, utilize a repair material suitable for the depth of repair.
 3. Materials shall be as indicated in Part 2.3

END OF SECTION

03 39 00 - CONCRETE CURING

PART 1 - GENERAL

1.1 REFERENCES

- A. ACI 301-10 - Standard Specifications for Structural Concrete
- B. ACI 308R-01 (2008) - Guide to Curing Concrete
- C. ACI 308.1-98 - Standard Specification for Curing Concrete
- D. ACI 305R-10 - Hot Weather Concreting
- E. ACI 306.1-90 (2002) - Standard Specification for Cold Weather Concreting
- F. ASTM C309-07 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete

1.2 SUBMITTALS

- A. Submit product data and material safety data sheets for curing compounds. Indicate the intended use and location for all products.
- B. Submit a written outline of cold weather protection measures, hot weather protection measures, and curing methods.

1.3 ENVIRONMENTAL CONDITIONS

- A. Environmental Conditions are defined as follows:
 - 1. Cold Weather - When temperature conditions during the concrete placement or during the 7 day curing period following the placement will fall below 40°F.
 - 2. Hot Weather - When temperature conditions during the concrete placement or during the 7 day curing period following the placement will rise above 90°F.

1.4 QUALITY ASSURANCE

- A. All curing materials shall meet all Federal and State regulations pertaining to Volatile Organic Compounds (VOC) Compliance.

PART 2 - PRODUCTS

2.1 CURING MATERIALS Curing and Sealing Compound; ASTM C309 Type 1 Class B. Emulsion Kurseal 309 by A.H. Harris & Sons, Inc., Aqua-Cure VOX by Euclid, Starseal EF Cure 500 by Vexcon, or equivalent.

- A. Curing Water: Water shall be potable from a municipal water supply or shall meet the requirements of ASTM C1602, and shall be free of materials that have the potential to stain concrete. The temperature of the curing water shall not be lower than 20°F cooler than the surface temperature of the concrete at the time the water and concrete come in contact.

PART 3 - EXECUTION

3.1 CURING

- A. Curing: Curing shall begin immediately following the initial set of concrete or after slab surface finishing has been completed and shall continue after form removal. All concrete shall be cured to attain strength and durability by one of the following methods for a minimum of seven consecutive days immediately after placement

regardless of the ambient air temperature: See Schedule of Finishes and Curing Requirements in this Section:

1. Moist Cure
 - a. Ponding or continuous sprinkling. Intermittent wetting and drying is not an acceptable curing method.
 - b. Application of absorptive mats of fabric kept continuously wet.
 2. Application of concrete curing compounds. When using dissipating resin curing compounds, allow dissipating resin curing compound to chemically break-down, and remove residuals and other foreign material, prior to applying slab sealing compound.
- B. Moisture loss from surfaces placed against wooden or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed. After form removal, the concrete shall be cured by one of the methods described above, for the balance of time remaining as specified above. All exposed concrete (tops of walls) within vertical forms shall begin moist curing within 24 hours of placement, regardless of the duration that the forms will remain in place.
- C. Cold Weather:
1. Unless otherwise superseded by the requirements within this Specification, conform to ACI 306 for placement of concrete in cold weather as defined in Part 1.6.
 2. Maintain concrete temperature between 50°F and 70°F for a minimum of seven days after placement. Enclose and heat, or insulate concrete as required.
 3. Protect concrete from damage due to concentrated heat sources to minimize local carbonation of the concrete surfaces. Combustion heaters shall be located so they do not apply heat directly to the concrete surfaces.
 4. For those surfaces requiring curing compounds, reapply curing compounds every two days during heating period or at greater frequencies as required by the manufacturer.
 5. The maximum allowable temperature drop of the concrete surfaces during the first 24 hours after the end of the curing period shall not exceed 5°F in any 1 hour and shall not exceed the following total gradual temperature drop in the first 24 hours:

Concrete Thickness			
Less than 12 in.	12 to 36 in.	36 to 72 in.	Greater than 72 in.
50 F	40 F	30 F	20 F

- D. Hot Weather:
1. Unless otherwise superseded by the requirements within this Specification, conform to ACI 305 for placement of concrete in hot weather as defined in Part 1.3.
 2. Concrete temperature as delivered to the project site shall not be greater than 90°F. Protect from loss of slump, flash set, plastic cracking and rapid evaporation of water.
 3. Place concrete quickly, shade from direct sun and protect from wind.

3.2 SCHEDULE OF CURING REQUIREMENTS

- A. Provide curing conditions according to the following schedule:

SCHEDULE OF CURING REQUIREMENTS	
Location	Curing Requirements
Exposed Wall surfaces that are not covered by backfill, including fishway notches	Moist cure or apply two coats of curing and sealing compound
Exterior unexposed below grade wall surfaces (non-liquid retaining)	Moist cure or apply two coats of curing and sealing compound
Fishway Floor	Moist Cure
Top of Wall, and Horizontal Surfaces on Weir Notch	Moist cure or apply two coats of curing and sealing compound

3.3 PROTECTION

- A. Protect concrete from high and low temperatures for seven days. Maintain temperatures between 50°F and 70°F during this time period.
- B. Protect against vibration until concrete has attained 33% of its 28-day strength. Do not blast ledge within 100 feet of freshly placed concrete until concrete has attained 33% of its 28-day strength]
- C. Protect against premature loads until the concrete has been in place for 28 days and the design strength has been attained (unless otherwise indicated). Premature loads include but are not limited to:
 - 1. Backfilling

END OF SECTION

DIVISION 31
EARTHWORK

31 05 00 - COMMON WORK RESULTS FOR EARTHWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Subjects common to multiple Sections in Divisions 31, 32, and 33.

1.2 SUBMITTALS

- A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor for the purposes of approval.
- B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.
- C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.
- D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.
- E. For geotextile fabrics, manufacturer shall furnish certified test reports with each shipment of material attesting that the fabric meets the requirements of this Specification.

PART 2 - PRODUCTS

2.1 SOIL AND AGGREGATE MATERIALS

- A. Common Borrow: Shall consist of approved material required for the construction of the work where designated. Common borrow may be used for embankments unless otherwise indicated and provided that the material is at a moisture content suitable for compaction to the required density. No rocks shall exceed 3/4 of the depth of the specified lift thickness. Common borrow shall be free from frozen material, perishable rubbish, peat, organic, and other unsuitable material.

<u>Sieve Designation</u>	<u>Percent Passing (by Weight)</u>
6 inch	100
No. 200	0 - 15

- B. Large Stone (Boulders): Large stones (boulders) shall be hard, durable, quarried stones or fieldstones in a mixture of sizes to be placed in a compact and stable mass. Unless otherwise specified on the Contract Documents, the average size of the stone shall be approximately 24 inches in diameter. No stone shall be less than 18 inches in diameter.

- D. Low-Permeability Stream Gravel: Low permeability gravel fill shall consist of a well-graded material free of organics, wood, trash, snow, ice, frozen soil and other objectionable material. The material shall be well-mixed and consistent blend of 4-inch stone (50% by volume) and a well-graded gravel. The well graded gravel shall meet the following gradation:

<u>Sieve Designation</u>	<u>Percent Passing (by Weight)</u>
2 ½ inch	60 - 95
1 inch	45 - 75
1/4 inch	25 - 50
No. 10	20 - 40
No. 200	10 - 15

2.2 GEOTEXTILE FABRIC

A. General Requirements:

1. Geotextile Fabrics shall be inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.
2. Geotextile Fabrics shall have a UV resistance which allows for a minimum of 70% strength retainage at 500 hours (ASTM D4355).

B. Non-Woven Fabric: To be utilized with certain drainage structures, underdrains, and in certain landscaping applications where identified on the Contract Documents. Fabric shall be formed of polypropylene fibers formed into a stable network, be provided on in widths of not less than six (6) feet, shall have a maximum apparent opening size of a #70 sieve (ASTM D4751), and shall have properties that meet or exceed the following:

<u>Mechanical Property</u>	<u>Test Method</u>	<u>Minimum Value</u>
Grab Tensile Strength	ASTM D4632	160 lbs
Grab Tensile Elongation	ASTM D4632	50%
Trapezoid Tear Strength	ASTM D4533	60 lbs
CBR Puncture Strength	ASTM D6241	410 lbs
Permittivity	ASTM D4491	1.5 per sec
Flow Rate	ASTM D4491	110 Gal/min/sq.ft.

C. Woven Fabric: To be utilized for reinforcement, under riprap, and stabilization where identified on the Contract Documents. Fabric shall be woven of high tenacity polypropylene yarns, provided in widths of not less than six (6) feet, shall have a maximum apparent opening size of a #40 sieve (ASTM D4751), and shall have properties that meet or exceed the following:

<u>Mechanical Property</u>	<u>Test Method</u>	<u>Minimum Permissible</u>
Grab Tensile Strength	ASTM D4632	315 lbs
Grab Tensile Elongation	ASTM D4632	15%
Trapezoid Tear Strength	ASTM D4533	120 lbs
CBR Puncture Strength	ASTM D6241	900 lbs
Permittivity	ASTM D4491	0.05 per sec
Flow Rate	ASTM D4491	4.0 Gal/min/sq.ft.

2.2 RIPRAP STONE

A. Riprap: Stone for riprap shall consist of hard, sound durable rock that will not disintegrate by exposure to water or weather. Stone for riprap shall be angular and rough. Rounded, subrounded or long thin stones will not be allowed. The maximum allowable length to width ratio will be 3:1. Stone for riprap may be obtained from quarries or by screening oversized rock from earth borrow pits. The minimum stone size (10 lbs) shall have an average dimension of 5 inches. The maximum stone size (200 lbs) shall have an average dimension of approximately 12 inches. Larger stones may be used if approved by the Resident. Fifty percent of the stones by volume shall have an average dimension greater than 9 inches (50 lbs).

B. Heavy Riprap: Stone for heavy riprap shall consist of hard, sound, durable rock that will not disintegrate by exposure to water or weather. Stone for heavy riprap shall be angular and rough. Rounded, subrounded, or thin, flat stones will not be allowed. The maximum allowable length to width ratio will be 3:1. Stone for heavy riprap may be obtained from

quarries or by screening oversized rock from earth borrow pits. The minimum stone size (500 lbs) shall have minimum dimension of 15 inches, and at least fifty percent of the stones by volume shall have an average dimension greater than 24 inches (1000 lbs).

2.3 EROSION CONTROL MIX

A. Erosion Control Mix is a well-graded mixture of particle sizes and may contain rocks less than 4" in diameter. Erosion Control Mix should be free of refuse, physical contaminants, and material toxic to plant growth such as fly ash or yard scraping. Large portions of silts, clays or fine sands are not acceptable in the mix. This mix composition should meet the following standards:

1. The organic matter content should be between 80% and 100%, dry weight basis.
2. Particle size by weight should be 100% passing a 6" screen and 70% to 85% passing a 0.75" screen.
3. The organic portion needs to be fibrous and elongated.
4. Soluble salts content shall be less than 4.0 mmhos/cm.
5. The pH should be between 5.0 and 8.0.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Description: This work shall consist of clear cutting, selective clearing and thinning, tree trimming, removing single trees, including dead, blown down or uprooted trees, removing and disposing of all stumps and debris within the limits of the right-of-way and easement areas except such objects as are designated to remain or are to be removed in accordance with other sections of these specifications. This work shall also include the preservation from injury to or defacement of all vegetation and objects designated to remain and the treatment of stumps with herbicides.
1. Clearing shall consist of cutting and disposing of all trees, down timber, brush, bushes, and debris within designated limits.
 2. Tree trimming shall consist of removing any designated branches and other tree portions for preservation purposes.
 3. Selective Clearing and Thinning shall consist of cutting and disposing of designated trees, down timber, stubs, brush, bushes, and debris within designated limits.
 4. Removing trees shall consist of cutting and disposing of single trees, stumps and roots, located outside the limits of clearing or selective clearing and thinning limits, as indicated on the plans or as authorized.

1.2 LIMITS OF WORK

- A. Perform clearing work within the areas required for construction, or as shown on the Contract Documents.
- B. Perform additional clearing and work within areas which, in the opinion of the Engineer, interfere with excavation and/or construction, or are otherwise objectionable.
- C. Clearing and grubbing work performed for the convenience of the Contractor will not be considered for payment.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 EXECUTION

3.1 GENERAL

- A. The RPR or Engineer shall be consulted for approval of clearing and selective clearing limit lines and designated items that are to be preserved and to remain.
- B. Unsound or unsightly branches of trees and shrubs, designated to remain and not specified to be removed under another item, shall be removed as directed. Trimming shall be done by skilled workers and in accordance with good tree surgery practices.
- C. Alignment stakes, grade stakes, witness stakes, boundary markers, bench marks and tie points shall be preserved until permission is given for their destruction by the RPR or Engineer.
- D. Fell trees toward the center of the area being cleared to protect trees and shrubs to be left standing.
- E. Employ skilled workmen or tree surgeons to trim and repair all trees that are damaged but are to be left standing.

3.2 CLEARING

- A. In areas indicated on the plans, all trees, down timber, brush, bushes, shrubs, plants and debris not designated to remain shall be removed and disposed of.
- B. All wood in the clearing area, except trees designated to remain, shall become the property of the Contractor, unless otherwise provided.

3.3 SELECTIVE CLEARING

- A. In order that trees may be properly marked, the Contractor shall give the RPR or Engineer at least 2 weeks notice before starting work. Only those trees or bushes designated to be removed shall be cut. In no event shall selective clearing operations begin until approval is given.
- B. All dead or diseased trees or shrubs, junk, trash, litter or foreign matter of any kind shall be removed from the areas to be enhanced. This shall include uprooted stumps and all branches, tops, trunks and dead wood, resulting from woodcutting operations or from any other causes.
- C. Trees and shrubs to be preserved shall be carefully pruned to remove all dead, diseased and injured wood. In addition, in certain areas, the RPR may require the branches of designated trees to be removed to a height above ground as directed. Complete clearing may be required in certain areas. Such clearing shall be included under this Subsection. Storing logs and pulpwood in thinned areas shall be avoided.
- D. The Contractor shall avoid disturbing or compacting the existing ground surfaces as well as avoiding damage to plant growth. The use of heavy equipment, operating anywhere within the area to be selectively thinned, will not be allowed unless authorized.
- E. Any injury to trees and shrubs that are to be preserved shall be carefully repaired. Disturbed ground surface shall be restored as nearly as possible to natural conditions.
- F. Pruning and repairs to live trees and shrubs shall be done by skilled workers or tree surgeons according to approved arboricultural practice. All stumps, new or old, shall be cut off as close to the ground as is practicable.
- G. Trees falling outside the specified limits of the thinning areas shall be removed and disposed of in a satisfactory manner.

3.4 REMOVING SINGLE TREES

- A. When called for on the plans or otherwise designated, complete removal and disposal of single trees and stumps shall be required and shall include the backfilling of stump holes.
- B. Trees, which have been uprooted, shall be removed by cutting the tree and removing the stump from the ground or, where approved, the stumps may be placed back in the hole to present a natural appearance. The area shall be graded to conform to the surrounding terrain

3.5 DISPOSAL

- A. All brush, timber, logs and other woody debris shall be disposed of off-site, unless otherwise directed or approved by the Engineer.
- B. If approved by the Engineer, acceptable methods of disposal may include chipping. Burning and burying will not be allowed.
 - 1. Chipping Wood chippers shall reduce woody material to chips, not over ¼ inch thick by not over 8 inches long, and the chips shall be spread uniformly over the ground or as directed by the Engineer.
 - 2. Burying is not allowed.
 - 3. Burning is not allowed.

END OF SECTION

31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Description: This work shall consist of removing, hauling, disposing and compacting, if required, of all material not being removed under some other item, encountered for the construction of the project in accordance with the specifications and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the plans or established. Excavation, except for excavation of demolition debris, will be classified as common excavation or ledge removal (rock excavation).
1. Common Excavation shall consist of removing all material encountered in grading the project within the limits of construction. Common excavation shall include the removing and disposing of boulders, solid mortared stone masonry and concrete masonry when each is less than 2 yd³ in volume and all soft and disintegrated rock which can be removed with ordinary excavating machinery. It shall include grubbing, which consists of the removing and disposing of all stumps, roots, bushes, grass, turf or other objectionable material and it shall include berm ditches and cut slope downspouts.
 2. Rock Excavation (Ledge Removal via Mechanical Equipment) shall consist of removing weathered or soft igneous, metamorphic and sedimentary rock which cannot be excavated without being physically broken apart with a excavator mounted pneumatic hammer, as well as all boulders, solid mortared stone masonry, concrete masonry, each having a volume of 2 yd³ or more.
 3. Rock Excavation (Ledge Removal via Blasting) shall consist of removing hard igneous, metamorphic and sedimentary rock which cannot be excavated without drilling and blasting, drilling and splitting, as well as all boulders, solid mortared stone masonry, concrete masonry, which cannot be removed via mechanical equipment.

1.2 JOB CONDITIONS

- A. Site Information:
1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data are made available for the convenience of Contractor.
 2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.
- B. Existing Utilities and Structures:
1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

1.3 SUBMITTALS

- A. Blasting Plan (for Projects requiring Ledge Removal via Blasting): Not less than two weeks prior to commencing drilling and blasting operations, or at any time the Contractor proposes to change drilling and blasting methods, the Contractor shall submit a Blasting Plan to the Engineer for review. The Blasting Plan shall contain full details of the drilling and blasting patterns and controls the Contractor proposes to use for both the controlled and production

blasting. Review of the Blasting Plan by the Engineer shall not relieve the Contractor of responsibility for the safety, accuracy and adequacy of the Plan when implemented in the field. The Blasting Plan shall contain the following information.

1. Limits of proposed shots. Plan and section views of the proposed drill pattern, including free face, burden, blasthole spacing, blasthole diameters, blasthole angles, lift height, and subdrill depth.
 2. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming.
 3. Initiators sequence of blastholes including delay times and delay system.
 4. Manufacturers' data sheets for all explosives, primers and initiators to be used.
 - a. The delay elements in blasting caps are known to deteriorate with age. For this reason, it is required that all blasting caps used on the project be less than one year of age. No blasting products will be allowed on the job site if the date codes are missing.
 - b. When in the opinion of the Resident any blasting product is either of excessive age or in what appears to be a deteriorated condition, all work will cease until the product's age or quality can be determined.
 - c. Explosives containing Perchlorate compounds shall not be used on Department projects.
 5. Details of the audible advance signal system to be employed at the job site.
 6. Pre-Blast Condition Survey of all structures and cultural features that may be affected.
 7. Precautions to protect nearby structures and cultural features.
- B. Daily Blasting Logs (for Projects operating under an approved Blasting Plan): The Contractor shall provide the Engineer with a daily log of blasting operations, submitted on a weekly basis. The log shall be updated at the close of each working day. The log shall include the number of blasts, times, and dates of blasts, the blasting locations and patterns, and all information shown below:
1. Limits of the shot.
 2. Plan and section views of drill pattern, including free face, burden blasthole spacing, blasthole diameters, lift height, and subdrill depth.
 3. Loading diagram showing type and amount of explosive, primers, initiators, and location and depth of stemming.
 4. Initiators sequence of blastholes including delay times and delay system in each blasthole.
 5. Mats or other protection used.
 6. Signature of the Blaster in charge.
 7. The Contractor shall report to the Engineer in writing of all blasting complaints received by the Contractor within 24 hours of receipt. Each blast complaint report shall include the name and address of the complainant, time received, date and time of blast complained about, and a description of the circumstances which led to the complaint.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Refer to Specification Section 31 05 00 - Common Work Results for Earthwork.

2.2 UNAUTHORIZED USE OF MATERIALS

- A. No common excavation, rock excavation, unclassified excavation or borrow which is designated for use in embankments or backfill may be diverted for the Contractor's own use.

Any unauthorized use of such material shall be replaced by the Contractor at no additional cost to the Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. Prior to beginning excavating, grading, and embankment operations in any area, all necessary clearing in that area shall have been performed in accordance with the Contract Documents.
- B. Unsuitable material shall be disposed of as directed and no material shall be wasted without permission. Excavating operations shall be conducted so that material outside of the limits of work will not be disturbed.
- C. The Engineer may designate as unsuitable those soils which cannot be properly compacted in embankments and all such unsuitable material shall be disposed of in approved waste storage areas or waste areas as directed.
- D. Suitable material taken from excavation shall be used in the construction of embankment, subgrade, and for backfilling as indicated on the plans, or as directed, except that if the volume of suitable excavated material exceeds that required to construct the embankments to the grades indicated, the excess shall be used as directed or wasted.
- E. The Contractor shall give the Engineer sufficient time before beginning excavation to review site conditions.
- F. When encountering Ledge Removal (Rock Excavation), the Contractor will be required to strip earth from the ledge to provide an opportunity for the Engineer to take the necessary measurements for the purposes of determining quantities in accordance with Specification Section 01 20 00.
- G. The degree of finish for grading ditches and slopes, both fill slopes and cut slopes, shall be that obtainable from machine operations. Ditches shall be constructed to within 6 inches above or below the grade called for on the cross sections or as otherwise modified but in no case shall the ditch be finished in a condition that will not allow the flow of water. Ditches shall be graded to the extent that puddles will not form. All provisions for measurement and payment limits shall remain in force and no payment will be made for unauthorized work done beyond authorized pay limits.
- H. Unstable slopes subject to sliding and slumping shall be excavated to the lines and grades shown or as directed. Immediately after each location is excavated to temporary subgrade, the approved permanent slope stabilization measures shall be implemented (i.e. riprap, erosion control blanket, etc.). There will be no additional pay for any temporary protection required for the construction of the project.
- I. Ledge slopes shall be scaled (cleaned of all loose material) immediately as the excavation proceeds. The ledge slope shall then be examined by the Contractor to determine if the slope is stable. If the slope is not deemed stable upon this examination, then immediate steps shall be taken by the Contractor to insure the stability of the slope during construction. There will be no additional pay for any temporary protection required for the construction of the project.

3.2 BLASTING

- A. General Requirements
 1. All blasting operations, including the storage and handling of explosives and blasting agents, shall be performed in accordance with the applicable provisions of the Contract Documents and all other pertinent Federal, State and local regulations.
 2. The Contractor shall observe the entire blast area to guard against potential hazards before commencing work in the cut.
 3. In case of conflict between regulations or between regulations and this Specification,

the Contractor shall comply with the strictest applicable codes, regulations, or Specifications.

4. The Engineer will, at all times, have the authority to prohibit or halt the Contractor's blasting operations if it is apparent that through the methods being employed, the required slopes are not being obtained in a stable condition, or the safety and convenience of the public is being jeopardized.
5. Explosives shall be stored, handled and employed in accordance with Federal, State and Local regulations. No explosives, caps, detonators or fuses shall be stored on the project site during non-working hours.
6. The overburden shall be removed or trenches shall be excavated through the overburden at the intervals directed by the Engineer, normally 25 ft. but in no case closer than 10 ft. apart to permit cross sectioning of the rock in its original position. Rock removed prior to sectioning will be considered as Common Excavation.

B. Blast Vibration Control and Monitoring

1. The Contractor shall be required to monitor blasting vibrations (both ground and air concussions). When nearby structures, utilities, or adjacent slopes may be subject to damage from blast-induced ground vibrations, the ground vibrations shall be controlled by the use of properly designed delay sequences and appropriate charge weights per delay.
2. When vibration damage to adjacent structures or cultural features is possible, the Contractor shall monitor each blast with an approved seismograph located, as approved by the Engineer, between the blast area and the closest structure subject to blast damage. The seismograph used shall be capable of recording particle velocity for three mutually perpendicular components of vibration in the range generally found with controlled blasting.

C. Flyrock Control

1. Before the firing of any blast in areas where flying rock or debris may result in personal injury or damage to property, the rock to be blasted shall be covered with approved blasting mats, soil, or other equally serviceable material to prevent flyrock.
2. The method of flyrock control shall be subject to approval by the Engineer.

D. Controlled Blasting Methods

1. Controlled blasting is defined as a blasting method which utilizes a line of closely spaced, lightly loaded blastholes that are fired either before or after the main production blast to define a break line on the perimeter of the excavation.
2. The purpose of the Controlled blasting is to create a stable rock face with a fall zone to protect the adjacent public from rockfall hazard, and to protect existing structures, adjacent and nearby properties, and the public from damage or injury. Controlled blasting shall be required on all rock critical slopes.
 - a. Production blasting refers to the main fragmentation blasting resulting from widely spaced production holes drilled throughout the main excavation area adjacent to the presplit line. Production holes shall be detonated in a controlled delay sequence.
 - b. Presplitting is defined as the establishment of a free surface of a shear plane in rock by the controlled usage of explosives and blasting accessories in appropriately aligned and spaced drill holes so that the resulting split rock is not affected by subsequent blasting and excavation operations. The purpose of presplitting is to minimize damage to the rock backslope and to help ensure long term stability. When presplitting, the detonation of the presplit line shall

- be before the detonation of any production holes.
- i. Prior to drilling, all overburden and all loose and disintegrated rock shall be removed down to solid rock in the vicinity of the presplit lines. Potentially dangerous boulders beyond the excavation limits shall also be removed as directed by the Resident.
 - ii. Presplitting shall extend a minimum of 30 feet ahead of the limits of production blasting within the section or to the end of the cut as applicable.
 - iii. All drilling equipment used to drill the presplit holes shall have electromechanical or electronic devices affixed to that equipment to accurately determine the angle at which the drill steel enters the rock. Presplit hole drilling will not be permitted if these devices are missing or inoperative.
 - iv. The length of the presplit holes shall not exceed 30 feet in depth unless approved by the Resident. Rock deeper than 30 feet shall usually be presplit in lifts, but no lift shall be less than 10 feet in depth. When the cut height will require more than one lift, a maximum 2-foot offset between lifts shall be permitted to allow for equipment clearance. No payment will be made for additional excavated quantity caused by offsetting of presplit lines for less than 20 foot lifts. Drilling 2 feet below ditch bottom will be allowed to facilitate removal of the toe berm.
 - v. Before placing charges, the contractor shall determine that the hole is free of obstructions for its entire depth. All necessary precautions shall be exercised so that placing the charges will not cause caving of material from the walls of the holes.
 - vi. The diameter of the explosives used in presplit holes shall not be greater than $\frac{1}{2}$ the diameter of the hole.
 - vii. Continuous column cartridge explosives manufactured especially for presplitting shall be used for all presplitting. The bottom charge of a presplit hole may be larger than the line charges, but shall not be large enough to cause overbreak. The top charge of the presplitting hole shall be placed far enough below the collar, and reduced sufficiently, to avoid overbreaking and heaving. The upper portion of all presplit holes, from the top charge to the hole collar, shall be stemmed.
 - viii. The presplit slope face shall not deviate more than one foot from a plane passing through adjacent drillholes, except where the character of the rock is such that, as determined by the Engineer, irregularities are unavoidable. The one-foot plane shall be measured perpendicular to the plane of the slope. In no case shall any portion of the slope encroach on the roadbed.
- c. Cushion blasting. Where the horizontal distance from the existing rock face to the cut face is less than 15 feet, or if rock conditions warrant this approach, the contractor may use cushion blast in lieu of presplitting. Cushion blasting is similar to presplitting except that the detonation along the cut face occurs after the detonation of all production holes. With the exception of the above criteria, requirements previously given for presplitting shall also apply to cushion blasting.
 - d. Sliver Cuts - For sliver cuts, pioneering the top of cuts and preparing a working platform to begin the controlled blasting may require unusual work methods and use of equipment. The contractor may use angle drilled holes during the initial pioneering operations to obtain the desired rock face. Hole spacing shall not exceed 30 inches.

3.3 EXCAVATION

- A. Excavation shall be maintained in such condition that the excavation surface will be well drained. Temporary drains, drainage ditches and culverts shall be constructed to intercept and divert water that may adversely affect the condition of the excavation and the prosecution of the work.
- B. Excavation in general, shall proceed in an upgrade direction. Subgrades shall be promptly graded and rolled to minimize absorption of water. Adjacent ditches shall be graded to the extent that puddles will not form. Grubbing areas which cannot be drained shall be promptly filled with approved excavation or common borrow to such an elevation that surface drainage will be effective. If, due to unusual circumstances, drainage by gravity cannot be accomplished, the Engineer may require the Contractor to provide adequate means of pumping the area. Pumping may be required on a 24 hour a day continuous basis and no direct compensation for cost of pumping will be made.
- C. The Contractor shall perform excavations in such manner and to such widths as will give suitable room for building the structures, laying and jointing the piping, and providing safe working conditions.
- D. The Contractor shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.
- E. Muck shall be removed in such a manner to insure its complete removal with no areas remaining or trapped below the embankment. Excavated muck shall be deposited in designated waste storage areas as shown on the plans or as otherwise directed. When muck is encountered that was not contemplated on the plans, it shall be disposed of as indicated above.
- F. Excavation adjacent to roots of trees or shrubs, which are to remain, shall be removed by hand.
- G. Material classified as rock or ledge shall be excavated to the required depth. Care shall be taken that undrained pockets will not be left in the surface of the rock remaining.
- H. The space between the rock remaining and the normal subgrade shown on the plans shall be backfilled with the designated aggregate subbase or aggregate base, pulverized rock or other approved material. The Contractor shall conduct their excavating and hauling work in a manner that will cause as little contamination as possible. Fine grading at the normal subgrade line will be required unless aggregate subbase or aggregate base material is used.
- I. Ditches in rock cuts shall be constructed with no protrusions of rock above the designated rock cut pay lines. The space between the rock remaining and the finished surface of the ditch shall be backfilled with broken rock.
- J. For earth and rock backslopes designated to be constructed on a 2 horizontal to 1 vertical slope or flatter, the slope shall be uniformly finished to within 6 inches above or 6 inches below the lines designated, but in no case shall projections of rock extend over 6 inches above the actual finished surface of the slope as constructed, unless approved by the Engineer. Rock backslopes designated to be constructed on a ¼ horizontal to 1 vertical slope shall be excavated at least to a vertical plane.
- K. Buried structures and obstructions, located within the designated limits of the work, shall be reviewed with the Engineer and removed.
- L. Unsuitable Subgrade Conditions:
 - 1. When subgrade condition is soft or otherwise unsatisfactory the excavation shall be carried to a depth designated by the Engineer and the material removed below the elevation shown on the plan and shall be replaced with approved granular material, thoroughly compacted, or a lower elevation for the bottom of the structure shall be established (if applicable).

2. When subgrade is to be sound and/or solid rock, the rock shall be excavated to a firm surface, either level stepped or serrated. When solid or disintegrated rock or boulders are encountered, the rock shall be excavated to a designated depth below the bottom of the proposed subgrade. Unless otherwise specified, the material so removed shall be replaced with well draining granular material (such as sand or crushed stone) and uniformly compacted and shaped as approved by the Engineer.

M. Structure and Foundation Subgrade:

1. When a structure or foundation is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation. If the surface upon which the structure is to rest is disturbed, it shall be regraded and recompact to the extent directed by the Engineer.
2. After each excavation is completed for a structure or foundation, the Contractor shall notify the Engineer and no formwork or structure shall be placed, foundation piles driven or other installations made, until the depth of the excavation and the character of the subgrade conditions have been approved.

3.4 COMMON FILL AND EMBANKMENT CONSTRUCTION

A. General: Layers of material for embankments shall start at the deepest portion of the fill and as placement progresses, layers shall be constructed approximately horizontal. Common fills and embankments of earth material shall be placed in layers not exceeding 8 inches, loose measure, unless otherwise approved and the material compacted as specified before the next layer is placed.

1. Ground Surface Preparation:
 - a. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, scarify or break-up sloped surface steeper than 1 vertical to 4 horizontal.
 - b. When existing ground surface has a density less than that specified under "compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.
2. When it is impractical to construct layers over the full width of the site, partial width layers may be authorized.
3. Effective spreading equipment shall be used on each layer to obtain uniform thickness. Each layer shall be crowned and maintained free of ruts and ridges to provide direct drainage of water from the embankment. As the compaction of each layer progresses, grading and manipulating will be required to assure uniform density. Construction equipment shall be routed uniformly over the entire surface of each layer.
4. Water shall be added or removed, if necessary, in order to obtain required compaction. Aeration of excavated materials to reduce the moisture content to within specified limits may be required.
5. When placing layers of specified thickness is not feasible, such as filling in water or over swampy ground, the initial layer of embankment may be constructed in one layer to an elevation where bridging will be accomplished, as approved by the Engineer.
6. When the excavation or borrow consists predominantly of fragments of such size that the material cannot be placed in embankments in layers of specified thickness without breaking down the pieces, such material may be placed in layers in thickness not exceeding the approximate average size of the larger rocks but in no case shall

layers exceed 2 feet. Rocks exceeding this thickness shall be separated and collectively placed in accordance with the requirements for rock embankments. Each layer shall be leveled and smoothed with suitable leveling equipment and by even distribution of rock spalls and finer rock fragments or earth. The layers so constructed shall not be placed above an elevation 2 feet below the finish subgrade. The remainder of the embankment shall be composed of suitable material smoothed and placed in layers not exceeding 8 inches, loose thickness, and compacted as specified for earth embankments.

7. Where guardrail is to be installed, rock shall not be placed in the embankment under the location of the guardrail to an elevation 4 feet below the finished grade of the shoulder. Rocks, broken concrete and other solid materials shall not be placed in any portions of embankments where piling is to be placed or driven or where Utility facilities are to be placed.
8. Excess or unsuitable excavated material, including rock and boulders, which cannot be used in embankments shall be disposed of by the Contractor in approved waste areas.
9. When material obtained from excavation is unsatisfactory for use in the formation of embankments due to excessive moisture content, can be rendered satisfactory for such use by combining it with granular material, the unsatisfactory material shall be combined with granular borrow or granular excavation when and as directed by the Engineer.
10. If the embankment is required to be deposited on only one side of an abutment, retaining wall, or other structure care shall be taken that the area immediately adjacent to the structure is not compacted excessively to the extent that it will cause overturning of or excessive pressure against the structure. When embankment is to be placed on both sides of a concrete wall, structural plate or box type structure, operations shall be so conducted that the embankment is always at approximately the same elevation on both sides of the structure.
11. At the close of each day's work, the embankment surface shall be graded, crowned, smoothed, rolled and protected against infiltration of water.

B. Compaction: Unless otherwise approved the material shall be deposited and spread upon compacted material in full width layers not more than 8 inches in depth, loose measure. Clay or loam soils shall be compacted by use of sheeps foot or tamping type roller having a minimum weight on each tamper, under working conditions, of 250 psi of cross-sectional bearing area. Sand or gravel soils shall be compacted by vibratory type compaction equipment or by pneumatic tired equipment and, if necessary, by the addition of water. A combination of the above or other methods capable of producing equivalent results may be used. The compacting operations shall be continued until each layer is compacted to its full depth and width.

1. With approval, the Contractor may place layers in excess of 8 inches and less than 24 inches, loose measure, providing the specified compaction requirements are obtained and the Contractor agrees to make necessary test excavation for the Engineer and/or Independent Testing Laboratory to determine density.
2. The Contractor will be required to demonstrate that the compaction equipment and methods are obtaining satisfactory compaction.
3. **Percentage of Maximum Density Requirements:** Compact soil to not less than 95% of maximum dry density (ASTM D1557) determined in accordance Specification Section 01 40 00 - Quality Requirements. Compaction density requirements may be reduced in non-critical areas as approved by the Engineer, however in no case will compaction requirements be less than 90% of maximum dry density (ASTM

D1557).

- C. Rock Fill and Embankments: The material for rock embankment shall be placed in compacted layers not exceeding 3 feet in depth. Depositing the rock directly over the end of the fill from the hauling equipment will not be permitted; it shall be deposited on the fill and pushed into place. The top of the rock embankment shall be so choked that there will be no infiltration of the earth embankment placed on the top of the rock embankment.
1. This method shall be used only in fills in excess of 4 feet in depth. In no case shall the rock embankment be placed within 1 foot of subgrade (4 feet in guardrail areas).
 2. When structures are located under rock embankment, they shall be covered with not less than 2 feet of earth excavation or borrow before the rock embankment is placed over the structures.
- D. Winter Construction of Fills and Embankments: Frozen material shall not be placed in the core embankment or fill. The construction of embankments may continue during cold weather only when all frozen material in the top of the core embankment or the existing ground is moved disposed, stockpiled, or otherwise moved off-site before placing additional material. Unless specifically provided for elsewhere in the Contract Documents, the Contractor will not be due additional compensation if this procedure results in the need for additional fill material or delays in schedule.
1. Compaction shall be in accordance with the specified method of embankment construction. When the prevailing temperatures are below 30°F all material used in embankment construction shall have a moisture content, at the time of compaction, equal to or less than the optimum moisture content.
 2. The embankment shall not be constructed upon frozen material except that such construction of embankments may be allowed providing the total depth of the added fill, including bases, plus the depth of the frozen material beneath does not exceed 5 feet. Frozen material may be left in the embankment only if it has been compacted as specified before freezing. The Contractor shall not resume construction of any embankments built in this manner until all frozen material has thawed. If test holes are required to make this determination they shall be dug and backfilled with satisfactory compaction at the Contractor's expense. Before additional material is added, uncompacted material on the surface of such embankments shall be either recompacted in accordance with the specified method of embankment construction or removed.
- E. Preparation and Protection of Subgrade: Unless otherwise provided, the subgrade shall be brought to a condition of uniform stability and compacted for the full width by grading and rolling operation and shall be maintained to no tolerance above or 3 inches below the required grade and cross section. The surface shall be compacted to uniform density and stability and graded to the extent that puddles of water will not form. Additional material required as a result of low subgrade shall be furnished and placed at the expense of the Contractor.
1. The required compaction shall be the same as specified for embankments. When the subgrade occurs in cuts, the required compaction shall apply to a depth of 6 inches below subgrade unless otherwise specified.
 2. The Contractor shall protect the subgrade from damage. Ditches and drains shall be maintained to effectively drain the subgrade. In no case shall vehicles be allowed to travel in a single track and form ruts. No material shall be deposited on a subgrade until the subgrade has been approved by the Engineer.

3.5 STRUCTURAL BACKFILL

- A. **General:** This work shall consist of filling and backfilling for the installation and construction of utilities and structures in accordance with these specifications and in reasonably close conformity with the lines, grade and typical cross sections shown on the plans or established.
1. Utilities and Structures shall include pipes, conduits, culverts, pipe arches, underdrains, catch basins, manholes, structural plate units, box culverts, culvert end walls, concrete steps and other minor structures. It shall also include abutments and piers for bridges, rigid frame structures, masonry retaining walls, and any other similar structure.
- B. **Backfilling:** Backfilling shall consist of placing suitable material in all spaces excavated and not occupied by drainage structures, bridge structures and other permanent structures up to the elevation of the existing ground or other elevations shown on the plans or designated. Backfill material for structures shall be Structural Fill or other material designated on the plans and shall be at or near optimum moisture content.
1. Backfill shall not be placed against gravity sections of any structure, including those comprised of masonry and/or concrete, until the structure has been in place for at least 7 days or until mortar and/or concrete cubes/cylinders cured with the structure establish that design strength has been reached. For structures other than gravity structures that require reinforcing steel designed to resist applied dead and live loads, no backfill shall be placed against the structure until the concrete has been in place for at least 14 days or until concrete cylinders cured with the structure establish that the design strength has been reached. Backfilling around pipes, catch basins and manholes, the joints of which are made with Portland cement mortar, shall not be done until the mortar has been in place at least 12 hours unless methods approved by the Resident are used to protect the mortar from being disturbed.
 2. Unless otherwise specific in the Contract Documents, backfill material shall be uniformly distributed in layers of not more than 8 inches in depth, loose measure, and each layer thoroughly compacted by use of approved compactors before successive layers are placed. When backfill is being placed around a pipe or structure, operations shall be so conducted that the fill is always at approximately the same elevation on both sides. Water shall be added when necessary to increase the moisture content of the backfill material to obtain compaction. Puddling or jetting of backfill will not be allowed unless specifically provided in the contract.
 3. Unless otherwise indicated on the plans or directed, all sheeting and bracing used during structural excavation shall be removed by the Contractor following the completion of the work, and all voids resulting from use of the sheeting and bracing backfilled where necessary.
 4. Percentage of Maximum Density Requirements: Compact backfill to not less than 95% of maximum dry density (ASTM D1557) determined in accordance Specification Section 01 40 00 - Quality Requirements.
- C. **Special Requirements:** Special bedding and backfill requirements shown elsewhere in the Contract Documents or as specified by the structure manufacturer or supplier shall supersede the requirements of this section.

3.6 ROCK RAMP SURFACE CONSTRUCTION

- A. **General:** Boulders and Low-permeability gravel infill for the Rock Ramp surface construction is to be placed on a prepared subgrade surface to form a well-graded, low-permeability mass. The finished surface of the mass is to be irregular with random and variable projections of rock up to twelve (12) inches from the low-permeability gravel surface.
- B. **Grade Control:** During construction, maintain lines and grades including prepared subgrade surfaces and general finished grade slopes. Subgrade shall be established approximately two

- (2) feet below the proposed finished grade of rock ramp area, as shown on the plans.
- C. Initial Boulder Placement: An initial lift of boulders shall be placed of the entire subgrade surface.
1. The initial lift shall be placed and compacted (tamped) to a lift thickness of approximately two and a half (2.5) feet in thickness. It is anticipated that some of the larger stone (pieces larger than 2.5 feet in diameter) will project higher at random locations throughout the surface of the initial lift.
 2. Do not place the material by methods that cause segregation or damage to the prepared surface. Place or rearrange individual rocks by mechanical methods to obtain a random and well graded mass of rock.
- D. Low-Permeability Gravel Infill: Fill all voids within the initial boulder placement with low-permeability gravel infill via the following method:
1. Spread a loose and thin layer of filler gravel over the surface of the initial lift placement.
 2. Use water pressure, metal tamping rods, and/or other similar hand operated equipment to force material into all surface and subsurface voids between the individual boulders.
 3. Repeat steps 1 and 2 (above) until a dense fill of gravel has been placed to the lines and grades shown on the plan.
 4. Do not place the material by methods that cause segregation or damage to the prepared surface. Place or rearrange individual rocks by mechanical methods to obtain a random and well graded mass of rock.
- E. Achieving Low-Permeability: The desired low-permeability gravel infill shall be verified by spreading water over the finished surface. Obvious and lasting puddles shall be evident. If it becomes apparent during gravel fill and compaction operations (Part 3.6.F) that obvious and lasting puddling is not being achieved over the compacted surface, additional silty material (that which passes the #200 sieve) shall be blended with the filler gravel as directed by the Engineer.

END OF SECTION

31 37 00 - RIPRAP

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This work shall consist of excavating for and constructing a protective covering of stone on slopes and in ditches.

PART 2 - MATERIALS

2.1 GENERAL:

- A. Refer to Specification Section 31 05 00 - Common Work Results for Earthwork

PART 3 - EXECUTION

3.1 GENERAL

- A. Suitable material removed when excavating for the placing of riprap, stone fill, stone blanket or stone ditch protection shall be used in the formation of embankments, subgrade and for backfilling as shown on the plans or as directed.

3.2 BACKING

- A. Riprap and Heavy Riprap shall include a backing material for transition at the interface between the subgrade material to the riprap material. The backing shall consist of either a layer of geotextile fabric or a lift of gravel backing as specified on Contract Documents.
- B. Backing shall be placed on a prepared subgrade that is free of brush, trees, stumps, and other objectionable material and be dressed as a smooth surface. Filled areas shall have already achieved appropriate compaction prior to placement of backing.
- C. Geotextile fabric backing
 1. The geotextile backing shall be a woven geotextile fabric, unless otherwise specified.
 2. The geotextile fabric shall be placed with the long dimension parallel to the centerline of the ditch channel or vertically along the slope (not parallel to the contour of the slope).
 3. Geotextile backing shall be placed with seams that overlap a minimum of 24" with the adjacent fabric and may be secured to the slope with stakes or pins as needed.
 4. The geotextile shall be turned down and buried a minimum of 24 inches at all exterior limits.
 5. Riprap and Heavy Riprap shall not be dropped from excessive heights onto the fabric. Geotextile fabrics that are torn, ripped, or otherwise damaged by the placement of stone is unacceptable and shall be replaced by the Contractor at no additional cost to the Owner.
- D. Gravel backing
 1. Gravel backing shall be constructed from Base Gravel material.
 2. Gravel backing shall be placed and compacted (to 95% dry density) on the prepared slope in a lift of at least 6 inches thick, unless otherwise specified. The surface of the gravel backing shall be reasonably even and free from mounds or windrows.

3.2 SLOPES

- A. Riprap: Stones for riprap shall be placed upon a backing (as identified in Paragraph 3.2) as called for on the Contract Documents. When required, the bottom of the riprap shall be placed in a trench at the toe of the slope. Plain riprap shall be placed full depth in one operation without special handwork and shall be placed approximately true to the required

slope line and grade and be uniform in appearance. Larger stones shall be laid at the base of the slope. The stones shall be laid in close contact with the longer axis perpendicular to the plane of the slope to stagger joints. Except when required to be grouted the openings between the stones in all riprap shall be filled with spall, or rocks securely rammed into place. Riprap shall be placed on the slope in a well-knit, compact and uniform layer. The surface stones shall be chinked with smaller stone from the same source.

- B. Heavy Riprap: Stones for heavy riprap shall be placed to the full depth in one operation without special handwork or machine work upon a properly graded and compacted slope. Above the low water elevation, stones shall be placed to form an approximate uniform surface, free from humps or depressions, with no excessively large stones projecting from the general surface. Loose stones or excessively large stones tending to extend above the average general surface shall be embedded, reoriented, or discarded. The openings between stones on the face of heavy riprap shall be filled with spall or small rocks, securely rammed into place.

3.3 DITCHES

- A. The ditch shall be excavated below the flow line to allow placement of the rock material to the specified depth. The stone ditch protection shall be placed, full depth, in one operation without special handwork, shall be approximately true to line and grade and shall be uniform in appearance.

END OF SECTION

31 52 00 - COFFERDAMS

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This work shall consist of the complete design, construction, maintenance and removal of cofferdams and other related work, including dewatering and inspection, required to allow for the excavation of foundation units, to permit and protect the construction of bridge or other structural units and to protect adjacent Roadways, embankments or other structural units, in accordance with the Contract.

1.2 SUBMITTALS:

- A. Working Drawings: The Contractor shall submit Working Drawings, showing the materials to be used and the proposed method of construction of cofferdams to the Engineer. Construction shall not start on cofferdams until such Working Drawings have been submitted and reviewed in accordance with Specification Section 01 33 00. Any review of or comment on, or any lack of review of or comment on, these Working Drawings by the Engineer shall not result in any liability upon the Engineer and it shall not relieve the Contractor of the responsibility for the satisfactory functioning of the cofferdam.
 1. Cofferdams that will retain a static water level greater than four (4) feet shall require working drawings that are stamped by a professional engineer in the State where the project is located.
 2. Working Drawings shall include sufficient detail related to equipment and operational plans for dewatering within the work area protected by the cofferdam.

1.3 DESIGN

- A. The Cofferdam and associated dewatering system shall be of sufficient size and capacity necessary to facilitate construction. Operate dewatering system continuously until associated construction work has been completed.
- B. Control of surface and subsurface water is part of dewatering system requirements. Maintain adequate control so that:
 1. The stability of excavated and constructed slopes are not adversely affected by saturated soil, including water entering prepared subbase and subgrades where underlying materials are not free draining or are subject to swelling or freeze- thaw action.
 2. Erosion and sedimentation is controlled.
 3. Flooding of excavations or damage to structures does not occur.
 4. Surface water drains away from excavations.
 5. Excavations are protected from becoming wet from surface water, or insure excavations are dry before additional work is undertaken
 6. Prevent loss of fines, seepage, boils, quick conditions or softening of foundation strata.

PART 2 - MATERIALS

2.1 GENERAL

- A. The term cofferdam designates any temporary or removable structure which is constructed to hold the surrounding water out of the excavation, whether such structure is formed of aggregates, timber, steel, concrete, plastic, or a combination of these. It may also include sand bags, water filled bladders, timber cribs, sheet piling and the like, as well as all necessary bracing. It shall also be understood to include the use of applicable pumping systems or

- dewatering systems as outlined in Paragraph 1.3.
- B. The type and clearance of the cofferdam will be subject to the approval of the Engineer. The Contractor is responsible for the successful completion of the work and to provide a coffer dam system as needed that shall have interior dimensions such as to provide sufficient clearance for the construction and removal of any required materials and the inspection of their exteriors and to permit pumping outside of the area of work.
 - C. The design, implementation, operation, and maintenance of the cofferdam system shall be in accordance with all applicable OSHA specifications.

PART 3 - EXECUTION

3.1 GENERAL:

- A. Keep work areas dewatered until the structures, and appurtenances to be built there have been completed to such an extent that they will not be damaged by water.
- B. Maintain standby backup equipment and power supply throughout the duration of the dewatering operation.
- C. Prevent soil particles from entering the discharge points.

3.2 DISPOSAL OF WATER:

- A. Dispose of water pumped or drained from the construction site in a suitable manner to avoid siltation of adjacent drainage structures and piping, wetlands or water bodies, injury to public health, damage to public and private property, and damage to the work completed or in progress.
- B. Provide suitable temporary channels for water that may flow along or across the construction site.
- C. Provide treatment as necessary to prevent discharge of contaminated ground water caused by Contractor's operations, or any contaminated ground water that may pass through the excavation support system selected by the Contractor.
- D. Contractor must obtain all necessary regulatory approvals for the disposal of dewatering flows. These may include, among others, approval by the USEPA under the National Pollutant Discharge Elimination System (NPDES) program for construction activities.

3.3 EXCAVATION SUMP PUMPING:

- A. When necessary and where appropriate, the work area may be over excavated 6 to 12 inches and filled with screened stone to allow sump pumping of groundwater.
- B. The system shall be installed with suitable screens and filters so that pumping of fines does not occur.

3.4 WELL AND WELL POINT SYSTEM:

- A. If necessary, dewater the excavations and trenches with an efficient well or wellpoint system to drain the soil and prevent saturated soil from flowing into the excavated wells and area.
- B. Wellpoint and well system shall be of the type designed for dewatering work and shall be installed with suitable screens and filters so that pumping of fines does not occur.
- C. Pumping units shall be capable of maintaining sufficient suction to handle large volumes of air and water at the same time.

3.5 **CORRECTIVE ACTION:**

- A. If dewatering requirements are not satisfied due to inadequacy or failure of the dewatering system (loosening of the foundation strata, or instability of slopes, or damage to foundations or structures), perform work necessary for reinstatement of foundation soil and damaged structure resulting from such inadequacy or failure by Contractor, at no additional cost to Owner.

END OF SECTION

DIVISION 32
EXTERIOR IMPROVEMENTS

32 90 00 - PLANTING

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This work shall consist of furnishing and placing loam or dirty borrow for seeding or sodding, in reasonably close conformity with the thicknesses called for on the plans or as authorized.
- B. This work shall consist of furnishing and applying seed, and other materials to areas shown on the plans or as authorized by the Engineer.

1.2 SUBMITTALS

- A. Submit test results (including gradation analysis) and source location for loam material to be used at least 10 working days prior to its use on the site.
- B. Submit seed mixtures and certificates
- C. Submit information demonstrating compliance with material specifications for all products utilized on the Project.

PART 2 - MATERIALS

2.1 GENERAL:

- A. Loam: Loam shall be screened, loose, friable, and shall be free from admixture of subsoil, refuse, large stones, clods, roots, or other undesirable foreign matter. It shall be reasonably free of weeds, roots, or rhizomes.
 1. The mineral content of the Loam shall meet the following requirements:

<u>Sieve Designation</u>	<u>Percent Passing (by Weight)</u>
No. 10	100
No. 40	95-100
No. 200	25-60

2. The Loam shall also have an organic content between 5% and 10% Humus, as well as have a pH between 5.5 and 7.5.

- B. Seed:

1. All seed shall be certified as to mixture, germination, purity, and live seed. All seed shall be from the current year's crop. Each variety shall conform to the following:

<u>Property</u>	<u>Specification</u>
Germination	Greater than 80%
Pure Live Seed	Greater than 85%
Purity	Greater than 85%
Weed Seed	Less than 1%

2. Seed Mixtures shall consist of a blend of seeds native to the State of Maine. The seed mixture shall be the Conservation/Wildlife Mix as supplied by New England Wetland Plants located in Hadley, MA or an approved similar mix. Species to be included in an approved similar mix are as follows:

- Seed Type
- Virginia Wild Rye
- Little Bluestem
- Big Bluestem
- Red Fescue
- Indian Grass
- Switch Grass
- Partridge Pea
- Showy Tick Trefoil
- Butterfly Milkweed
- Beggar Ticks
- Purple Joe Pye Weed
- Black Eyed Susan
- Heath (or Hairy) Aster
- Early Goldenrod

- C. Fertilizer: Fertilizer shall be commercial fertilizer having available elements in conformity with the standards of the Association of Official Agricultural Chemist. The fertilizer shall be furnished in unopened bags with the weight, contents, and guaranteed analysis shown there on or on a securely attached tag.
1. Grass seed fertilizer shall conform to the following:

<u>Property</u>	<u>Specification</u>	<u>Breakdown of Property</u>
Nitrogen (N)	23 %	At least 50% from slow release sources
Phosphorous (P)	0 %	No Phosphorus
Pottasium (K)	12 %	40% from potassium magnesium sulphate
Iron (Fe)	1 %	From iron sulphate

- D. Humic Acid: Humic Acid Soil Conditioner shall come from naturally occurring dry granular unaltered oxidized lignite, also called Humate, or equivalent product approved by the department's landscape architect, crushed to a particle size which passes a US standard 7 mesh screen [1/8 inch]. Humate or equivalent product shall have a Humic Acid equivalent content of 70% (by weight)
- E. Humus: Shall be an organic substance that may be a natural peat from sedge, sphagnum or reed origin, or compost from source separated materials that may include leaf and yard trimmings, food scrapes, food processing residues, manure and other agricultural residuals, or biosolids. Humus shall contain no visible admixture of refuse or other physical contaminates or any material toxic to plant growth. Humus shall meet the following:

<u>Property</u>	<u>Specification</u>
pH	4.5 to 8.0
1 inch sieve	100% passing
Soluble Salts Content	Less than 4.0 mmhos/cm
Organic Matter	35 percent, minimum
Dewar Self Heating	Greater than 5 stability

- F. Agricultural Ground Limestone: Agricultural ground limestone may be shipped in containers or in bulk. Packaged material shall be delivered in the manufacturer's standard containers. The containers shall be new and so constructed to assure safe arrival at the site.

The net weight of the contents shall not exceed 100 pounds per container. The manufacturer's name, a guarantee analysis, and the net weight shall appear on each container. Bulk shipments shall be accompanied by certificates stating manufacturer's name, weight, and guarantee analysis. Agricultural ground limestone shall have the following mechanical analysis:

<u>Sieve Designation</u>	<u>Percentage Passing by Weight</u>
No. 10	100
No. 20	90-100
No. 100	50-100
Total Carbonates	Greater than 80

G. Liquid Lime: Liquid lime may be substituted for agricultural ground limestone when seeding hydraulically. Liquid lime shall be delivered in the manufacturer's unopened containers. The manufacturer's name, a guaranteed analysis, and the quantity shall appear on each container. Liquid lime shall be water soluble and contain the following analysis:

<u>Property</u>	<u>Specification</u>
Elemental Calcium (Ca)	19 percent
Nitrogen (N)	15.5 percent of which 1% is from ammoniac nitrogen and 14.5/5 is from Nitrate Nitrogen

H. Mulch:

1. Hay mulch shall consist of long fibered hay, reasonably free from weeds and other undesirable material. No material shall be used which is so wet, decayed or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings, or other short fibered material shall be used unless directed.
2. Straw mulch shall consist of long fibered straw derived from oats, wheat, rye or other cultivated grains, reasonable free from weeds and other undesirable material. No material shall be used which is so wet, decayed or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings, or other short fibered material shall be used unless directed.
3. Cellulose fiber mulch shall consist of elongated wood fibers from virgin or recycled sources and post-consumer newsprint. The woods fibers shall be tested to show no lead, asbestos or other heavy metals exceeding EPA toxic levels. Cellulose fiber mulch shall be free of refuse, physical contaminants, and material toxic to plant growth. Cellulose fiber shall not contain more than 30 percent post-consumer newsprint.

PART 3 - EXECUTION

3.1 LOAM

- A. Preparing Areas: All slopes and other areas where loam is to be placed shall be shaped to the required grade. Before placing the loam on hard or compacted soils, the areas under preparation shall be scarified and loosened to a depth of at least 2 inches.
- B. Placement of Loam: Loam shall be spread uniformly on prepared areas to the depth of six (6) inches or as shown on the Contract Documents. Any remaining clods, roots, stones over 2 inches in its greatest diameter and all other foreign matter, shall be removed. All loam shall be brought to a true, even surface, meeting the required grade. The Contractor shall compact the loam with a 100 pound roller or other approved means. Loam thickness shall meet the specified depth after compaction.

3.2 SEED

- A. Rates of Application: Application rates are set forth below. One unit is defined as 1000 square feet.
 - 1. The Contractor shall apply agricultural ground limestone at the rate of 33 pounds per unit. For hydroseeding, liquid lime shall be applied at the rate of 1 pound (dry weight) per unit, hydraulic method. These rates shall apply to all Seeding Methods.
 - 2. Humic acid soil conditioner shall be applied at the rate of 2 pounds per unit, hydraulic method.
 - 3. The seed mixture sowing rate for shall be 0.4 pounds per unit.
- B. Time of Initial Seeding The Contractor shall not seed during January, February, or March, or when the ground is frozen or snow covered, or at other times as the Engineer may direct.
- C. Applying Fertilizer and Agricultural Ground Limestone - Conventional Method: The Contractor shall apply fertilizer and agricultural ground limestone when the soil is moist and before sowing the seed. The Contractor shall apply these materials to the soil by an approved method capable of maintaining a measured rate of application, thoroughly incorporating materials into the soil to a depth of not less than 1 inch. The Contractor shall not apply these materials simultaneously unless using an approved hydraulic method.
- D. Sowing Seed - Conventional Method: The Contractor shall sow seeding materials uniformly at the required rate and mulch seeded areas the same day as sown. The Contractor shall roll lawn areas with a light lawn roller after seeding but before mulch is applied.
- E. Sowing Seed and Applying Fertilizer and Agricultural Ground Limestone - Hydraulic Method: The Contractor may use the hydraulic spray method of sowing seed where approved. The Contractor shall use a commercial machine designed for the hydraulic application of seed, fertilizer, humic acid soil conditioners, liquid lime or limestone and mulch in slurry. The Contractor shall mix seed and added materials with sufficient water in the tank of the machine and keep the slurry thoroughly agitated, so the materials are uniformly mixed and suspended in the water at all times during operation. The Contractor shall uniformly distribute the seed slurry on the designated areas at the required rate.

3.3 MULCH

- A. After seeding, the Contractor shall place hay mulch straw mulch unless cellulose fiber mulch is applied with the seed by the hydraulic method or Erosion Control Blankets are specified.
- B. Mulch Application
 - 1. Hay or straw mulch
 - a. shall be spread evenly and uniformly over the designated areas. Unless otherwise directed, mulch shall be applied at the rate of 70 to 90 lbs per unit.

Too heavy an application of mulch shall be avoided. Lumps and thick mulch material shall be thinned.

- b. Unless otherwise authorized, hay or straw mulch shall be anchored in place by uniformly applying an acceptable mulch binder. Mulch binder shall be applied as soon as the mulch is placed. Application of a concentrated stream of mulch binder will not be allowed. Mulch binder will be paper fiber mulch applied at 5 lbs per Unit or approved equal. Water spray may be used as a temporary binder.
2. Cellulose Fiber Mulch
 - a. shall be applied as a waterborne slurry. The cellulose fiber and water shall be thoroughly mixed and sprayed on the area to be covered so as to form a uniform mat of mulch at the rate of not less than 40 pounds of mulch material per 1000 square foot unit of area.
 - b. Cellulose fiber mulch may be mixed with the proper quantities of seed, fertilizer, and agricultural limestone as required under Paragraph 3.2 and 3.4 or may be applied separately the same day as seeding.
- C. Maintenance of Mulch
 1. The Contractor shall maintain the hay, straw, or fiber mulch by repairing all damaged mulch and by correcting all shifting of the mulch due to wind, water, or other causes, until an acceptable growth of grass has been achieved.
 2. If cellulose fiber mulch is used, any reseeding will require additional cellulose fiber mulch.
 3. If water spray is used as a temporary binder, it shall be maintained in a manner acceptable to the Engineer.

3.4 CONSTRUCTION METHODS

A. All seeding methods

1. The Contractor may place seed and limestone directly over existing ground without site preparation.
2. The Contractor shall apply agricultural ground limestone to the areas as specified in Paragraph 3.2.
3. The Contractor shall sow seed as specified in Paragraph 3.2.
4. The Contractor shall apply mulch as specified in Paragraph 3.2.
5. The Contractor shall not apply mulch if seeding riprap or erosion control mix.

3.5 MAINTENANCE AND ACCEPTANCE

- A. The Engineer will accept areas upon attainment of a reasonably thick uniform stand of permanent grass species with at least 90 percent coverage, free from sizable thin or bare spots. The Contractor shall perform final reseeding as follows: Upon completion of all other work on the project, seeded areas that have not been accepted shall, within 60 calendar days, meet the 90 percent coverage requirement or be reseeded a final time. Final reseeding shall be done at the end of the 60-day period or at any time within the 60 days, as directed by the Engineer. The Contractor will not be allowed to perform final reseeding between September 15th and April 15th, and the Department will not count this time as part of the 60-day period. All reseeding shall comply with Paragraph 3.2.
- B. The Contractor shall maintain and protect all seeded areas until acceptance.

END OF SECTION

APPENDIX A

SUBSURFACE EXPLORATIONS

Northern Test Boring, Inc. Boring Log

Client: Acadia Civil Works	Project Name: Fishway
Location: Meddybemps, Maine	Driller: Mike Nadeau

	Casing	Sample	Ground Water Observation	
Type	HSA	SS		
Size	2 1/4"	1 3/8"	Start Date: 12/3/24	Finish Date: 12/3/24
Hammer Wt.		140		
Hammer Fall		30"		

No	Pe	Re	Sampl Depth	Sample Blow Counts				Depth	Stratum Description
S-1	24		4-6	3	3	3	4		Grey/Brown Fine Sandy Silt (Native Soil)
								5'	Grey Silty Sand
S-2	24		6-8	6	8	29	21		
S-3	24		8-10	2	10	50/5			Grey Silty Sand and Gravel (Glacial Till)
S-4	24		10-12	12	17	17	10	10'	
S-5	24		12-14	4	22	50/5			Auger Refusal @ 13.4' Possible Boulder/Probable Bedrock
								15'	
								20'	

Boring #: B-1
Sheet: 1 of 1

Northern Test Boring, Inc. Boring Log

Client: Acadia Civil Works	Project Name: Fishway
Location: Meddybemps, Maine	Driller: Mike Nadeau

	Casing	Sample	Ground Water Observation	
Type	HSA	SS		
Size	2 1/4"	1 3/8"	Start Date:	Finish Date:
Hammer Wt.		140	12/3/24	12/3/24
Hammer Fall		30"		

No	Pe	Re	Sampl Depth	Sample Blow Counts				Depth	Stratum Description
									Grey/Brown Silty Fine Sand and Gravel (Native Soil)
S-1	24		4-6	1	3	5	12		
								5'	Grey Silty Sand and Gravel (Glacial Till)
S-2	24		6-8	11	34	50	50/2		
									Auger Refusal @ 8.7' Possible Boulder/Probable Bedrock
								10'	
								15'	
								20'	

Boring #: B-2
Sheet: 1 of 1

APPENDIX B

SOIL MANAGEMENT PLAN



nobis

SOIL MANAGEMENT PLAN

**Eastern Surplus Superfund Site
887 Main Street, Route 191
Meddybemps, Maine**

Prepared For:

**Acadia Civil Works
PO Box 212
Leeds, ME 04263**

**BY
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**Nobis Project No. 101099.000
January 30, 2026**



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EASTERN SURPLUS SUPERFUND SITE
887 MAIN STREET, ROUTE 191
MEDDYBEMPS, MAINE**

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1.0 INTRODUCTION

Nobis Engineering, Inc. d/b/a Nobis Group® (Nobis) is providing environmental consulting services to Acadia Civil Works in support of Fish Passage Improvements (dam renovations) for the portion of the Denny's River (the "Site") located adjacent to the Eastern Surplus Company Superfund Site (the "Superfund Site" at 887 Main Street in Meddybemps, Maine. This Soil Management Plan (SMP) was prepared to support soil excavation and management, construction activities, exposure mitigation, and anticipated soil characterization and confirmation sampling required for dam construction activities. For the purposes of this SMP, the areas of focus are identified as the site soils on the west bank of the Denny's River that are located within the Eastern Surplus Superfund Site. Soil sampling in the 1990s identified Resource Conservation and Recovery Act (RCRA-8) metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) in site soils and sediments at levels exceeding the US EPA maximum contaminant levels (MCLs) at the time. Soil excavations and backfill were completed in 1999 to remove contaminated soils. Based on the available documentation, it appears that soils in all areas of the superfund site were evaluated, and that all soils with contaminant levels above the applicable standards were removed. The documentation indicated that sediments in the Denny's River and mill pond, however, were left in place and may contain Polycyclic Aromatic Hydrocarbons (PAHs), PCBs, and metals, however, sediment samples generally reported only low levels of these contaminants. This SMP is also focused on the areas which reported positive detections of Per- and Polyfluoroalkyl Substances (PFAS) in superfund site soils during a 2025 overburden soil investigation. This document is subject to the limitations included in Appendix A.

This SMP outlines methods and procedures for soil management during construction activities and future use and management of the Site. Contractors performing intrusive subsurface activities will be required to comply with this SMP. If at any time during the course of construction unanticipated materials or subsurface conditions are encountered, the contractors are to stop work and contact Nobis for direction.

Detailed provisions for the removal, transport, and disposal of contaminated soil will be presented in the contractor's scope of work (SOW). Wherever the project SOW and this SMP disagree, the more stringent requirement will prevail.

2.0 BACKGROUND AND REDEVELOPMENT PLAN

2.1 Site Background

The Site consists of an approximately 700-foot portion of the Dennys River and the adjoining properties located at 887 Main St (Eastern Surplus Company Superfund Site) on the west bank and Lombard Lane on the east bank. Proposed work on the site for the fish passage improvements includes the removal of the current dam infrastructure, widening of the river, dredging and re-grading the mill pond, and construction of a series of step pools. The approximate location of the site is illustrated on **Figure 1** Site Locus.

The Eastern Surplus Superfund Site is located on the west bank of the Dennys River. From 1946 to the early 1980s, the Superfund Site property (north of Route 191) was the location of the Eastern Surplus Company, a retailer of army surplus and salvage items. The property was inspected by the Maine Department of Environmental Protection (MEDEP) in 1984. During the inspection, MEDEP noted chemical odors, leaking electrical transformers, hundreds of deteriorating drums and containers, compressed gas cylinders, 16,000 pounds of calcium carbide, and numerous areas of stained soil. In 1985, MEDEP initiated emergency cleanup and removal measures and erected a fence to secure the property. EPA took responsibility of the removal actions in 1986.

Superfund Site contamination threatened the adjacent Meddybemps Lake and Dennys River, both of which maintained active fisheries and spawning areas, and a National Wildlife Refuge. The Superfund Site is identified as a significant archaeological site and is listed on the National Register of Historic Places because of the presence of Native American artifacts dating back approximately 9,000 years.

EPA placed the Superfund Site on the National Priorities List on June 17, 1996, and began a remedial investigation and feasibility study (RI/FS) the same year. In September and October 1996, the Roy F. Weston, Inc. (Weston) Superfund Technical Assessment and Response Team (START) conducted soil, surface water, and sediment sampling at the superfund site. Follow-up sampling events by Weston in June and October 1997 investigated the soil “hot spot”, “source area” and “former debris area”. Soil sample results were summarized in the *Comprehensive Soil Sampling and Field Analyses Summary Report*, Weston, 1998. Sediment sampling is discussed below.

Soil sample locations for the October 1996 event were laid out along an approximately 25 x 25 ft grid which extended across nearly the entire superfund site property north of route 191. Sample locations for the source area follow-up sampling were located in the northeast portion of the



superfund site near MW-3B and in the southeast area of the superfund site near the mill building. Sample locations for the hot-spot follow-up sampling were located in the northeast area of the superfund site. Samples collected during the former debris area sampling were collected on the southwest side of the site and in three other areas, including the shoreline near the fish dam. Samples were not collected beneath the mill building in the southeast area of the superfund site.

Soil samples for the 1996 and 1997 events were field-screened for VOCs, PCBs, and Metals. A subset of samples were submitted for laboratory analysis of VOCs, Semi-Volatile Organic Compounds (SVOCs), pesticides/PCBs, target analyte list (TAL) metals, and cyanide. Field Screening and laboratory results reported PCBs, metals, and VOCs, including methylene chloride, acetone, chloroform, 2-butanone, toluene, ethylbenzene, tetrachloroethylene (PCE) and trichloroethylene (TCE), at levels above applicable standards in several sample locations across the site, primarily in the southeast area near the mill building and in the northeast area near the “hotspot”.

Generally, the soil samples collected closest to the lake and the Dennys River in the northeast portion of the superfund site reported no VOCs, metals, or PCBs in the field screening results. A few locations closer to the “hotspot” reported low levels of VOCs in the field screening results. The four sediment samples collected on the west shoreline near the fish dam all reported at least one positive VOC detection, with the highest concentration reported for acetone, at 230 µg/kg. One sediment location reported 3 pesticides and one sediment location reported one SVOC.

Sediment and surface water sampling was conducted by Weston alongside soil sampling in September and October 1996 and October 1997 and summarized in the *Remedial Investigation Surface Water and Sediment Sampling Summary Report*, Weston, 1998. In October 1996, sediment samples were collected from the Meddybemps Lake, the mill pond immediately south of the lake outlet and adjacent to the superfund site, the Dennys River, the Dead Stream, and a tributary of the Dennys river. Sediment samples were analyzed for SVOCs, pesticides, PCBs, TAL metals, and cyanide, grain size, total organic carbon (TOC), and a subset were analyzed for dioxin. In October 1997, sediment samples were collected from the Meddybemps Lake, Dennys River, Stoney Brook, and a tributary south of Rte. 191. Sediment samples were analyzed for VOCs, SVOCs, pesticides, PCBs, TAL metals, TOC, and grain size.

Sediment sampling results from the 1996 event reported 19 SVOCs detected in 16 of the 43 locations sampled, PCBs in 38 of the 43 locations, and dioxin/furan isomers in 22 of the 23 locations analyzed. Sediment sampling results from the 1997 event reported 4 VOCs, and 11 SVOCs in one or more sample locations. Pesticides were reported in 3 locations, and PCBs were reported at five locations. Metals detected above the Federal Benchmark Levels at one or more



locations in the sediment samples from 1996 and/or 1997 included arsenic, nickel, mercury, copper, and lead.

Sediment samples collected from the Meddybemps Lake reported arsenic (several locations) and nickel (two locations) above Federal Benchmark Levels. PCBs were reported in 3 samples, VOCs were reported in 2 samples, and SVOCs were reported in 1 sample from the lake. The samples which reported SVOCs, VOCs, and two which reported PCBs were located in the lake at the mouth of the Dennys River, adjacent to the superfund site. Arsenic, nickel, mercury, and lead were all reported at one or more locations above Federal Benchmark levels in sediment samples collected from the mill pond. The SVOC 4-methylphenol was reported in three sediment samples collected from the mill pond. Arsenic, copper, nickel, and lead were reported at one or more locations above Federal Benchmark levels in sediment samples collected from the upper Dennys River. PAHs and PCBs were reported in several locations in samples collected from the upper Dennys River. VOCs were reported in two locations, and SVOCs were reported in one location in the upper Dennys River. Arsenic, copper, nickel, and mercury were reported at one or more locations above Federal Benchmark levels in sediment samples collected from the lower Dennys River and Dead Stream. PAHs and one SVOC were detected in one location each in the lower Dennys River.

In November and December 1997, Brown & Root Environmental (B&RE) performed field investigations in support of an onsite soil vapor extraction testing system and to acquire additional information that complemented the investigation performed by Weston. Data is presented in the *Data Summary Memorandum-Remedial Investigation and Feasibility Study* by Brown & Root Environmental, 1998. Soil samples were collected in the northeast area of the site and in the southeast area of the site near the mill building. Soil samples were submitted for laboratory analysis of VOCs, pesticides, PCBs, metals, grain size analysis, and TOC. Analytical results reported VOCs including acetone, 2-butanone, methylene chloride, PCE, toluene, ethylbenzene, styrene, and Xylenes in superfund site soils. The SVOC bis(2-ethylexyl) phthalate, pesticides, and PCBs were also reported for several of the soil samples. Several TAL metals were reported for all soil samples submitted, with positive detections of all RCRA-8 metals except mercury in several soil sample locations.

In June of 1999, Tetra Tech NUS, Inc. (Tetra Tech) performed field investigations in support of the NTCRA in June and July of 1999. Samples were collected for groundwater, surface water, and sediment and analytical results are summarized in the *June 1999 Sampling-Data Summary Report*, Tetra Tech NUS, Inc, 1999. Sediment samples were collected from the Meddybemps Lake adjacent to the site, mill pond and the upper Dennys River. Samples were submitted for laboratory analysis of SVOCs, pesticides, PCBs, and metals.

The SVOC bis(2-ethylexyl) phthalate and PAHs were reported in sediment samples collected from the mill pond and the upper Dennys River. PCBs were reported in sediment samples collected from the lake at low levels and from the mill pond at high concentrations. PCBs were also detected at levels above the lowest effects level (LEL) screening values in the upper Dennys River. Arsenic, chromium, copper, iron, manganese, and nickel were detected at concentrations exceeding the LEL screening values. Arsenic, copper, and iron, as well as most of the chromium detections were reported at concentrations consistent with background sediment samples. Manganese concentrations at most locations were consistent with background sediment samples, and nickel concentrations in most sediment samples were slightly higher than the background concentrations.

Between July and November 1999, all soils with contamination levels above cleanup levels were excavated and removed from the superfund site (*Record of Decision*, US EPA, 2000). Soil cleanup levels for contaminants of concern were PCBs – 2 mg/kg, cadmium – 27 mg/kg, chromium – 450 mg/kg, lead – 350 mg/kg, tetrachloroethene – 0.06 mg/kg, trichloroethene – 0.06 mg/kg, and methylene chloride 0.02 mg/kg (*Superfund Site Preliminary Close Out Report, Non-Time Critical Removal Action and Final Site Action*, US EPA, 2001). Soil excavations occurred in 3 main areas of the superfund site (the southern area, the central PCB area, and the northern VOC area) as well as small hotspot locations. During the excavation activities, samples were collected over a 25-ft grid that covered the areas designated for soil excavation. Soil samples were collected from the floor and sidewalls of the excavation and were analyzed onsite to determine if they met cleanup levels. If contaminant levels exceeded cleanup levels, the excavation was extended and the confirmation sample process repeated until cleanup levels were achieved.

Excavations in the southern area involved work along the Dennys River. River flow was controlled by temporarily lowering the floodgate at the mouth of the river and by installing jersey barriers and sandbags at the edge of the river.

Excavations in the central PCB area involved the removal of soils to one foot bgs across the entire area. Confirmatory samples were then collected and analyzed and the excavation was continued for areas which required further soil removal.

Excavations in the northern VOC area involved the removal of soils to one foot bgs across the entire area. Confirmatory samples were collected and analyzed and the excavation was continued for areas which required further soil removal. Some of the northern VOC area was excavated to 11 ft bgs to the bedrock. Excavations extended northwest to MW-28 and south beyond RW-5. Once the excavation has been completed to the extent that cleanup levels were achieved, the



excavation was backfilled with clean gravel and compacted with an excavator in one foot lifts. Test pits were excavated and sampled outside the perimeter of the excavation area to confirm that soils outside the excavation area did not report contaminants of concern above cleanup levels.

Excavations in the hotspot areas were staked out in 5 by 5 ft areas. Excavations in the hotspots were completed to depths indicated by the RI. After the initial excavation, a confirmatory sample was collected and analyzed. If the results indicated that cleanup levels had not been achieved, the excavation was extended and the confirmation sample process repeated.

Soils generated during the excavation activities were separated and stockpiled according to the contaminant type and concentration based on confirmation sample results. Soils were disposed of at appropriate offsite facilities based on the contaminant levels determined by composite samples collected from each stockpile. Prior to backfilling excavated area, backfill materials were analyzed for primary pollutant metals, VOCs, SVOCs, PCBs, and total petroleum hydrocarbons (TPH).

Soils left in place at the superfund site had either no contamination or low levels of contamination below the soil cleanup levels. Numerous organic compounds and several metals at low levels were reported for superfund site soils outside the excavation areas. Sediments in the mill pond with PCB concentrations above 1 mg/kg were also removed from the superfund site as part of the NTCRA in 1999.

The Record of Decision (EPA, 2000) identified two distinct groundwater plumes on the superfund site. with the primary groundwater contaminant of tetrachloroethylene (PCE). The northern plume is situated in the northern half of the Site north of Route 191. The southern plume was located on the southern portion of the site, primarily south of Rte. 191. The ROD set forth the selected remedy for the Site that included groundwater extraction and treatment of both plumes, land use restrictions, long-term monitoring, archaeological mitigation activities, and review of the Site every five (5) years.

A Public Health Assessment completed by the Agency for Toxic Substances and Disease Registry completed in 2003 (ATSDR, 2003) concluded that current soil conditions on the superfund site “pose no health hazards under current or possible future site uses”. The Health Assessment did note the presence of several contaminants detected in surface water in the Meddybemps Lake and the Dennys River, however, based on the detected concentrations and the assumed present and future uses of the water bodies, the assessment found that “adverse health effects are not expected to results from contact with contaminated surface water during past, current, or future recreational use of the Mill Pond or Dennys River”. The assessment noted that PAHS, PCBs, and



metals were found above their CVs in sediment samples collected in the Meddybemps Lake and Dennys River. The report concluded that “none of these contaminants, however, were detected at levels that might be associated with adverse health effects from recreational exposures”.

Sediment sampling was conducted by Nobis Group at the superfund site in 2008. Twenty sediment samples were collected from the Meddybemps Lake, the north end of the mill pond, the south end of the mill pond, and the upper Dennys River south of Rte. 191. Sediment samples were analyzed for PCB homologues and metals. PCB homologues were reported in all samples collected, however only one sample reported total PCBs above the ROD protective level (PL) of 190 µg/kg. This sample was located in the upper Dennys River, south Rte. 191. Metals were reported for all sediment samples analyzed. Arsenic and nickel were reported for nearly all sediment samples at concentrations exceeding their ROD PLs of 6 µg/kg and 16 µg/kg, respectively. Chromium and manganese were reported at concentrations exceeding their ROD PLs of 26 µg/kg and 460 µg/kg, respectively, at three locations. Copper was reported at concentrations exceeding the ROD PL of 16 µg/kg at six locations. Arsenic concentrations ranged from 4.8 µg/kg to 25.4 µg/kg, chromium concentrations ranged from 14.3 µg/kg to 41 µg/kg, manganese concentrations ranged from 161 µg/kg to 496 µg/kg, copper concentrations ranged from 8.1 µg/kg to 23.4 µg/kg, and nickel ranged from 15.5 µg/kg to 43.2 µg/kg.

The groundwater extraction system for the southern plume was shut down in 2010 as groundwater in the southern plume had met cleanup goals and then decommissioned in 2013-2014. The groundwater extraction system for the northern plume was suspended in 2011 to allow for an enhanced in-situ bioremediation (EISB) pilot study. The EISB pilot study was implemented in 2012 and 2013 in the north plume area. Full scale EISB injection events were performed in 2018, 2019, and 2022, supported by subsequent groundwater sampling rounds.

Twenty-one bedrock boreholes were installed in the north plume area in 2024 in support of EISB treatments at the superfund site. Well rehabilitation, packer testing, groundwater sampling, and EISB injections were performed at the superfund site in 2025. Groundwater analytical results from 2025 indicate that PCE and the breakdown compounds TCE, cis-1,2-DCE, and vinyl chloride are present in bedrock groundwater in the north plume area of the site. Based on the data, the plume hotspot is located approximately 60-70ft bgs in the center of the north plume area. Overburden groundwater in the north plume area has not been analyzed since 2021. However, bedrock groundwater data suggests that groundwater in the shallow bedrock less than 30 ft bgs has relatively low levels of CVOC contamination, however, these levels do intermittently exceed the Project Action Limits (PALs) at the superfund site.



In 2021, at the request of the EPA, per the five-year review, Nobis included six PFAS compounds regulated by Maine DEP in the analytical suite for the north plume groundwater sampling round. Laboratory analytical results indicated that several PFAS compounds were present in groundwater at the superfund site in exceedance of the 2021 Maine Interim Drinking Water Standards (MIDWS) of 20 nanograms per liter (ng/L) for six specific compounds. Superfund site groundwater was sampled for the six PFAS compounds regulated by Maine in June 2023. Results indicated that Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) were present in superfund site groundwater at levels exceeding the 2021 MIDWS, primarily in the infiltration gallery and superfund site wells in the South Plume area.

An overburden soil investigation and overburden well installation in the southeast area was completed in 2025. Soil analytical results from this investigation indicate that PFOA, PFOS, and Perfluorononanoic Acid (PFNA) are present in overburden soils in the southeast area at concentrations exceeding the US EPA Regional Screening Level (RSL) for groundwater and surface water protection. PFOA is present at levels that exceed the RSL for direct contact. Additional PFAS groundwater sampling was completed in July 2025. Results indicated that PFOS, PFOA, PFNA, and Perfluoroheptanoic Acid (PFHpA) were present in superfund site groundwater at levels exceeding the EPA drinking water Maximum Contaminant Limits (MCLs), the 2023 Maine Remedial Action Guidelines (RAGs), and/or the 2021 MIDWS, primarily in the southeast area. The Nobis Well Rehabilitation, Sampling, and Treatment Report, 2025 is pending submission as of January 2026.

The concrete powerhouse structure which spanned the Dennys River at the south end of the mill pond north of Rte. 191 was removed in 2021. Concrete and metals bulk waste were disposed of offsite. Soils and fill materials excavated from the west bank of the river were spread in the southeast area of the superfund site. Some concrete was left in place below the riprap on the west bank of the river, and on riverbank on the east side of the river.

2.1 Fish Passage Improvements

Maine DMR is currently planning fish passage improvements at the Site, which includes the removal of the current dam infrastructure, dredging and re-grading of the mill pond, widening of the Dennys River at the outlet of the mill pond, and construction of a series of step pools.

Construction will involve the disturbance and/or excavations of existing soils on both sides of the Dennys River near the Meddybemps Lake outlet and in the area of the former power station at the south end of the mill pond. Construction will disturb and potentially excavate sediments in the Dennys River and mill pond. Overburden groundwater is likely to be encountered during



construction; it is possible that bedrock groundwater will be encountered during construction activities. A portion of the excavated soils and sediments are proposed for re-use onsite. Material that cannot be reused onsite, will have to be stockpiled and characterized for offsite disposal.

3.0 SOIL CHARACTERIZATION

The contaminants of concern identified based on analytical data include PFAS (soil, groundwater), PAHs, PCBs, and metals (sediment) and PCE, TCE, cis-1,2-DCE, and VC (groundwater).

PFAS were identified in site soils in the southeast area of the site in a 2025 soil investigation. PFOA, PFNA, and PFOS were identified at concentrations exceeding the EPA RSLs for leaching to groundwater, and PFOA was identified at concentrations exceeding the EPA RSL for direct contact. None of the detected PFAs compounds were reported at levels that exceeded the MEDEP Remedial Action Guidelines (RAGs) for groundwater/surface water protection or direct contact (residential). The 2025 soil investigation was not intended to be comprehensive, so the nature and extent of PFAS contamination in site soils has not been fully delineated. Based on the available data, it is anticipated that PFAS, if encountered, are likely to be present at similar concentrations to those observed in the 2025 soil investigation.

Overburden groundwater in the north plume area was last sampled at the site in 2021 (one location) and prior to that, 2014. Overburden groundwater results from 2014 and 2021 reported PCE above the PAL of 3 µg/L in 2 of the 3 locations sampled, however the highest PCE detection in overburden groundwater was 17 µg/L in 2014 and 12 µg/L in 2021. Based on the available data, it is anticipated that overburden groundwater encountered during the construction activities will not contain CVOC contaminants at concentrations in exceedance of the superfund site PALs. Shallow bedrock groundwater encountered immediately downstream of the current dam infrastructure may contain CVOCs at concentrations in exceedance of the superfund site PALs, however, if encountered, CVOC concentrations are expected to be low.

Overburden groundwater in the southeast area of the site was sampled for PFAS in 2021, 2023, and 2025. Groundwater analytical results indicated that PFOS, PFOA, PFNA, and Perfluoroheptanoic Acid (PFHpA) were present in site groundwater at levels exceeding the EPA drinking water Maximum Contaminant Limits (MCLs), the 2023 Maine Remedial Action Guidelines (RAGs), and/or the 2021 MIDWS, primarily in the southeast area. The 2025 overburden groundwater investigation was not intended to be comprehensive, so the nature and extent of PFAS contamination in site overburden groundwater has not been fully delineated. If overburden groundwater is encountered during excavations in the southeast area of the site, PFAS are likely



to be present at similar concentrations to those observed in the 2025 overburden groundwater investigation.

Sediments encountered during construction activities in the Meddybemps Lake, mill pond, and upper Dennys River may contain low levels of PAHs, PCBs, and metals such as arsenic, nickel, manganese, copper, mercury, and chromium. Based on sediment analytical results and the 2003 Public Health Assessment, exposure to contaminants that may be present in sediments is not anticipated to cause adverse health effects.

The current approach for the Site improvements and construction assumes that excess materials will be exported from the Site. Additional soil characterization is required and will be determined by the selected disposal facility. It is anticipated that additional characterization sampling would include a full suite of waste characterization analyses including VOCs, SVOCs, PCBs, pesticides, herbicides, corrosivity, ignitability, reactive sulfide, reactive cyanide, and Resource Conservation and Recovery Act (RCRA) 8 metals. PFAS analysis may also be required for waste characterization.

4.0 SITE SAFETY AND CONTROLS

The Site general construction contractor should prepare a Health & Safety Plan (HASP) meeting the standard requirements of 40 CFR 1910 and include information on standard personal protective equipment (PPE) to be used and conditions that may require PPE level upgrades during construction. PPE considerations should take into account the contaminants present in soil and dust and selection of PPE should adequately protect works from dermal or inhalation exposure. Based upon previous investigations, it is anticipated that the work will be performed in Level D PPE unless otherwise specified in the HASP or unexpected conditions are encountered that require an upgrade in PPE. Level D clothing includes:

- Standard field clothing (work shirt, long pants, of coveralls)
- Steel toe safety shoes
- Safety glasses
- Hardhat when overhead hazards are present
- American National Standards Institute (ANSI) Class II vest on or near roadways during the day and ANSI Class III jacket after sunset.
- Hearing protection for high noise areas such as heavy
- Gloves appropriate to handle the materials.



If unanticipated conditions are encountered beyond the nature and characteristics of the contamination as addressed in this SMP, revisions to the HASP and safety protocols may be necessary to adequately provide for hazard mitigation and worker safety.

5.0 SOIL EXCAVATION AND HANDLING

5.1 Excavation

Soil excavation activities will take place during the course of general construction activities for the fish passage improvements. Soil will be excavated in accordance with the Plans and Specifications provided by Acadia Civil Works. Prior to engaging in excavation or other intrusive activities, work areas will be prepared with installation of silt fence, sediment barriers and settlement areas, and other erosion control measures as defined by Acadia Civil Works and accepted best management practices to prevent off-Site migration of soil.

Excavation activities will allow for observation of subsurface soils and sediments, by an environmental professional to determine if unexpected or unidentified contamination is encountered. Routine inspection of the ongoing construction and visual verification of anticipated soil fill conditions should be conducted by the contractor and other qualified staff to assure the materials at the site are consistent with anticipated materials. Should unexpected conditions be encountered during the course of excavation where contamination is suspected, (odors, staining) excavation will cease and the site work contractor will notify the engineer and environmental professional to conduct inspection of the excavation area and the conditions encountered.

5.2 Soil Material Stockpiling

As stated, construction is anticipated to proceed such that excess soil excavated at the Site will be exported off-Site for disposal, therefore, temporary stockpiling of soil is anticipated as part of construction sequencing. Soil should not be removed from the Site before waste characterization sampling results are known.

Temporary stockpiles will be used during construction. Due to ongoing construction activities and sequencing, the area for stockpiling should be identified away from other Site activities and in locations away from areas where clean imported materials are present to discourage mixing. The following is a summary of the general requirements for stockpiling that are established in this section:



- Soil and sediment stockpiles are to be segregated based on the area of the site they are removed from (northeast area separated from material from the southeast area of the Site). Sediment shall be segregated and stockpiled separately as well. If potential contaminants are suspected from any location, then that material should be segregated and stored away from other excavated materials.
- It is recommended that temporary stockpiles designated for disposal off-Site shall be no greater than 500 cubic yards. Each stockpile must be clearly marked from adjacent stockpiles and segregated based on characteristics.
- Soil stockpiles placed over “clean” construction materials will be placed onto a base of impermeable materials and will be completely covered with impermeable material to minimize the infiltration of precipitation, erosion of the stockpile, and mixing with unimpacted clean materials. Any stockpile covering will be secured and have sufficient strength to resist tearing by the wind. Any failure of materials used in employing base/cover layers will be repaired immediately.
- When it is necessary to temporarily stockpile excavated material, it shall be stockpiled in a secure manner to prevent exposure to human health and the environment. Stockpiles will not be placed near (< 50 feet) an occupied residential property or near sensitive human health receptors such as private water supply wells or sensitive environmental receptors such as wetlands or surface water bodies.
- Movement and/or aeration of stockpiles will be limited to those activities that are necessary to manage and ultimately dispose of the stockpiles.
- Stockpile waste characterization will be determined via laboratory analysis. The ultimate disposition of soil accumulated during the project will be dependent upon the results of waste characterization samples and the selected disposal facility. Characterization and shipping documentation will be handled by an environmental professional.
- Soil testing will likely include the following analyses, to be conducted by an environmental professional. This list should be confirmed with the potential disposal facilities to ensure compliance with their permits.
 - Total 8 RCRA Metals (7060, 7740, etc.)
 - Total Volatiles (8260)
 - Total Semi-Volatiles (8270)



- Total Pesticides (8081)
 - Total Herbicides (8151)
 - Total PCB's (8082)
 - Ignitability/Flash (1010, 1030)
 - Corrosivity/pH (9045)
 - Reactive Sulfide (7.3.4.1)
 - Reactive Cyanide (7.3.4.2)
-
- For the purpose of this SMP, the contractor shall assume that 500 cubic yards (approximately 750 tons) of soil/sediments will be impacted with contamination that requires off-site disposal at a licensed landfill to receive such material. The contractor shall assume that this material will be trucked off-site, by a licensed waste hauler to a Maine licensed disposal facility (such as, but not limited to the Juniper Ridge Landfill in Old Town, Maine). If sediment is impacted, storage, drying and mixing of the material will be required prior to shipping and off-site disposal.
 - For the purpose of this SMP, contractors can assume that all other material is not impacted and can be shipped off-site in accordance with applicable State of Maine Guidelines and the Acadia Civil Works Plans and Specifications.

5.3 Dewatering

Based on historical groundwater levels observed at the site, large volumes of groundwater will likely be encountered during the excavations depending on seasonal rainfall at the time of construction.

Overburden groundwater in the north area of the site is not expected to contain contaminants above regulatory standards, however, it is possible that overburden groundwater, may contain low levels of CVOCs. Overburden groundwater in the south area of the site may contain low levels of contaminants, particularly PFAS, above regulatory standards.

If groundwater is encountered, the excavation will proceed in accordance with the plans and specifications provided by Acadia Civil Works. Once groundwater is encountered, an environmental professional shall inspect the groundwater and collect samples for analytical testing. Groundwater analytical results will be reviewed and discussed with all stakeholders. Recommendations will be provided regarding the next course of action. For the purpose of this



SMP, it is assumed that the encountered groundwater will not be impacted and can be handled in accordance with the Plans and Specifications provided by Acadia Civil Works.

6.0 DECONTAMINATION

Site soils may be impacted and care will be taken to decontaminate equipment of residual material prior to leaving the Site. Cleaning of equipment as needed will be by “dry Decon” methods, i.e., use of brushes and brooms to remove soil without the use of water. In the event that large amounts of soil remain on equipment, high-pressure water (greater than 90 psi) will be used. Soil removed during the decontamination process will be collected and discarded on Site in areas of soil with similar impacts that will be managed during future construction, or will be disposed with the stockpiled soils identified for off-Site disposal. During demobilization, contractors will observe for the possibility of tracking contaminated soil offsite and will return any soil back to the Site following the above decontamination methods. Soil/sediment tracking pads should be installed and maintained to assure no soil particulate leaves the Site from vehicular traffic.

7.0 DUST, VAPOR, AND ODOR CONTROL

Work activities requiring special attention to dust control may include soil excavation, soil stockpiling, soil loading and removal of soils from the site. Dust generated during work activities must be contained on site. The Site construction contractor should implement engineering controls outlined in the specifications provided by Acadia Civil Works.

8.0 SPILL RESPONSE

In the event of a spill or release of the hazardous material or petroleum product, only employees designated to respond to emergency situations involving hazardous materials releases beyond incidental quantities shall be permitted to address the spill. Nobis employees that work with hazardous chemicals such as on OSHA HAZWOPER regulated projects are trained to respond to incidental releases of such materials. When determining whether a situation constitutes an emergency, each location’s circumstance must be considered on a case-by-case basis to determine the actual or estimated exposure or degree of danger to responders, other workers, neighbors, etc. To aid in this determination, factors such as the potential size of the spill, the type of materials that could be released or spilled, and the location of the incident play a significant role. Based on the quantity and concentration of the material that is spilled, Maine DEP, local and federal authorities may be required to be notified.



9.0 RECORD KEEPING

The construction superintendent will maintain routine documentation of relevant construction activities, including but not limited to: the work being conducted; the Contractor Name and staff on site; the equipment used; the weather conditions; conversations with the Owner, Contractor or Nobis staff; approximate amount of material moved or placed; deliveries received; equipment mobilized to and/or demobilized from the site; locations of work and samples collected; and copies of chain of custodies for environmental samples.

10.0 SOIL DISPOSAL

If off-site soil disposal is determined to be necessary, soil disposal facility selection shall be based on the waste characterization results of the soils designated for offsite disposal. For this SMP, it is assumed that 500 cubic yards of material will be impacted by low-levels of contaminants and will require off-site disposal at a Maine Licensed facility to receive such waste. It is assumed that materials won't contain high levels of contamination, such that it will be deemed a characteristic hazardous waste. If analytical testing indicates that any material is identified as a characteristic hazardous waste, then further discussions and waste disposal determinations will be performed.

11.0 REFERENCES

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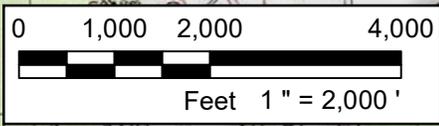


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FIGURES

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USGS Topographic Map
 Meddybemps Lake East, Maine
 Revised 1987

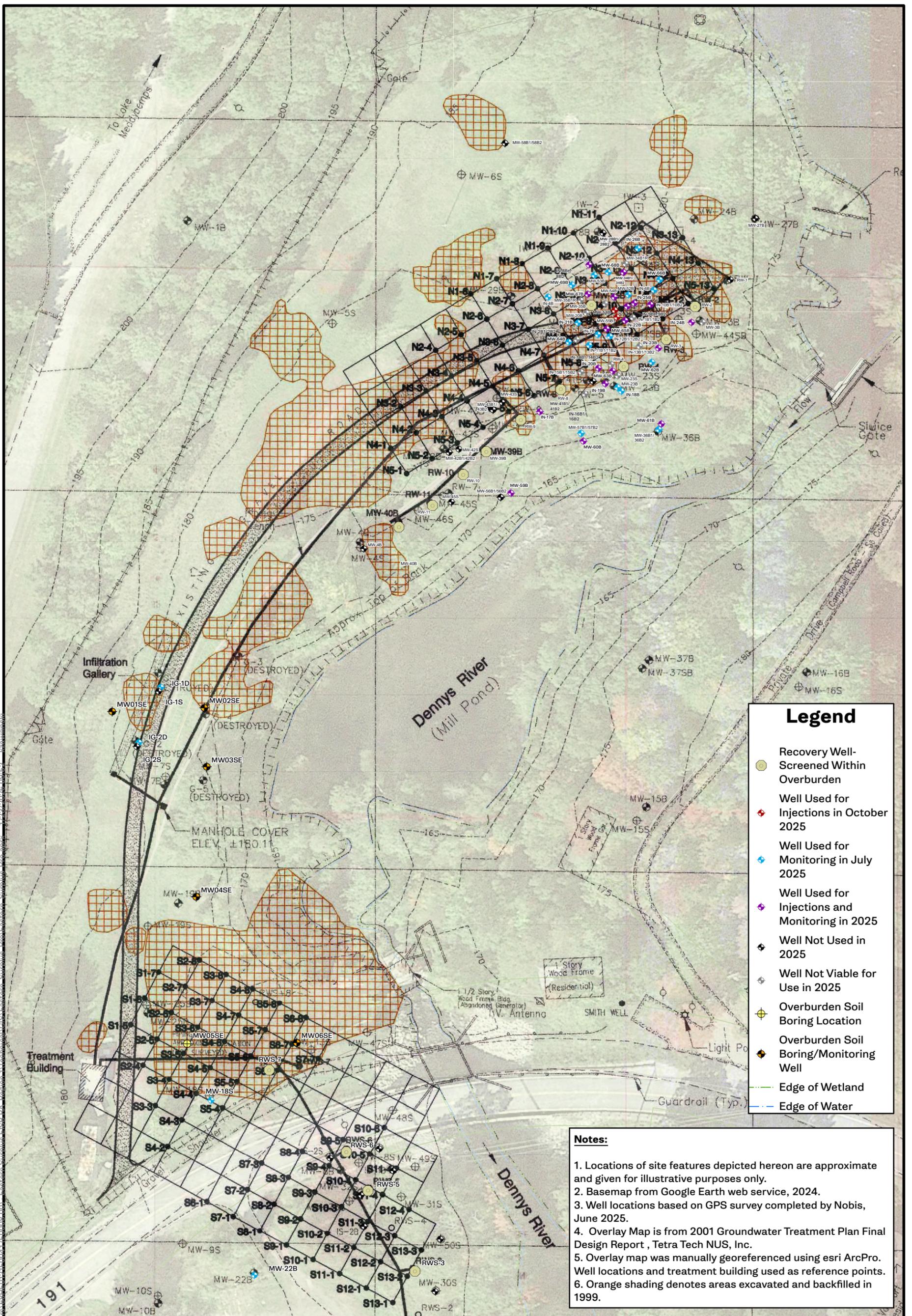


FIGURE 1

LOCUS PLAN
 EASTERN SURPLUS COMPANY
 SUPERFUND SITE
 MEDDYBEMPS, MAINE

PREPARED BY: KPZ
 PROJECT NO. E00008

CHECKED BY: SH
 DATE: MARCH 2025



Legend

- Recovery Well-Screened Within Overburden
- ◆ Well Used for Injections in October 2025
- ◆ Well Used for Monitoring in July 2025
- ◆ Well Used for Injections and Monitoring in 2025
- ◆ Well Not Used in 2025
- ◆ Well Not Viable for Use in 2025
- Overburden Soil Boring Location
- Overburden Soil Boring/Monitoring Well
- Edge of Wetland
- Edge of Water

Notes:

1. Locations of site features depicted hereon are approximate and given for illustrative purposes only.
2. Basemap from Google Earth web service, 2024.
3. Well locations based on GPS survey completed by Nobis, June 2025.
4. Overlay Map is from 2001 Groundwater Treatment Plan Final Design Report, Tetra Tech NUS, Inc.
5. Overlay map was manually georeferenced using esri ArcPro. Well locations and treatment building used as reference points.
6. Orange shading denotes areas excavated and backfilled in 1999.

0 30 60 120



Feet

1 inch equals 60 feet



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FIGURE 3

**SITE MAP WITH 1999 SOIL EXCAVATIONS
EASTERN SURPLUS COMPANY
SUPERFUND SITE
MEDDYBEMPS, ME**

PREPARED BY: KPZ
PROJECT NO. 101099.000

CHECKED BY: SH
DATE: JANUARY 2026



APPENDIX A



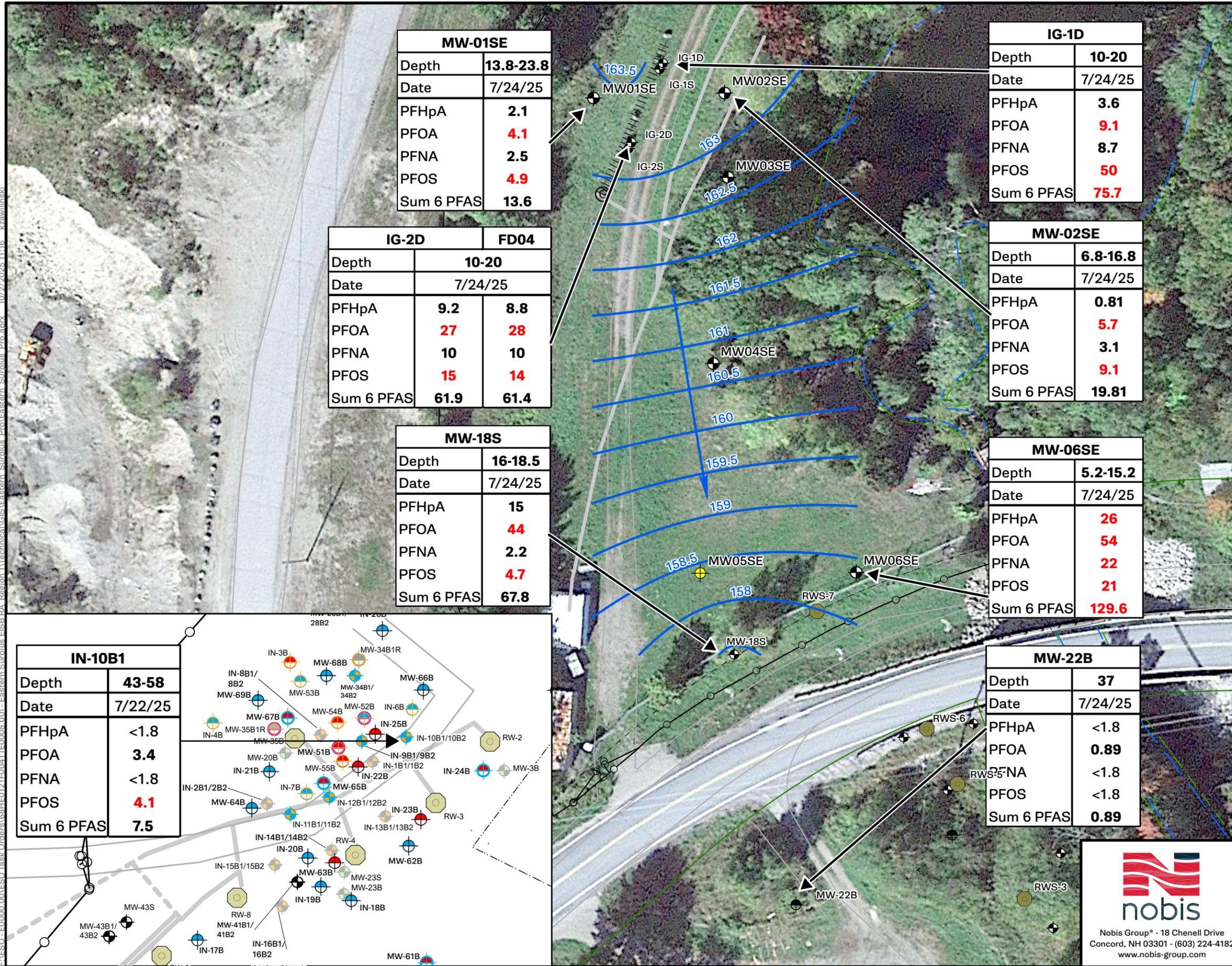
LIMITATIONS

- 1) These environmental services were performed in accordance with generally accepted practices of other consultants undertaking similar assessments at the same time and in the same geographical area. The results of this assessment are based on our professional judgment and are not scientific certainties. Specifically, Nobis Group® does not and cannot represent that the site contains no hazardous wastes, oil, or other latent conditions beyond those observed during this assessment. No other warranty, express or implied, is made.
- 2) The observations and conclusions presented in this report were made solely on the basis of conditions described in the report and not on scientific tasks or procedures beyond the scope of described services or the budgetary and time constraints imposed by the client. The work described in this report was performed in accordance with the terms and conditions of our contract. No other warranty, express or implied, is made.
- 3) Observations were made of the site as indicated in this report. Where access to portions of the site was unavailable or limited, Nobis Group® renders no opinion as to the presence of hazardous wastes or the presence of indirect evidence of hazardous wastes in that portion of the site.
- 4) No property boundary, site feature, or topographic surveys of the site were performed by Nobis Group® unless specifically indicated in the text of the report.
- 5) No sampling or testing was performed for the presence of dioxins, furans, pesticides, herbicides, radon, lead paint, urea-formaldehyde, asbestos, or polychlorinated biphenyls (PCBs) at the site unless specifically indicated in the text of the report.
- 6) Except as noted within the text of the report, no quantitative laboratory testing was performed as part of this assessment. Where such analyses have been conducted by an outside laboratory, Nobis Group® has relied upon the data provided and has not conducted an independent evaluation of the reliability of these data.
- 7) Chemical analyses have been performed for specific parameters during this site assessment, as described in the text of the report. Additional chemical constituents not searched for during the current study may be present in soil and/or groundwater at the site.
- 8) This report has been prepared for the exclusive use of Acadia Civil Works, solely for use in an environmental evaluation of the site. This report shall not, in whole or in part, be conveyed to any other party, other than those authorized by Acadia Civil Works, without prior written consent of Nobis Group®.



APPENDIX B

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MW-01SE	
Depth	13.8-23.8
Date	7/24/25
PFHpA	2.1
PFOA	4.1
PFNA	2.5
PFOS	4.9
Sum 6 PFAS	13.6

IG-1D	
Depth	10-20
Date	7/24/25
PFHpA	3.6
PFOA	9.1
PFNA	8.7
PFOS	50
Sum 6 PFAS	75.7

IG-2D		FD04	
Depth	10-20		
Date	7/24/25		
PFHpA	9.2	8.8	
PFOA	27	28	
PFNA	10	10	
PFOS	15	14	
Sum 6 PFAS	61.9	61.4	

MW-02SE	
Depth	6.8-16.8
Date	7/24/25
PFHpA	0.81
PFOA	5.7
PFNA	3.1
PFOS	9.1
Sum 6 PFAS	19.81

MW-18S	
Depth	16-18.5
Date	7/24/25
PFHpA	15
PFOA	44
PFNA	2.2
PFOS	4.7
Sum 6 PFAS	67.8

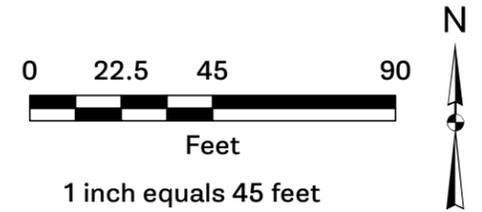
MW-06SE	
Depth	5.2-15.2
Date	7/24/25
PFHpA	26
PFOA	54
PFNA	22
PFOS	21
Sum 6 PFAS	129.6

IN-10B1	
Depth	43-58
Date	7/22/25
PFHpA	<1.8
PFOA	3.4
PFNA	<1.8
PFOS	4.1
Sum 6 PFAS	7.5

MW-22B	
Depth	37
Date	7/24/25
PFHpA	<1.8
PFOA	0.89
PFNA	<1.8
PFOS	<1.8
Sum 6 PFAS	0.89

- Notes:**
- Locations of site features depicted hereon are approximate and given for illustrative purposes only.
 - Basemap from Google Earth web service, 2024.
 - Well locations based on GPS survey completed by Nobis, June 2025.
 - PFAS analytical results are from the July 2025 sampling round.
 - Results shown in nanograms per liter, equivalent to parts per trillion.
 - Only select results shown. Refer to Table 12 for full PFAS analytical results.
 - Red Text indicates an exceedance of regulatory standards.

- Legend**
- Recovery Well
 - Soil Boring
 - Monitoring Well
 - Inferred Groundwater Flow Direction
 - Groundwater Contour July 2025
 - Infiltration Gallery Manhole
 - Infiltration Gallery
 - Extraction System Utility
 - Fence
 - Edge of Wetland
 - Edge of Water
 - Road
 - Property Line



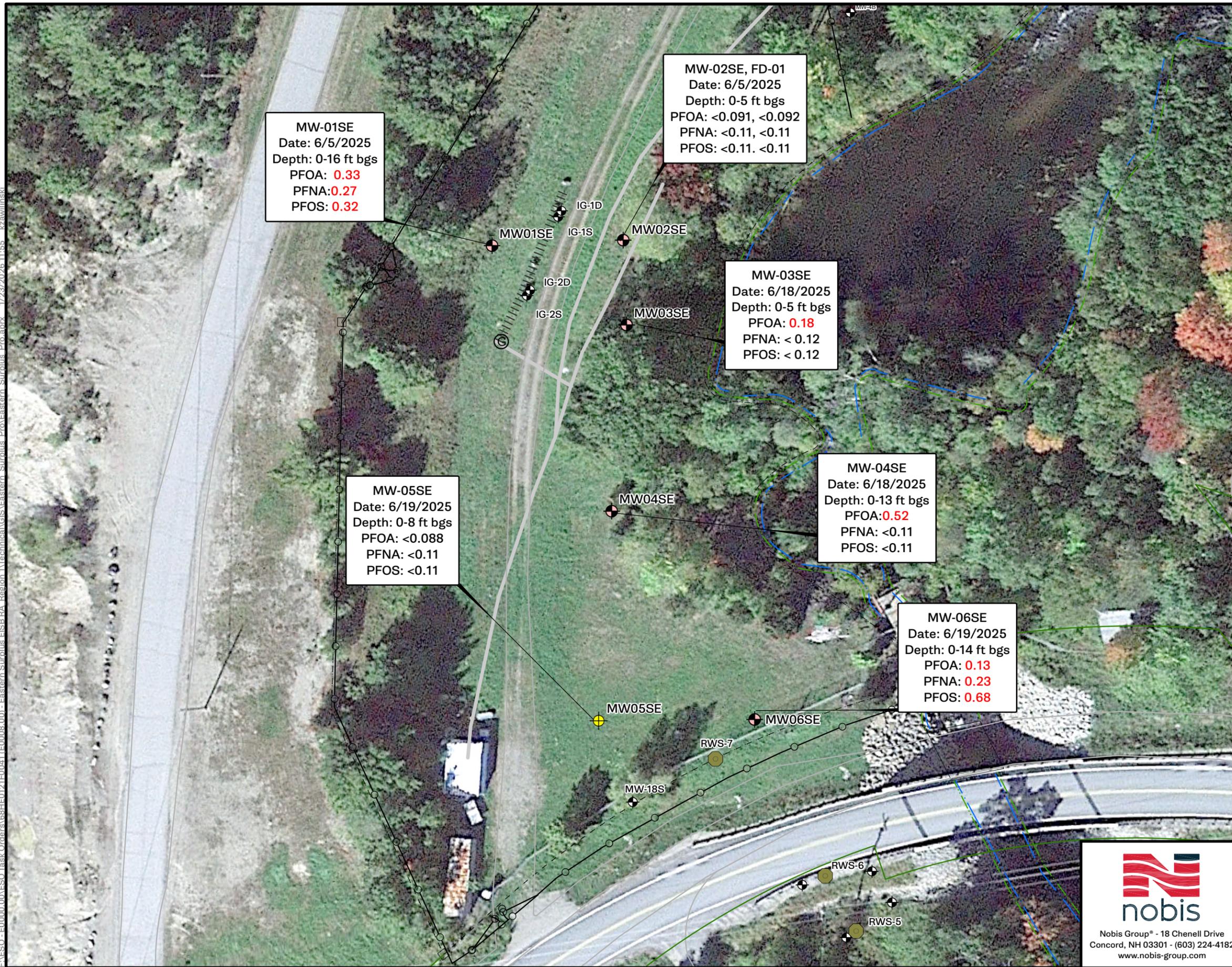
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FIGURE 8

**GW PFAS ANALYTICAL RESULTS
EASTERN SURPLUS COMPANY
SUPERFUND SITE
MEDDYBEMPS, ME**

PREPARED BY: KPZ	CHECKED BY: SH
PROJECT NO. E00008.003	DATE: OCTOBER 2025

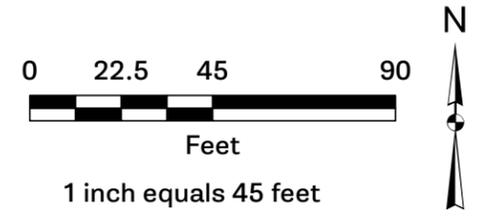
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- Notes:**
1. Locations of site features depicted hereon are approximate and given for illustrative purposes only.
 2. Basemap from Google Earth web service, 2024.
 3. Well locations based on GPS survey completed by Nobis, June 2025.
 4. PFAS analytical results are from the June 2025 soil borings.
 5. Results shown in micrograms per kilogram, equivalent to parts per billion.
 6. Only select results shown. Refer to Table 3 for full soil PFAS analytical results.
 7. **Red Text** indicates an exceedance of regulatory standards.

Legend

- Legacy Recovery Well
- Legacy Monitoring Well
- Soil Boring-June 2025
- Monitoring Well-Installed June 2025
- Infiltration Gallery Manhole
- Infiltration Gallery
- Extraction System Utility
- Fence
- Edge of Wetland
- Edge of Water
- Road
- Property Line



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FIGURE 9	
SOIL PFAS ANALYTICAL RESULTS EASTERN SURPLUS COMPANY SUPERFUND SITE MEDDYBEMPS, ME	
PREPARED BY: KPZ	CHECKED BY: SH
PROJECT NO. E00008.003	DATE: JANUARY 2026

Table 3
 Overburden Soil PFAS Analytical Results
 Eastern Surplus Superfund Site
 Meddybemps, ME
 EPA Region 1 ESO Contract No. 68HE0118D0007

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)	Carboxylates/Carboxylic Acids													Sulfonates/Sulfonic Acids								Sulfonamides/Fluorotelomers			Others				
	Perfluorobutanoic Acid (PFBA)	Pentafluoropropionic acid (PFPrA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorooctanoic Acid (PFOA)	Perfluorononanoic Acid (PFNA)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUnA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTTrDA)	Perfluorotetradecanoic Acid (PFTTA)	Perfluorooctadecanoic acid (PFODA)	Perfluorobutane Sulfonate (PFBS)	Perfluorobutane Sulfonate-K (PFBS-K)	Perfluoropentane Sulfonate (PFPeS)	Perfluorohexane sulfonate (PFHxS)	Perfluoroheptane Sulfonate (PFHpS)	Perfluorooctane Sulfonate (PFOS)	Perfluorooctane Sulfonate-K (PFOS-K)	perfluorodecane sulfonic acid (PFDS)	Perfluorooctane Sulfonamide (PFOSA)	6:2 Fluorotelomer Sulfonic Acid	8:2 Fluorotelomer sulfonic Acid	HFPO-DA (Gen X)	Bis(trifluoromethylsulfonyl)amine (TFSl)			
US EPA RSL for Groundwater/Surface Water Protection	6.5	2.1	ns	2.4	ns	0.061	0.042	ns	45	170	ns	9,400	220,000	3	3	ns	0.0042	ns	0.03	0.015	ns	ns	ns	ns	0.01	1.9			
US EPA RSL for Direct Contact	78,000	39,000	ns	32,000	ns	0.019	190	ns	19,000	3,200	ns	63,000	2,500,000	19,000	19,000	ns	1,300	ns	6.3	6.3	ns	ns	ns	ns	230	230			
Maine RAG for Groundwater / Surface Water Protection	360	ns	ns	130	ns	17	4.6	ns	ns	ns	ns	ns	ns	110	ns	ns	0.47	ns	1	ns	ns	ns	ns	ns	0.81	ns			
Maine RAG for Direct Contact-Residential	110,000	ns	ns	4,300	ns	260	260	ns	ns	ns	ns	ns	ns	26,000	ns	ns	1,700	ns	170	ns	ns	ns	ns	ns	320	ns			
CAS Number	375-22-4	422-64-0	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	16517-11-6	375-73-5	29420-49-3	2706-91-4	355-46-4	375-92-8	1763-23-1	2795-39-3	335-77-3	754-91-6	27619-97-2	39108-34-4	13252-13-6	82113-65-3			
Location	Depth (ft bgs)	Sample ID	Date	Laboratory Analytical Results																									
MW01SE	0-16	ESRA-MW01SE-0016X	6/5/2025	<0.11	na	0.17	<0.092	0.12	0.33	0.27	0.13	0.15	<0.18	<0.13	<0.12	na	<0.064	na	<0.094	<0.094	<0.12	0.32	na	<0.11	<0.14	<0.20	<0.14	<0.17	na
MW02SE	0-5	ESRA-MW02SE-0005X	6/5/2025	<0.11	na	<0.080	<0.097	<0.11	<0.091	<0.11	<0.12	<0.12	<0.18	<0.13	<0.13	na	<0.067	na	<0.098	<0.099	<0.13	<0.11	na	<0.11	<0.15	<0.21	<0.15	<0.18	na
MW02SE	0-5	ESRA-FD01-060525D	6/5/2025	<0.11	na	<0.081	<0.097	<0.11	<0.092	<0.11	<0.12	<0.13	<0.19	<0.14	<0.13	na	<0.068	na	<0.099	<0.10	<0.13	<0.11	na	<0.11	<0.15	<0.21	<0.15	<0.18	na
MW03SE	0-5	ESRA-MW03SE-0005X	6/18/2025	<0.12	na	<0.087	<0.11	<0.12	0.18	<0.12	<0.13	<0.14	<0.20	<0.15	<0.14	na	<0.073	na	<0.11	<0.11	<0.14	<0.12	na	<0.12	<0.16	<0.23	<0.16	<0.19	na
MW04SE	0-13	ESRA-MW04SE-0013X	6/18/2025	<0.11	na	<0.079	<0.096	<0.11	0.52	<0.11	<0.12	<0.12	<0.18	<0.13	<0.13	na	<0.066	na	<0.097	<0.098	<0.13	<0.11	na	<0.11	<0.15	<0.20	<0.15	<0.17	na
MW05SE	0-8	ESRA-MW05SE-0008X	6/19/2025	<0.11	na	<0.078	<0.094	<0.10	<0.088	<0.11	<0.11	<0.12	<0.18	<0.13	<0.12	na	<0.065	na	<0.095	<0.096	<0.12	<0.11	na	<0.11	<0.15	<0.20	<0.14	<0.17	na
MW06SE	0-14	ESRA-MW06SE-0014X	6/19/2025	<0.11	na	<0.078	<0.094	<0.10	0.13	0.23	0.14	<0.12	<0.18	<0.13	<0.12	na	<0.065	na	<0.096	<0.096	<0.13	0.68	na	<0.11	<0.15	<0.20	<0.14	<0.17	na

- All values are in µg/kg, equal to parts per billion.
- EPA RSLs from RSL Generic Tables updated November 2024. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>
- ME RAGs from Maine Remedial Action Guidelines, updated November 2023. <https://www.maine.gov/dep/spills/publications/guidance/rags/Maine-Remedial-Action-Guidelines-2023-11-15.pdf>
- All samples were collected by Nobis Group on the dates specified.
- Samples were analyzed for PFAS by EPA Method 537, Isotope Dilution by Pace Analytical, East Longmeadow, MA.
- "ns" = no standard. "na" = not analyzed.
- Bold values indicate positive detections of a compound.
- Bold and shaded values indicate exceedance of the EPA RSL(s) or ME RAG(s).

Table 4
 Groundwater PFAS Analytical Results July 2025
 Eastern Surplus Superfund Site
 Meddybemps, Maine
 EPA Region 1 ESO | Contract No. 68HE0118D0007

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)					Carboxylates/Carboxylic Acids										Sulfonates/Sulfonic Acids								Sulfonamides/Fluorotelomers			Others		SUM				
					Perfluorobutanoic Acid (PFBA)	Pentafluoropropionic acid (PFPrA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorooctanoic Acid (PFOA)	Perfluorononanoic Acid (PFNA)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUnDA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTrDA)	Perfluorotetradecanoic Acid (PFTeA)	Perfluorooctadecanoic acid (PFODa)	Perfluorobutane Sulfonate (PFBS)	Perfluorobutane Sulfonate-K (PFBS-K)	Perfluoropentane Sulfonate (PFPeS)	Perfluorohexane sulfonate (PFHxS)	Perfluoroheptane Sulfonate (PFHpS)	Perfluorooctane Sulfonate (PFOS)	Perfluorooctane Sulfonate-K (PFOS-K)	perfluorodecane sulfonic acid (PFDS)	Perfluorooctane Sulfonamide (PFOSA)	6:2 Fluorotelomer Sulfonic Acid	8:2 Fluorotelomer sulfonic Acid	HFPO-DA (Gen X)	Bis(trifluoromethylsulfonyl)amine (TFSl)	Sum of 6 PFAS ¹³	
US EPA MCL for Drinking Water-Numerical					ns	ns	ns	ns	ns	4	10	ns	ns	ns	ns	ns	ns	ns	10	ns	4	ns	ns	ns	ns	10	ns	ns				
US EPA Regional RSL for Drinking Water and Groundwater					18,000	9,800	ns	9,900	ns	0.0027	59	ns	6,000	1,000	ns	20,000	800,000	6,000	6,000	ns	390	ns	2	ns	ns	ns	15	5,900	ns			
Maine Interim Drinking Water Standard					ns	ns	ns	ns	20	20	20	20	ns	ns	ns	ns	ns	ns	20	ns	20	ns	ns	ns	ns	ns	ns	ns	70			
Maine RAG for Groundwater-Residential					19,000	ns	ns	9,900	ns	60	59	ns	ns	ns	ns	ns	6,000	ns	ns	390	ns	40	ns	ns	ns	ns	60	ns	70			
Maine RAG for Groundwater-Construction					28,000,000	ns	ns	10,000,000	ns	110,000	42,000	ns	ns	ns	ns	32,000,000	ns	ns	310,000	ns	75,000	ns	ns	ns	ns	1,100,000	ns	ns				
CAS Number					375-22-4	422-64-0	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	335-76-2	2058-94-8	307-55-1	72629-94-8	376-06-7	16517-11-6	375-73-5	29420-49-3	2706-91-4	355-46-4	375-92-8	1763-23-1	2795-39-3	335-77-3	754-91-6	27619-97-2	39108-34-4	13252-13-6	82113-65-3	N/A	
Sample Location	Sample ID	Sample Depth	Sample Date	Sample Type	Laboratory Analytical Results																											
IN-10B1	ESRA-IN10B1-072225X	43-58	7/22/2025	P	120	na	4.3	46	<1.8	3.4	<1.8	<1.8	<1.8	<1.8	<1.8	na	0.75	na	<1.8	<1.8	11	4.1	na	5.3	<1.8	<1.8	<1.8	<1.8	na	7.5		
IG-1D	ESRA-IG1D-072425X	10-20	7/24/2025	P	1.5	na	1.8	2.2	3.6	9.1	8.7	4.3	<1.9	<1.9	<1.9	na	<1.9	na	<1.9	<1.9	<1.9	50	na	<1.9	<1.9	<1.9	<1.9	<1.9	na	75.7		
IG-2D	ESRA-IG2D-072425X	10-20	7/24/2025	P	0.86	na	1.7	4.3	9.2	27	10	<1.9	<1.9	<1.9	<1.9	na	<1.9	na	<1.9	0.73	<1.9	15	na	<1.9	<1.9	<1.9	<1.9	<1.9	na	61.9		
	ESRA-FD04-072425X	10-20	7/24/2025	DUP	0.77	na	1.7	4	8.8	28	10	<1.9	<1.9	<1.9	<1.9	na	<1.9	na	<1.9	0.56	<1.9	14	na	<1.9	<1.9	<1.9	<1.9	<1.9	na	61.4		
MW-18S	ESRA-MW18S-072425X	16-18.5	7/24/2025	P	1.9	na	2.4	6.2	15	44	2.2	<1.8	<1.8	<1.8	<1.8	na	<1.8	na	<1.8	1.9	<1.9	4.7	na	<1.8	<1.8	<1.8	<1.8	<1.8	na	67.8		
MW01SE	ESRA-MW01SE-072425X	13.8-23.8	7/24/2025	P	2.8	na	2.2	3	2.1	4.1	2.5	<1.9	<1.9	<1.9	<1.9	na	<1.9	na	<1.9	<1.9	<1.9	4.9	na	<1.9	<1.9	<1.9	<1.9	<1.9	na	13.6		
MW02SE	ESRA-MW02SE-072425X	6.8-16.8	7/24/2025	P	1.3	na	<1.9	<1.9	0.81	5.7	3.1	<1.9	<1.9	<1.9	<1.9	na	<1.9	na	<1.9	1.1	<1.9	9.1	na	<1.9	<1.9	2.5	<1.9	<1.9	na	19.81		
MW03SE	DRY - No Sample																															
MW04SE	DRY - No Sample																															
MW06SE	ESRA-MW06SE-072425X	5.2-15.2	7/24/2025	P	24	na	29	35	26	54	22	3.7	<1.8	<1.8	<1.8	na	1.1	na	<1.8	2.9	<1.8	21	na	<1.8	<1.8	3.4	<1.8	<1.8	na	129.6		
MW-22B	ESRA-MW22B-072425X	37	7/24/2025	P	0.85	na	<1.8	<1.8	<1.8	0.89	<1.8	<1.8	<1.8	<1.8	<1.8	na	<1.8	na	<1.8	<1.8	<1.8	<1.8	na	<1.8	<1.8	<1.8	<1.8	<1.8	na	0.89		

1. All values are in ng/L, equal to parts per trillion.
 2. EPA RSLs from RSL Generic Tables updated November 2024. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>.
 3. EPA MCLs from EPA.gov. <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>.
 4. ME RAGs from Maine Remedial Action Guidelines, updated November 2023. <https://www.maine.gov/dep/spills/publications/guidance/rags/Maine-Remedial-Action-Guidelines-2023-11-15.pdf>
 5. ME Interim Drinking Water Standard, updated June 2021. <https://www.mainelegislature.org/legis/bills/getPDF.asp?paper=SP0064&item=3&snum=130>
 6. All samples were collected by Nobis Group on the dates specified.
 7. Samples were analyzed for PFAS by EPA Method 537, Isotope Dilution by Pace Analytical, East Longmeadow, MA.
 8. Bold text indicates positive detection of a chemical
 9. Bold and shaded text indicates exceedance of MCL, Maine Interim Drinking Water Standard, or RAG for Residential Groundwater.
 10. *Italicized and underlined text indicates a non-detect results with a reporting limit greater than the MCL, Interim Drinking Water Standard, or RAG.*
 11. The analyses were performed by Pace Analytical of East Longmeadow, MA by SOP-454 for PFAS.
 12. Compounds not listed in this table were not detected above laboratory reporting limits in the samples analyzed.
 13. Sum of 6 PFAS include PFOA, PFOS, PFHpA, PFHxS, PFNA, and PFDA, which are defined as a group as the Maine Regulated PFAS Contaminants and are compared to the Maine PFAS Interim Drinking Water Standard, 2021 for evaluation of drinking water exposure.

APPENDIX C
MAINE DEP NRPA PERMIT

The Owner is currently seeking this written approval from the Maine Department of Environmental Protection. It will be included in this appendix once received.

APPENDIX D

US ARMY CORPS PERMIT

The Owner is currently seeking this written approval from the Corps. It will be included in this appendix once received.

APPENDIX E
TOWN OF MEDDYBEMPS
APPROVAL

The Owner is currently seeking this written approval from the Town. It will be included in this appendix once received.



ACADIA CIVIL WORKS
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