

PROJECT MANUAL

for the

**Eagle Lake Plane Base
Fuel Storage Tank Replacement**

for the

**Department of Inland
Fisheries and Wildlife
Augusta, Maine**

BREM# PT-3031



00 01 10
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00 11 13
Notice to Contractors

Eagle Lake Plane Base Fuel Storage Tank Replacement

Under orders from the Department of Environmental Protection the Existing UST at the Inland Fisheries & Wildlife Eagle Lake Plane Base must be removed prior to August 1, 2019 due to age. The tank is to be replaced with a new 6000 gallon Fireguard AVGAS storage tank with all accessories and shelter as described in the bid documents.

The cost of the work is approximately \$ 126,000. The work to be performed under this contract shall be completed on or before the Final Completion date of *01 August, 2019*.

1. Sealed Contractor bids, in envelopes plainly marked "Bid for *Eagle Lake Plane Base Fuel Storage Tank Replacement*" and addressed to:

*Joseph Ostwald
Bureau of Real Estate Management
4th Floor, Cross State Office Building, 111 Sewall Street
77 State House Station
Augusta, Maine 04333-0077*

will be opened and read aloud at *the address shown above* at **2:00 p.m.** on **03 May, 2019**. Any bid submitted after the noted time will not be considered a valid bid and will remain unopened.

2. The bid shall be submitted on the Contractor Bid Form (section 00 41 13) provided in the Bid Documents. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.
3. Bid security *is required* on this project.
If noted above as required, 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 BREM website.
4. Performance and Payment Bonds *are required* on this project.
If noted above as required, 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 BREM website.
5. Filed Sub-bids *are not required* on this project.
6. There *are no* Pre-qualified General Contractors on this project.
If Pre-qualified General Contractors are identified for this project, the name of each company, with their city and state, are listed below.
7. An on-site pre-bid conference *will not* be conducted for this project.
If a pre-bid conference is scheduled, it is *optional* for General Contractors and optional for Subcontractors and suppliers. Contractors who arrive late or leave the meeting early may be prohibited from participating in this meeting and bidding.

00 11 13
Notice to Contractors

8. Bid Documents - full sets only - will be available on or about *08 April, 2019* and may be purchased \$30.00 plus shipping from:

Quality Copy & Digital Print
4 North St
Hallowell, ME 04347
(207)622-7447

9. Bid Documents may be examined at:

AGC Maine
188 Whitten Road
Augusta, ME 04330
Phone 207-622-4741 Fax 207-622-1625

Construction Summary
734 Chestnut Street
Manchester, NH 03104
Phone 603-627-8856 Fax 603-627-4524

Location of Site

32 Warden Lane, Eagle Lake Maine 04739



00 21 13
Instructions to Bidders

1. Bidder Requirements

- 1.1 A bidder is a Contractor who is qualified, or has been specifically pre-qualified by the Bureau of Real Estate Management, to bid on the proposed project described in the Bid Documents.
- 1.2 Contractors and Subcontractors bidding on projects that utilize Filed Sub-bids shall follow the requirements outlined in these Bid Documents for such projects. See Section 00 22 13 for additional information.
- 1.3 Contractors and Subcontractors are not eligible to bid on the project when their access to project design documents prior to the bid period distribution of documents creates an unfair bidding advantage. Prohibited access includes consultation with the Owner or with design professionals engaged by the Owner regarding cost estimating, constructability review, or project scheduling. This prohibition to bid applies to open, competitive bidding or pre-qualified contractor bidding or Filed Sub-bidding. The Bureau may require additional information to determine if the activities of a Contractor constitute an unfair bidding advantage.
- 1.4 Each bidder is responsible for becoming thoroughly familiar with the Bid Documents prior to submitting a bid. The failure of a bidder to review evident site conditions, to attend available pre-bid conferences, or to receive, examine, or act on addenda to the Bid Documents shall not relieve that bidder from any obligation with respect to their bid or the execution of the work as a Contractor.
- 1.5 Prior to the award of the contract, General Contractor bidders or Filed Sub-bidders may be required to provide documented evidence to the Owner or the Bureau showing compliance with the provisions of this section, their business experience, financial capability, or performance on previous projects.
- 1.6 The selected General Contractor bidder will be required to provide proof of insurance before a contract can be executed.
- 1.7 Contracts developed from this bid shall not be assigned, sublet or transferred without the written consent of the Owner.
- 1.8 By submitting a bid the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Director of the Bureau of Real Estate Management 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.
- 1.9 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.
- 1.10 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.

00 21 13
Instructions to Bidders

2. Authority of Owner

- 2.1 The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner and the State of Maine.
- 2.2 Subject to the Owner's stated right to accept or reject any or all bids, the Contractor shall be selected on the basis of the lowest sum of an acceptable Base Bid plus any Alternate Bids the Owner elects to include. An acceptable bid is one from a responsive and responsible bidder.
- 2.3 The Owner is exempt from the payment of Federal Excise Taxes and Federal Transportation Tax on all shipments, as well as Maine State Sales and Use Taxes on items "...physically incorporated in real property ...". The bidder shall not include these taxes in their bid. See Section 00 72 13 for additional information.

3. Submitting Bids and Bid Requirements

- 3.1 Each bid shall be submitted on the forms provided in the Bid Documents.
- 3.2 Each bid shall be valid for a period of thirty calendar days following the Project bid opening date and time.
- 3.3 A bid that contains an escalation clause is considered invalid.
- 3.4 Bidders shall include a Bid Bond or other approved bid security with the bid form submitted to the Owner when the bid form indicates such bid security is required. The bond value shall be 5% of the bid amount. The form of bond is shown in section 00 43 13.
- 3.5 Bidders shall include the cost of Performance and Payment Bonds in the bid amount if the bid amount will result in a construction contract value over \$125,000, inclusive of alternate bids that may be awarded in the contract. Pursuant to 14 M.R.S.A., Section 871, Public Works Contractors' Surety Bond Law of 1971, subsection 3, the selected Contractor is required to provide these bonds before a contract can be executed. The form of bonds are shown in section 00 61 13.13 and 00 61 13.16.
- 3.6 Bidders may modify bids in writing prior to the bid closing time. Such written amendments shall not disclose the amount of the initial bid. If so disclosed, the entire bid is considered invalid.
- 3.7 Bidders shall acknowledge on the bid form all Addenda issued in a timely manner. The Architect shall not issue Addenda affecting bidders less than 72 hours prior to the bid closing time. Addenda shall be issued to all companies who are registered holders of Bid Documents.
- 3.8 A bid may be withdrawn without penalty if a written request by the bidder is presented to the Owner prior to the bid closing time. Such written withdrawal requests are subject to verification as required by the Bureau. After the bid closing time, such written withdrawal requests may be allowed in consideration of the bid bond or, without utilizing a bid bond, if the Contractor provides documented evidence to the satisfaction of the Bureau that factual errors had been made on the bid form.
- 3.9 In the event State of Maine Offices unexpectedly close on the published date of a public bid opening in the location of that bid opening, prior to the time of the scheduled deadline, the new deadline for the public bid opening will be the following business day at the originally scheduled hour of the day, at the original location. Official closings are posted on the State of Maine government website.
- 3.10 Projects which require a State of Maine wage determination will include that schedule as part of the Bid Documents. See section 00 73 46, if such rates are required.
- 3.11 Projects which require compliance with the Davis-Bacon Act are subject to the regulations contained the Code for Federal Regulations and the federal wage determination which is made a part of the Bid Documents. See section 00 73 46, if such rates are required.

**00 41 13
Contractor Bid Form**

Eagle Lake Tank Replacement

To: *Joseph Ostwald*
Bureau of General Services
77 State House Station
Augusta, Maine 04333-0077

The undersigned, or *Bidder*, having carefully examined the form of contract, general conditions, specifications and drawings dated March 26, 2019, prepared by CES Inc for Eagle Lake Tank Replacement, as well as 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

1. Allowances *are not included* on this project.

No Allowances

insert brief name of Allowance

\$ *insert dollar amount of Allowance*

insert brief name of Allowance

\$ *insert dollar amount of Allowance*

2. Alternate Bids *are not included* on this project.

Alternate Bids are as shown below

Any dollar amount line below that is left blank by the Bidder shall be taken as a bid of \$0.00.

1 *insert title of Alternate or "not used"*

\$ _____ .00

2 *insert title of Alternate or "not used"*

\$ _____ .00

3 *insert title of Alternate or "not used"*

\$ _____ .00

4 *insert title of Alternate or "not used"*

\$ _____ .00

5 *insert title of Alternate or "not used"*

\$ _____ .00

**00 41 13
Contractor Bid Form**

3. The Bidder acknowledges receipt of the following addenda to the specifications and drawings:

Addendum No. _____ Dated: _____

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

If noted above as required, 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 this completed bid form submitted to the Owner.

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

**00 41 13
Contractor Bid Form**

Eagle Lake Tank Replacement

6. The Bidder agrees, if this bid is accepted by the Owner, to sign the designated Owner-Contractor contract and deliver it, with any and all bonds and affidavits of insurance specified in the Bid Documents, 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.

7. This bid is hereby submitted by:

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: _____

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 bid due date.

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

(Contract value \$50,000 or greater. Contract includes Project Manual, Specifications and Drawings)

Agreement entered into by and between the State of Maine through the insert contracting entity name hereinafter called the **Owner** and insert Contractor company name hereinafter called the **Contractor**.

BREM Project No.: insert number assigned by BREM (not the PIP number)

Other Project No.: _____

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

The Specifications and the Drawings have been prepared by 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 Sum of \$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 will be 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 TIME OF COMPLETION

2.1 The work of this Contract shall be completed on or before 31 December 2020.

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 Real Estate Management 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 Property Insurance for this construction contract, described in the Insurance Requirements section of the General Conditions of the contract, shall be *Non-standard project insured by Contractor.*

4.3 The Contractor shall comply with all laws, codes and regulations applicable to the work.

4.4 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.

4.5 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.

4.6 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 Consultant of any non-appropriation and the effective date of the non-appropriation.

ARTICLE 8 CONTRACT DOCUMENTS

8.1 The General Conditions of the contract, instructions to bidders, bid form, Special Provisions, the written specifications and the 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 each sheet number and title*

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

BREM Project No.: _____

The Agreement is effective as of the date last executed by the parties.

OWNER

CONTRACTOR

(Signature) *(Date)*
name and title

(Signature) *(Date)*
name and title

name of contracting entity

name of contractor company

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

<i>select proper approval authority</i>			
Reviewed by:		Approved by:	
_____ <i>(Signature)</i>	_____ <i>(Date)</i>	_____ <i>(Signature)</i>	_____ <i>(Date)</i>
<i>insert name</i>		<i>Joseph H. Ostwald</i>	
<i>Project Manager/ Contract Administrator</i>		<i>Director, Planning, Design & Construction</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.

State of Maine REQUISITION FOR PAYMENT

Contractor: [Contractor company name]
[location]
[address]
[city state zip]

Req. Number:

Date: _____

Project: [Project name]

Project Number: _____

Period: [start date] to [end date]

	Description of Work	Scheduled Value	Work Completed		Total Work Completed	Percent Complete	Balance to Finish
			Previously	This Period			
1	item	\$0	\$0	\$0	\$0	#####	\$0
2	item	\$0	\$0	\$0	\$0	#####	\$0
3	item	\$0	\$0	\$0	\$0	#####	\$0
4	item	\$0	\$0	\$0	\$0	#####	\$0
5	item	\$0	\$0	\$0	\$0	#####	\$0
6	item	\$0	\$0	\$0	\$0	#####	\$0
7	item	\$0	\$0	\$0	\$0	#####	\$0
8	item	\$0	\$0	\$0	\$0	#####	\$0
9	item	\$0	\$0	\$0	\$0	#####	\$0
10	item	\$0	\$0	\$0	\$0	#####	\$0
11	item	\$0	\$0	\$0	\$0	#####	\$0
12	item	\$0	\$0	\$0	\$0	#####	\$0
13	item	\$0	\$0	\$0	\$0	#####	\$0
14	item	\$0	\$0	\$0	\$0	#####	\$0
15	item	\$0	\$0	\$0	\$0	#####	\$0
16	item	\$0	\$0	\$0	\$0	#####	\$0
17	item	\$0	\$0	\$0	\$0	#####	\$0
18	item	\$0	\$0	\$0	\$0	#####	\$0
19	item	\$0	\$0	\$0	\$0	#####	\$0
20	item	\$0	\$0	\$0	\$0	#####	\$0
21	Change Order No. 1	\$0	\$0	\$0	\$0	#####	\$0
22		\$0	\$0	\$0	\$0	#####	\$0
23		\$0	\$0	\$0	\$0	#####	\$0
24		\$0	\$0	\$0	\$0	#####	\$0
25		\$0	\$0	\$0	\$0	#####	\$0
Totals		\$0	\$0	\$0	\$0	#####	\$0
5% Retainage			\$0	\$0			
Total Paid to Date			\$0				
Current Payment Due				\$0			

Architect/Engineer
 [Firm name] _____
 [address] _____
 [city state zip] _____

Contractor
 [Company name] _____
 [address] _____
 [city state zip] _____

Owner
 [Agency name] _____
 [address] _____
 [city state zip] _____

 [signature above this typed name]
 date: _____

 [signature above this typed name]
 date: _____

 [signature above this typed name]
 date: _____

> approved by: **Bureau of General Services** _____ date: _____



MAINE REVENUE SERVICES

PERMANENT EXEMPTION CERTIFICATE

This Exemption Certificate is issued under the provisions of 36 M.R.S. §§ 1751 - 2113

MAINE STATE OF
d/b/a MAINE INLAND FISHERIES & WILDLIFE
284 STATE ST
AUGUSTA, ME 04333-0001

Registration Number : E80730
Date Effective: February 11, 2000
Date Issued: February 7, 2017

Form ST-2
2020572170207

This certifies that the organization named above is an agency, branch, or instrumentality of the federal government, the State of Maine or a political subdivision of the State of Maine, and is therefore entitled to purchase tangible personal property or taxable services that will be used exclusively by the organization for the purposes for which it is organized without payment of the Maine sales or use tax.

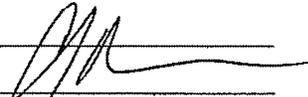
Note to the Organization: This certificate is not to be used in activities that are mainly commercial enterprises including, but not limited to, purchases of items which will be resold by the organization. A copy of this certificate with the certification completed below, must be provided to vendors in order to purchase goods exempt from tax. It is only necessary to provide one copy to the vendor. Subsequent purchases should indicate that the purchase is exempt from tax. In order to be exempt, the sale must be billed directly to and paid for directly by the organization named on the exemption certificate. This certificate cannot be used for purchases when payments are made with cash, personal checks, or personal credit cards.

Note to the Vendor: This certificate must be taken in good faith from the taxpayer named above. Your good faith may be questioned if you have knowledge of facts which give rise to a reasonable inference that the purchaser is not the holder of the exemption certificate or that the merchandise is not to be used exclusively by the organization. This certificate is valid only if the following certification is completed.

PERMANENT EXEMPTION CERTIFICATE

I HEREBY CERTIFY: That the above exemption certificate is valid, that the tangible personal property described herein which I shall purchase from _____ will be used exclusively by the organization named above for purposes for which it is organized.

Description of property to be purchased:


Authorized Signature

2-8-17

Date

**State of Maine
CONSTRUCTION CONTRACT**

Construction Change Directive

Project name
Contractor Company name

C. C. D. Number: 1

Table C

CCD Item No.	Item Name and Description	Method of Compensation	Projected Calendar Days	Projected Item Cost
1			0	\$0
			0	\$0
			0	\$0
			0	\$0
			0	\$0
Totals			0	\$0

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.

signature

date

Consultant (A/E)

Contractor

Owner

Other

Bureau of Real Estate Management

Select or tab to cells which require input, starting at CT# at right.

AdvantageME CT#

**State of Maine
CONSTRUCTION CONTRACT
Change Order**

Project name
location / school / campus
address
city state zip code

C. O. Number: 1
Issue Date: 31-Jan-2020

Contractor Company name

BREM Project No.:
Other Project No.:

Table A

Show Deduct as a negative number, e.g.: "-\$700".

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

Table B

Show Deduct as a negative number, e.g.: "-14".

	Add	Deduct	Total
Net Calendar Days Adjusted by this Change Order	0	0	
Calendar Days Adjusted by Previous Change Orders	0	0	
Net of Change Orders to Date	0	0	0
Original Contract Completion Date			31-Dec-2020
Revised Contract Completion Date*			31-Dec-2020

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

Role, such as Owner's Rep, or "not used"

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

signature date

Bureau of Real Estate Management

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

signature date

Attach list of Change Order items (Table C) and all supporting documentation.

For reference only, see contract for full definitions:

Substantial Completion Date: date of first beneficial use by Owner.

*Contract Completion Date: Contractor's final completion deadline.

Contract Expiration Date: deadline for Owner's management of contract accounts.

**State of Maine
CONSTRUCTION CONTRACT**

Change Order - Details

Project name
Contractor company name

C. O. Number:

TABLE D

ASI No.	RFI No.	CR No.	CP No.	CO Item No.
Item name				
Description of Work				
Reason or Necessity of Work				
Cost Breakdown	Subcontractor base cost	Subcontractor Markup ($\leq 20\%$)	Contractor base cost	Contractor Markup ($\leq 10\%$ or $\leq 20\%$)
	\$0	\$0	\$0	\$0
Reason Code	CC	Total Cost		\$0
Compensation	lump sum	Calendar Days		0
Initiated by	Consultant	Supporting documentation		is attached

Reason Code

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

▪ *Use one Table D sheet for each Change Order item.*

▪ *Use Table D sheets with the BREM Change Order Table A (cost) and Table B (time) summaries and signature sheet, and the BREM Change Order Table C (list of items) sheet.*

signature

date

Consultant (A/E)

Contractor

Owner

Other

**Bureau of Real Estate
Management**

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Definitions

1. Definitions
 - 1.1 *Addendum*: A document issued by the Consultant that amends the Bid Documents. Addenda shall not be issued less than seventy-two hours prior to the specified bid opening time.
 - 1.2 *Allowance*: A specified dollar amount for a particular scope of work or service included in the Work that is identified in the Bid Documents and included in each Bidder's Bid. The Contractor shall document expenditures for an Allowance during the Project. Any unused balance shall be credited to the Owner. The Contractor is responsible for notifying the Owner of anticipated expenses greater than the specified amount and the Owner is responsible for those additional expenses.
 - 1.3 *Alternate Bid*: The Contractor's written offer of a specified dollar amount, submitted on the Bid Form, for the performance of a particular scope of work described in the Bid Documents. The Owner determines the low bidder based on the sum of the base Bid and any combination of Alternate Bids that the Owner selects.
 - 1.4 *Architect*: A Consultant acting as, or supporting, the Professional-of-Record who is responsible for the design of the Project. Equivalent to "Consultant" in State of Maine contract forms.
 - 1.5 *Architectural Supplemental Instruction (ASI)*: A written instruction from the Architect for the purpose of clarification of the Contract Documents. An ASI does not alter the Contract Price or Contract Time. ASIs may be responses to RFIs and shall be issued by the Architect in a timely manner to avoid any negative impact on the Schedule of Work.
 - 1.6 *Bid*: The Contractor's written offer of a specified dollar amount or amounts, submitted on a form included in the Bid Documents, for the performance of the Work. A Bid may include bonds or other requirements. A base Bid is separate and distinct from Alternate Bids, being the only cost component necessary for the award of the contract, and representing the minimum amount of Work that is essential for the functioning of the Project.
 - 1.7 *Bid Bond*: The security designated in the Bid Documents, furnished by Bidders as a guaranty of good faith to enter into a contract with the Owner, should a contract be awarded to that Bidder.
 - 1.8 *Bidder*: Any business entity, individual or corporation that submits a bid for the performance of the work described in the Bid Documents, acting directly or through a duly authorized representative.
 - 1.9 *Bid Documents*: The drawings, procurement and contracting requirements, general requirements, and the written specifications -including all addenda, that a bidder is required to reference in the submission of a bid.
 - 1.10 *Bureau*: The State of Maine Bureau of Real Estate Management (formerly known as Bureau of General Services, or BGS) in the Department of Administrative and Financial Services.
 - 1.11 *Calendar days*: Consecutive days, as occurring on a calendar, taking into account each day of the week, month, year, and any religious, national or local holidays. Calendar days are used for changes in Contract Time.
 - 1.12 *Certificate of Substantial Completion*: A document developed by the Consultant that describes the final status of the Work and establishes the date that the Owner may use the facility for its intended

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Definitions

purpose. The Certificate of Substantial Completion may also include a provisional list of items - a "punch list" - remaining to be completed by the Contractor. The Certificate of Substantial Completion identifies the date from which the project warranty period commences.

- 1.13 *Certificate of Occupancy*: A document developed by a local jurisdiction such as the Code Enforcement Officer that grants permission to the Owner to occupy a building.
- 1.14 *Change Order (CO)*: A document that modifies the contract and establishes the basis of a specific adjustment to the Contract Price or the Contract Time, or both. Change Orders may address correction of omissions, errors, and document discrepancies, or additional requirements. Change Orders should include all labor, materials and incidentals required to complete the work described. A Change Order is not valid until signed by the Contractor, Owner and Consultant and approved by the Bureau.
- 1.15 *Change Order Proposal (COP) (see also Proposal)*: Contract change proposed by the Contractor regarding the contract amount, requirements, or time. The Contractor implements the work of a COP after it is accepted by all parties. Accepted COPs are incorporated into the contract by Change Order.
- 1.16 *Clerk of the Works*: The authorized representative of the Consultant on the job site. Clerk of the Works is sometimes called the Architect's representative.
- 1.17 *Construction Change Directive (CCD)*: A written order prepared by the Consultant and signed by the Owner and Consultant, directing a change in the Work prior to final agreement with the Contractor on adjustment, if any, in the Contract Price or Contract Time, or both.
- 1.18 *Contract*: A written agreement between the Owner and the successful bidder which obligates the Contractor to perform the work specified in the Contract Documents and obligates the Owner to compensate the Contractor at the mutually accepted sum, rates or prices.
- 1.19 *Contract Bonds (also known as Payment and Performance Bonds)*: The approved forms of security, furnished by the Contractor and their surety, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials and equipment by the Contractor.
- 1.20 *Contract Documents*: The drawings and written specifications (including all addenda), Standard General Conditions, and the contract (including all Change Orders subsequently incorporated in the documents).
- 1.21 *Contract Price*: The dollar amount of the construction contract, also called *Contract Sum*.
- 1.22 *Contract Time*: The designated duration of time to execute the Work of the contract, with a specific date for completion.
- 1.23 *Contractor*: Also called the "General Contractor" or "GC" the individual or entity undertaking the execution of the general contract work under the terms of the contract with the Owner, acting directly or through a duly authorized representative. The Contractor is responsible for the means, methods and materials utilized in the execution and completion of the Work.
- 1.24 *Consultant*: The Architect or Engineer acting as Professional-of-Record for the Project. The Consultant is responsible for the design of the Project.

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- 1.25 *Drawings*: The graphic and pictorial portion of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.
- 1.26 *Engineer*: A Consultant acting as, or supporting, the Professional-of-Record who is responsible for the design of the Project. Equivalent to “Consultant” in State of Maine contract forms.
- 1.27 *Filed Sub-bid*: The designated major Subcontractor's (or, in some cases, Contractor's) written offer of a specified dollar amount or amounts, submitted on a form included in the Bid Documents, for the performance of a particular portion of the Work. A Filed Sub-bid may include bonds or other requirements.
- 1.28 *Final Completion*: Project status establishing the date when the Work is fully completed in compliance with the Contract Documents, as certified by the Consultant. Final payment to the Contractor is due upon Final Completion of the Project.
- 1.29 *General Requirements*: The on-site overhead expense items the Contractor provides for the Project, typically including, but not limited to, building permits, construction supervision, Contract Bonds, insurance, field office, temporary utilities, rubbish removal, and site fencing. Overhead expenses of the Contractor's general operation are not included. Sometimes referred to as the Contractor's General Conditions.
- 1.30 *Owner*: The State agency which is represented by duly authorized individuals. The Owner is responsible for defining the scope of the Project and compensation to the Consultant and Contractor.
- 1.31 *Owner's Representative*: The individual or entity contracted by the Owner to be an advisor and information conduit regarding the Project.
- 1.32 *Overhead*: General and administrative expenses of the Contractor's principal and branch offices, including payroll costs and other compensation of Contractor employees, deductibles paid on any insurance policy, charges against the Contractor for delinquent payments, and costs related to the correction of defective work, and the Contractor's capital expenses, including interest on capital used for the work.
- 1.33 *Performance and Payment Bonds (also known as Contract Bonds)*: The approved forms of security, furnished by the Contractor and their surety, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials and equipment by the Contractor.
- 1.34 *Post-Bid Addendum*: Document issued by the Consultant that defines a potential Change Order prior to signing of the construction contract. The Post-Bid Addendum allows the Owner to negotiate contract changes with the Bidder submitting the lowest valid bid, only if the negotiated changes to the Bid Documents result in no change or no increase in the bid price.

A Post-Bid Addendum may also be issued after a competitive construction Bid opening to those Bidders who submitted a Bid initially, for the purpose of rebidding the Project work without re-advertising.

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- 1.35 *Project*: The construction project proposed by the Owner to be constructed according to the Contract Documents. The Project, a public improvement, may be tied logistically to other public improvements and other activities conducted by the Owner or other contractors.
- 1.36 *Proposal (see also Change Order Proposal)*: The Contractor's written offer submitted to the Owner for consideration containing a specified dollar amount or rate, for a specific scope of work, and including a schedule impact, if any. A proposal shall include all costs for overhead and profit. The Contractor implements the work of a Proposal after it is accepted by all parties. Accepted Proposals are incorporated into the contract by Change Order.
- 1.37 *Proposal Request (PR)*: An Owner's written request to the Contractor for a Change Order Proposal.
- 1.38 *Punch List*: A document that identifies the items of work remaining to be done by the Contractor at the Close Out of a Project. The Punch List is created as a result of a final inspection of the work only after the Contractor attests that all of the Work is in its complete and permanent status.
- 1.39 *Request For Information (RFI)*: A Contractor's written request to the Consultant for clarification, definition or description of the Work. RFIs shall be presented by the Contractor in a timely manner to avoid any negative impact on the Schedule of Work.
- 1.40 *Request For Proposal (RFP)*: An Owner's written request to the Contractor for a Change Order Proposal.
- 1.41 *Requisition for Payment*: The document in which the Contractor certifies that the Work described is, to the best of the Contractor's knowledge, information and belief, complete and that all previous payments have been paid by the Contractor to Subcontractors and suppliers, and that the current requested payment is now due. See *Schedule of Values*.
- 1.42 *Retainage*: The amount, calculated at five percent (5%) of the contract value or a scheduled value, that the Owner shall withhold from the Contractor until the work or portion of work is declared substantially complete or otherwise accepted by the Owner. The Owner may, if requested, reduce the amount withheld if the Owner deems it desirable and prudent to do so. (See Title 5 M.R.S.A., Section 1746.)
- 1.43 *Sample*: A physical example provided by the Contractor which illustrates materials, equipment or workmanship and establishes standards by which the Work will be judged.
- 1.44 *Schedule of the Work*: The document prepared by the Contractor and approved by the Owner that specifies the dates on which the Contractor plans to begin and complete various parts of the Work, including dates on which information and approvals are required from the Owner.
- 1.45 *Schedule of Values*: The document prepared by the Contractor and approved by the Owner before the commencement of the Work that specifies the dollar values of discrete portions of the Work equal in sum to the contract amount. The Schedule of Values is used to document progress payments of the Work in regular (usually monthly) requisitions for payment. See *Requisition for Payment*.
- 1.46 *Shop Drawings*: The drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

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Definitions

- 1.47 *Specifications*: The portion of the Contract Documents consisting of the written requirements of the Work for materials, equipment, systems, standards, workmanship, and performance of related services.
- 1.48 *Subcontractor*: An individual or entity undertaking the execution of any part of the Work by virtue of a written agreement with the Contractor or any other Subcontractor. Also, an individual or entity retained by the Contractor or any other Subcontractor as an independent contractor to provide the labor, materials, equipment or services necessary to complete a specific portion of the Work.
- 1.49 *Substantial Completion*: Project status indicating when the Work or a designated portion of the Work is sufficiently complete in compliance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended purpose without unscheduled disruption. Substantial Completion is documented by the date of the Certificate of Substantial Completion signed by the Owner and the Contractor.
- 1.50 *Superintendent*: The representative of the Contractor on the job site, authorized by the Contractor to receive and fulfill instructions from the Consultant.
- 1.51 *Surety*: The individual or entity that is legally bound with the Contractor and Subcontractor to insure the faithful performance of the contract and for the payment of the bills for labor, materials and equipment by the Contractor and Subcontractors.
- 1.52 *Work*: The construction and services, whether completed or partially completed, including all labor, materials, equipment and services provided or to be provided by the Contractor and Subcontractors to fulfill the requirements of the Project as described in the Contract Documents.

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General Conditions

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General Conditions

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 Real Estate Management (BREM);
 - 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 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.

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General Conditions

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.
- 5.8 The Contractor shall comply with the Maine Code of Fair Practices and Affirmative Action, 5 M.R.S. §784 (2).

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6. Taxes

- 6.1 The Owner is exempt from the payment of Federal Excise Taxes on articles not for resale and from the Federal Transportation Tax on all shipments, as well as Maine State Sales and Use Taxes. Pricing in all Change Order Proposals from the Contractor and Subcontractors shall not include these taxes.
- 6.2 Maine statute (36 M.R.S. §1760) allows "...an exemption from sales and use tax on items which will be physically incorporated in real property of an exempt organization. This exemption only applies to lumber, hardware, doors and windows, nails, insulation and other building materials actually affixed to realty. Tools, wearing apparel, consumable supplies, machinery and equipment used by the Contractor are taxable even if purchased specifically for the exempt job."
- 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.
- 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

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General Conditions

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 BREM. The Contractor shall submit insurance certificates to the Owner and BREM at the commencement of this Contract and at policy renewal or revision dates. The certificates shall identify the project name and BREM 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 BREM.
- 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.
- 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

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General Conditions**

ensure that all Subcontractors they engage or employ will procure and maintain similar insurance in form and amount acceptable to the Owner and BREM. 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
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- 9.3.4 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

- 9.4 The Owner has determined the appropriate coverage for this particular project, verified the coverage with the State of Maine Risk Management Division, and selected the proper option on the contract form. Property Insurance for this construction contract shall one of the options described below.

- 9.4.1 New construction insured by the Contractor –

The Contractor shall procure and maintain Builder's Risk insurance naming the Owner, Contractor and any Subcontractors as insureds as their interest may appear. Covered cause 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 and coverage shall apply during the entire contract period until the Certificate of Substantial Completion is accepted by the Owner.

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- 9.4.2 Renovations and additions to existing State-owned buildings insured by the State of Maine Risk Management Division –
Builder's Risk insurance will be provided by the State of Maine in accordance with the terms and conditions of the State's property policy. The Owner shall notify Maine Risk Management Division concerning the project, including the nature and value of the work, planned start and completion date, and the name of the General Contractor. Said insurance coverage shall cover the interests of the Contractor and Subcontractor, as their interests may appear. Exclusions common to commercial property policies may be applicable. A Builder's Risk certificate of insurance will be furnished to the Contractor upon request.

The \$500 per occurrence deductible is the responsibility of the Contractor. Should the Contractor or Subcontractor desire coverage in excess of that maintained by the State, it must be acquired by the Contractor and at Contractor expense.

- 9.4.3 Renovations and additions to existing buildings *not* insured by the State of Maine Risk Management Division –
The Contractor shall procure and maintain Builder's Risk insurance naming the Owner, Contractor and all Subcontractors as insureds as their interests may appear. The covered cause of loss form shall be Risks of Direct Physical Loss, endorsed to include flood, earthquake, testing and ensuing loss and shall include coverage for materials in transit and materials stored off site. Coverage shall be on a replacement cost and a completed value basis. Unless specifically authorized by the Owner, the limit of insurance shall not be less than the contract amount and coverage shall apply during the entire contract period until the Certificate of Substantial Completion is accepted by the Owner.

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.

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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, 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.

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- 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.

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.

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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.

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.

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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.

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

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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.

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.

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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.
- 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.

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- 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 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

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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.
- 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,

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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 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.

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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 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

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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 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.

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- 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 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

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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.
- 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.

00 72 13
General Conditions

- 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.
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.

**00 72 13
General Conditions**

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.
- 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.

00 73 46
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)

00 73 46
Wage Determination Schedule

THIS DOCUMENT MUST BE CLEARLY POSTED AT THE PERTAINING STATE FUNDED PREVAILING WAGE CONSTRUCTION SITE

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.

Title of Project -----Eagle Lake Tank Replacement

Location of Project --Eagle Lake, Aroostook County

**2019 Fair Minimum Wage Rates
 Highway & Earth Aroostook County**

Occupation Title	Minimum			Occupation Title	Minimum		
	Wage	Benefit	Total		Wage	Benefit	Total
Asphalt Raker	\$20.00	\$4.86	\$24.86	Line Erector - Power/Cable	\$31.00	\$5.32	\$36.32
Backhoe Loader Operator	\$22.00	\$5.08	\$27.08	Loader Operator - Front-End	\$16.75	\$2.11	\$18.86
Bulldozer Operator	\$17.00	\$0.46	\$17.46	Mechanic- Maintenance	\$18.50	\$1.32	\$19.82
Carpenter	\$20.00	\$2.64	\$22.64	Millwright	\$24.25	\$8.80	\$33.05
Carpenter - Rough	\$19.00	\$1.88	\$20.88	Oil/Fuel Burner Serv& Installer	\$23.00	\$3.51	\$26.51
Cement Mason/Finisher	\$17.00	\$1.34	\$18.34	Painter	\$17.50	\$0.42	\$17.92
Concrete Mixing Plant Operator	\$22.11	\$4.99	\$27.10	Paver Operator	\$19.50	\$0.00	\$19.50
Crane Operator =>15 Tons)	\$26.80	\$4.74	\$31.54	Pipe-layer	\$22.00	\$1.49	\$23.49
Crusher Plant Operator	\$17.00	\$3.86	\$20.86	Re-claimer Operator	\$21.58	\$1.80	\$23.38
Driller - Well	\$19.83	\$2.66	\$22.49	Roller Operator - Earth	\$22.11	\$3.39	\$25.50
Electrician - Licensed	\$22.55	\$14.26	\$36.81	Roller Operator - Pavement	\$18.00	\$0.48	\$18.48
Electrician Helper/Cable Puller	\$17.00	\$1.34	\$18.34	Screed/Wheelman	\$17.25	\$2.36	\$19.61
Excavator Operator	\$18.00	\$0.27	\$18.27	Sider	\$16.75	\$1.38	\$18.13
Fence Setter	\$17.13	\$1.50	\$18.63	Stone Mason	\$21.00	\$0.95	\$21.95
Flagger	\$11.00	\$0.00	\$11.00	Truck Driver - Light	\$17.00	\$1.39	\$18.39
Grader/Scraper Operator	\$17.50	\$0.00	\$17.50	Truck Driver - Medium	\$18.78	\$5.14	\$23.92
Highway Worker/Guardrail Install	\$17.25	\$1.39	\$18.64	Truck Driver - Heavy	\$14.00	\$0.00	\$14.00
Ironworker - Reinforcing	\$22.11	\$2.79	\$24.90	Truck Driver - Tractor Trailer	\$15.88	\$0.00	\$15.88
Laborers (Incl. Helpers & Tenders)	\$15.00	\$0.38	\$15.38	Truck Driver - Mixer (Cement)	\$17.10	\$2.01	\$19.11
Laborer - Skilled	\$16.50	\$0.36	\$16.86				

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

Apprentices - The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

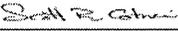
Posting of Schedule - Posting of this schedule is required in accordance with 26 MRS §1301 et. seq., by any contractor holding a State contract for construction valued at \$50,000 or more and any subcontractors to such a contractor.

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.

Determination No: HI-091-2019

A true copy

Filing Date: March 18, 2019

Attest: 

Expiration Date: 12-31-2019

Scott A. Cotnoir
 Wage & Hour Director

BLS(Highway & Earth Aroostook)

End of Section 00 73 46

SECTION 01 10 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 REQUIREMENT INCLUDED

- A. The work to be performed under this Contract shall consist of furnishing all plant, tools, equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the specifications, drawings, and other Contract Documents as herein before defined, all of which are made a part hereof, and including such detail sketches as may be furnished by the Engineer from time to time during construction in explanation of said Contract Documents. The work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract Documents which may be necessary for the complete and proper construction of the work in good faith shall be performed, furnished, and installed by the Contractor as though originally so specified or shown, at no increase in cost to the Owner.

1.2 RELATED SECTIONS

- A. Section 01 56 00: Temporary Facilities and Controls.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work shall consist of the removal and replacement of the existing underground fuel storage tank with an above ground tank and facility in Eagle Lake, Maine.

1.4 CONTRACT METHOD

- A. The work hereunder will be constructed under unit prices as indicated in the Bid Schedule.
- B. The Contractor shall include the General Conditions and Supplementary General Conditions of the Contract as a part of all of its subcontract agreements.

END OF SECTION

SECTION 01 10 90

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Schedule of references.

1.2 RELATED SECTIONS

- A. Section 01 40 00 - Quality Control.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at job site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

AASHTO	American Association of State Highway and Transportation Officials 444North Capitol Street, N.W. Washington, DC 20001
AGC	Associated General Contractors of America 1957 E. Street N.W. Washington, DC 20006

- AI Asphalt Institute
Asphalt Institute Building
College Park, MD 20740
- ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103
- EJCDC Engineers' Joint Contract Documents Committee
American Consulting Engineers Council
1015 15th Street, N.W.
Washington, DC 20005
- FS Federal Specification
General Services Administration
Specifications and Consumer Information
Distribution Section (WFSIS)
Washington Navy Yard, Bldg. 197
Washington, DC 20407
- UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

1.1 PRE-INSTALLATION CONFERENCES

- A. When required in individual specification Section, convene a pre-installation conference at work site prior to commencing work of the applicable work item.
- B. Require attendance of parties directly affecting, or affected by, work of the specific Section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda, preside at conference, record minutes, and distribute copies within two days after conference to participants, with two copies to Engineer.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURE

PART 1 - GENERAL

1.1 PROPOSED PRODUCTS LIST

- A. Within 5 days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.2 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturer's instructions and Contract Documents.

1.3 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturer's certificate to Engineer for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance/control of installation.
- B. References.
- C. Field samples.
- D. Testing laboratory services.
- E. Manufacturer's field services and reports.

1.2 RELATED SECTIONS

- A. Section 01 10 19 - Contract Considerations.
- B. Section 01 10 90 - Reference Standards.
- C. Section 01 33 00 – Submittal Procedures.
- D. Section 01 60 00 – Product Requirements.
- E. Section 31 23 16 - Excavation.
- F. Section 31 23 23 - Backfill.

1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with Manufacturer's instructions, including each step, in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents.

1.5 TESTING LABORATORY SERVICES

- A. Contractor shall employ the services of a qualified firm to perform quality control testing in the field or laboratory on moisture-density relationships (Proctors) and relative density tests on embankments, fill and backfill materials, in-place field density tests on embankments and fills, and other materials and equipment during and after their incorporation in the Work. Field sampling and testing shall be performed by the testing firm with minimum interference with construction operations. Engineer shall determine the time and location of field sampling and testing as necessary to determine that materials and equipment conform to the Contract Documents.

Contractor shall furnish all sample materials and cooperate in the sampling and field-testing activities. Contractor will furnish personnel, equipment, and facilities to perform sampling and field testing activities and to deliver samples and test specimens to the testing laboratory.

If tests indicate Work does not meet specified requirements, remove work, replace, and retest at no cost to Owner.

Contractor shall be responsible for all testing laboratory services in connection with pipe and appurtenances testing, topsoil analysis testing, and other necessary testing not included in paragraph 1.5A above.

END OF SECTION

SECTION 01 56 00

TEMPORARY FACILITIES AND CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Water Control.
- B. Dust Control.
- C. Erosion and Sediment Control.
- D. Pollution Control.

1.2 RELATED SECTIONS

- A. Section 01 10 00 - Summary of Work.
- B. Section 31 23 16 - Excavation.

1.3 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.4 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.5 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills. Prevent erosion and sedimentation.
- B. Minimize amount of bare soil exposed at one time.
- C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
- D. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.6 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Contractor shall provide dust control and cleaning as needed and per Engineer's recommendation due to construction activity.

END OF SECTION

SECTION 01 57 00

TRAFFIC CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. Regulate traffic in the area of Work being performed.
- B. Perform Work in a manner to provide safe passage for the public at all times with a minimum of obstruction to traffic.
- C. The Owner, local Police Department, Fire Department, and the Engineer will determine if safe passage is being maintained. Perform additional Work required by them to maintain safe passage.
- D. Provide all signs, barricades, flags, traffic guards, and warning devices required conforming to the current edition of the MUTCD.
- E. Provide access for residents and abutting land owners along the Project to driveways and other normal outlets from their property.
- F. Backfill all open excavations prior to stopping work for the night, unless otherwise directed by Engineer.

PART 2 - PRODUCTS

2.1 SIGNS, BARRICADES, AND WARNING DEVICES

- A. General: Comply with requirements in "Manual on Uniform Traffic Control Devices" published by Dept. of Transportation and Federal Highway Administration, and requirements of Maine Dept. of Transportation.
- B. Contractor to submit a Traffic Control Plan for all phases of construction to be approved by Owner and Engineer prior to the start of construction.
 - 1. Failure of the Contractor to abide the developed Traffic Control Plan shall result in a suspension of work until corrections are made to follow the submitted Traffic Control Plan.

PART 3 - EXECUTION

3.1 MAINTENANCE OF TRAFFIC

- A. General: Maintain at least one-way traffic through the Work area during working hours and two-way traffic during the night and on weekends and holidays.

3.2 DETOURS

- A. General: Provide, identify and maintain suitable detours when the Project, or any part thereof, is closed to public travel.

When the closed part of the Project is reopened, restore the detour area, and any other disturbed areas, to the original condition as approved by the Engineer.

- B. Approval: All detours must be approved by Owner, Police and Fire Departments, MDOT, and Engineer.
- C. Request Approval of Detours: Make written request for detours two business days in advance of their proposed use.
- D. Notification: Notify Owner, Police Department, Fire Department, MDOT, and Engineer when detours are put into use and when they are reopened.

3.3 SCHEDULING OF WORK

- A. Revise the plan of Work if, in the opinion of the Engineer, it will create traffic hazard or an unreasonably long detour.
- B. Do not start Work in any new location without the permission of the Engineer.

3.4 SIGNS, BARRICADES, AND WARNING DEVICES

- A. Provide adequate warning signs, barricades, signal lights, and take other necessary precautions for the safety of the public.
- B. Provide and illuminate suitable warning signs to show where construction, barricades, or detours exist.
- C. Signal lights: Illuminate at all barricades and obstructions from sunset to sunrise.
- D. Maintain necessary signs, as required by the MDOT, barricades, lights, and other safety precautions during authorized suspension of the Work, weekends, holidays, or other times when construction Work is not in progress.

3.5 UNIFORMED TRAFFIC GUARDS

- A. Uniformed Traffic Guards: Provide uniformed traffic guards as required by MDOT, Owner, or the Engineer.

3.6 EXISTING SIGNS

- A. Temporarily Reset and Maintain street directory and regulatory signs which must be moved during construction. Relocate signs so that no traffic hazards are created.
- B. Permanently reset signs at designated locations prior to completion of Work.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.2 RELATED SECTIONS

- A. Section 01 10 19 - Contract Considerations.
- B. Section 01 40 00 - Quality Requirements.

1.3 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

1.4 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.5 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.

- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
- D. Store loose granular materials on solid flat surfaces in a well-drained area. Avoid mixing with foreign matter.
- E. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.6 PRODUCT OPTIONS

- A. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions. The use of “or equal” materials or equipment shall conform to the requirements set forth in Section 7.04 of the General Conditions.
- B. The Engineer will consider requests for substitutions as set forth in Section 7.05 of the General Conditions.

END OF SECTION

SECTION 03 10 00

CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other affected work.
- C. Form accessories and embedded items.
- D. Form stripping.

1.2 RELATED SECTIONS

- A. Section 03 20 00 - Concrete Reinforcement.
- B. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete.
- C. ACI 347 - Recommended Practice For Concrete Formwork.
- D. PS-1 - Construction and Industrial Plywood.

1.4 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to code requirements; resultant concrete to conform to required shape, line and dimension.
- B. Earth forms not permitted.

1.5 SUBMITTALS FOR REVIEW

- A. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.
- B. Product Data: Provide data on void form materials and installation requirements.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301, 318, and 347 standards.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Transport, handle, store, and protect products.
- B. Deliver void forms and installation instructions in manufacturer's packaging.
- C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.

2.2 FORMWORK ACCESSORIES

- A. Form Ties: Type typical with Contractor's forming system.
- B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.
- C. Corners: Chamfered, wood strip type; 3/4 inch by 3/4 inch size; maximum possible lengths.
- D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members which are not indicated on Drawings.
- F. Provide chamfer strips on external corners.
- G. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- H. Coordinate this section with other sections of work which require attachment of components to formwork.
- I. Construct and erect formwork to maintain tolerances in accordance with ACI 301.

3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.4 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items which will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- D. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.5 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.

- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
- B. Do not use patched wooden form panels for concrete surfaces exposed to view.

3.7 FORM REMOVAL

- A. Notify Architect/Engineer prior to removing formwork.
- B. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- C. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- D. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

- A. Section 01 33 00 - Submittals.
- B. Section 03 10 00 - Concrete Formwork.
- C. Section 03 30 00 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements For Reinforced Concrete.
- C. ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
- D. ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
- E. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- F. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- G. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.
- H. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.

1.4 SUBMITTALS FOR REVIEW

- A. Submit under the provisions of Section 01 33 00.
- B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 318.

PART 2 PRODUCTS

2.1 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, unfinished.
- B. Stirrup Steel: ASTM A82, unfinished.
- C. Welded Steel Wire Fabric: ASTM A185 Plain Type; unfinished.
- D. Use no reinforcement less than #4 size; except for column ties.

2.2 ACCESSORIES

- A. Tie Wire: Minimum 16 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.

2.3 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice and ACI 318.
- B. Locate reinforcing splices at point of minimum stress. Review location of splices with Architect/Engineer.
- C. Space reinforcement no more than 18 inches on center.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Conform to applicable code for concrete cover over reinforcement.

3.2 FIELD QUALITY CONTROL

- A. Inspect for acceptability.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cast-in-place concrete footings, foundation walls, and building slabs.
- B. Control, expansion and contraction joint devices associated with concrete work, including joint sealants.

1.2 RELATED SECTIONS

- A. Section 03 10 00 - Concrete Formwork: Formwork and accessories.
- B. Section 03 20 00 - Concrete Reinforcement.

1.3 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- C. ACI 305R - Hot Weather Concreting.
- D. ACI 306R - Cold Weather Concreting.
- E. ACI 308 - Standard Practice for Curing Concrete.
- F. ACI 318 - Building Code Requirements for Reinforced Concrete.
- G. ASTM C33 - Concrete Aggregates.
- H. ASTM C94 - Ready-Mixed Concrete.
- I. ASTM C150 - Portland Cement.
- J. ASTM C260 - Air Entraining Admixtures for Concrete.
- K. ASTM D1752 - Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.4 SUBMITTALS FOR REVIEW

- A. Product Data: Provide data on concrete mix, joint devices, attachment accessories, and admixtures.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.
- B. Acquire cement and aggregate from same source for all work.
- C. Conform to ACI 305R when concreting during hot weather.
- D. Conform to ACI 306R when concreting during cold weather.

1.6 COORDINATION

- A. Coordinate work with other affected trades.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type II - Moderate, Portland type.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

2.2 ADMIXTURES

- A. Air Entrainment: ASTM C260.
- B. Water-Reducing Admixture: ASTM C 494, Type A.
- C. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- D. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- E. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.3 ACCESSORIES

- A. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 5,000 psi in 28 days.

2.4 JOINT DEVICES AND FILLER MATERIALS

- A. Joint Filler: ASTM D1752; Closed cell polyvinyl chloride molded vinyl foam or premolded sponge rubber, resiliency recovery of 95 percent if not compressed more than 50 percent of original thickness.

- B. Construction Joint Devices: Integral galvanized steel or extruded plastic; formed to tongue and groove profile, with removable top strip exposing sealant trough, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge.

2.5 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ASTM C94.
- B. Provide concrete in accordance with the Master Limits Table below:

Master Limits Table

	<u>A</u>
Compressive Strength (psi at 28 day)	4500
Aggregate Size (maximum in inches)	0.75
Minimum Cement Content (lbs/CY)	611
Water/Cement Ratio (max. by wt.)	0.44
Slump - Plus or minus 1 inch	3
Air Entrained (percent) Plus or Minus 1.5	6

**If interior slabs are placed during a wet and cold part of construction season, then air entrainment may be required.*

- C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.
- D. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.2 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

3.3 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301.
- B. Notify Architect/Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.
- D. Install joint devices in accordance with manufacturer's instructions.
- E. Apply sealants in joint devices.
- F. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- G. Place concrete continuously between predetermined expansion, control, and construction joints.
- H. Do not interrupt successive placement; do not permit cold joints to occur.

3.5 CONCRETE FINISHING

- A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.
- B. Steel trowel surfaces which are scheduled to be exposed.

3.6 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Protect concrete structures from frost penetration and action until building is permanently enclosed with a functioning heating system.

3.7 FIELD QUALITY CONTROL

- A. Provide free access to Work and cooperate with testing firm.
- B. Five concrete test cylinders will be taken for every 50 cubic yards or less of each class of concrete placed. Cylinders breaks will be completed as follows: one at 7 days, one at 14 days, two at 28 days, and one hold.
- C. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.
- D. One slump test will be taken for each set of test cylinders taken.

3.8 PATCHING

- A. Allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.
- C. Patch imperfections in accordance with ACI 301.

3.9 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

3.10 SCHEDULE

- A. Slab: Type A.

END OF SECTION

SECTION 07 21 13

BOARD INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Installation of trench insulation.

1.2 RELATED SECTIONS

- A. Section 31 23 23 - Backfill.
- B. Section 31 23 17 - Trenching.

1.3 REFERENCES

- A. ANSI/ASTM D2842 - Water Absorption of Rigid Cellular Plastics.
- B. ASTM C578 - Preformed Cellular Polystyrene Thermal Insulation.
- C. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.
- D. FS HH-I-530 - Insulation Board, Thermal, Unfaced, Polyurethane or Polyisocyanurate.

1.4 SUBMITTALS

- A. Product Data: Provide data on product characteristics, performance criteria and limitations.
- B. Manufacturer's Installation Instructions: Indicate special environmental conditions required for installation and installation techniques.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not install insulation adhesives when temperatures or weather conditions are detrimental to successful installation.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Polystyrene Perimeter Board Insulation: ASTM C578 Type VI extruded cellular type, conforming to the following:
- | | |
|-----------------------|--|
| Thermal Resistance: | 10 |
| Thickness: | Thickness 2 inches |
| Board Size: | 4 feet wide by 8 feet long |
| Compressive Strength: | Minimum 30 psi |
| Water Absorption: | In accordance with ANSI/ASTM D2842 0.3 percent by volume maximum |
| Edges: | Shiplap |

2.2 ADHESIVES

- A. Adhesive: Type recommended by insulation manufacturer for application.

2.3 ACCESSORIES

- A. Tape: Self-adhering tape, mesh reinforced 2 inches wide.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

3.2 INSTALLATION - TRENCH INSULATION

- A. Insulate all pipe installation with less than 4 feet of cover to obtain the equivalent of 4 feet of cover, or as directed by the Resident Inspector. For determination of required thickness of insulation, 2 inches of insulation is considered equivalent to one and a half feet of soil cover.
- B. Install per manufacturer instructions and according to detail on Contract Drawings.
- C. Install horizontal insulation on top of minimum 3-inch layer of compacted select bedding material above top of pipe.
- D. Backfill by hand for first 6-8 inches over insulation and compact prior to placing remaining backfill.
- E. Install each type of insulation in accordance with manufacturers' recommendations.

- F. Rigid insulation shall be clean, dry and free of any material which can dissolve plastic, such as asphalt.

3.3 SCHEDULE

A. Sanitary Sewer:

1. Two feet wide for pipes smaller than six inches in diameter, or as directed by the Resident Project Representative.
2. Four feet wide for pipes six inches in diameter and greater, or as directed by the Resident Project Representative.

END OF SECTION

SECTION 23 13 00

FACILITY FUEL STORAGE SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Provide an integrated fuel system for AVGAS. The specification requires the detailed system design, equipment, installation, startup, and training to be the responsibility of a single specialized fuel system supplier. The specification section includes responsibility for mechanical, electrical, and control systems. Provide complete, in place fuel storage system as indicated on the drawings and specified herein, including but not necessarily limited to:

1. Fuel storage tank and accessories.
2. Fuel distribution pipe, valves and fittings.
3. Fuel transfer and control.
4. Tank level and leak monitoring system.
5. Tank fill containment.
6. Fuel filtration.
7. Installation of tank and piping system.
8. All required permits, certifications, and specifications.

B. Section Includes:

1. Aboveground AVGAS fuel storage tank.
2. Aboveground steel secondary containment tank.
3. Tank level and leak detection system.
4. Remote fill station.
5. Emergency Venting.
6. Fuel management system.
7. Submersible turbine fuel pump.
8. AVGAS fuel dispenser.
9. AVGAS fuel filter.
10. Power hose reel, AV hose & nozzle.
11. Static cable & reel.

C. RELATED WORK SPECIFIED ELSEWHERE:

1. Excavating, backfilling and compacting.
2. Cast-in-place concrete
3. Basic mechanical requirements
4. Basic electrical requirements.

1.2 GOVERNING STANDARDS/REFERENCES

A. Equipment and installation necessary to accomplish the work specified herein shall comply with the latest revisions of the applicable federal, state, and local codes and regulations concerning above ground fuel storage and dispensing systems including but not limited to the following:

1. State of Maine – CMR Chapter 691
2. National Fire Protection Association: Flammable and Combustible Liquids Code (NFPA 30) & Automotive and Marine Service Station Code (NFPA 30A)
3. Underwriters Laboratories, Inc., Non-metallic underground piping for petroleum products, gasoline-alcohol blends. Alcohols such as methanol and ethanol, and reformulated fuels (File MH9162).
4. National Electric Code (NEC), Article 513
5. ANSI B31, American National Standard Code for Pressure Piping
6. API 2000, Venting Atmospheric and Low Pressure Storage Tanks
7. NFPA 30, Flammable and Combustible Liquids Code
8. NFPA 70, National Electric Code
9. API 650, Welded Steel Tanks for Oil Storage
10. API 2000, Venting Atmospheric and Low Pressure Storage Tanks
11. PEI/RP 200-92, Recommended Practices for Installation of Aboveground Storage Systems
12. UL 142, Steel Aboveground Tanks for Flammable and Combustible Liquids
13. UL 2085, Insulated Aboveground Tanks for Flammable and Combustible Liquids
14. Uniform Fire Code: Article 52, Article 79, and Appendix II-F
15. BOCA Fire Prevention Code

1.3 SUBMITTALS

- A. Shop Drawings: Indicate system layout, pipe sizes, location of supports, elevations, and equipment mounting details. For fuel tank: Indicate dimensions, and location of all accessories.
- B. Product Data: Provide data on pipe materials, pipefittings, valves and accessories. Provide manufacturers catalog information for all equipment.
- C. Electrical System Design: Provide drawings and specifications that include the proposed conduit layout and wiring diagrams for equipment covered in this section that requires electrical connections. Indicate conduit size and material, number and size or wires, location of wiring in classified areas and location of intrinsically safe circuits and conduits.
- D. Provide a piping and instrument diagram for the system including a complete bill of material/equipment list.
- E. Control System Design: Provide control system designs including electrical schematics, panel physical, and field wiring diagrams. Control panels shall include power conditioners.
- F. Structural Design: Provide drawings of reinforced concrete slabs. Include conduit stub up locations, and barrier spacing.
- G. Calculations: Provide calculations for pump selection, pipe sizes, pipe support requirements, atmospheric vent sizing, and emergency vent sizing.

- H. Equipment Data: Provide manufacturers information for all equipment.
- I. Permit Applications: Provide copies of all permit applications.
- J. Schedule: Provide a design and installation schedule.

1.4 CLOSEOUT SUBMITTALS

- A. Record and submit actual location of piping system, storage tanks, wiring, conduit runs and system components.
- B. Operations and Maintenance Manual.
 1. Operation Data: Include installation instructions and exploded assembly views.
 2. Maintenance Data: Include maintenance and inspection data, replacement part numbers and availability, and service depot location and telephone numbers for all system equipment.
 3. Provide four (4) copies of Operations and Maintenance manual.

1.5 QUALITY ASSURANCE

- A. Installation shall follow the latest version of the Petroleum Equipment Institute Publications RP 100, RP 200, and RP 300, NFPA-30, 30A and 31 and all manufacturers current installation instructions.
- B. Comply with NFPA 30 “Flammable and Combustible Liquids Code” and NFPA 30A “Automotive and Marine Service Station Code” for design and construction, installation, inspection, and testing of fuel dispensing system components and accessories.
- C. Comply with NFPA 70 “National Electric Code” for equipment, wiring, and conduit installed under this section.
- D. Provide listing/approval stamp, label, or other marking on equipment made to specified standards.
- E. Welding Materials and Procedures: Conform to ASME Code and applicable state labor regulations.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.
- B. Installer: Company specializing in performing the work of this section with minimum five (5) years documented experience.
- C. Only workmen who have a minimum of two (2) years experience installing this type equipment shall perform installation of equipment.

- D. The contractor shall be International Fire Code Institute certified in the installation of underground/aboveground storage tank equipment. Call 1-888-708-5423 for certification service information.

1.7 DELIVERY STORAGE AND HANDLING

- A. Deliver, store, protect and handle products to site.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

PART 2 – PRODUCTS

2.1 ABOVEGROUND FIRE RATED FUEL TANKS – UL 2085

- A. Manufacturers.
 - 1. Tank shall be manufactured by Highland Tank; Stoystown, PA; Manheim, PA; Lebanon, PA; Watervliet, NY; Greensboro, NC.
 - 2. Engineer approved equivalent.
- B. GENERAL
 - 1. Provide and install pre-engineered aboveground tank systems complete with tank, piping, secondary containment, gauges, and other accessories specified herein as a complete assembled system. The primary tank shall have a total volume of 6,000 gallons.

C. DESIGN CRITERIA

The tank system shall be designed and testing in strict accordance with UL- 2085. The UL 2085 listing for insulated secondary containment aboveground tanks for flammable liquids shall encompass both fire protected and fire resistant approvals. Numbered brass plaques issued by Underwriters Laboratories, Inc. confirming UL subject 2085 approval shall be installed on the tank and be clearly visible to inspectors. System shall provide for two (2) hour fire protection in accordance with Uniform Fire Code: Article 52, Article 79 and Appendix II-F. System shall provide for two (2) hour fire protection in accordance with NFPA 30. Integral secondary containment shall provide at minimum 100% containment of the primary storage tank. A leak detection access tube shall be located in the interstitial space between the inner and outer tank.

D. TANK CONSTRUCTION: Internal Steel Tank

- 1. Tank: The primary tank shall be minimum .25-inch thick carbon steel; the secondary tank shall be a minimum .18-inch thick carbon steel approved per UL Standard 142 with shell seams of continuous lap weld construction. Integral secondary containment shall provide at minimum 100% containment of the primary storage tank. The interstitial space shall allow liquid to migrate through it to a monitoring point. A leak detection access tube shall be located in the interstitial space between the inner tank and the secondary barrier. An interstitial monitoring

sight glass that allows for visual inspection of the interstitial shall be located as noted on drawings.

2. Steel tank shall meet UL 142 – Secondary Containment aboveground Tank for Flammable Liquids. Steel primary containment tank contained within a steel secondary containment shell forming an interstitial (annular) space that is capable of being monitored for leakage with integral welded steel supports. A minimum of 3" of porous, lightweight monolithic thermal insulation material shall be installed at the factory within the interstitial space between the inner and outer wall.
3. Tanks shall comply with the normal and emergency venting requirements of NFPA 30.
4. Tanks shall carry and 30-year written warranty including materials and workmanship.
5. The secondary containment space shall be vented with an emergency vent complying with NFPA 30, Section 2-3.4.1 and 2-3.6.

E. TANKS APPURTENANCES: The tank manufacturer shall provide the following integral components:

1. Saddles: Tank shall have integral seam welded tank saddles in accordance UL Standard 142 designed to support the full load of tank and contents. Saddles shall provide for a minimum 6" clearance between tank and pad for complete visual inspection. The tank support system shall be anchored to concrete pad to protect from floatation. Saddle anchors shall be as provided by tank manufacturer.

F. VENTING

1. Provide properly sized UL listed and CARB approved emergency and standard vents to satisfy code requirements. Standard vent shall terminate a minimum of 12' above the adjacent ground level.

G. GROUNDING

1. A grounding cable, clamp, and ground rod shall be provided by tank manufacturer and installed by contractor. System shall be electrically grounded in full compliance with NFPA 78 standards for static electricity build up. Clamp shall be attached to base of vent riser prior to finish painting.

H. EXTERIOR FINISH

1. The complete tank system shall include a urethane based high gloss white exterior finish. The final coat shall be a clear fuel resistant coating. Color of finish to be like the adjacent hanger building. Manufacturer to supply available color options for owner's approval in a timely manner.

I. INTERIOR FINISH

1. The entire tank interior shall be coated with a Novolac Epoxy Liner, "Chemline 4000", consisting of a minimum of 2 coats (6-8 mils per coat) applied in accordance with manufacturer's requirements.

J. ENVIRONMENTAL PROTECTION

1. All service fittings shall have 12"x12" gauge/deflector plates under them on bottom of tank.

2.2 ABOVE GROUND STORAGE TANK ACCESSORY EQUIPMENT

- A. Direct Read Level Gauge: Tank shall be equipped with a direct reading level gauge with aluminum housing. The level gauge shall be readable from ground level. Morrison model #818 with high level alarm or engineer approved equivalent.
- B. Inspection Port Adapter Cap: Tank shall be equipped with a 4" adapter and lockable cap for inspection and manual gauging of fuel level. Gauge port shall be accessible from a ladder.
- C. Tank Fill System: The tank shall be provided with a FillMate fill container designed to minimize and contain oil spilled when disconnected the delivery fitting during normal tank filling operations. The interior shall be prime coated and painted with durable white urethane to aid in visual product lead inspection. Total leak containment shall be seven (7) U.S. gallons.
- D. Line Purging Valve: Carbon steel, stainless ball, with Viton seals.
- E. Spill Sump Drain Valve: Tied into suction side of pump. Carbon steel, stainless ball, with Viton seals.
- F. Ground Stud: Provide labeled ground stud for connection to static bonding cable.
- G. Operating Valve: 3" stainless steel ball valve.
- H. Check Valve: Iron body, Viton seals.
- I. Overfill Prevention Valve: Installed in the fill pipe. The valve shall close automatically at 90% of tank capacity. The valve shall incorporate a crop tube extending to within 6" of the tank bottom. Valve shall be rated for pressurized fuel delivery. Valve shall include integral vacuum breaker for siphon prevention. Size as shown on drawings.
- J. Product/Vapor Piping: All piping shall be 304L Stainless Steel Schedule 10 belled fitted fittings and pipe connections are ANSI 150# RF Flanged w/#5 bolts, nuts and stainless washers on both flange sides, Victaulic roll groove couplings and /or threaded galvanized steel with Stainless Steel flexible connectors.
- K. Disconnect Coupling: Stainless steel assembly with dust cap for supply delivery connection. Fitting shall be coordinated with fuel supplier to assure compatibility. Installed fitting shall be at 45 degree angle pointing upward to minimize drips. Fitting shall include 40-mesh stainless steel cone strainer.
- L. Product Label Marker: Stainless steel band clamp with API color-coded plaque for product being stored.
- M. Provide decal or placard affixed to the tank fill box that gives a detailed, step-by-step tank filling procedure as well as the tank calibration chart. The decal or placard must

be readily visible during tank filling operations and must be of a material that does not deteriorate when exposed to weather.

2.3 FUEL DISTRIBUTION PIPE AND PIPE FITTINGS, ABOVEGROUND

A. DESIGN CRITERIA

1. Steel pipe: ASTM A53 or A120, or ASME B36.10, Schedule 10 304L stainless steel.
2. Finish: Prime and finish paint with industrial urethane applied in controlled atmosphere per manufacturer's recommendations.
3. Remote aboveground pipe to be 1 ½" galvanized steel.

B. ACCESSORY EQUIPMENT

1. Ball valves: Stainless steel two-piece body, stainless steel ball, Teflon seats and stuffing box ring, level handle and balancing stops, threaded ends with union.

2.4 FUEL DISPENSING SYSTEM

A. Pump: Submersible Turbine Pump. Provide a UL listed Submersible Turbine Pump with the following capabilities:

1. Turbine shall include an integral check valve to hold operating pressure at 30 psi to minimize loss of pressure due to thermal contraction. Leak detector shall be designed to trip with loss of piping pressure.
2. The entire pumping assembly shall have UL listing and shall meet all requirements of UL Standard UL 79.
3. The pump discharge head and manifold assembly shall be manufactured from ASTM A48 Class 30 gray iron.
4. The pump motor shall have a thermal over current overload protector with automatic reset.
5. The pump motor assembly shall be clearly marked with pertinent information including horsepower, voltage, phase and manufacturer.
6. The pumping unit shall not incorporate any flexible diaphragms and all sealing shall be accomplished with "O" rings or UL recognized fiber gaskets.
7. The motor assembly height shall be field adjustable utilizing a UL listed telescoping shaft and set to a minimum of 6" from the bottom of the tank.
8. Provide a piston style mechanical leak detector capable of slowing flow while detecting a 3-gph leak rate. Leak detector shall be all fuels compatible utilizing Teflon for all dynamic sealing surfaces. Leak detector shall be manufactured specifically for use with intended product and piping system.
9. The piping system shall include an approved anti-siphon system. Valve(s) shall have integral pressure relieve or be provided with an external pressure relieve. All piping and valves shall be constructed of stainless steel or have a melting point higher than nodular iron in compliance with NFPA 30 & 30A.

B. Design Basis: Submersible turbines to be Red Jacket model AGP200SI-3,2 HP.

C. Flow at nozzles to be 15-gpm minimum.

2.5 PRODUCT DISPENSERS – PRESSURIZED SUPPLY

- A. Provide a single product hose dispenser to supply one dispensing station via isolation valves, UL listed full cabinet remote dispenser with the following:
 - 1. Manufacturers
 - a) Gasboy Atlas 9853K, Remote Digital Dispenser
 - b) Engineering approved equivalent.
- B. General – Provide UL listed, single product, single hose fuel dispenser.
- C. Design Criteria
 - 1. Register: Volume only 1” back lighted LCD display
 - 2. Totalizer: Displayed on LCD by magnetic switch activation, battery-backed.
 - 3. Pulser: Dual phase 1000:1 with error detection. Selectable pulse/gallon outputs.
 - 4. Meter: Three piston, positive displacement. Tested and calibrated for accuracy at any speed or pressure. Weights and Measures approved/scalable.
 - 5. Cabinet:
 - a. Finish – Top, sides, and bezel painted black. Front and back panels painted white or specify color. Black acrylic graphic overlay on dial face.
 - b. Construction – Hot-dipped galvanized steel panels for rust resistance.
 - c. Lights – Fluorescent. Illuminate product panels and register areas
 - 6. Filters: Two (2) one at each hose reel, Velcon with pressure differential gauge and Acquacon elements.

2.6 PRODUCT NOZZLES, HOSES AND HOSE RETRIEVERS

- A. Nozzles to be OPW #295 SA.
- B. One (1) dispensing hose to be 1”x 150ft. long Aviation Certified.
- C. One hose reel to be 150 ft. power rewind.
- D. One static cable and reel 150 ft. long.

2.7 TANK LEVEL LEAK MONITORING SYSTEM

- A. Manufacturers
 - 1. Electronic leak detection system by Omntec model ELP21LU2.
 - 2. Engineer approved equivalent.

2.8 KEY ACTIVATED FUEL MANAGEMENT SYSTEM

- A. Manufacturers
 - 1. Gasboy, TopKat
 - 2. Engineer approved equivalent.
- B. General: Provide an integral TopKat fuel management system **with optional printer**, factory-mounted on Gasboy 9800 series dispenser specified above.

C. Design Criteria

1. Handles up to 50 vehicles and 50 employees.
2. Uses injection-molded smart key for vehicle identification.
3. Limits fuel type, amount dispenses, and number of fuelings per day.

2.9 HARDWARE FEATURES

- A. Power & Environmental requirements; 115 VAC \pm 10%, 47-63Hz, operates-30C to +50C.
- B. Data Entry: 4x4 weatherproof membrane keypad with audible feedback. Read/write key receptacle, two line x 20 character, backlit LCD.

2.10 DEMONSTRATION

- A. Representative of the equipment supplies for the fuel management system shall provide necessary training and technical support to the owner so that the owner may properly operate and maintain the system.

2.11 ELECTRICAL CONTROL SYSTEM

- A. All wiring shall be designed and installed in strict accordance with NFPA 70.
- B. Tank system shall be factory pre-wired and supplied with remote mounted NEMA 4X emergency stop control panel. Panel to be equipped with means of disconnected all fueling system circuits per NFPA 70-514.
- C. System shall include branch circuit panel board, pump motor starter, disconnect relays, pump running indicator, panel disconnect, with maintained mushroom head push button.
- D. System shall require only one 230V Single Phase 30 amp feeder from main distribution panel.
- E. Enclosure: NEMA 4X fiberglass.
- F. System shall connect to tank with a single explosion proof UL Listed and CSA Approved for Class I, Groups B, C, D, Divisions 1 and 2 direct burial multiple conductor cable. Conductors shall be color coordinated with control panel and tank connections.
- G. Remote Emergency Shut Off shall be installed according to applicable codes.

2.12 TANK SYSTEM MATERIALS SUMMARY

- 6,000-gallon, above ground, Fireguard tank for AVGAS, painted (color by owner) or equivalent
- Dual wall steel tank with welded saddles
- Factory pre-assembly
- Emergency venting
- Atmospheric venting
- 18" man-way
- Vapor tight lockable stick port
- Gauge stick
- Mechanical clock gauge with drop tube interstitial monitoring system
- Decals and signage
- Remote fill station
- Fill ID tag
- Lockable operating valve
- Check valve
- 3" overfill valve with drop tube
- 2 HP submersible pump
- Anti-siphon valve
- Electronic leak detector fire/shear valve
- Gasboy 9853Atlas remote digital dispenser or equivalent
- Gasboy TopKat integral fuel management system with optional integral printer (up to 50 users) or equivalent
- Remote emergency shut off
- One (1) Velcon Aviation filters with differential pressure gauge and aquacon elements
- One (1) OPW 295 SA overawing nozzles
- One (1) 150 ft. static cables and reels
- One (1) 150 ft. power rewind reel with 1"x 150 ft. aviation certified hose, mounted at tank with isolation valve.
- 30 year limited tank warranty
- SPCC plan
- Fire extinguishers (as required)
- Appropriate spill kit
- Engineer approved equivalents

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify concrete pad is ready for tank installation.

3.2 FUEL TANK INSTALLATION

- A. Install tanks in strict accordance with the manufacturer's recommendations, applicable fire and environmental codes. State and local permits shall be obtained prior to installation.
- B. Aboveground. Tank shall be clearly marked on all sides with warning signs: "FLAMMABLE", or "COMBUSTIBLE", "NO SMOKING", tank volume, product identification, and other signs as required by the applicable codes.
- C. Electrical work shall be in accordance with applicable codes and shall be rated for hazardous area as required. Tanks shall be electrically grounded in accordance with NFPA 78.
- D. The tank installation shall be inspected and approved by the tank supplier or its certified contractor. The tank supplier shall submit a comprehensive checklist of quality and safety items critical to the system and verify that the installation has been in accordance with these standards and applicable fire and environmental codes.

3.3 TANK LEVEL MONITORING SYSTEM INSTALLATION

- A. Install in strict accordance with the manufacturer's recommendations, National Electric Code NFPA 70, NFPA 30A and local/State of Maine requirements.
- B. Electrical work shall be rated for hazardous area as required.
- C. Install the tank level probe in the proper locations in the fuel tank.
- D. Install the overflow alarm and acknowledgement switch as shown in the plan.

3.4 ELECTRICAL SYSTEM

- A. Design, provide and install all branch circuit conduit and wiring for equipment installed in this section. All wiring shall be designed and installed in strict accordance with NFPA 70.

3.5 FIELD QUALITY CONTROL

- A. Test fuel distribution system according to NFPA 30. Replace leaking joints and connections with new materials.
- B. Test and adjust fuel management and leak monitoring systems controls and devices. Replace damaged and malfunctioning controls and devices.
- C. Submit reports of test and procedures in writing to the Engineer.

3.6 DEMONSTRATION

- A. Train owner's maintenance personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing and preventive maintenance.
- B. Representatives of equipment suppliers for the leak monitoring system shall provide necessary training and technical support to the owner so that the owner may properly operate and maintain the systems.

3.7 COMMISSIONING

- A. Before activating the system, perform these steps:
 - 1. Flush system piping with grade of fuel to be used by owner to remove any debris and foreign matter in piping prior to filling tank for the first time. Service all system filters and screens and dispose of fuel in accordance with EPA and NFPA regulations after flushing.
 - 2. Open valves to correct position for system operation.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Remove surface debris.
- B. Remove paving, curb, structures and pipes.
- C. Clear site of plant life and grass.
- D. Remove trees and shrubs.
- E. Remove root system of trees and shrubs.
- F. Topsoil Excavation.

1.2 RELATED SECTIONS

- A. Section 31 23 16 - Excavation.
- B. Section 31 23 18 - Rock Removal.

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable code for disposal of debris.
- B. Contractor is required to contact Dig Safe prior to construction.
- C. Coordinate clearing Work with local utility companies.

PART 2 - EXECUTION

2.1 PREPARATION

- A. Verify that existing plant life designated to remain is tagged or identified.
- B. Install silt fencing in accordance with Section 01 56 00 before starting clearing.
- C. Coordinate clearing work with Owner.

2.2 PROTECTION

- A. Locate, identify, and protect utilities that are to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.

- C. Protect bench marks and existing structures from damage or displacement.

2.3 CLEARING

- A. Remove paving where applicable.
 - B. Remove trees and shrubs within marked areas. Remove stumps, main root ball, root system and surface rock to depth limitation on plans.
 - C. Clear undergrowth and deadwood using proper methodology to minimize the mixing of topsoil.
- D. Clear areas required for access to site and execution of work.

2.4 REMOVAL

- A. Any debris, rock, and extracted plant life must be removed off site and disposed of at an approved location.
- B. Remove the existing culverts, valves, pipe, structures, curb and other site features as indicated on the Contract Drawings and disposed of at an approved location. The Owner shall have first right and refusal of the equipment and materials associated with the site features.
 - 1. Contractor to remove all existing storm drainage structures within the project limits not scheduled for reuse, unless otherwise noted. Backfill with approved granular material.
 - 2. Contractor to remove all existing storm drainage piping within proposed trenches; all other pipe to be abandoned in-place, unless otherwise noted.
 - a. Contractor to fill all abandoned pipes with flowable fill. Contractor to ensure that entire run of abandoned pipe is filled with flowable fill.

END OF SECTION

SECTION 31 22 13

ROUGH GRADING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Completion of rough grading.
- B. Removal of topsoil and subsoil. Stockpile for later reuse. Evenly distribute excess on site.
- C. Grading and rough contouring the site.

1.2 RELATED SECTIONS

- A. Section 01 33 00 - Submittal Procedure.
- B. Section 01 40 00 - Quality Requirements.
- C. Section 31 10 00 – Site Clearing.
- D. Section 31 23 16 – Excavation.
- E. Section 31 23 18 - Rock Removal.
- F. Section 31 23 23 – Backfill.
- G. Section 32 12 16 - Asphaltic Paving

1.3 REFERENCES

- A. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12-inch (304.8 mm) Drop.
- B. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by the Sand-cone Method.
- C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18-inch (457 mm) Drop.

1.4 SUBMITTALS

- A. Samples: Submit 10 lb. sample of each type of fill to testing laboratory, in air-tight containers.

- B. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

1.5 SITE CONDITIONS

- A. It is the intent of this item for the Contractor to perform whatever rough grading may be required to complete installation of utilities, dumpster pad and paved areas, and building foundation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: Excavated material, graded, free of roots, rocks larger than 1-inch subsoil, debris, and large weeds.
- B. Subsoil: Excavated material, graded, free of lumps larger than six inches, rocks larger than three inches and debris.

PART 3 - EXCAVATION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 31 10 00.
- B. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.
- C. Notify utility company to remove and relocate utilities if required.
- D. Protect above the below grade utilities which are to remain.
- E. Upon discovery of unknown utility or concealed conditions, discontinue affected Work. Notify Architect/Engineer.
- F. Protect plant life and other features remaining as a portion of final landscaping.
- G. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

3.3 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated.
- B. Stockpile in area designated on site. Cover to protect from erosion. Remove excess topsoil not being reused, from site.
- C. Do not excavate wet topsoil.

3.4 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, landscaped, or re-graded.
- B. Stockpile in area designated on site. Remove excess subsoil not being reused, from site.
- C. Do not excavate wet subsoil, dewater prior to excavation.
- D. Stockpile subsoil to depth not exceeding eight feet. Cover to protect from erosion.
- E. When excavation through roots is necessary, perform work by hand and cut roots with sharp axe.

3.5 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Granular Fill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth, compacted to 95 percent.
- C. Subsoil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth, compacted to 95 percent.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum six inches in 10 feet unless noted otherwise.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus fill materials from site.

3.6 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus one-inch.

3.7 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 40 00.
- B. Compaction testing will be performed in accordance with ANSI/ASTM D1557, ANSI/ASTM D2922, and with Section 01 40 00.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- D. Frequency of Tests: One test per 1,000 s.f.

END OF SECTION

SECTION 31 23 16

EXCAVATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Excavation for site structures.

1.2 RELATED SECTIONS

- A. Section 31 10 00 – Site Clearing.
- B. Section 31 23 17 - Trenching.
- C. Section 31 23 23 - Backfill.
- D. Section 31 23 18 - Rock Removal.
- E. Section 31 38 00 – Geotextiles.

1.3 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.

PART 2 - EXECUTION

2.1 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known underground, above ground and aerial utilities. Stake and flag locations.
- C. Erect sheeting, shoring, and bracing as necessary for protection of persons, improvements, and excavations and as indicated on the Drawings.
- D. Provide dewatering and drainage as required to accomplish work of this section.
- E. Protect new construction, existing structures, existing utilities, plants, trees, etc. at all times. Report any damages immediately to Engineer and proper authorities.
- F. Use extreme caution when excavating near underground utilities. Employ manual excavation where necessary.

- G. Inform appropriate utility or agency of all actions in vicinity of underground pipes, mains, conducts, wires, etc. Coordinate all work with appropriate utility or agency and comply with all requirements.

2.2 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work, including utilities and pipe chases.
- B. Excavate existing material as necessary and as delineated on the Contract Drawings. Excavated material may be used as backfill as specified in Section 31 23 23, when approved by the Engineer.
- C. Machine slope banks to angle of repose or less, until shored.
- D. Excavate all materials regardless of nature of elevations and dimensions indicated plus sufficient space for forming, shoring, draining, inspection, etc. Excavate using open cut method unless otherwise indicated or permitted.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Hand trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock up to two cubic yards measured by volume. Larger material will be removed under Section 31 23 18.
- H. Allow Engineer to inspect bottom of excavation for suitability of base material.
- I. Remove unsuitable base material to a depth of at least six inches below any pipe or structure or to a depth directed by the Engineer and replace with compacted screened gravel or crushed stone or provide proper base as otherwise directed by Engineer. Place no footing, wall, structure, pipe, etc. on unsuitable material.
- J. Place no structure, pipe, etc. partially on earth and partially on rock. Remove rock and replace with compacted screened gravel or crushed stone.
- K. Protect excavation bottoms from frost and weathering. Place no structure, pipe, etc. on frozen or weathered ground.
- L. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- M. Correct unauthorized excavation at no extra cost to Owner.
- N. Correct areas over-excavated by error in accordance with Section 31 23 23.

- O. Stockpile excavated material in area designated on site and remove excess material not being reused, from site.

2.3 FIELD QUALITY CONTROL

- A. Field inspection will be performed under provisions of Section 01 40 00.
- B. Provide for visual inspection of bearing surfaces.

2.4 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation, from freezing.

END OF SECTION

SECTION 31 23 17

TRENCHING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Excavation of trenches for utilities.
- B. Bedding and backfilling of utilities.
- C. Compaction of bedding and backfill material over utilities to subgrade elevations.

1.2 RELATED SECTIONS

- A. Section 31 23 16 – Excavation.
- B. Section 31 23 18 - Rock Removal.

1.3 REFERENCES

- A. ANSI/ASTM C136 – Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ANSI/ASTM D1557 – Modified Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10 lb Rammer and 18-inch Drop.

1.4 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as shown on drawings.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. Types as specified in Section 31 23 23.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify fill materials to be reused, are acceptable and obtain Engineer's approval.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Maintain and protect existing utilities remaining, which pass through work area.

- C. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.
- D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.
- E. Protect above and below grade utilities which are to remain.
- F. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with approved granular material and compact to density equal to or greater than requirements for subsequent backfill material.
- G. Cut pavement using masonry saw, pavement breaker, or other appropriate device to provide a uniform edge and to minimize damage to remaining pavement. Do not use removed pavement as fill.

3.3 EXCAVATION

- A. Excavate subsoil required for water service installation, culverts, sanitary sewers, storm sewers, underground conduits, and precast light bases.
- B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.
- C. Excavation shall not interfere with normal 45 degree bearing splay of foundations.
- D. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- E. Remove lumped subsoil, boulders, and rock up to two cubic yards, measured by volume. Larger material will be removed under Section 31 23 18.
- F. Correct unauthorized excavation at no cost to Owner.
- G. Correct areas over-excavated by error in accordance with Section 31 23 23.
- H. Stockpile excavated material in area designated on site and provide proper erosion control measures. Excess material shall be removed off site and disposed of properly.

3.4 BEDDING

- A. Support pipe and conduit during placement of crushed stone or specified bedding material.
- B. Do not compact crushed stone over any flexible plastic pipe.
- C. Bedding material thickness shall be in accordance with the Contract Drawings.

3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Granular Fill: Place and compact materials in continuous layers not exceeding six inches compacted depth.
- D. Soil Fill: Place and compact material in continuous layers not exceeding eight inches compacted depth.
- E. Employ a placement method that does not disturb or damage pipe in trench.
- F. Maintain optimum moisture content of fill materials to attain required compaction density.
- G. Surplus fill materials shall be removed off site.
- H. Fill material stockpile areas shall be compiled neatly and provided proper erosion control protection.

3.6 TOLERANCES

- A. Top Surface of Backfilling: Under Paved Areas plus or minus one half inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus one inch from required elevations.

3.7 FIELD QUALITY CONTROL

- A. Field testing will be performed under provisions of Section 01 40 00.
- B. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D1557 and Section 01 40 00.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D6938 and with Section 01 40 00.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest at no cost to Owner.

3.8 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01 56 00.

END OF SECTION

SECTION 31 23 18

ROCK REMOVAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Removal of rock uncovered during excavation.
- B. Explosives to assist rock removal.

1.2 RELATED SECTIONS

- A. Section 31 10 00 - Site Clearing.
- B. Section 31 23 16 - Excavation.
- C. Section 31 23 17 - Trenching.
- D. Section 31 23 23 - Backfill.

1.3 REFERENCES

- A. NFPA 495 - Code for Explosive Materials.
- B. MDOT Standard Specifications - Highway and Bridges, current revision.

1.4 DEFINITIONS

- A. Rock is defined as any stone, boulder, or pieces of concrete or masonry, two cubic yards or more in volume, and any hard, natural material or rock ledge that will withstand removal by the usual mechanical excavation methods such as, power shovels or toothed bulldozer blades, and such that normally requires blasting or continuous drilling, wedging, sledging, or barring for removal. No soft or disintegrated rock which can be removed with a hand pick or power operated excavator shovel; no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere; and no rock exterior to the maximum limits of measurements allowed, which may fall into the excavation, will be measured or allowed. The Engineer shall be sole judge as to whether the material encountered shall be classified as rock in accordance with the above description.

1.5 QUALIFICATIONS

- A. Seismic Survey Firm: Company specializing in seismic surveys with five years documented experience.

- B. Explosives Firm: Company specializing in explosives for disintegration of rock, with five years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for explosive disintegration of rock and to NFPA 495 for handling explosive materials.
- B. Obtain permits from authorities having jurisdiction before explosives are brought to site or drilling is started.

1.7 SCHEDULING

- A. Schedule work under the provisions of Section 01 30 00.
- B. Schedule Work to avoid disruption to occupied buildings nearby.
- C. No blasting is to occur until the Contractor and Engineer agree to the quantity of rock that is to be removed. If blasting occurs otherwise, Engineer will compute quantities and those quantities will be considered final.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Explosives: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.
- B. Delay Device: Type recommended by explosive firm.
- C. Blast Mat Materials: Type recommended by explosives firm.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site conditions and note subsurface irregularities affecting work of this section.
- B. Beginning of work of this Section means acceptance of existing conditions.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Conduct pre-blast survey and document conditions of buildings near locations of rock removal and prior to blasting, photograph existing conditions identifying existing irregularities. Provide copy to Owner and Engineer for review prior to blasting.

3.3 ROCK REMOVAL - EXPLOSIVE METHOD

- A. If rock is uncovered requiring the explosives method for rock disintegration, notify the Engineer and execute as follows.
- B. Advise owners of adjacent buildings or structures in writing, prior to executing seismographic survey. Explain planned blasting and seismic operations.
- C. Obtain a seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.
- D. Provide seismographic monitoring during progress of blasting operations.
- E. Disintegrate rock and remove from excavation.
- F. Remove rock at excavation bottom to form level bearing.
- G. Remove shaled layers to provide a sound and unshattered base.
- H. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter; and 12 inches below base elevation of structures and 24 inches wider than structures.
- I. Remove excess excavated material from site after obtaining Engineers permission.
- J. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 23.
- K. Perform no blasting without informing Engineer, governing authorities, and other concerned parties. Conform to all local, State, and Federal regulations concerning blasting and pertinent provisions of the "Manual of Accident Contractors of America, inc., of the "Construction Safety Rules and Regulations, as adopted by the State Board of Construction Safety, Augusta, Maine, and Maine Department of Transportation "Standard Specifications" Section 107.12, Use of Explosives.
- L. Blast only with such quantities and strength of explosives and in such manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Avoid excessive cracking of the rock upon or against which any structure will be built and to prevent injury to existing pipes or other structures and property above or below ground. Cover rock where necessary.
- M. Blast no closer than 20 feet from completed pipes, manholes, or other structure. Any damages to the work resulting from blasting shall be repaired at the Contractor's expense.

- N. The Contractor shall maintain and submit (if requested) to the Engineer accurate record of each blast. Show the general location of the blast, the depth and number of drill holes, the kind and quantity of explosive used, and other data required for a complete record.

3.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 40 00.
- B. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

END OF SECTION

SECTION 31 23 23

BACKFILL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Site filling and backfilling.
- B. Fill, aggregate subbase, and aggregate base under paving.
- C. Consolidation and compaction.
- D. Fill for over-excavation.

1.2 RELATED SECTION

- A. Section 31 23 16 - Excavation.
- B. Section 31 23 17 - Trenching.
- C. Section 31 23 18 - Rock Removal.

1.3 REFERENCES

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ANSI/ASTM D1557 – Modified Test Method for Moisture Density Relations of Soils and Soil Aggregate Mixtures, Using 10 lb Rammer and 18-inch Drop.
- D. ASTM D6938 – Standard Test Method for In-Place Density and water content of soil and soil aggregate by Nuclear Methods (Shallow Depth).
- E. ASTM D2487 - Classification of Soils for Engineering Purposes.
- F. ASTM 4318 - Test Method For Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- G. ASTM D1140 - Test Method For Amount of Material in Soils Finer than the No. 200 (75 - μ m) sieve.

PART 2 - PRODUCTS

2.1 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENT

- A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock or sand, free from grass, roots, brush, or other vegetation.

- B. Fill and backfill to be placed within 6 inches of any structure or pipe shall be free of rocks or unbroken masses of earth materials having a maximum dimension no larger than 3 inches for structures, and 1 inch for DI, PVC and HDPE pipe.
- C. Suitable Materials: Soils not classified as unsuitable as defined in paragraph entitled, "Unsuitable Material" herein, are defined as suitable material and may be used in fills, backfilling, and embankment construction subject to approval by Engineer, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.
- D. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported. If imported materials are required to meet the requirements of the section or to meet the quantity requirements of the project, the Contractor shall provide the imported materials at no additional expense to the Owner, unless a unit price item is included for imported materials in the bidding schedule.
- E. The following types of suitable materials are designated and defined as follows:

1. COMMON BORROW

Common borrow shall consist of earth, suitable for embankment construction. It shall be free from frozen material, perishable rubbish, peat, and other unsuitable material.

The moisture content shall be sufficient to provide the required compaction and stable embankment. In no case shall the moisture content exceed 4 percent above optimum.

The optimum moisture content shall be determined in accordance with ASTM D1557.

2. STONE FILL

MDOT 703.25 Stone Fill Stones for stone fill shall consist of hard, sound, durable rock that will not disintegrate by exposure to water or weather. Stone for stone fill shall be angular and rough. Rounded, subrounded, or long thin stones will not be allowed. Stone for stone fill may be obtained from quarries or by screening oversized rock from earth borrow pits. The maximum allowable length to thickness ratio will be 3:1. The minimum stone size (10 lbs) shall have an average dimension of 5 inches. The maximum stone size (500 lbs) shall have a maximum dimension of approximately 36 inches. Larger stones may be used if approved by the Resident. 7-21 Fifty percent of the stones by volume shall have an average dimension greater than 12 inches (200 lbs).

3. CRUSHED STONE/BEDDING MATERIAL

Crushed stone shall be durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock and reasonably free from thin, flat, elongated, or other objectionable pieces. The crushed stone shall be reasonably free from sand, clay, loam, chemical decay, or deleterious materials

and not more than one percent of material passing a No. 200 sieve will be allowed to adhere to the crushed stone. The crushed stone shall be uniformly blended according to the grading requirements listed in the following table:

3/4 inch crushed stone:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
1"	100
3/4"	95-100
1/2"	35-70
3/8"	0-25

1½ inch crushed stone:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
2"	100
1"	0-60
3/4"	0-30
1/2"	0-15
3/8"	0-25

4. SAND

Sand shall be well graded coarse sand without excessive fines and free from loam, clay, and organic matter. Beach sand shall not be used. The grading requirements are as follows:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
3/8"	100
No. 4	95-100
No. 16	50- 85
No. 50	0-30
No. 100	2-10

5. AGGREGATE SUBBASE

Aggregate subbase shall be sand or gravel consisting of hard durable particles which are free from vegetable matter, lumps, or balls of clay, and other deleterious substances. The gradation of the portion which will pass a 3-inch sieve shall meet the grading requirements of the following table:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
1/4"	25-70
No. 40	0-30
No. 200	0-7

Granular subbase and gravel subbase shall not contain particles of rock which will not pass the 6-inch square mesh sieve.

Gradation tests shall conform to ASTM C136 except that the material may be separated on the ½ inch sieve.

6. AGGREGATE BASE

Aggregate Base shall be screened or crushed gravel consisting of hard durable particles which are free from vegetable matter, lumps or balls of clay, and other deleterious substances. The gradation shall meet the grading requirements of the following table:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
1/2"	45-70
1/4"	30-55
No. 40	0-20
No. 200	0-5

Screened or crushed gravel base shall not contain particles or rock which will not pass the 2 inch square mesh sieve.

Gradation tests shall conform to ASTM C136 except that the material may be separated on the 1/2 inch sieve.

7. STRUCTURAL FILL AND BACKFILL

Structural fill shall be a material free from organic matter, frozen material and other deleterious substances. Maximum particle size should not exceed two-thirds of the proposed loose lift thickness. All fill will be compacted to at least 95% of its a maximum dry density as determined by ASTM D-6938.

Fill placed adjacent to foundations as backfill will be a clean granular material meeting the gradation requirements of the following table.

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
4"	100
3"	90-100
1/4"	25-90
#40	0-30
#200	0-5

8. REFILL MATERIAL

Refill material for replacement of unsuitable material or rock excavation below grade shall be aggregate subbase material or crushed stone of 3/4 inch maximum size, free from silt, loam, and clay.

9. BEDDING MATERIAL

Where any of the above material is to be used for bedding materials, it shall further meet the following additional criteria. Bedding material shall be so graded that 100% will pass a one (1) inch screen and not more than 10% will pass a 200-mesh sieve. Gradation test results of the bedding material shall be submitted to the Engineer for approval. In the event abnormally unstable or wet conditions are encountered, bedding material shall be crushed stone, if directed by the Engineer.

2.2 UNSUITABLE MATERIAL

- A. Unsuitable soils for fill and backfill material shall include soils which, when classified under the standard method for "Classification of Soils for Engineering Purposes"(ASTM D2487), fall in the classifications of Pt, OH, CH, MH, or OL.
- B. In addition, any soil containing organic matter, having a plastic limit of less than 8 percent when tested in accordance with the requirements of ASTM D4318 and containing more than 25 percent of material, by weight, passing the No. 200 sieve when analyzed according to the requirements of ANSI/ASTM D1140, or any soil which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classed as unsuitable material.

2.3 SUBMITTALS

- A. Contractor shall submit testing in accordance with Section 01 40 00.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify fill materials to be reused are acceptable.

3.2 PREPARATION

- A. Scarify and recompact subgrade to density required for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with an approved granular material and compact to a density equal to or greater than requirements for subsequent backfill material.
- C. Prior to placement of aggregate subbase course material at paved areas, compact subsoil to 95 percent of its maximum dry density as analyzed in accordance with ANSI/ASTM D1557 and field tested in accordance with ASTM D6938.

3.3 BACKFILLING

- A. Use suitable materials from excavations which conform to the requirements herein or are approved by the Engineer for backfill up to rough grade lines except where these specifications have more stringent or special requirements for certain parts of the contract work. Supply extra fill if there is not enough fill to complete the project. Use no material from any excavation as backfill unless approved by the Engineer.
- B. Material within two feet of finished grade in any areas to be paved or within five feet horizontally of any structure shall contain no stone having any dimension exceeding six inches. Excess and unsuitable excavated materials shall be stock piled onsite at the Owners discretion. In the event sufficient suitable excavated material is not available for backfill, supply a granular backfill.

- C. Place materials in layers of thicknesses specified herein but in no case greater than 12 inches before compaction. Wet backfill when necessary, uniformly to obtain required density. Compact each layer with vibratory compactors before placing next layer.
- D. In cross-country runs, trenches shall be backfilled and mounded six inches above surrounding grade in addition to the normal compaction procedure.
- E. In backfilling around structures, place material in 8 inch layers and then compact. Allow no heavy machinery within 5 feet of structure during placement. Place no material until structure can withstand the load. Place temporary backfill where required and remove when no longer required. Bring backfill up evenly on all sides of the structure.
- F. Systematically backfill to allow maximum time for natural settlement. Do not backfill overporous, wet, frozen, or spongy subgrade surfaces.
- G. Maintain moisture content within 2 percent, plus or minus, of optimum moisture content of backfill materials to attain required compaction density.

3.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 40 00.
- B. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D1557 and with Section 01 40 00.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D6938 and with Section 01 40 00.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- E. Frequency of Tests: Compaction Tests -
 - 1. Trench - 1 test every 300 feet varying lifts.
 - 2. Site Work / Roads - 1 test every 5,000 S.F., each lift.
- F. Proof roll compacted fill surfaces under paving.
- G. Minimum densities following compaction shall be as follows:

<u>Fill and Backfill Location</u>	<u>Modified Proctor Density %</u>
Top two feet under pavement	95
Under or within five feet of structures	95
Fill For Erosion Repair Areas	92
Under pavements below top two feet	92
Trenches through unpaved areas	92
In embankment (including temporary)	92
Pipe bedding and trenching	92

- H. Compaction shall be accomplished by appropriate methods, i.e., vibratory compaction of granular materials, sheepsfoot compaction of cohesive materials, etc. In no case shall trench compaction be deemed adequate with the use of a non-compactive device such as a bulldozer.

The Engineer may withhold 5 percent of the monthly requisition if in his opinion proper compaction was not met. Improperly compacted materials shall be removed, replaced, or recompact.

3.5 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01 56 00.
- B. Recompact fills subjected to vehicular traffic.

END OF SECTION

SECTION 31 25 13

EROSION CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Site preparation.
- B. Remove surface debris, clear site of plant life and grass.
- C. Remove trees and shrubs, including root systems.
- D. Install and maintain silt fencing, erosion control blanket, and other erosion control measures.

1.2 RELATED SECTIONS

- A. Section 31 22 13 - Rough Grading
- B. Section 31 23 16 - Excavating
- C. Section 31 23 18 - Rock Removal

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable codes and regulations for environmental requirements and disposal of debris.
- B. Conform to "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, March 2003, hereinafter referred to as "Maine BMP Manual".
- C. Coordinate clearing Work with Owner.

1.4 SITE CONDITIONS

- A. The intent of this item is for the Contractor to complete any site preparation work needed for the project.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Silt Fence: Standard strength, permeability of 0.3 gal/sq ft/min.
- B. Erosion Control Blanket: Excelsior blanket rated for 10 fps.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that existing plant life and features designated to remain are tagged or identified.

3.2 PROTECTION

- A. Locate, identify and protect utilities that remain from damage.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect bench marks and existing structures from damage or displacement.

3.3 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove trees and shrubs within areas indicated. Remove stumps, main root ball, root system and surface rock to a depth of 12 inches.

3.4 INSTALLATION OF EROSION CONTROL MEASURES

- A. Silt Fence:
 - 1. Install silt fence in accordance with Maine BMP Manual.
 - 2. Install silt fence at bottom of all fill slopes and downstream edge of disturbed soil areas.
 - 3. Install silt fence at constant elevation.
- B. Check Dams: Install as required by the Maine BMP Manual.

END OF SECTION

SECTION 31 38 00

GEOTEXTILES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Geotextile used as erosion control and for stabilization between fill materials.

1.2 RELATED SECTIONS

- A. Section 31 23 16 - Excavation.
- B. Section 31 23 23 - Backfill.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer design data, test reports, and installation instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection: Material to be wrapped in heavy duty protective covering during shipment, storage, and prior to installation.

1.5 SITE CONDITIONS

- A. Verify that site is prepared to receive geotextile.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Geotextile:
 1. Roadway Geotextile: Mirafi 600X, ADS Geosynthetics 315W, SKAPS W315, or approved equal.
 2. Erosion/Drainage Geotextile: Mirafi 160N, SKAPS GT-160, or approved equal.
- B. Substitutions: In accordance with Section 01 30 00.

2.2 MATERIALS

- A. Roadway Geotextile Properties
 1. Grab Tensile Strength: 315 lbs (ASTM-D4632)
 2. Grab Tensile Elongation: 12% (ASTM-D4632)
 3. Trapezoidal Tear Strength: 113 lbs (ASTM-D4533)
 4. Puncture Strength: 900 lbs (ASTM-D6241)

- 5. Apparent Opening Size: 40 (ASTM-D4751)
- 6. Permittivity: 0.05 (ASTM-D4491)
- 7. Flow Rate: 4 gal/min/sf (ASTM-D4491)
- 8. UV Resistance: 70 (ASTM-D4355)
- 9. Weight: 6.0 oz/sy (ASTM D5261)
- 10. Thickness: 25 mils (ASTM D5199)

B. Erosion/Drainage Geotextile Properties

- 1. Grab Tensile Strength: 160 lbs (ASTM-D4632)
- 2. Grab Tensile Elongation: 50% (ASTM-D4632)
- 3. Trapezoidal Tear Strength: 60 lbs (ASTM-D4533)
- 4. Puncture Strength: 410 lbs (ASTM-D6241)
- 5. Apparent Opening Size: 70 (ASTM-D4751)
- 6. Permittivity: 1.5 (ASTM-D4491)
- 7. Flow Rate: 110 gal/mn/sf (ASTM-D4491)
- 8. UV Resistance: 70 (ASTM-D4355)
- 9. Weight: 6.5 oz/sl (ASTM D5261)
- 10. Thickness: 765 mil (ASTM D5199)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Verify that site is ready to receive geotextile.

3.2 PREPARATION

- A. Surface Preparation: Maintain surface free of stones or projections that may damage geotextile.

3.3 INSTALLATION

- A. Install in accordance with manufacturer recommendations.
- B. Install in maximum practical widths and lengths, with minimum of seams and joints.
- C. Provide full coverage over area where required in accordance with the drawings.

3.4 SCHEDULE

- A. Roadway Geotextile: Between Roadway Subgrade and Sub-Base Gravel, above utility trenches.
- B. Erosion Geotextile: Under all riprap

3.5 FIELD QUALITY CONTROL

- A. Inspection: Allow Engineer to inspect installation prior to placement of any backfill or riprap.
- B. Repair or replace any areas found to be unsatisfactory.

3.6 PROTECTION

- A. Protect geotextile from damage prior to placement of subsequent materials.

END OF SECTION

SECTION 32 91 19

LANDSCAPE GRADING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Final grade topsoil for finish landscaping.

1.2 RELATED SECTIONS

- A. Section 31 23 23 - Backfill.
- B. Section 31 23 17 - Trenching.
- D. Section 32 92 19 - Seeding.

1.3 REFERENCES

- A. ASTM C 602 - Specification For Agricultural Liming Materials.
- B. FS O-F-241 - Fertilizers, Mixed Commercial.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Imported Topsoil: 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 free of weeds, roots or rhizomes. The pH shall be 5.5-8.0 percent by volume and meet the requirements of MDOT 615.02.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site and trench backfilling has been inspected.
- B. Verify substrate base has been contoured and compacted.

3.2 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1-inch in size. Remove subsoil contaminated with petroleum products.

- C. Scarify subgrade to depth of three inches where topsoil is scheduled. Scarify in areas where equipment is used for hauling and spreading topsoil and has compacted subsoil.

3.3 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding, and/or planting is scheduled. Place topsoil during dry weather.
- B. Fine grade topsoil eliminating rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks and foreign material while spreading.
- D. Manually spread topsoil close to trees, plants, building, and structures to prevent damage.
- E. Roll placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.4 SOIL CONDITIONERS

- A. Dolomitic Limestone: ASTM C 602.
- B. Aluminum Sulphate: Standard commercial grade.
- C. Peat: FS Q-P-166, Type I, Class B.
- D. Perlite: Standard horticultural grade.
- E. Manure: Rotted a minimum of 6 months.
- F. Sawdust: Rotted a minimum of 24 months.
- G. Pesticides: As recommended by Department of Agriculture/Pesticide Control Board and MDOT.
- H. Fertilizer:
 1. FS O-F-241, Type I, Grade B
 2. Available nutrients, percent by weight.
 - a. 10 N
 - b. 6 P₂O₅
 - c. 4 K₂O
- I. Water: Harmless to plant growth.

3.5 TOLERANCES

- A. Top of Topsoil: Plus or minus ½-inch.

3.6 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect existing structures, fences, sidewalks, utilities, paving and curbs.

3.7 SCHEDULES

- A. Compacted topsoil thickness at the following areas:
 - 1. Lawn Areas: 4 inches.
 - 2. Non-lawn areas: 4 inches.

END OF SECTION

SECTION 32 92 19

SEEDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fertilizing.
- B. Seeding.
- C. Hydroseeding.
- D. Seed Protection.
- E. Maintenance.

1.2 RELATED WORK

- A. Section 32 91 19 - Landscape Grading.

1.3 QUALITY ASSURANCE

- A. Comply with all local, State and Federal regulations concerning seeding.

1.4 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. M145-74, Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
- B. American Society for Testing and Materials (ASTM):
 - 1. C 602-69 (1975), Agricultural Liming Materials.
 - 2. D 2487-69 (1975), Classification of Soils for Engineering Purposes.
 - 3. D 977-73, Emulsified Asphalt.
- C. Federal Specifications:
 - 1. O-F-241, Fertilizer, Mixed, Commercial.
 - 2. O-P-166E, Peat Moss, Peat Humus, Peat, Reed-Sedge.
- D. Maine Department of Transportation (MDOT):
 - 1. Standard Specifications - Highways and Bridges.

1.5 SUBMITTALS

A. Test Reports

1. Provide analysis of topsoil fill.
 - a. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
2. Results of seed purity and germination tests.
3. Results of fertilizer analysis.
4. Results of peat moss analysis.

B. Certificates

1. Soil conditions and fertilizers.
2. Grass seed.
3. Quarantine restrictions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Tag seed, with botanical and common names.
- B. Store and protect seed from excessive heat, cold, sun, rain, wind, and other deleterious environmental conditions.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.7 JOB CONDITIONS

- A. Place no frozen soils or extremely wet or dry soils.
- B. The seeding process shall meet the following conditions.
 1. Not on or in frozen or extremely wet or dry soils.
 2. Not between June 15 and August 15 or October 1 and April 15.
 3. Do not seed when wind exceeds 15 mph.

1.8 DEFINITIONS

- A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lamsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.9 GUARANTEE

- A. Guarantee seed through one full growing season after planting. Replace if necessary.

1.10 MAINTENANCE DATA

- A. Submit maintenance data for continuing Owner maintenance under provisions of Section 01 70 00.
- B. Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

PART 2 - PRODUCTS

2.1 SUBSOIL

- A. See Section 31 23 23 - Backfill.

2.2 TOPSOIL

- A. See Section 31 23 23 - Backfill.
- B. See Section 32 91 19 - Landscape Grading.

2.3 SOIL CONDITIONERS

- A. See Section 32 91 19 - Landscape Grading.

2.4 SEED

- A. Lawn Areas: MDOT 717.03, Method Number 1: Park Mixture.
- B. Other Areas: MDOT 717.03, Method Number 2: Roadside Mixture.

2.5 MULCH

- A. Clean hay, wood fiber, jute netting, cheese cloth, burlap, or asphalt emulsion (ASTM D977, Grade SS-1) as appropriate, must meet requirements of MDOT Section 619.

2.6 ACCESSORIES

- A. Herbicide: Approved chemical registered in State of Maine for stump or basal bark treatment.
- B. Stakes: Softwood lumber, chisel pointed.
- C. String: Inorganic fiber.
- D. Edging: Galvanized steel.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that prepared topsoil is ready to receive the work of this Section.
- B. Beginning of installation means acceptance of existing site conditions.

3.2 FERTILIZING

- A. Apply fertilizer at a rate of 33 pounds per 1000 square feet.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches with an appropriate method.
- E. Lightly water to aid the dissipation of fertilizer.
- F. Water dry topsoil to a depth of 4 inches, 48 hours prior to seeding to obtain a loose, friable seed bed.

3.3 SEEDING

- A. Apply seed at a rate of 4 lbs per 1000 sq. ft. evenly in two intersecting directions. Rake in lightly to a depth of $\frac{3}{8}$ inch. Do not seed area in excess of that which can be mulched on same day.
- B. Planting Season: April 15 to June 15 or August 15 to October 1.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller weighing a maximum of 150 lbs/foot of width.
- E. Immediately following seeding and rolling, apply mulch to a thickness of $\frac{1}{8}$ inches. Maintain clear of shrubs and trees.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturated to 4 inches of soil.

3.4 HYDROSEEDING

- A. Apply seeded slurry at a rate of 4 lbs per 1000 sq. ft. evenly in two intersecting directions, with a hydraulic seeder. Do not hydroseed area in excess of that which can be mulched on same day.

- B. Immediately following seeding, apply mulch to a thickness of ½ inches. Maintain clear of shrubs and trees.
- C. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.5 SEED PROTECTION

- A. Cover seeded slopes where grade is 4 inches per foot (3:1 slope) or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 12-inch overlay of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36-inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.
- F. Erect warning signs and barriers to protect seeded areas.

3.6 MAINTENANCE

- A. Mow grass at regular intervals to maintain at a maximum height of 2½ inches. Do not cut more than ⅓ of grass blade at any one mowing.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- G. Immediately reseed areas which show bare spots.
- H. Protect seeded areas with warning signs during maintenance period.

END OF SECTION