

Armstrong Engineering
A JEM Engineering Corporation

Project Manual

for

Northern Maine Community College
Presque Isle, Maine

Involving

**- Christie Building -
Nursing Classrooms AC Project**

- Owner -

**NORTHERN MAINE COMMUNITY COLLEGE
33 Edgemont Drive
Presque Isle, Maine 04769**

**B.R.E.M. Project: #PT 3054
AE Project: #19.02.18
April 02, 2019**

- Designer -

***Armstrong Engineering
94 Presque Isle Street
Fort Fairfield, Maine 04742
473-7117***



ARMSTRONG ENGINEERING

94 Presque Isle Street, Rt. 1A, Fort Fairfield, Maine 04742 Phone 473-7117 Fax 476-5621

SECTION 00 00 00

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END OF SECTION

00 12 13
Notice to Contractors and Subcontractors

NMCC - Christie Building Nursing Classrooms AC Project

The proposed construction project consists of a new mechanical air conditioning system for Nursing Classrooms.

The cost of the work (prime Contractor contract) is approximately \$ 70,000. The work to be performed under this contract shall be completed on or before the Final Completion date of *15 June 2019*.

1. Sealed Contractor bids, in envelopes plainly marked "Bid for *NMCC - Christie Building Nursing Classrooms AC Project*" and addressed to:

*Northern Maine Community College
Mr. Barry A. Ingraham
Dean Of Technology & Facilities
33 Edgemont Drive
Presque Isle, Maine 04769*

will be opened and read aloud at *the address shown above* at **2:00 p.m.** on *April 26, 2019*. Any bid submitted after the noted time will not be considered a valid bid and will remain unopened.

2. The bids shall be submitted on the Contractor Bid Form (section 00 41 13) and Subcontractor Bid Form (section 00 41 16) 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.
The Bidder shall include a satisfactory Bid Bond (sections 00 43 13 and 00 43 16) 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.
The selected Contractor and Filed Sub-bid contractors shall furnish their respective 100% contract Performance Bonds (section 00 61 13.13 and 00 61 13.23) and 100% contract Payment Bonds (section 00 61 13.16 and 00 61 13.26) in their contract amounts to cover the execution of the Work. Bond forms are available on the BREM website.
5. Filed Sub-bids *are required* on this project.
The Bidder shall include in the bid all Filed Sub-bids identified in the Bid Documents and shown on the Contractor Bid Form (section 00 41 13). Filed Sub-bids are due at the Maine Construction Bid Depository at NA on *Not required*. Bids submitted after the noted time will not be accepted.
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.
NA

Notice to Contractors and Subcontractors

7. An on-site pre-bid conference *will* be conducted for this project.
If a pre-bid conference is scheduled, it is *mandatory* 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. *April 19, 2019 at 2:00 pm. Site walk through will start in the Christie Building Lobby.*
8. Bid Documents - full sets only - will be available on or about *April , 5, 2019* and may be purchased for \$ 80 per *hardcopy set* from:
*Armstrong Engineering
94 Presque Isle Street
Fort Fairfield, ME 04742
207-473-7117 or email: jmarmstrong@armstrongeng.com*
9. Bid Documents may be examined at:

<i>Armstrong Enegineering 94 Presque Isle Street Fort Fairfield, ME 04742 Phone 207-473-7117 Fax 207-476-5621</i>	<i>Northern Maine Community College 33 Edgemont Drive Presque Isle, ME 07694 Phone 207-764-2706 Electronic Bid Documents available at http://www.nmcc.edu/rfp.</i>
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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

NMCC - Christie Building Nursing Classrooms AC Project

To: *Northern Maine Community College*
Mr. Barry A. Ingraham
Dean of Technology & Facilities
33 Edgemont Drive
Presque Isle, Maine 04769

The undersigned, or *Bidder*, having carefully examined the form of contract, general conditions, specifications and drawings dated *April 02, 2019*, prepared by *Armstrong Engineering* for *NMCC - Christie Building Nursing Classrooms AC Project*, 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

\$

\$

2. Alternate Bids *are not included* on this project.
No Alternate Bids

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

1 *Not Used* \$ _____ .00

2 *Not Used* \$ _____ .00

3 *Not Used* \$ _____ .00

4 *Not Used* \$ _____ .00

5 *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: _____

Addendum No. ____ Dated: _____

Addendum No. ____ Dated: _____

Addendum No. ____ Dated: _____

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

NMCC - Christie Building Nursing Classrooms AC Project

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 BondBond 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**

_____ <i>(Signature)</i> <i>(Date)</i> _____ <i>name and title</i> _____ _____ <i>name of contracting entity</i>	_____ <i>(Signature)</i> <i>(Date)</i> _____ <i>name and title</i> _____ _____ <i>name of contractor company</i>
----------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------

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

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

00 61 13.16
Contractor Payment Bond

Bond No.: insert bond number

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

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

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

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

00 61 13.16
Contractor Payment Bond

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

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

Contractor

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

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

00 71 00
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

00 71 00
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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- 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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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

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

3. Additional Drawings and Specifications

3.1 Upon the written request of the Contractor, the Owner shall provide, at no expense to the Contractor, up to five sets of printed Drawings and Specifications for the execution of the Work.

3.2 The Consultant shall promptly furnish to the Contractor revised Drawings and Specifications, for the area of the documents where those revisions apply, when corrections or clarifications are made by the Consultant. All such information shall be consistent with, and reasonably inferred from, the Contract Documents. The Contractor shall do no work without the proper Drawings and Specifications.

4. Ownership of Contract Documents

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

5. Permits, Laws, and Regulations

5.1 The Owner is responsible for obtaining any zoning approvals or other similar local project approvals necessary to complete the Work, unless otherwise specified in the Contract Documents.

5.2 The Owner is responsible for obtaining Maine Department of Environmental Protection, Maine Department of Transportation, or other similar state government project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.

5.3 The Owner is responsible for obtaining any federal agency project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.

5.4 The Owner is responsible for obtaining all easements for permanent structures or permanent changes in existing facilities.

5.5 The Contractor is responsible for obtaining and paying for all permits and licenses necessary for the implementation of the Work. The Contractor shall notify the Owner of any delays, variance or restrictions that may result from the issuing of permits and licenses.

5.6 The Contractor shall comply with all ordinances, laws, rules and regulations and make all required notices bearing on the implementation of the Work. In the event the Contractor observes disagreement between the Drawings and Specifications and any ordinances, laws, rules and regulations, the Contractor shall promptly notify the Consultant in writing. Any necessary changes shall be made as provided in the contract for changes in the work. The Contractor shall not perform any work knowing it to be contrary to such ordinances, laws, rules and regulations.

5.7 The Contractor shall comply with local, state and federal regulations regarding construction safety and all other aspects of the Work.

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

6. Taxes

- 6.1 The Owner is exempt from the payment of 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.

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

8. Indemnification

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

9. Insurance Requirements

- 9.1 The Contractor shall provide, with each original of the signed Contract, an insurance certificate or certificates acceptable to the Owner and 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.

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- 9.3 The Contractor shall procure and maintain primary insurance for the duration of the Project and, if written on a Claims-Made basis, shall also procure and maintain Extended Reporting Period (ERP) insurance for the period of time that any claims could be brought. The Contractor shall ensure that all Subcontractors they engage or employ will procure and maintain similar insurance in form and amount acceptable to the Owner and 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
- 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

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coverage shall apply during the entire contract period until the Certificate of Substantial Completion is accepted by the Owner.

- 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

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harmless regarding patent suits that may arise due to installations made by the Contractor, and to any awards made as a result of such suits.

- 11.2 Any royalty payments related to the work done by the Contractor for the Project shall be borne by the Contractor. The Contractor shall hold the Owner harmless regarding any royalty payments that may arise due to installations made by the Contractor.

12. Surveys, Layout of Work

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

13. Record of Documents

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

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Work. The Contractor is the responsible party and contact for the Contractor's work as well as that of Subcontractors, suppliers or others who provide Shop Drawings.

- 15.2 The Consultant shall review and acknowledge Shop Drawings, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents.
- 15.3 The Contractor shall provide monthly updated logs containing: requests for information, information bulletins, supplemental instructions, supplemental sketches, change order proposals, change orders, submittals, testing and deficiencies.
- 15.4 The Contractor shall make any corrections required by the Consultant, and shall submit a quantity of corrected copies as may be needed. The acceptance of Shop Drawings or schedules by the Consultant shall not relieve the Contractor from responsibility for deviations from Drawings and Specifications, unless the Contractor has called such deviations to the attention of the Consultant at the time of submission and secured the Consultant's written approval. The acceptance of Shop Drawings or schedules by the Consultant does not relieve the Contractor from responsibility for errors in Shop Drawings or schedules.

16. Samples

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

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.

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- 17.4 The duration of a substitution review process can not be the basis for a claim for delay in the Schedule of the Work.

18. Assignment of Contract

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

19. Separate Contracts

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

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- 20.4 The Contractor, not the Owner, is as fully responsible for the acts and omissions of Subcontractors and of persons employed by them, as the Contractor is for the acts and omissions of persons directly or indirectly employed by the Contractor.
- 20.5 Neither the Contract Documents nor any Contractor-Subcontractor contract shall indicate, infer or create any direct contractual relationship between any Subcontractor and the Owner.

21. Contractor-Subcontractor Relationship

- 21.1 The Contractor shall be bound to the Subcontractor by all the obligations in the Contract Documents that bind the Contractor to the Owner.
- 21.2 The Contractor shall pay the Subcontractor, in proportion to the dollar value of the work completed and requisitioned by the Subcontractor, the approved dollar amount allowed to the Contractor no more than seven days after receipt of payment from the Owner.
- 21.3 The Contractor shall pay the Subcontractor accordingly if the Contract Documents or the subcontract provide for earlier or larger payments than described in the provision above.
- 21.4 The Contractor shall pay the Subcontractor for completed and requisitioned subcontract work, less retainage, no more than seven days after receipt of payment from the Owner for the Contractor's approved Requisition for Payment, even if the Consultant fails to certify a portion of the Requisition for Payment for a cause not the fault of the Subcontractor.
- 21.5 The Contractor shall not make a claim for liquidated damages or penalty for delay in any amount in excess of amounts that are specified by the subcontract.
- 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.

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22. Supervision of the Work

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

23. Observation of the Work

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

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- 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.

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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.

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Wage Determination Schedule

PART 1- GENERAL

1.1 Related Documents

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

1.2 Summary

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

1.3 Requirements

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

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

**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 laborers and workers employed on the below title project.

Title of Project -----Nursing Air Conditioning Installation

Location of Project --Presque Isle, Aroostook County

**2019 Fair Minimum Wage Rates
Building 2 Aroostook County
(other than 1 or 2 family homes)**

<u>Occupation Title</u>	<u>Minimum Wage</u>	<u>Minimum Benefit</u>	<u>Total</u>	<u>Occupation Title</u>	<u>Minimum Wage</u>	<u>Minimum Benefit</u>	<u>Total</u>
Asbestos/Lead Removal Worker	\$15.00	\$0.96	\$15.96	Ironworker - Structural	\$25.39	\$8.29	\$33.68
Backhoe Loader Operator	\$22.00	\$5.08	\$27.08	Laborers (Incl. Helpers & Tenders)	\$15.00	\$0.75	\$15.75
Boilermaker	\$24.00	\$9.00	\$33.00	Laborer - Skilled	\$17.00	\$2.79	\$19.79
Bricklayer	\$25.00	\$3.46	\$28.46	Loader Operator - Front-End	\$19.00	\$3.00	\$22.00
Bulldozer Operator	\$20.00	\$3.71	\$23.71	Mechanic- Maintenance	\$25.00	\$3.94	\$28.94
Carpenter	\$19.00	\$2.87	\$21.87	Mechanic- Refrigeration	\$26.00	\$5.11	\$31.11
Carpenter - Acoustical	\$19.50	\$2.03	\$21.53	Millwright	\$29.47	\$10.77	\$40.24
Carpenter - Rough	\$16.00	\$2.79	\$18.79	Oil/Fuel Burner Serv & Installer	\$23.00	\$3.51	\$26.51
Cement Mason/Finisher	\$17.00	\$2.79	\$19.79	Painter	\$18.50	\$3.01	\$21.51
Communication Equip Installer	\$22.20	\$3.67	\$25.87	Pipe/Steam/Sprinkler Fitter	\$23.50	\$4.06	\$27.56
Concrete Mixing Plant Operator	\$22.11	\$4.92	\$27.03	Plumber (Licensed)	\$25.00	\$3.70	\$28.70
Crane Operator =>15 Tons)	\$27.00	\$7.14	\$34.14	Plumber Helper/Trainee	\$20.00	\$2.70	\$22.70
Dry-Wall Applicator	\$21.00	\$0.49	\$21.49	Propane /Natural Gas Serv & Inst	\$26.00	\$4.03	\$30.03
Dry-Wall Taper & Finisher	\$22.91	\$1.08	\$23.99	Pump Installer	\$16.13	\$3.14	\$19.27
Electrician - Licensed	\$24.50	\$3.42	\$27.92	Rigger	\$22.25	\$6.60	\$28.85
Electrician Helper/Cable Puller	\$14.50	\$0.90	\$15.40	Roofer	\$17.75	\$2.57	\$20.32
Excavator Operator	\$20.50	\$2.91	\$23.41	Sheet Metal Worker	\$18.00	\$3.64	\$21.64
Fence Setter	\$15.00	\$2.00	\$17.00	Sider	\$16.75	\$1.38	\$18.13
Flagger	\$13.00	\$0.00	\$13.00	Stone Mason	\$21.00	\$0.95	\$21.95
Floor Layer	\$20.00	\$3.06	\$23.06	Truck Driver - Light	\$17.00	\$1.17	\$18.17
Glazier	\$17.25	\$0.89	\$18.14	Truck Driver - Medium	\$19.00	\$3.37	\$22.37
HVAC	\$27.00	\$2.82	\$29.82	Truck Driver - Heavy	\$17.00	\$1.09	\$18.09
Insulation Installer	\$22.25	\$3.59	\$25.84	Truck Driver - Tractor Trailer	\$17.15	\$1.08	\$18.23
Ironworker - Reinforcing	\$16.00	\$2.79	\$18.79	Truck Driver - Mixer (Cement)	\$17.88	\$3.15	\$21.03

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.

SECTION 01 05 00

SUMMARY OF WORK

PART 1: GENERAL

1.01 Description:

- A. The work herein described includes all work by all trades necessary for the schedule of mechanical renovations as described. Mechanical renovation shall include, 1) the installation of two outdoor AC condensers, 2) the installation of eight ceiling AC cassettes and associated refrigeration piping, and 3) Providing automatic temperature controls, wiring and integration associated with existing Building Management System.

Work includes the furnishing of materials and all construction equipment required for the completion of the project with minimal disturbance to the operation of the facility employees and general public.

- B. The building is presently occupied and used by the general public, thus extreme care is to be taken to insure safety at all times during both the demolition and installation phases. This includes, but not limited to, installation of proper barricades and close supervision and scheduling of construction activities by Contractor and Owner.
- C. Due to classroom activity up until May 11, 2019, scheduling of on site construction will start after May 11, 2019. Limited access to areas may occur with prior permission 48 hours in advance up until the above calendar date. Weekends and after classroom scheduled active hours may also be granted for Contractor work prior to May 11, 2019 with prior permission.

PART 3: EXECUTION

- 3.01 After the contractor has been directed to proceed with the work from the Engineer, in writing or verbally, temporary services shall be completed, before any demolition occurs.
- 3.02 No major demolition will take place prior to the Owner's approval and major equipment and materials are in shipment or are available.

END OF SECTION

SECTION 01 15 00
TEMPORARY SERVICES

PART 1: GENERAL

1.01 Description:

- A. The work of temporary services shall be the responsibility of the General Contractor.

PART 2: PRODUCTS AND EXECUTION

2.01 Shoring and Scaffolding

- A. Provide necessary scaffolding, mobile lift, etc. to convey materials and workers safely. All temporary equipment for such purpose shall shored and supported properly.

2.02 Storage Shed

- A. Provide weather tight storage facilities for the storage of material which could be damaged by inclement weather.

2.03 Temporary ramps, walkways

- A. Contractor shall be responsible to provide and maintain means of egress and access to existing buildings, walkways, etc., as required for execution of the work. Such requirements shall comply with all Federal, State and local laws.
- B. Dust Control: during construction, Contractor shall maintain all areas clear and clean of dust and debris.

2.04 Public Safety and Protection

- A. During all stages of construction protect all areas affected by the work against hazards of any kind that may affect property or life. Provide and install necessary signage, barricade, fencing, etc. to deter unauthorized entry and warn of hazards.

2.05 Removal of Temporary Services

- A. The contractor shall remove all temporary services at the completion of the project, of which all materials shall be the property of the contractor.

END OF SECTION

SECTION 01 7 00
PROJECT CLOSEOUT

PART 1: GENERAL

1.01 Description:

- A. The work of this section shall be the responsibility of the General Contractor.
 - 1. Site area and area parking lot shall be completely clean of all debris and materials.
 - 2. Four complete sets of maintenance and instruction manuals shall be presented to the Owner, along with one (1) year warranty of all parts and labor for the entire project.
 - 3. Electronic As Build Plans as well as electronic data of maintenance and/or instructional data shall be presented to the Owner at the end of the project.
- B. The Owner and Engineer shall establish and agree, after final site inspection, that the work is substantially complete and a project completion date will be determined. This date shall reference the one (1) year warranty period.

END OF SECTION

SECTION 07 84 00

FIRE STOPPING

PART 1: GENERAL

1.01 Description:

- A. The work of fire stopping shall be the responsibility of the General Contractor.

1.1 Related Work Specified Elsewhere

- a. Plumbing Div. 22 00 00
- b. Mechanical Div. 23 00 00
- c. Electrical Div. 26 00 00

PART 2: PRODUCTS AND EXECUTION

2.01 General

- A. Manufacture of fire stop material shall be the same. Fire stopping shall be provided for ,but not limited to, sleeves, collars, or other fire rated means. Product manufacture by 3M or approved equal.
- B. All and any wall, floor, or exterior penetrations, apply applicable fire stopping material(s) in accordance with manufacture's instructions and documented UL listed system number. All work shall be done in a clean and appropriate manner.
- C. Locations: penetrations through fire or smoke walls, interior and exterior walls and floors in general.

END OF SECTION

SECTION 22 00 00

PLUMBING SYSTEMS

Part I - GENERAL

- 1.01 DESCRIPTION: Provide and furnish all necessary labor and materials in connection with a complete plumbing system as described in this section and as shown on drawings. Construction Coordination and Collaborate: This Contractor shall coordinate and collaborate all efforts of installation with all other trades during the construction phase of this project. Time will be allowed for a coordination meeting with all other involved trades during the early stage of construction installation.

- 1.01.1 Commissioning: Time shall be allotted for each Construction Phase of this project for commissioning of systems, equipment, devices, etc.,. Plumbing Contractor, as well as all involved Sub-Contractors, shall collaborate with Commissioning Agency.

1.02 WORK SPECIFIED IN THIS SECTION:

- A. Plumbing fixtures and trim.
- B. Sanitary waste, vent, storm drain systems.
- C. Hangers, supports, sleeves, escutcheons, etc.
- D.
- E.

1.03 WORK SPECIFIED ELSEWHERE

- A. Section 07 84 00: Fire Stopping
- B. Section 23 00 00: Heating & Ventilation
- C. Section 26 00 00: Electrical
- D.
- E.
- F.

1.04 REFERENCES:

Unless otherwise specified or indicated, materials and workmanship shall conform with the latest edition of the following standards and specifications:

- 1. American National Standards Institute (ANSI).
- 2. Underwriters Laboratories, Inc. (U.L.).
- 3. American Society for Testing and Materials (ASTM).
- 4. National Fire Protection Association (NFPA).
- 5. State of Maine Plumbing Code

1.05 SUBMITTALS:

- A. Submit shop drawings in accordance with the requirements of the General Conditions. Submittals shall include manufacturer's specifications and installation instructions on all specified items.

B. Provide submittals on the following items:

1. Plumbing fixtures and associated faucets & trim
2. Domestic Hot & Cold Water Piping & Specialties
3. Insulation
4. Valves and Piping
5. Miscellaneous Equipment

C. Provide warranties and guarantees for standard manufactures products specified in the section.

Part II - PRODUCTS

2.01 SANITARY WASTE, & VENT PIPING:

- A. Except as otherwise noted, all sanitary waste and vent piping shall be schedule 40 cast iron piping and fittings shall be used. Schedule 40 PVC piping and fittings may be used if an approved fire stop device is used at the floor penetrations. Provide clean outs as shown, and at changes in direction and as required by local and State code.
- B. Except as otherwise noted, all Condensate drain piping shall be installed as shown on plans. Piping which is located exposed in Mechanical, Electrical Rooms, concealed in wall partitions, or is exposed to physical damage shall be piped with schedule M copper and fittings. Condensate piping concealed in accessible grid T-bar ceiling maybe schedule 40 PVC piping.

2.02 ESCUTCHEONS:

- A. Escutcheons shall be installed around all exposed pipe passing through a finished floor, wall, or ceiling. Escutcheons shall be heavy cast brass, chromium plated, adjustable, and shall be of sufficient outside diameter to cover sleeve opening and shall fit snugly around pipe, and lock with set screw.

2.03 TRAPS:

- A. All traps connected to the sanitary system shall be vented as shown on the Drawings and as required by the local and state plumbing codes.
- B. Type of fixture traps shall be cast brass, for concealed, and cast brass chrome plated for accessible, water-seal, self-cleaning "P" trap. Each trap shall have an accessible cleanout of ample size, protected by the water seal.

2.04 EXPANSION PROVISION:

- A. Where branches are taken off hot and cold water risers, the tee in the riser shall be located with adequate clearance from the structure or other piping to allow for expansion of the riser without strain on the branch piping.
- B. Branches shall be taken off the risers with at least three fittings to form an adequate swing joint.
- C. For each hot water riser suitable swing shall be provided at top and bottom connections from mains to risers to allow for expansion in both main and riser.

- D. Where soldered or brazed joints are used for the piping systems, proper swing joints as described above for branches from risers shall be provided, or adequate length loops shall be installed to prevent undue strain on the tubing or joints to expansion and contraction.
- E. Main domestic hot water and return pipe lines that run more than fifty shall be provide with means of expansion by either pipe expansion loop or U type flex connector made of bronze braided corrugated high tensile material by KeFlex or approved manufacture.

2.05 HANGERS AND SUPPORTS:

- A. Provide all pipe hangers and fixture supports, and be responsible for proper and permanent location.
- B. All piping shall be rigidly supported from the building structure by means of approved hangers and supports. Horizontal piping shall be hung with adjustable wrought iron or malleable iron pipe hangers, unless otherwise specified, spaced as follows:
 - 1. Cast Iron or PVC pipe: 6 feet at joints.
 - 2. Copper tubing: 6 feet on center.
 - 3. Steel Piping, sch. 40: $\frac{3}{4}$ " and less 8 ft. on center, 1" and larger 12 ft. on center
- C. Vertical stacks of soil, waste, vent and conductor piping shall have friction clamps on each floor. Vertical supply risers shall be supported at each floor by friction clamps or inserting around the supply pipe, a coupling which shall rest on pipe sleeve. Soil, waste and conductor stacks shall be firmly supported at their base, either by a suitable hanger placed on the horizontal line near the riser, or by a base fitting set on a pedestal or foundation carried down to a firm bearing.
- D. Hangers for piping, sizes 4 inches and smaller, shall be Carpenter-Patterson No. 1A Bank Type, Grinnell Co., Calco Steel Products Co., or equal, black steel with hanger rods with machine threads. For un-insulated, copper tubing, the hangers shall be copperized. Hanger for use on insulated service lines shall be sized to allow for insulation thickness, except that branch runouts to individual fixtures and water piping within concealed pipe chases shall be supported with split ring hangers attached directly to tubing.
- E. Chain, strap, perforated bar, or wire hangers will not be approved. Approved gang hangers may be used in lieu of separate hangers on pipes running parallel to each other and close together. Where used for copper tubing, the gang hangers shall have copper saddles or shall be sheet-lead coated.
- F. All fixtures and equipment shall be supported and fastened in a satisfactory manner. Where wall-hung fixtures are secured to partitions, they shall be fastened with 1/4 inch through bolts provided with nuts, washers and plates at back, except where chair carriers are specified. Bolt heads and nuts shall be hexagon and exposed bolts, nuts, washers and screws shall be chromium-plated brass. Where secured to concrete or masonry walls, they shall be fastened with brass bolts or machine screws in lead sleeve type expansion shields and shall extend at least 3 inches into solid concrete or masonry work. Water closets shall be installed with double gasket seals between floor and closet.

2.06 SLEEVES:

- A. All sleeves shall be one-piece Schedule 40 steel pipe. The sleeves shall be fitted securely to prevent slipping or moving.
- B. All piping through masonry walls, beams and partitions shall be sleeved. All sleeves shall finish flush with the finish line.
- C. Space between sleeves and piping shall be sealed watertight and/or gastight as described below:
 - 1. Un-insulated metal piping shall be sealed watertight and/or gastight by packing space between pipe and sleeve with approved packing. Special care shall be taken not to drive lead below top of sleeve. Mechanical seals may be used.
 - 2. Insulated piping and plastic piping shall be sealed watertight and/or gastight by packing space between pipe sleeve and insulation with an approved packing. Fill the remaining space with approved waterproof resilient adhesive sealant.
- D. Sleeves shall be of size to allow for continuous full thickness of pipe insulation through sleeve.
- E. Provide waterproof sleeve or casting on each pipe entering or leaving building through foundation walls and tank pits, or wet wells. Seal space between each pipe and its waterproof sleeve. Each end of sleeve shall be sealed as described above. Each pipe shall be concentric with sleeve. Sleeves shall be waterproof type with welded or cast flange and of size and length to suit pipe and wall thickness. Sleeves shall be all galvanized after welding.

2.08 INSULATION:

- A. Provide thermal insulation on cold, hot, and return water. Insulation shall be continuous through supports.
- B. Insulation shall be omitted on branch runouts designated as chromeplated, except as otherwise specified.
- C. Pipe covering shall be Armaflex #AP-2000 or equal, 1/2" thickness for all hot and cold pipe sizes 3/4" and less. 3/4" thick for 1" to 1-1/4", and 1" thick for 1-1/2" and larger.
- D. Fittings for hot water and hot water recirculating piping shall be covered with Armaflex fitted of same thickness and finish as adjacent pipe covering.
- E. Valves, flanges and fittings for cold water and hot water piping shall be covered with mitered sections of Armaflex. Insulation shall be of same thickness and finish as adjacent pipe covering.
- F. The insulation lap shall be sealed with an externally applied sealer.
- G. Storm Drain; provide 1/2" thick Armaflex # AP-2000 closed cell insulation for all storm drain piping, fittings, and roof drains. Install per manufacture's recommended procedures.

2.09 PIPE IDENTIFICATION:

- A. Provide color coded pipe identification markers on all piping in the building installed under this Section. Pipe markers shall be semi-rigid plastic identification markers equal to "Set Mark" Type "SNA" by Seton Nameplate Corporation or equal.
- B. Provide an arrow marker with each pipe content marker to indicate the direction of flow. If flow can be in either direction, use a double headed arrow marker.
- C. Piping shall be labeled at 20 foot intervals, adjacent to each valve, on each riser. This work shall be done after architectural finish painting where such is required on the pipes.
- D. The following color coding shall be used with names in black letters on backgrounds indicated:

<u>Service</u>	<u>Legend</u>	<u>Background Color</u>
Domestic CW	Domestic C.W.	Green
Domestic HW	Domestic H.W.	Green
Domestic HWR	Domestic H.W.R.	Green
Storm Drain	Storm Drain	Green

- E. In general, 3/4 inch high legend shall be used for pipe lines.
- F. All markers to be OSHA approved.

Part III - EXECUTION

3.01 GENERAL:

- A. The work shall be executed in compliance with the latest edition of the Maine State Plumbing and other applicable Building Codes and all local regulations, etc., applicable to work in this section.

Permits: Obtain and pay for all required permits, licenses, etc.. In case of conflict between the Contract Documents and a governing code or ordinance, the more stringent standard shall apply.

- B. Unless otherwise specified or indicated, materials and workmanship shall conform with the latest edition of the following standards and specifications:

1. American National Standards Institute (ANSI).
2. Underwriters Laboratories, Inc. (U.L.).
3. American Society for Testing and Materials (ASTM).
4. National Fire Protection Association (NFPA).

- C. All work shown on Drawings is diagrammatic. It is not intended to specify or to show every offset, fitting, and component. However, it is the intent of these Specifications and Drawings accompanying same that all required components and materials shall be furnished and installed under this Section, whether or not indicated or specified, in such a manner as to make the entire installation fully complete, operable and maintainable in all respects to satisfaction of Owner.

- D. Refer to appropriate sections for specifications on cutting and sealing openings for piping and other equipment penetrating walls, floors, and roofs. Building Structure Penetrations; General Contractor to provide cutting & finish patching of all building structure penetrations involving removals and new installations of system items, devices, etc. associated with this trade. This contractor shall provide necessary and proper fire stop(s), water seal or weather stop(s), etc. associated with system device penetration. This trade shall coordinate all system component penetrations through building structure(s) with General Contractor and Owner.
- E. Refer to Section 02072 and the General Conditions for provisions governing work in existing buildings, including removal of existing equipment and advance notice of service interruption.

3.02 TESTING – ADJUSTING & COMMISSIONING:

- A. Due to the extent of the work, testing shall be done in sections before any work is covered in and in order that the various parts of the work can go ahead without delay.
- B. Sanitary & Storm drain piping: Before the installation of fixtures, close all openings of the system and fill all lines with water to roof and allow to stand until a thorough inspection has been made. No appreciable drop should be noticed within a 60 minute period, as witnessed by Architect or Owner.
- C. Water piping shall be tested to a hydrostatic pressure test of 125 pounds per square inch and it shall hold tight for a period of 2 hours.
- D. All piping shall then be blown out and made clean and free from scale, water or sludge.
- E. If inspection or test show defects, such defective work or materials shall be replaced and inspection and test repeated.
- F. The Inspector or Plumbers shall be notified sufficiently in advance of all tests in order that he may observe them.
- G. All tests to be witnessed by Architect or his authorized agent, or Owner. Contractor shall provide an allowance for Commissioning before project completion. An allowance of 4 hours minimum of onsite time for commissioning shall be allotted.
- H. All operating equipment installed under this Section shall be placed in operation and shall function continuously in an operating test for a period of two weeks.
- I. Carry out operating test prior to scheduling the project final inspection and after completion of all installation and running adjustments, balancing and any other work required to place the equipment in complete operating condition to meet all requirements under this specification. During this running test period the Contractor shall deliver to the Architect two complete sets of operating, service and replacement data for all equipment which will require operating maintenance or replacement, and one copy of this literature shall be available during the instruction of operating personnel. During all working hours of the operating test

Contractor instruction personnel shall be available for and provide thorough and detailed training to operating and maintenance personnel in operation, maintenance, and adjustment of all equipment installed.

3.03 COMPLETION:

- A. Valve tags and charts: All valves shall have tags noting service and number which shall be noted on record Drawings and Charts.
- B. Provide properly executed certificate of inspection from authorities having jurisdiction.
- C. Instruct such persons as the Owner designates in the proper operation and maintenance of the systems and their parts. Submit to the Architect a letter naming the person or persons so instructed and the dates of such instruction.
- D. Prepare and deliver four sets of complete literature showing operating, service and replacement data for all equipment which will require periodic maintenance or replacement.
- F. Documentation : Proper and adequate documentation must be provided, this will include:
 - a. Accurate as-built drawings and sequences submitted in hardcopy and CD disk form updated via a standard 2013 Computer Aided Drafting (CAD) program)
 - b. Owner's manuals including technical spec sheets
 - c. Operator manuals

END OF SECTION

DIVISION 23 00 00

HEATING, VENTILATING, AND AIR CONDITIONING

PART ONE: GENERAL

1.01 Scope

- A. The work covered by this section of the specification shall include all equipment, materials, labor, transportation, permits, inspections and incidentals required to complete all operations in connections with the installation of an Air Conditioning system as shown on the drawings and/or as herein specified. The Contractor shall assume complete responsibility for receiving, storing, handling, and installing all equipment. All work shall be executed to conform to all required local, state, and federal laws, regulations, etc., applicable to work in this section.
- B. The general provisions of the contract, including the General Conditions, Contract Conditions, and Drawings apply to work specified in this section.
- C. Commissioning: Time shall be allotted for this project for commissioning of systems, equipment, devices, etc., Mechanical Contractor, as well as all involved Sub-Contractors, shall collaborate and coordinate with Owner's Commissioning Agency.

1.02 WORK SPECIFIED IN THIS SECTION

- A. Air Conditioning Units & Equipment
- B. Refrigeration Piping
- C. Automatic Temperature Controls
- D.
- E.

1.03 WORK SPECIFIED ELSEWHERE

- A. Section 07 84 00: Fire Stopping
- B. Section 22 00 00: Plumbing
- C. Section 26 00 00: Electrical Systems
- D.
- E.
- F.

1.04 REFERENCE:

American Society for Testing and Materials (ASTM)
Underwriters' Laboratories, Inc. (UL)
Air Moving and Conditioning Assoc. (AMCA)
American Society of Heating, Refrigerating, and Air
Conditioning Engineers (ASHRAE)
American Society of Mechanical Engineers (ASME)
National Electrical Manufacturers Association Institute of Electrical and Electronics
Engineers (IEEE)

NMCC Christie Building
Nursing Classrooms AC
HVAC 23 00 00 / 1

American National Standards Institute (AWWA)
Local and State Fire Code
The Board of Fire Underwriters
Local and State Plumbing Codes
American Welding Society
Building Officials Code Administration (BOCA)
Office of Safety and Health Administration (OSHA)

1.05 SUBMITTALS

- A. All items shall be submitted for approval to the Owner as mentioned in the General Conditions, apply are as follows:
1. All equipment, including fan curves data.
 2. Piping specialties (thermometers, gauges, valves, flexible connections, strainers, etc.)
 3. Hot water specialties
 4. Pipe, fittings and hangers
 5. Grills, diffusers and registers
 6. Duct accessories, (volume damper, turning vanes, access doors, etc.)
 7. Thermal insulation for all systems
 8. Piping, valve and equipment identification
 9. Schematic control diagrams and control schemes
 10. Contractor's duct fabrication and piping standards
 11. Shop drawings for ductwork and piping

PART TWO: PRODUCTS

2.01 AIR CONDITIONING UNIT: ACU-1 & 2 / AC-1, 2, 3, & 4 / AC-A, B, C, & D

- A. Air conditioning system shall consist of drop in ceiling mounted fan/evaporator units and outdoor matching condenser.

ACU-1 & 2: Condenser Unit capacity: 57,571 btu/hr cooling / 52,886 btu/hr heating.
Daikin VRV Heat Pump Unit series: model #RXTQ60TAVJU,. Unit specifications: IEER 18.0, 208 v, 1 ph., refrigeration R 410A. RLA; 29.1, max fuse size; 35 amps, refrigeration piping flare type, 3/8" liquid, 3/4" suction. Provide accessories, remote wall controller, optional low ambient control, and pre-charged liquid, and suction lines.

- B. AC Cassette Units: Ceiling mounted fan evaporators indoor unit model #FXZQ- series, 208V - 1 ϕ , remote wall controller. Provide refrigerant piping tees model #KHRP26A22T9, navigation remote wall controller #BRC1E73, pre-charge refrigerant 1/4" liquid and 1/2" suction lines.
- C. Equipment Accessories shall be provide: 1) condensate pump, 2) remote wall controllers, 3) iTouch Manager for BMS interface, 3) BacNet software /card, 4) equipment start up, including BMS coordination, 5) AC cassettes will be provided with motion detection sensors.

D. Unit Schedules.

Unit #	Model #	cfm	Watts	Voltage	Cool/Heat	Note
AC-1	FXZQ18TAVJU	511HI	124	208/1/60	18086/18242	1, 2
AC-2	FXZQ18TAVJU	511HI	124	208/1/60	18086/18242	1, 2
AC-3	FXZQ12TAVJU	353HI	83	208/1/60	11944/12600	1, 2
AC-4	FXZQ12TAVJU	353HI	83	208/1/60	11944/12600	1, 2
AC-A	FXZQ12TAVJU	353HI	83	208/1/60	11944/12600	1, 2
AC-B	FXZQ12TAVJU	353HI	83	208/1/60	11944/12600	1, 2
AC-C	FXZQ18TAVJU	511HI	124	208/1/60	18086/18242	1, 2
AC-D	FXZQ18TAVJU	511HI	124	208/1/60	18086/18242	1, 2

Note 1) Ceiling T-Bar drop in w/ grille 2) Wall Wired Control – integrated into A.T.C. BMS

2.02 REFRIGERATION PIPING

A. General: Furnish, install, support and test a refrigerant piping system of the type and size and in the location shown on the Drawings and per manufactures equipment recommendations.

B. Refrigeration work shall be performed by a firm regularly engaged in the installation and service of refrigeration systems of the type specified. Install refrigerant piping in an approved manner in accordance with the best practice of the trade.

C. Installation shall include the following:

1. Thoroughly clean the inside surfaces of copper tubing using an approved degreasing solvent or refrigerant-113, or approved equal.
2. During soldering, the pipe and fillings shall be kept full of inert gas, N or CO2 to prevent formation of scale.
3. Thermal expansion and contraction forces shall be absorbed through proper use of directional changes or U bends in the piping layout.
4. The piping shall be properly anchored to minimize the transmission of vibration from the compressor into the piping system.
5. Under minimum load conditions, gas velocity shall not be less than 500 FPM through horizontal lines and 1,000 FPM through vertical lines.
6. Pitch all horizontal lines a minimum of 1/2" in 10' in the direction of refrigerant flow.
7. Horizontal dimensions of traps shall be as small as possible.
8. Keep hot gas bypass valves close to the compressor discharge.

9. Insulate hot gas lines exposed to outdoor ambient with 1" thick unicellular plastic insulation.

10. Insulate all suction lines with unicellular plastic insulation per manufacture's equipment Installation guidelines.

D. Testing: After the refrigeration system is installed and before any piping is insulated, covered, or anchored, thoroughly leak test the entire system, make any necessary repairs, and retest as necessary.

1. Do not include the compressor in the leak test and exercise care not to damage any controls or relief valves by the test pressure.

2. Use oil-pumped, dry nitrogen with a pressure regulator controlling the system pressure.

3. Each solder connection shall be tapped with a rubber mallet and checked for leaks using a soap solution.

4. Repair all leaks by disassembling the connection, cleaning and remaking the fitting.

5. After all leaks have been repaired, charge the system with refrigerant, initially to 10 psig, then boost to 150 psig (or that required by local codes) using nitrogen. Check the entire circuit for leaks using a halide torch or electronic leak detector. Repair any leaks and repeat test until all leaks are eliminated.

E. Once all leaks have been repaired, charge the system to 150 psig and seal off. If there is no detectable pressure change after 24 hours, the system will be considered free of leaks.

F. Materials shall be as follows:

1. Type "L" hard copper tubing (ACR grade) shall be used in all refrigerant systems.
2. "Stay-Brite" or 95-5 solder shall be used in making all joints.
3. Forged or wrought copper fitting shall be used.
4. Armaflex Type "FR" fire retardant insulation shall be used as indicated.
5. Specialties shall be Sporlan or Alco.
6. Flexible piping connectors shall be used where compressors have vibration isolators.

2.03 HANGERS AND SUPPORTS:

- A. Provide all pipe hangers and equipment supports, and be responsible for proper and permanent location. All piping and equipment shall be supported and fastened in a satisfactory manner.
- B. All piping shall be rigidly supported from the building structure by means of approved hangers and supports. Horizontal piping shall be hung with adjustable wrought iron or malleable iron pipe hangers, clevis or roller type unless otherwise specified, spaced as follows:

Pipe Size	Rod Diameter	Maximum Spacing	Hanger Type
3 / 4"	3 / 8"	5'-0"	Clevis
1"	3 / 8"	6'-0"	Clevis
1-1 / 4"	3 / 8"	8'-0"	Clevis
1-1 / 2" & 2"	1 / 2"	12'-0"	Clevis
2-1 / 2" & 3"	1 / 2"	12'-0"	Clevis w/ roller
4" & 5"	5 / 8"	15'-0"	Roller w/ spring

- C. Vertical piping shall have friction clamps on each floor. Vertical pipe risers shall be supported at each floor by friction clamps or inserting around the supply pipe, a coupling which shall rest on pipe sleeve. shall be firmly supported at their base, either by a suitable hanger placed on the horizontal line near the riser, or by a base fitting set on a pedestal or foundation carried down to a firm bearing.
- D. Hangers for piping shall be Carpenter-Patterson No. 1A Bank Type, Grinnell Co., Calco Steel Products Co., or equal, black steel with hanger rods with machine threads. For un-insulated, copper tubing, the hangers shall be copperized. Hanger for use on insulated service lines shall be sized to allow for insulation thickness, except that branch runouts to individual fixtures and water piping within concealed pipe chases shall be supported with split ring hangers attached directly to tubing.
- E. Chain, strap, perforated bar, or wire hangers will not be approved. Approved gang hangers may be used in lieu of separate hangers on pipes running parallel to each other and close together. Where used for copper tubing, the gang hangers shall have copper saddles or shall be sheet-lead coated.
- F. All insulated piping hanger supports shall be provide with hanger insulation protection saddles thickness of the associated pipe insulation. Carpenter & Paterson 350 series.
- G. Pipe and pipe support hanger shall be constructed of the same material such that electrolysis may not occur between hanger, protection saddle, etc. and piping.

2.04 PIPE INSULATION

- A. Unless otherwise noted or specified, insulate all piping conveying heating fluids with pre-molded fiberglass pipe insulation with all service jacket. Insulation average thermal conductivity shall not exceed 0.24 Btu per inch of thickness per square foot per degree F per hour at a mean temperature of 75 degrees F. Fire and smoke hazard for compositity insulation (, jacket or facing and adhesive) shall not exceed a flame spread of 25 and smoke developed of 50 per ASTM E84, NFPA 255 and UL 723. Insulation shall be Johns- Manville, FLAME SAFE, AP, Owens-Corning Fiberglass 25ASJ, KNAUF or approved equal.
- B. Insulation thickness for pipe sizes 1 1/2" and smaller shall be 1" thick with white removable protective jack. Insulated Pipe fittings shall match pipe insulation. HW piping 2" and larger shall be insulated with 1-1/2" thick pipe insulation with white removable protective jack.
- C. Condensate waste piping: Insulate with 1/2" thick pre-molded glass fiber insulation or Armaflex and fittings, flanges, valves, etc.

- D. Refrigeration piping: provide 3/4" thick Armaflex # AP-2000 closed cell insulation. All refrigeration piping, pumps, tanks, fittings, and system cold competent devices shall be insulated. Install per manufacture's recommended procedures.
- E. Steam and condensate: piping 1-1/2" and larger shall be insulated with 1-1/2" thick pipe insulation with white removable protective jacket for all piping fittings, flanges, valves,
- F. Exterior Piping: Exterior Piping: Insulation shall be 2" high density, mineral wool pipe insulation with all aluminum, Stocco & Boss 020 removable service jacket. All joints shall have stainless steel wing seals and bands. Insulation average thermal conductivity shall not exceed 0.24 Btu per inch of thickness per square foot per degree F per hour at a mean temperature of 75 degrees F.

2.05 ESCUTCHEONS

- A. Escutcheons shall be installed around all exposed pipe passing through a finished floor, wall, or ceiling. Escutcheons shall be heavy cast brass, chromium plated, adjustable, and shall be of sufficient outside diameter to cover sleeve opening and shall fit snugly around pipe, and lock with set screw.

2.06 SLEEVES:

- A. All sleeves shall be one-piece Schedule 40 steel pipe. The sleeves shall be fitted securely to prevent slipping or moving.
- B. All piping through masonry walls, floors, beams and partitions shall be sleeved. All sleeves shall finish flush with the finish line. All sleeves shall be chalked with an approved water repellant and fire retardant sealant.
- C. Space between sleeves and piping shall be sealed watertight and/or gastight as described below:
 - 1. Un-insulated metal piping shall be sealed watertight and/or gastight by packing space between pipe and sleeve with approved packing. Special care shall be taken not to drive lead below top of sleeve. Mechanical seals may be used.
 - 2. Insulated piping and plastic piping shall be sealed watertight and/or gastight by packing space between pipe sleeve and insulation with an approved packing. Fill the remaining space with approved waterproof resilient adhesive sealant.
- D. Sleeves shall be of size to allow for continuous full thickness of pipe insulation through sleeve.
- E. Provide waterproof sleeve or casting on each pipe entering or leaving building through foundation walls and tank pits, or wet wells. Seal space between each pipe and its waterproof sleeve. Each end of sleeve shall be sealed as described above. Each pipe shall be concentric with sleeve. Sleeves shall be waterproof type with welded or cast flange and of size and length to suit pipe and wall thickness. Sleeves shall be all galvanized after welding.

2.07 PIPE IDENTIFICATION:

- A. Provide color coded pipe identification markers on all piping in the building installed under this Section. Pipe markers shall be semi-rigid plastic identification markers equal to "Set Mark" Type "SNA" by Seton Nameplate Corporation or equal.
- B. Provide an arrow marker with each pipe content marker to indicate the direction of flow. If flow can be in either direction, use a double headed arrow marker.
- C. Piping shall be labeled at 20 foot intervals, adjacent to each valve, on each riser. This work shall be done after architectural finish painting where such is required on the pipes.
- D. The following color coding shall be used with names in black letters on backgrounds indicated:

<u>Service</u>	<u>Legend</u>	<u>Background Color</u>
Heating HWS	Heating HWS	Yellow
Heating HWR	Heating HWR	Yellow
Refrigeration Suction	RSL	Yellow
Refrigeration Liquid	RLL	Yellow

- E. In general, 3/4 inch high legend shall be used for pipe lines.
- F. All markers to be OSHA approved.

2.08 AUTOMATIC TEMPERATURE CONTROLS

A. General: Building Management System (BMS)

Existing DDC automatic temperature control system, BMS, by Honeywell, which shall be connected to, monitor, and control all HVAC equipment, by means of an Building Management System (BMS), to provide the sequences as described in these specifications. The system general components shall be consistent with network A/I direct digital control devices, electric, electronic solid state, or a combination of the above, and shall include required components including, low voltage (24 V) and line voltage wiring. It is the intent that the BMS shall be provided with color graphic screen for all systems herein specified. Pneumatic will not be accepted.

B. DDC System

The Direct Digital Control System (DDC) shall be an integrated distributed processing network of stand-alone controllers that incorporate seamless Direct Digital Control technology. The DDC will network digital control panels for the following equipment; air handling AC units.

Each microprocessor based digital controller must maintain its programmed memory in a non-volatile state, this non-volatile memory shall 'keep' its programmed information without the use of a battery when power is unavailable.

The intent of this specification is that all BMS components and related temperature control components, specified elsewhere, shall be manufactured by the same vendor. Related temperature components are items such as: sensors, transducers, control valves, relays, panels, thermostats, actuators, etc.

C. System Guarantee:

The entire control system shall be guaranteed for parts and labor a period of one (1) year from the date of acceptance by the Owner.

D. Diagrams and Supervision:

Provide any necessary wiring or piping diagrams and supervise the installation. These diagrams shall be incorporated into the Owner and Operating Manuals.

E. Control Panels:

In general, relays, transmitters, controllers, transformers, or other control devices (not including room thermostats) shall be grouped and mounted in a factory- built cabinet enclosure located in the Mechanical Room(s) or as indicated on plans. Locations of temperature control panels shall be located in neared electrical room.

F. Wiring:

It is the intent that all control wiring for installation of temperature controls shall be provided and installed by the Automatic Temperature Control Contractor, unless noted otherwise. Power wiring for HVAC equipment and wiring for smoke detectors shall be by Electrical Contractor. All wiring shall comply with requirements of Electrical Section 26000 of the specification.

G. Transmitters

Each transmitter shall be located as shown or where it will respond to the average space temperature if not indicated on prints. Transmitters shall be mounted approximately 48" above finished floor on interior walls or surfaces, not on outside walls. It is the intent that each zoned terminal heating or cooling device, in all areas, be independently controlled by its respective wall transmitter.

2.08.H. SEQUENCE OF CONTROLS:

The existing classrooms are currently heated and ventilated by central HV air handling equipment, which shall remain in use. Space temperatures in all classrooms are currently maintained by individual wall temperature sensors. CO2 levels in the Nursing Skill and Medical Skill Labs are being controlled by one wall CO2 sensor located in the Medical Skills Lab. CO2 sensors will be provided for Nursing Skills Labs and Classrooms 1 and 2. ATC via BMS shall monitor CO2 levels and occupancy of each area. When respective designated area is occupied, determined by motion detector(s), supplied by AC cassette manufacture, room HV equipment shall maintained CO2 levels.

CO2 levels shall be maintain between 800 and 1000 ppm by increasing OA rates from associated HV's and unit OA dampers. All control set points shall be adjustable via front end BMS.

2.08.H.01 AC-1, 2, 3, 4, A, B, C, & D (BMS)

Project AC units shall be controlled by BMS via manufacture's wall thermostats. Thermostats shall be inactive at the local level. If BMS network becomes compromised or disabled, Owner's staff may enable local control via password function and establish local control of AC units until BMS system or network is re-established.

Thermostats provided by AC manufacture, installed and interfaced to existing BMS by A.T.C Contractor.

AC cassettes general control sequence of operation. When classrooms are in occupied schedule, associated unit fan operation shall be energized and run continuously. Respective cooling space condition shall be controlled by BMS to maintain cooling set point. During unoccupied periods, unit motion detector shall establish fan operation with a 30 minutes time delay off after no occupancy detection.

All control set points, schedules, time delays, etc., shall be adjustable via front end BMS.

A minimum of 36 A/I points attributes shall be interfaced from AC mechanical equipment to the BMS front end for monitoring and control features. A/I points attributes as follows;

- 1) Independent occ/unocc schedules for each classroom, total of 4
- 2) Independent space temperatures for each classroom, total of 4
- 3) Motion detection status of each classroom, total of 4
- 4) AC Cassette fan operation, groups of two, total of 4
- 5) Space temperature control adjustments, total of 4
- 6) Monitor AC status, enabled/disabled, total of 4
- 7) Monitor Outdoor ACU-1 & 2 operation status, total of 2
- 8) Alarm Annunciation of system device failure(s), total of 10

2.08.H.02 MANUAL OVERRIDES & SCHEDULES

There shall be the capability to manually override, in a "user friendly manner", unoccupied heating and cooling schedules from the ATC Panel / System. This shall be accomplished by individual mark timed switches, override switches, keypad display, or CRT wired to necessary controls if DDC are used.

2.08.H.03 SYSTEM MONITORING & ANNUNCIATION

ATC Contractor shall provide system monitoring and alarm annunciation via DDC control color graphic system as per Owner's performance. Each physical DDC point shall be historically trended for manual or automatic printing and all alarms automatically printed.

2.08.H.04 SYSTEM TRAINING

ATC Contractor shall provide system training of all system components and DDC control color graphic software programmed systems.

Provide 2 hours of training for the building operators. The purpose will be to simulate and familiarize the operations and equipment / programming, etc. for maintenance personnel. A mutual agreement on the scheduling of this training will be made between the Owner and the ATC contractor. The training class will use the actual operator manual that will be submitted for this project.

In addition to the above training and after the project has been finally commissioned, the ATC Contractor shall allow for 4 hours of Owner customized software programming, additional custom sequence and graphic time at the Owner request.

2.08.H.05 COMMISSIONING:

Commissioning: Time shall be allotted for this project for commissioning of systems, equipment, devices, etc., A.T.C. Contractor, as well as all involved Sub-Contractors, shall collaborate and coordinate efforts to perform pre-commissioning of control sequences. Time shall also be allotted to perform a final commissioning with the Owner's Commissioning Agent.

2.08.H.06 DOCUMENTATION:

Proper and adequate documentation must be provided, this will include:

- a. Accurate as-built drawings and sequences submitted in hardcopy and electronic form. Program files, graphic information, and updated standard Computer Aided Drafting (CAD) as built record drawings and specifications shall be prepared and presented to Owner.
- b. Owner's manuals including technical spec sheets shall be delivered to Owner.
- c. Operator manuals

2.09 MOTORS AND DRIVES:

- A. Unless otherwise noted, all motors/ drives shall be furnished factory-mounted on the driven equipment and shall be provided by equipment manufacturer. Mechanical Contractor shall supply all motors to associated HVAC equipment. Electrical Contractor shall be responsible for providing motor starters, variable frequency drives, and disconnects and power wiring to all mechanical equipment including motor starters and terminating in such equipment. This Contractor and Electrical Contractor shall coordinate such installation of electrical equipment and both shall be present when motors of 1/2 hp and larger are to be first energized.

- B. Motors shall meet the latest applicable standards of the following:

National Electric Manufacturers' Association (NEMA)
American National Standards Institute (ANSI)
Institute of Electrical and Electronic Engineers (IEEE)
National Electrical Code (NEC)
Underwriters' Laboratories (UL)

- C. Motors shall be horizontal, induction type, for general purpose applications under usual indoor and outdoor service conditions as defined in NEMA Standard MG1-14.02 (Class B insulation, continuous 40 degrees C ambient).
- D. Unless otherwise noted, all motors 1/2 horsepower and larger shall be rated 208 volts, 3-phase, 60 hertz. All motors smaller than 1/2 horsepower shall be rated 120 volts, single-phase, 60 hertz.
- E. Motors shall develop rated horsepower at terminal voltage rating from 90 to 110 percent of rated frequency, and a combined frequency/voltage deviation of 10 percent at any frequency between 95 and 105 percent of rated.

PART THREE: EXECUTION

3.01 GENERAL

- A. The work shall be executed in strict conformance with the latest edition of the State Building Code and all local regulations that may apply. In case of conflict between the Contract Documents and a governing code or ordinance, the more stringent standard shall apply.
- B. All piping and ductwork shall be properly supported as approved by the Engineer.
- C. Follow equipment manufacturers' detailed instructions and recommendations in the installation and connection of all equipment. No equipment installation or connections shall be made in a manner that voids the manufacturer's warranty.
- D. Duct systems shall be thoroughly cleaned during erection.
- E. Refer to Section 06100 for specifications on cutting and sealing openings for piping, ductwork and other equipment penetrating walls, floors and roofs.
- F. Refer to Section 06100 and General Conditions for provisions governing work, including removal of existing equipment and advance notice of service interruption.
- G. All work shown on Drawings is diagrammatic. It is not intended to specify or to show every offset, fitting, and component. However, it is the intent of these Specifications and Drawings accompanying same that all required components and materials shall be furnished and installed under this Section, whether or not indicated or specified, in such a manner as to make the entire installation fully complete, operable and maintainable in all respects to satisfaction of Owner.
- H. Refer to appropriate sections for specifications on cutting and sealing openings for piping and other equipment penetrating walls, floors, and roofs.

Building Structure Penetrations; General Contractor to provide cutting & finish patching of all building structure penetrations involving removals and new installations of system items, devices, etc. associated with this trade. This contractor shall provide necessary and proper fire stop(s), water seal or weather stop(s), etc. associated with system device penetration. This trade shall coordinate all system component penetrations through building structure(s) with General Contractor and Owner.

3.02 GENERAL - PIPING

- A. All piping shall be installed so as to provide allowances for expansion and contraction and shall be thoroughly cleaned and reamed before installation.
- B. Shut off valves shall be installed on all main and sub main branches and as shown on the Drawings, details and where specified. Provide shut off valves on branch lines and as detailed.
- C. Piping system shall be tested at 1-1/2 times the working pressure, but not less than 50 psi. All leaks shall be repaired in a manner approved by the Engineer before applying insulation

D. SLEEVES:

All piping through masonry walls, floors, beams and partitions shall be sleeved. All sleeves shall finish flush with the finish line. All sleeves shall be chalked with an approved water repellant and fire retardant sealant. Space between sleeves and piping shall be sealed watertight and/or gastight as described below:

1. Un-insulated metal piping shall be sealed watertight and/or gastight by packing space between pipe and sleeve with approved packing. Special care shall be taken not to drive lead below top of sleeve. Mechanical seals may be used.
2. Insulated piping and plastic piping shall be sealed watertight and/or gastight by packing space between pipe sleeve and insulation with an approved packing. Fill the remaining space with approved waterproof resilient adhesive sealant.

Sleeves shall be of size to allow for continuous full thickness of pipe insulation through sleeve. Provide waterproof sleeve or casting on each pipe entering or leaving building through foundation walls and tank pits, or wet wells. Seal space between each pipe and its waterproof sleeve. Each end of sleeve shall be sealed as described above. Each pipe shall be concentric with sleeve. Sleeves shall be waterproof type with welded or cast flange and of size and length to suit pipe and wall thickness. Sleeves shall be all galvanized after welding.

3.06 COORDINATION WITH ELECTRICAL WORK

- A. Available electric power shall be, in general, 208/120 volt, 3 phase, 60 hertz for motors of 1/2 hp and higher, and 120 volts, 1 phase, 60 hertz for motors smaller than 1/2 hp.
- B. Unless otherwise specifically noted, all 208v 3 phase motors furnished in this Section shall be furnished with magnetic across the line starters with H-O-A switch and reset push button in cover, and control transformer as necessary for reduced voltage, all contained in suitable general purpose enclosure. Electrical Contractor shall be responsible for providing motor starters and disconnects and power wiring to all mechanical equipment including motor starters and terminating in such equipment. This Contractor and Electrical Contractor shall coordinate such installation of electrical equipment and both shall be present when motor of 1/2 hp and larger are to be first energized. All coil control wiring shall be done under this section except as otherwise noted. Each unit shall be equipped with necessary auxiliary contacts for its application. Coil voltage shall not exceed 120 volts. Connections to the

selector switch shall be such that only the normal automatic regulatory control devices will be bypassed when the switch is in the manual position; all safety control devices, such as motor overload protective devices, shall be connected in the motor control circuit in both the manual and the automatic positions of the selector switch. The starters solid state type with adjustable overcurrent relays, shall be as manufactured by Telemecanique, Westinghouse, General Electric or Cutler Hammer. Starters for outdoor equipment shall be weatherproof-type if exposed to the elements.

- C. Unless otherwise noted, and where a magnetic starter is not required, 120v single phase motors furnished in this section shall be furnished with a manual toggle type starter with overload heaters and red pilot lights in a suitable general purpose enclosure supplied and installed by the electrical contractor. The units shall be as manufactured by Westinghouse, General Electric or Cutler Hammer.
- D. Unless otherwise noted all control and interlock wiring with appurtenances necessary to make the work of this section complete shall be furnished and installed under this section. See "Automatic Temperature Controls" section.
- A. Starters for all 208v 3 phase equipment shall be provided with thermal overload solid state type, relays.

3.07 COMPLETION

- A. The contractor shall provide four report copies of the complete balancing and adjusting of all air, and water systems as specified as well as duct pressure test results.
- B. Submit four copies of maintenance data and operating instructions including schematic diagrams of control systems, valve tagging charts, spare parts lists, extended warranty certificates, etc.
- C. Verify that project record documents are complete such as Submittals and Record Documents. Clean and repair damage to finished surfaces resulting from work under this Section. Remove materials and equipment from areas of work and storage areas. All dirt and debris resulting from the work shall be thoroughly taken up and removed from the premises on a regular schedule acceptable by Architect/Engineer/Owner. All equipment shall be cleaned for inspection and use.
- D. All special tools required for maintenance shall be provided to owner at the completion of the project.
- E. Provide two extra sets of clean air filters for the all air handling and ventilation equipment. Install one set and leave with the owner one other set.
- D. Commissioning: Time shall be allotted for each Construction Phase of this project for commissioning of systems, equipment, devices, etc.,. Mechanical Contractor, as well as all involved Sub-Contractors, shall collaborate and coordinate efforts with Commissioning Agency for the duration of all three construction phases.

- F. Documentation : Proper and adequate documentation must be provided, this will include:
- a. Accurate as-built drawings and sequences submitted in hardcopy and electronic form, flash drive, or CD, formatted in 2013 Autocad standard Computer Aided Drafting (CAD) program.
 - b. Owner's manuals including technical spec sheets
 - c. Operator manuals

END OF SECTION

SECTION 26 00 00

ELECTRICAL POWER

PART ONE: GENERAL

- 1.01 A. The work covered by this section of the specification shall include all equipment, materials, labor, transportation, permits, inspections and incidentals required to complete all operations in connections with the installation of electrical systems as shown on the drawings and/or as herein specified. The Contractor shall assume complete responsibility for receiving, storing, handling, and installing all equipment.
- B. The general provisions of the contract, including the General Conditions, Contract Conditions, and Drawings apply to work specified in this section.

1.02 WORK SPECIFIED IN THIS SECTION

- A. Demolition of Existing
B. Power Wiring for Devices, and Mechanical Equipment

1.03 WORK SPECIFIED ELSEWHERE

- A. Section 23 00 00: Heating & Ventilation

1.04 SCOPE OF WORK

The contractor shall provide all materials, labor, and supervision necessary to furnish and install a complete operating electrical system as indicated and as necessary. The work shall include but not be limited to the following.

- A. Furnish and install power to all mechanical equipment.
- B. Furnish and install all power wiring to motor starters, and disconnects. Provide motor starters that are not supplied by mechanical equipment. Magnetically held type motor starters and disconnects associated with HVAC and plumbing equipment shall be furnished by the Electrical Contractor. Automatic Temperature Control Contractor shall furnish and install control wiring associated with control devices, unless otherwise noted. Electrical Contractor shall fully review Mechanical Plans and Specification Division 23 00 00 for power requirements and equipment locations.

1.05 CODE COMPLIANCE

- 1.05.1 All wiring shall comply with the 2017 Edition of the National Electrical Code NFPA 70, the 2013 Edition of the Life Safety Code NFPA 101, and all applicable OSHA, federal, state, and local codes. Obtain and pay for all required permits.

1.06 SUBMITTALS

1.06.1 Within 30 days of the contract award, submittals are required for the following equipment.

- a) Lighting fixtures
- b) Disconnect switches
- c) Motor starters and Variable Frequency Drives
- d) All Wiring devices
- e) Power Switch Equipment & Electrical Distribution Panels

PART 2 PRODUCTS

2.01 ELECTRICAL SERVICE AND DISTRIBUTION EQUIPMENT

2.01 WIRING MATERIALS

2.01.1 Conductors shall be #12 AWG minimum with THWN/THHN insulation rated 90 degrees C. All conductors shall be copper. Type MC cable may be used for branch circuits only as long as it is well protected from damage, sharp edges, etc.. Type NM cable may not be used for powering equipment devices of voltage 120 volts or higher. Type NM cable may be used for low voltage system wiring such as fire alarm and A.T.C. system devices. All cable shall be run perpendicular to building structure. Where multi-wire branch circuits are used, wires shall be color coded to indicate the phase. The color code shall be posted at the panelboard.

All HVAC, Service Closets, Mechanical and Electrical Equipment Rooms:

All power and low voltage wiring serving these areas shall be feed using metal conduit, EMT or rigid conduit.

2.01.2 Conduit (rigid and EMT) shall be used in designated power feeds, main equipment loads, electrical, mechanical rooms, and where indicated on the plans and where required for protection from physical damage. The conduit shall not be used as a grounding conductor.

Where flexible connections are required, such as motor connections, liquid tight flexible metal conduit shall be used for exterior, wet locations. MC cable may be used for interior flexible connections. Supplemental grounding conductors shall be used, sized by Article 250-95.

2.01.3 Except as otherwise indicated, boxes shall be metal. Where devices are installed on 4" square boxes, plaster rings shall be used. All boxes shall be of sufficient size for the conductors contained within.

2.02 SPECIALTIES

2.02.1 AC Mechanical Systems: Wiring shall be provided and wired by this contractor. Existing 208v/3ph/60hz service distributed from existing power circuit panel boards shall be utilized. Power requirements involve 208/120v/1ph/60hz. Provide individual fused disconnects to each AC cassette and outside condenser unit as indicated on plans circuits.

Contractor shall coordinate efforts with AC equipment manufacture and Mechanical Contractor.

2.03 MOTORS

- 2.03.0 All motors shall be furnished factory-mounted on the driven equipment and shall be provided by equipment manufacturer. Mechanical Contractor shall supply all motors to associated HVAC equipment, unless otherwise noted. This Contractor and Mechanical Contractor shall coordinate such installation of electrical equipment and both shall be present when motors of 1/2 hp and larger are to be first energized.
- 2.03.1 Furnish and install branch circuit wiring for power to all motors. Control wiring shall be furnished by A.T.C. under this specification.
- 2.03.2 Furnish and install motor disconnect switches for servicing of equipment located at all motors. Disconnect switches shall be furnished with dual element time delay fuses to match NEC requirements and equipment specifications. In no case shall the maximum fuse size specified by the equipment manufacturer be exceeded.
- 2.03.3 Manual motor starters for fractional horsepower motors shall be General Electric CR 101 Y in NEMA 1 enclosures or flush mounted. Furnish and install overload heaters in accordance with manufacturer's nameplate.
- 2.03.4 Magnetic motor starters shall be General Electric style CR306. Starters shall be furnished with HOA selector switch. Furnish and install overload heaters in accordance with manufacturer's nameplate.
- 2.03.5 Where running conduit, equipment shall be connected to power wiring by means of flexible metal conduit or liquid tight flexible conduit in damp or wet locations. Only listed fittings shall be used. A separate grounding conductor shall be installed in all flexible raceways.

PART 3 EXECUTION OF WORK

- 3.00 All work shall be performed in a neat workmanlike manner. All efforts shall be made to coordinate the work with their trades.

Provide necessary and proper fire stop(s), water seal or weather stop(s), etc. associated with system device penetration. Coordinate all system component penetrations through building structure(s) with General Contractor and Owner.

3.01 Examination

- A. Verify field measurements and circuiting arrangements are as shown on Drawings.
- C. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- B. Coordinate power service outages with Owner.

3.03 DEMOLITION OF EXISTING ELECTRICAL WORK

- A. Demolish of existing electrical work under provisions of General Conditions, and this Section.
- B. Existing Electrical Service shall not be demoed.

3.04.1 TEMPORARY SERVICE

Electrical Contractor shall allow for all costs for temporary electrical usage during project construction. Electrical Contractor shall provide separate means of power electrical metering for construction utility electrical costs. Refer to Section 01 05 00 Temporary Facilities.

Wiring for temporary use of all trades throughout the building as follows: a 20 amp 120 volt source shall be available to all areas of construction with 50 ft. extension cord. The contractor shall furnish and install a 200 watt lamp outlet (or equivalent) for each 1000 sq. ft. of building area for temporary power and light.

3.05 GENERAL:

- 3.05.1 All materials entering into the installation must be new and of the quality specified, otherwise to be the best commercial quality obtainable for the purpose. All parts of the work and the erections thereof must be performed in the best and most substantial manner in accordance with the standards of the trade and all applicable codes.
- 3.05.2 All trenching and backfill for underground conduit shall be in accordance with all pertinent provision of Section 02200 Earthwork of these specifications.
- 3.05.3 Any item inadvertently omitted from the plans and specifications, but which is necessary for the proper completion and operation of the work, in accordance with the intent of the plans and specifications, shall be supplied by the contractor at no additional charge.
- 3.05.4 All questions as to the interpretation or extent of the drawings, and specifications shall be referred to the Engineer.
- 3.05.5 Throughout the progress of the work, the electrical subcontractor shall examine at the site, architectural drawings, together with drawings of equipment companies and other trades, and shall take note carefully all architectural changes and corresponding changes in other lines so that no work will be installed which would have to be removed or altered.
- 3.05.6 This subcontractor shall be responsible that advance information be given to the General Contractor of location and size of all frames, boxes and openings needed.
- 3.05.7 The General Contractor will provide all boxed openings, recesses, lintels and bucks required for the admission of the work. Furnish him with all necessary information in ample time.
- 3.05.8 In no case may any structural member be pierced or violated in any way without written permission from the Engineer.
- 3.05.09 The electrical contractor shall take effective measures to protect all materials and fittings from loss or damage; and all pipe and duct openings from obstruction throughout the construction.

3.05.10 All dirt and debris resulting from the work shall be thoroughly taken up and removed from the premises. All equipment shall be cleaned for inspection and use.

3.05.11 All electrical conduit shall be concealed in ceiling space or partitions except EMT conduit located in Mechanical Room. Provide means of venting conduit, enclosures, etc. of condensation where moisture may occur.

3.06 COMPLETION:

- A. Panel Board Name Plates and Schedules: All panel boards shall have name tags noting service and number which shall be noted on record Drawings and Charts. Each panel shall be provided with breaker schedules.
- B. Provide properly executed certificate of inspection from authorities having jurisdiction.
- C. Instruct such persons as the Owner designates in the proper operation and maintenance of the systems and their parts. Submit to the Architect a letter naming the person or persons so instructed and the dates of such instruction.
- D. Commissioning: Time shall be allotted before the completion of this project for final commissioning of systems, equipment, devices, etc.,. Electrical Contractor, as well as all involved Sub-Contractors shall collaborate and coordinate with Owner's Commissioning Agency.
- E. Prepare and deliver four sets of complete literature showing operating, service and replacement data for all equipment which will require periodic maintenance or replacement.
- F. Documentation : Proper and adequate documentation must be provided, this will include:
 - a. Accurate as-built drawings and sequences submitted in hardcopy and CD disk form updated via a standard 2013 Computer Aided Drafting (CAD) program)
 - b. Owner's manuals including technical spec sheets
 - c. Operator manuals

END OF SECTION